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FOREST TAXATION IN THE UNITED STATES

By

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and
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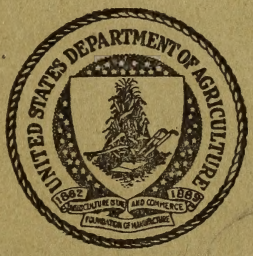

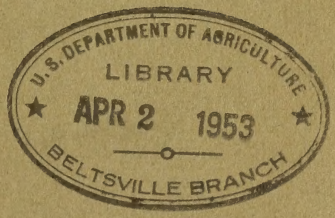

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AUTHORSHIP

The following members of the Forest Taxation Inquiry were associated with Fred Rogers Fairchild in the authorship of this report: R. Clifford Hall, assistant director, Besse B. Day, Wade E. DeVries, Louis S. Murphy, Daniel Pingree, Roy B. Thomson, and Paul W. Wager. The research upon which this report is based is the work of the entire technical staff of the Forest Taxation Inquiry and was facilitated by the cooperation of many individuals and agencies. The names of the staff and more detailed acknowledgment of outside assistance are contained in part 1.

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FOREWORD

Taxation imposes a burden on all forms of enterprise. The business of growing forests must carry a reasonable share of the load. It is widely believed that the existing tax system imposes more than a reasonable share on forestry and discourages the use of private land for this purpose. If so, the public interest demands that this handicap be removed. The Forest Service has, over a period of years, made an exhaustive investigation of this subject through a staff of economists and foresters under the immediate direction of a leading taxation economist. This report contains the more important results of that investigation. It presents a background of facts about the existing methods of taxation and their relation to forestry. It weighs the effects of taxation on forest management. It develops the principles of sound forest taxation. Concrete proposals for applying these principles are offered. These proposals are based on the requirements of the public interest both in forestry and in taxation. I commend them to the earnest consideration of those concerned with progress in these fields.

F. A. Silcox,
Chief.

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PART 1. INTRODUCTION

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ORIGIN AND ORGANIZATION OF THIS STUDY

RISE OF THE FOREST-TAX PROBLEM

Dissatisfaction with the American property tax as applied to forests has had expression for more than a generation, during which period the volume and vigor of complaint has steadily grown. This is no to imply that the owners of forest property are unique in their attitud toward taxation and that all other taxpayers welcome the tax gathere with open arms or even accept his exactions with silent resignation Quite the contrary. Taxation has never in the history of the world been pleasant, and taxpayers have ever been notoriously vocal in expression of the pain with which they part with money for support of government. Yet in spite of all this there does appear to be something peculiar about the complaint against the taxation of forest property. In particular it appears to have been generally accepted by those who have given attention to the subject that the problem of forest taxation is not merely a question of the amount of taxes levied upon the forests but extends to the method of taxation, and that complaints against taxation represent not merely the natural resistance to a heavy tax burden but the conviction that taxation has power to affect the business of forest growing and the future of the forests in a peculiarly unfavorable manner. Efforts to induce forest owners to protect and care for their forests, to prevent destructive exploitation of virgin forests, and to encourage the reforestation of cut-over lands have always, sooner or later, encountered difficulties in connection with taxation. It has been urged that heavy taxation tends to force premature cutting and to make conservative logging unprofitable and, above all, that uncertainty as to future tax exactions stands as an insuperable obstacle to the investment of capital in forest growing. In short, it appears that there is a real problem of forest taxation.

The professional foresters of the United States awoke early to the theoretical significance of taxation as a possible obstacle to conservation, and in the years before 1909 some literature had appeared on the

subject, including contributions by such men as Fernow, Schenck, Gaskill, Akerman, Elliott, and others. Legislation intended to correct the situation had been enacted by a number of States. In 1909 the report of President Roosevelt's Conservation Commission contained a monograph by Fairchild on forest taxation, which was influential in directing later discussion of the question. The problem attracted the attention of the National Tax Association, the Society of American Foresters, the American Forestry Association, and others interested in forestry and conservation. The lumbering and logging associations also took the matter up, and there was steady growth of interest and discussion. Experiments in legislation to solve the problem were undertaken with renewed interest in many States. While some progress had thus been made in the study of the theoretical aspects of the subject and valuable lessons had been learned from legislative experience, the problem still remained essentially unsolved at the time of the inception of the present investigation. That is, the legislation thus far enacted had failed to remove the tax obstacle which stood in the way of the fullest development of private forestry, and knowledge of the theory and especially of the facts of the problem was still too meager to permit of reliable conclusions as to what type of legislation was best suited to meet the situation.

THE SENATE COMMITTEE ON REFORESTATION

In 1923 Congress took cognizance of the matter as part of the broader problem of reforestation. The Senate provided (67th Cong., 4th sess., S. Res. 398) for the appointment of a committee—

> to investigate problems relating to reforestation, with a view to establishing a comprehensive national policy for lands chiefly suited for timber production in order to insure a perpetual supply of timber for the use and necessities of citizens of the United States.

The Select Committee on Reforestation, appointed pursuant to this resolution, was composed of Charles L. McNary, Oregon, chairman, George H. Moses, New Hampshire, James Couzens, Michigan, Duncan U. Fletcher, Florida, and Pat Harrison, Mississippi. The committee proceeded to make a Nation-wide survey, with hearings covering all the important forest regions of the United States. The published record of its hearings (67th Cong., 4th sess., hearing pursuant to S. Res. 398) contains much interesting and valuable evidence upon the general problem of reforestation and frequent reference to the question of forest taxation.

The committee made its report to the Senate on January 10, 1924 (68th Cong., 1st sess., S. Rept. 28). This report called attention to the fact that annual property taxes, unless extremely moderate, may debar the investment of private funds in forest-growing enterprises. The great diversity in tax burden on both merchantable timberland and on cut-over land among the different parts of the United States was cited, and the conclusion was reached that the uncertainties in respect to taxation constitute a serious handicap on reforestation. The complexity of the problem was recognized, particularly the revenue difficulties which certain solutions might involve. Bounties, rebates, and exemptions were rejected as unsound. According to the committee, forest properties should pay their fair share of the public revenues, and the solution of the forest-tax problem should be

sought, not through the exemption of forest property, but by an adjustment of the manner of taxing it in keeping with the time required to mature its products.

The results of the optional yield tax laws which had been enacted in the preceding 12 years were described by the committee as inconclusive. The proposal to make the tax on forest lands a land tax only was mentioned. Constitutional limitations were cited as obstacles to forest-tax reform in many States. The committee arrived at the following conclusions with respect to taxation of forest lands:

> Probably the second development of general importance in encouraging private production of timber is an adjustment of the methods of taxing forest-growing lands so as to avoid an undue burden of current taxation. Obviously, as to State and local taxation, such reforms can be effected only by State legislation. The subject is, however, of such wide importance in all of the forest regions of the United States and has such a universal bearing upon the success of a national policy which seeks to promote timber growth that the committee believes it should be covered by a comprehensive Federal investigation. The purpose of this study should be to disclose the present methods and practices in the taxation of timber and forest-growing land and their actual effect upon the use of land for the growth of timber. The investigation should be conducted, as far as practicable, in cooperation with the States and other suitable local agencies; and the Federal representatives should be authorized to collaborate with the States in devising tax legislation adapted to particular situations which will give reasonable encouragement to reforestation.
>
> Immediate results from a project of this nature cannot be anticipated, but in the long run it should prove an important factor in eliminating obstacles which now stand in the way of private timber growing. Reforms in forest taxation can only be brought about by an extended process of public education, first, as to the present facts and their effect upon timber growth and, second, as to equitable means of modifying the existing conditions. The importance of the subject is so great that the Federal Government may wisely take the lead in an inquiry of this nature.

THE CLARKE-McNARY LAW

The Clarke-McNary Act became law on June 7, 1924 (43 Stat. 653). Its title is: "An act to provide for the protection of forest lands, for the reforestation of denuded areas, for the extension of national forests, and for other purposes, in order to promote the continuous production of timber on lands chiefly suitable therefor." It contains the following provisions relating to taxation:

> SEC. 3. That the Secretary of Agriculture shall expend such portions of the appropriations authorized herein as he deems advisable to study the effects of tax laws, methods, and practices upon forest perpetuation, to cooperate with appropriate officials of the various States or other suitable agencies in such investigations and in devising tax laws designed to encourage the conservation and growing of timber.

THE FOREST TAXATION INQUIRY

Pursuant to the provisions of this act the Forest Service established the Forest Taxation Inquiry and imposed upon it the duty of conducting the study of forest taxation required by the law. The Inquiry may be said to have come formally into existence in April 1926, although little beyond the work of building up the staff, organizing the office, and making preliminary plans was attempted before midsummer of that year. General headquarters were established and have been maintained throughout the course of the study in New Haven, Conn.

The Inquiry has enlisted the services of a technical staff of foresters and economists, with appropriate clerical, stenographic, and statistical assistants. The record of the technical personnel, with dates of appointment and resignation, is as follows:

Fred Rogers Fairchild (professor of political economy, Yale University), director, appointed July 9, 1925.
Louis S. Murphy, senior forest economist, detailed July 9, 1925.
R. Clifford Hall (valuation engineer, Income Tax Unit, U. S. Treasury Department), principal forester, appointed April 1, 1926.
Herman H. Chapman (professor of forestry, Yale University), principal forester, appointed June 1, 1926.
Paul A. Herbert (assistant professor of forestry, Michigan State College), senior forest economist, appointed June 15, 1926, resigned July 31, 1931.
Jennie C. Goddard, senior statistical clerk, appointed July 24, 1926, resigned November 30, 1927.
Conrad H. Hammar, assistant economist,appointed March 31, 1927, resigned April 30, 1929.
Daniel Pingree, assistant forest economist, appointed May 20, 1927, resigned June 15, 1933.
Martha S. Epps, assistant economist, appointed November 14, 1927, resigned August 31, 1930.
Bushrod W. Allin (assistant professor of agricultural economics, University of Wisconsin), taxation economist, appointed September 25, 1928, resigned October 15, 1930.
Otto Neiuwejaar (assistant professor of forestry, University of Riga, Latvia), forest economist, temporary appointment, effective December 10, 1928, terminated October 31, 1930.
Robert M. Haig (professor of business administration, Columbia University), principal taxation economist, temporary appointment, effective November 1, 1929, terminated December 31, 1930.
Paul W. Wager (associate professor of rural social economics, University of North Carolina), taxation economist, appointed January 8, 1930.
Roy B. Thomson, assistant forest economist, detailed March 1, 1930.
Wade E. DeVries (Michigan State Department of Conservation), taxation economist, appointed July 10, 1930.
Besse B. Day, associate statistician, appointed July 15, 1930.
Wilfrid E. Hiley (lecturer in forest economics, Oxford University), principal forest economist, temporary appointment, effective July 25, 1930, terminated April 4, 1931.

INITIAL ASSUMPTIONS REGARDING THE NATURE OF THE FOREST-TAX PROBLEM

The discussion of the forest-tax problem contained in this report is predicated upon certain basic conditions, which should be briefly stated at this point.

PRIVATE OWNERSHIP OF FORESTS AND THE PUBLIC INTEREST

It is recognized that the greater part of the forests and forest lands in the United States is now in private ownership and that, in spite of continued public purchase, this situation may be expected to continue for a long time, perhaps indefinitely.

In countries where forestry has been practiced for centuries, the private forest area continues to be a substantial part of the entire forest area. In France, for example, there are 16 million acres of private forests out of a total of 25 million; in Germany 15 million out of 31 million acres; and in Sweden 43 million out of 57 million acres (*244, 263, 276, 277*).[1] In the United States, 396 million of the 495

[1] Italic numbers in parentheses refer to Literature Cited, p. 641.

million acres of land in commercial forests are now privately owned (73d Cong., 1st sess., S. Doc. 12). While the publicly owned area is increasing in this country by reversion of tax-delinquent lands and by purchase, this increase is slow compared with the total area involved.

The public is taking an increasing interest in the conservative management of all forests, both public and private. Not only is the need for perpetuation of the domestic timber supply recognized, but also the need for protection against floods, erosion, the silting or drying-up of navigable streams, the depletion or pollution of domestic water supplies, and the spoliation of scenery. These are all vitally important from the public point of view, but not so important from the point of view of a private owner. A private owner has no direct interest in protecting agricultural and urban property lying below his forest land from the evil effects of floods and erosion, nor does he gain from helping to preserve and keep pure the domestic water supply of some city perhaps 100 miles distant. He may occasionally receive a small and irregular income on account of scenery, as when he has suitable camp sites for rent, but such income is on the whole exceptional. The owner must, perforce, be concerned with income on which he can depend, and such income is to be obtained chiefly from the utilization of the merchantable timber. It is to the owner's advantage to cut trees at the point of greatest financial return and to spend no more on cultural operations than is strictly justified by financial considerations.

As a matter of fact, owners are frequently led by force of circumstances to cut growing trees before they have reached the point of greatest financial return, even though such practice may be against their own best interest. The public is interested in influencing private owners against such short-sighted or emergency cutting, in order that the consequent deterioration of the forest stand may be prevented. The public interest is generally on the side of growing larger timber. In the case of forests needed for protection or for scenic purposes, the public interest requires not only less severe cutting, but also as a rule more expensive cultural operations and methods of cutting. From the public standpoint, even a reduction in rate of financial return may be more than offset by protective and aesthetic advantages.

Questions arising from this conflict of interest have in the past usually been resolved in favor of the private owner, except as prevented by restrictive legislation or traditional obligations enforced by public sentiment. Legislative restrictions such as are in effect in many European countries have not generally been adopted by the American States except, to a limited extent, in regard to fire protection. The traditional obligations so effective in some countries of Europe have not thus far established themselves in the United States. A precedent may perhaps be seen in the action of Louisiana and New Hampshire in requiring the leaving of seed trees under certain conditions. A very important step in the direction of regulating methods of cutting on private forest lands has recently (1933–34) been taken by the lumber and timber products industries under article X of the Lumber Code in connection with the National Recovery Administration. This article provides for the adoption of specific measures of forest practice within each regional division of the industry in order to assure continuous forest production.

The public has still other interests in conservative forest practice than those mentioned above. Wood is an important raw material for use on the occasion of war or certain other national catastrophes, such as flood, tornado, earthquake, or fire, and the Government may take steps to insure an adequate supply in the event of an emergency. The national forestry program now being carried out in Great Britain is a case in point (*1*).

Another public interest in forestry lies in diverting from agricultural use such land as may be submarginal for farming. The clearing and settling of land which is likely later to be abandoned not only causes misdirected effort and unnecessary suffering on the part of the settler and his family but also increases local costs of government by requiring additional road and school facilities. This particular public interest requires: (1) Truthful publicity by State officials regarding the character and economic limitations of the unoccupied land resources of the State; (2) the effective dissemination of such information among prospective purchasers; (3) control over real estate operations in unoccupied land; (4) rural zoning (as now authorized in Wisconsin) and the evacuation of settlers left stranded in regions suffering from agricultural decline; and (5) public ownership of idle submarginal agricultural land which is in danger of being reabsorbed into an uneconomic agricultural use, so far as may be feasible without financial loss to the State. The desirability of such ownership is recognized in official reports and to some extent in the laws of such States as Wisconsin, Michigan, and New York. Wisconsin, for example, encourages a county to establish forest reserves out of land reverted to it for nonpayment of taxes and grants to the county, for planting and forestry costs, 10 cents an acre for all such land registered under the forest crop law, in addition to another 10 cents which is paid to the town in which the forest is located and which is meant to be in lieu of taxes. In consideration of these contributions, 75 percent of the revenue from timber cut from such county forest lands goes to the State, but such payment is, for most land, in the distant future.[2] Michigan purchases the equity of the local governments in land which has reverted for nonpayment of taxes in order permanently to dedicate such lands to forest or recreational use.[3] New York in 1931 amended her constitution by directing the legislature to appropriate $19,000,000, to be spent over a period of 11 years, for purchasing and reforesting abandoned farm and other idle land.[4] This State also cooperates with counties in reforesting lands acquired by the latter. Town forests are given encouragement by New Hampshire and Massachusetts.

EFFECT OF TAXATION UPON THE MANAGEMENT OF PRIVATELY OWNED FORESTS

In spite of the many-sided public interest in conservative forest practice, the public, through the property tax, is subjecting the forest business to an influence directly opposed to conservation. Development of this thesis will be one of the major tasks of this report. Enough has long been known, however, to set up a reasonable presumption that the American tax system—especially the property

[2] Wisconsin Statutes, 1931, secs. 59.98, 77.05.
[3] Michigan, Compiled Laws, 1929, sec. 3527.
[4] Constitutional amendment adopted by the people of New York in November 1931, art. VII, sec. 16.

tax—acts as a discouragement to forest growing and may in some cases affect adversely the utilization of mature forests. As already pointed out, it was this presumption, commonly entertained, which chiefly induced Congress to provide for the present investigation.

THE IDEAL TAX SYSTEM

The ideal tax system is that which accomplishes, in a workable and not too expensive fashion, an equitable distribution of the cost of government among all persons having an interest in the government. To be ideal the tax system must first of all be workable. A tax system which is incapable of effective administration, which is uncertain as to the amount of the taxpayer's liability, or which encourages evasion and fraud must be rejected, whatever other virtues it may claim. Secondly, the operation of the system must not be too expensive in comparison with the revenue received. Thirdly, the system must accomplish an equitable distribution of the cost of government. An equitable distribution is obtained when the current general conscience of the community approves of such distribution as being fair and just, after careful consideration of the relative abilities of the taxpayers, the benefits which they receive from government, and all other pertinent factors. Lastly, the contributions to the cost of government must be made by all persons who have an interest in the government—in general, by all citizens and by those foreigners who receive protection to person or property from the government in question.

Special favors in the way of reduction or remission of taxes are repugnant to the ideal tax system as defined above; they may be justified, if ever, only by a resulting benefit to all the people of the jurisdiction granting the special favor. Special favors, in general, have a far-reaching effect in directing industry into uneconomic channels. Any industry which cannot bear its fair share of the costs of government has a heavy burden of proof to show that it is not a parasite upon the other industries of the community. It is not enough to show that the industry seeking special consideration is meritorious; has great public value. The same may be said of all legitimate industries, and it is not a sound principle of taxation that the relative contributions of different interests shall be graded inversely according to an estimate of their respective services to the public. Any tax concession granted to one interest necessitates an increased tax burden upon all other interests. For example, it may be urged with truth that the forests are of enormous public usefulness. But cannot the same be said of the farms, the factories, the stores? Shall all other necessary industries be penalized in order that forestry may be promoted? This point might perhaps warrant further elaboration were it not for the fact that in any case little aid toward the solution of the forest-tax problem is to be looked for from this direction. It is significant that, of the many States which have sought to promote forestry by special tax favors, none has accomplished any result of importance.

FOREST TAXATION IN THE IDEAL TAX SYSTEM

The ideal method of taxing forests is that which will require a just contribution from forest owners, while being of such form as will not place a special obstacle (beyond what any just tax must impose) in

the way of the best use of the forests and forest lands from the viewpoint of the public interest. In pursuance of this ideal, a balance should be struck between the needs of the forest owners and the needs of the forest communities. The forest owner should have the opportunity to pursue his forest business without the obstacle of unreasonable taxation; the forest community, on the other hand, should have money to supply necessary governmental services. This money may, to some extent, be obtained from the State in the form of aids and grants, but public policy demands that local communities, no matter how poor, shall supply at least some of their governmental services out of their own pockets. An entire community placed on the dole is not a part of the American ideal.

It is not to be presumed that an ideal tax system would require that large areas of forest or other land be placed on the delinquent-tax rolls year after year. To confiscate forest property by taxation is as much against public policy as to exempt it from carrying its fair share of governmental burdens.

The search for a just tax begins with a presumption against special favors to forest owners. Nevertheless, consideration of the use of special tax favors for the purpose of encouraging forestry has not been excluded from this investigation. The question will receive appropriate attention in connection with the discussion of proposed reforms in forest taxation.

SCOPE OF STUDY

The scope of this study has been determined primarily by the authorization of the Clarke-McNary Reforestation Act, i. e.—

> to study the effects of tax laws, methods, and practices upon forest perpetuation, to cooperate with appropriate officials of the various States or other suitable agencies in such investigations, and in devising tax laws designed to encourage the conservation and growing of timber * * *

Federal taxes having never presented any serious obstacle to the practice of forestry, this study has been concerned almost entirely with State and local taxation.

As will be elaborated in the next part, the property tax is the most important form of taxation imposed by the States and practically the sole tax of the local governments. Complaint of the forest landowners has centered about the property tax, and the burdensome effect of this tax was cited to the Senate Committee as a serious or insurmountable handicap to forest perpetuation in private ownership. A predominant share of this report is accordingly concerned with the property tax.

Special forest-tax laws have been enacted, amended, and repealed from time to time during the past half century in 35 of the States. An important part of the present study is the critical examination of the provisions of the State forest-tax laws and the results which have been achieved in their administration.

There are other taxes which, as regards their effects upon forests and forest perpetuation, are of minor importance. These were studied briefly.

The general income taxes, as imposed by the Federal Government and by many States, were considered with reference to their indirect effects on forest perpetuation.

Death taxes, including succession taxes and estate taxes, have, potentially at any rate, an important bearing on the perpetuation of

forest properties under certain circumstances. The effect of these taxes on the business of growing forests has been studied briefly.

Severance taxes which are imposed in some States in addition to the usual property tax on the nonrenewable products of the soil are extended to forest products in a few cases. The place of such severance taxes in a system of forest taxation has been investigated and is discussed briefly in this report. These taxes are not to be confused with the same kind of taxes when employed as a substitute for the property tax.

The various business taxes, corporation taxes, franchise taxes, and the like, were not considered as a part of this study, their effects on the forest business being negligible. Sales taxes and other State taxes not here mentioned are not considered, since they play only a minor role in the whole tax burden on the forests and have no practical influence on the perpetuation of forests.

The Federal excise taxes do not relate to forests or forest products and are not treated in this report.

The customs tariff has some effect on forestry and the lumber business, through its effect upon the prices of timber. However, the study of the tariff is clearly a separate topic, and it was evidently not contemplated by Congress that study of the tariff should be a part of this investigation.

European tax systems were investigated with special reference to the methods of taxing forest properties, particularly in Germany, France, Switzerland, Great Britain, Norway, Sweden, and Finland, for the sake of the light which foreign experience might throw on the problem of American forest taxation.

Prerequisite to any useful research in this problem is the recognition that forest taxation is not a separate problem, to be isolated, studied, and solved apart from the taxation of other kinds of property or the other problems of government finance. Forest taxation must be regarded as an integral part of the whole system of taxation. Consideration must be given to the public services which the people require of their State and local governments, the various sources from which these governments are able to draw the money necessary to pay the cost of rendering such services, the total amount that has thus to be contributed by taxation, the distribution, actual and ideal, of the total tax burden among the various taxpaying interests, the balance of public revenues and public expenditures, and the state of the public debt. One must consider further the relation between governmental services and the taxable capacity of the community; what sort of governmental services can the people afford? One must similarly consider the relation between taxes and the capacity to pay taxes, not of forest owners only, but of all the various taxable interests. Only by thus putting forest taxation in its true place in the whole system of public finance can progress be made. The present investigation has been guided by such a broad conception of the problem of forest taxation.

In investigating the problem of forest taxation, thus broadly conceived, those engaged in this study have undertaken first to assemble the essential facts and to formulate the theoretical principles involved. Thereafter they have sought to draw the appropriate conclusions and to offer recommendations for modification of State tax laws and administrative procedure designed to correct existing defects and bring the taxation of forests as near as may be to the ideal which has been proposed.

PLAN AND METHOD OF STUDY

The plan of this study comprised field investigations in various forest regions of the United States. Since each State has a financial and taxation system of its own, it was necessary to make the State the primary unit of the study. In each forest region one or more key States were therefore selected for special investigation. These States were, in order of investigation: Minnesota, 1926–27; Wisconsin, 1927; Michigan, 1927; Oregon, 1928; Washington, 1928; New Hampshire, 1928; and North Carolina, 1930. First of all there was gathered material sufficient to present a clear picture of the financial structure and tax system of the State as a whole, including a general view of the finances and taxation of its counties, towns or townships, and other local subdivisions. Thereafter, selection was made of certain counties, towns, or townships for special intensive investigation, intended to bring to light all obtainable facts bearing upon the local tax situation with special reference to forest property. Certain specialized studies, to be discussed at a later point, were also made.

In all of this, the aim was to acquire a broad foundation of facts relating to the whole financial system, by no means limited to those taxes only which were imposed upon the forests. The regions, States, and local jurisdictions selected for study were, of course, in general those where forests were or might be important. Yet study was not confined exclusively to such areas. Certain agricultural and other nonforest localities were included for purposes of comparison.

Having thus studied the key States, a less intensive study was made of certain other States, with chief reference to the operation of special forest-tax laws, as well as to unusual forest-tax conditions. These States were, Alabama, Indiana, Iowa, Louisiana, Maine, Massachusetts, Mississippi, Ohio, and Vermont; they were investigated for the most part in 1930 and 1931.

In connection with its State and regional studies, the investigating staff welcomed the cooperation and assistance of all local agencies able and willing thus to join hands with it. Such were the public officials of the States and their local subdivisions, State universities and other institutions, associations interested in forestry or in taxation, individuals, and associations in the forest industries.

In the studies of selected localities, two general methods were employed. In States such as Minnesota, Wisconsin, and Michigan, where the forests are largely concentrated in distinct regions, the counties of a State composing such a region were compared with the other counties of the State as to tax rates, tax delinquency, taxes and assessment per capita, proportion of cut-over forest land, amount of agricultural development, area of public land, total assessed valuation, assessed valuations of forest and other classes of property, and the like. This was the "extensive method" of investigation, as illustrated by Forest Taxation Inquiry Progress Reports 3, 5, and 13.[5]

[5] CHAPMAN, H. H., HALL, R. C., and HERBERT, P. A. RESOURCES AND TAX BASE OF THE FOREST COUNTIES OF MINNESOTA. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry [3], [37] pp. Sept. 5, 1928. [Mimeographed.]

——— THE FOREST COUNTIES OF MINNESOTA: TAX BASE CONTINUED, TAX RATES, AND TAX BURDEN ON WILD LAND. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 5, [28] pp. 1929. [Mimeographed.]

HERBERT, P. A. RESOURCES AND PUBLIC FINANCES OF MICHIGAN IN RELATION TO THE FOREST TAX PROBLEM. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 13, [103] pp. 1931. [Mimeographed.]

The other method of studying selected localities, which may be called for convenience the "intensive method", involved painstaking investigation of selected towns, counties, or other local units with regard to their economic resources, the working of the present tax system, and the probable effects of proposed changes in taxation. Such an investigation was conducted partly on the basis of information available in public records, such as the assessment rolls, partly through field examination by members of the investigating staff, and partly through private sources of information which were found to be reliable. The intensive method may be illustrated by Forest Taxation Inquiry Progress Reports 9, 15, and 17.[6] The report under date of March 1, 1930, entitled "Preliminary Tables Relating to Forest Taxation in New Hampshire", is also representative of this intensive type of investigation.

The selected locality studies roughly outlined above threw considerable light on assessment practice, on tax delinquency, and on the effects of taxation on forest industries, but these subjects seemed of such vital importance to the presentation and solution of the forest tax problem that it seemed necessary to study them from every possible angle. Hence, in certain of the key States, additional data were obtained on the subjects of assessment ratios, tax delinquency, and the effects of taxation on forest industries.

Records of bona fide real estate sales in many forest localities were obtained, and the assessments of the properties involved were compared with the considerations paid to obtain "assessment ratios." These ratios were then used to test the treatment of forest property in the assessment practice, both as between timbered and cut-over lands, and as between either of these classes and agricultural, resort, commercial, or residential properties. The ratios were also used to show how erratically individual properties or subgroups of properties were assessed within a group. Some original theoretical work was required in the development and application of assessment ratios. Assessment ratio studies have been incorporated in several of the Forest Taxation Inquiry Progress Reports and are the special subject matter of Reports 6 and 12.[7]

The tax delinquency studies, for their part, were used to ascertain the absolute amount of long- and short-term tax delinquency in forest counties, the relative amount of such delinquency in forest compared with other counties of a given State, and the type of real estate which seemed most likely to go delinquent. The long-term delinquency was considered to be especially important, since it is this type of delinquency which indicates the amount of land that is likely to pass out of private ownership through failure to pay taxes. Practically all of the delinquency information was obtained from tax rolls or from published reports themselves taken from tax rolls. Forest

[6] HALL, R. C., and HERBERT, P. A. PROPERTY TAXATION IN SELECTED TOWNS IN THE FOREST LAND REGIONS OF MINNESOTA. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 9, [76] pp. 1930. [Mimeographed.]

PINGREE, D. SOME ASPECTS OF THE FOREST TAX PROBLEM IN SELECTED TOWNS OF WISCONSIN. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 15, [60] pp. 1931. [Mimeographed.]

WAGER, P. W., and THOMSON, R. B. TAXATION OF FOREST PROPERTY IN NORTH CAROLINA. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 17, [206] pp. 1932. [Mimeographed.]

[7] PINGREE, D., and HALL, R. C. ASSESSMENT RATIOS OF RURAL REAL ESTATE IN OREGON AND WASHINGTON. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 6, [34] pp. 1930. [Mimeographed.]

HALL, R. C. ASSESSMENT RATIOS OF FOREST PROPERTY AND OTHER REAL ESTATE IN WISCONSIN. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 12, [37] pp. 1930. [Mimeographed.]

Taxation Inquiry Progress Reports 10 and 11 [8] also deal with tax delinquency, and the subject is discussed in other progress reports.

The effects of taxation on forest industries were studied in the Pacific Northwest, the region having the greatest present concentration of such industries and the greatest present reserve of old-growth timber. The object of the study was to determine the role played by taxation in the holding and operating of virgin or old-growth timber and the relation of taxation to the other economic factors of importance to these industries. Since the facts useful in such a study were largely in the possession of the timber owners and operators, it was necessary to use the questionnaire method. An effort was made to counteract the bad repute in which this method was held by very careful introduction of the questionnaires with the cooperation and endorsement of individual leaders of importance and of the regional lumber trade associations. The questionnaires were followed up by personal interviews with the more important individuals and concerns from whom answers were expected. The results have been incorporated in Forest Taxation Inquiry Progress Report 14.[9]

Another field project was the study of existing forest-tax legislation in those States having special forest-tax laws. Forest Taxation Inquiry Progress Reports 4, 7, and 16 [10] deal with existing forest tax legislation in the United States, largely from the legislative aspect, however. The practical effects have been studied by means of interviews and questionnaires, but the data gathered have, for the most part, not as yet been published. Attention was given also to existing tax legislation, especially as applied to forests, in those European countries which are considered most advanced in their tax systems. The European project involved vists to Germany, Switzerland, Sweden, Finland, and France, together with special reports on Great Britain and Norway by duly qualified citizens of each of those countries under the direction of the investigative staff. The outstanding results of the European studies are to be found in part 11 of this report, entitled "Taxation of Forests in Northwestern Europe." The special forest-tax studies and the European study were conducted chiefly in 1930 and 1931.

In addition to the information-gathering projects which have been noted, it was found essential to make a thorough reexamination of the theory of taxation of property and income, especially in conjunction with the theory of forest enterprise, and to push this theoretical analysis somewhat further than had been done by previous investigators. This was found necessary in order to provide a foundation both for criticism of the existing property tax and for testing of proposed reforms. The principal results of the theoretical study are

[8] CHAPMAN, H. H., and PINGREE, D. TAX DELINQUENCY IN THE FOREST COUNTIES OF THE LAKE STATES. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 10, [41] pp. 1930. [Mimeographed.]
PINGREE, D. TAX DELINQUENCY IN THE SELECTED COUNTIES OF OREGON AND WASHINGTON, U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 11, [26] pp. 1930. [Mimeographed.]

[9] HALL, R. C. TAXATION OF TIMBER PROPERTIES IN OREGON AND WASHINGTON. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 14, [35] pp. 1931. [Mimeographed.]

[10] MURPHY, L. S., and HERBERT, P. A. DIGEST OF STATE FOREST TAX LAWS AS OF DECEMBER 31, 1928. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry [4], [42] pp. 1929. (Superseded by no. 16.) [Mimeographed.]
——— and HERBERT, P. A. DIGEST OF STATE FOREST TAX LAWS ENACTED OR REVISED DURING THE CALENDAR YEAR 1929. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 7, [19] pp. 1930. (Superseded by no. 16). [Mimeographed.]
——— HERBERT, P. A., and DEVRIES, W. E. DIGEST OF FOREST TAX LAWS IN THE UNITED STATES IN EFFECT JANUARY 1, 1932. U. S. Dept. Agr., Forest Serv. Prog. Rept. Taxation Inquiry 16, 73 pp. 1932. [Mimeographed.]

presented in part 3 of this report, under the title "Theory of Forest Taxation with Special Reference to the Property Tax."

The final office project involved the critical analysis of existing tax methods and the formulation and testing of proposed forest-tax reforms. In this testing the studies of revenues and expenditures were found useful in connection with showing what readjustments from the fiscal standpoint would be required under any particular plan. The studies of selected localities afforded basic data with regard to such localities, so that the tax set-up under various assumptions might be constructed under the specific conditions represented. The knowledge of the practical working of existing tax systems gained from many of the other projects furnished guidance in foreseeing the practical operation of proposed systems.

No attempt has been made to bring the factual matter in this report up to date beyond July 1, 1933.

ACKNOWLEDGMENTS

This investigation has greatly benefited by the generous cooperation of many organizations and individuals, of which no complete list can be given. Yale University made it possible for Professor Fairchild to give the necessary time and furnished quarters in Marsh Hall on a rent-free basis, as well as library facilities. The tax officials of the States and of their subdivisions, the State conservation, forestry, and other administrative departments, the State universities, colleges, and experiment stations, have been most liberal in furnishing information and assistance and in extending active cooperation in States where detailed studies were conducted. Lumber manufacturers' associations have helped by endorsing efforts to obtain information from their members, and many corporations, associations, and individuals of the forest industries have furnished valuable data and records. The European phase of the study was facilitated by the cooperation of the taxation and forestry officials of the countries included. In France and Germany the representatives of the forest owners' organizations were also exceedingly helpful. This report has been materially improved through the criticisms and suggestions from other members of the Forest Service, from economists of the Bureau of Agricultural Economics, and from foresters and economists engaged in private or educational work.

PART 2. FINANCIAL ORGANIZATION OF GOVERNMENT IN THE UNITED STATES

CONTENTS

EXISTING AMERICAN SOCIAL AND POLITICAL INSTITUTIONS

The discussion of the forest-tax problem contained in this report is predicated upon fundamental American social and political institutions as they exist at present.

The institutions of private property, personal liberty, and individual freedom in the economic field, are taken for granted. Specifically it is assumed that economic motives—generally functioning through the search for profits—operate as the chief propelling force in the forestry business, as in other businesses. Altruistic motives, such as a desire to promote the public welfare, are to be reckoned with and may be controlling in exceptional cases, but in general there is no reason to expect privately owned forests to be run on other principles than those generally accepted in business management.

This study similarly recognizes the existing political organization of the United States, with a Federal Government, sovereign States, and various local governments, having their respective spheres of powers and duties prescribed by constitutions and laws, and operating through the machinery of representative government.

The resulting financial organization of government particularly affects the premises of this study. Intelligent investigation of the problem of forest taxation obviously requires, as a prerequisite, an elementary appreciation at least of the functions performed by the several grades of government, the sources from which they derive their revenues, and the functional and financial relations between them. The present part seeks first to present such an elementary picture of American financial organization. After this general presentation, there will follow some discussion of the finances of representative forest communities, including comparison with agricultural communities in the respective States.

The United States is a federation of sovereign States, united under a written constitution, which defines the respective spheres of the Federal Government and of the several States. To the Federal Government belong such powers and functions as are granted (either explicitly or by implication) by the Constitution of the United States. The States and the people are the residual claimants of sovereignty, retaining all powers and functions not thus granted to the Federal Government. Subject to the limits thus laid down, each grade of government is supreme.

The Constitution of the United States imposes a certain separation of governmental functions between the National Government and the States. Provision for national defense, diplomatic relations with other nations, control of immigration and naturalization, regulation of foreign and interstate trade, and control of the monetary system are among the important functions assigned of necessity to the Federal Government. By such assignment the powers of the States are definitely limited. Otherwise the States perform all the functions of government, either directly or through delegation to their subordinate political units. There is a wide area in which both the Nation and the States operate, from which condition there arises a considerable amount of overlapping as well as some jurisdictional dispute.

Somewhat similar differentiation appears on the revenue side of governmental operation. To the National Government belongs, of necessity, the exclusive right to impose taxes upon imports and interstate commerce. On the other hand, its power to tax property or to employ other "direct" taxes, with the single exception of the income tax, is seriously restricted—indeed, to all practical intents, denied—by the constitutional rule of apportionment among the States according to their population. The States retain all sovereign revenue powers except as limited by the Federal Constitution. Most important is their practically exclusive right to the taxation of property. Here again there is a considerable common ground, represented especially by the taxation of incomes and including excise taxes which do not burden interstate commerce. In general the States are not permitted to levy taxes upon the property or activities of the Federal Government without its consent, nor is it the policy of the Federal Government to levy taxes upon the property or activities of any State government.

The States are divided into numerous local jurisdictions, first into counties, and then into townships or towns, incorporated cities, school districts, road districts, and other local units. The relations between the States and their local governments are not those of a federation but those of a centralized government. The local subdivisions have no sovereignty but are the creatures of the State and subject to its complete control. Local governmental units are created for two main purposes; (1) for the performance of local functions and the satisfaction of local needs, and (2) as the agents of the State for carrying out its functions in the particular localities.

In New England the county is unimportant as a unit of local self-government; it is little more than an administrative district of the State government, chiefly concerned with the judiciary and to a

lesser extent with poor relief. In Connecticut the governing or policy-making body of the county is the local delegation in the State legislature. In Maine all county budgets must, by law, be approved by the State legislature and are in fact approved by the county delegation in the State legislature.

In many of the Southern States, on the other hand, the counties are in actual fact, if not in law, largely independent of the State legislature and are the principal expression of local self-government. State administrative officials in the South exert very little control or supervision over the county officials (*2, p. 16*).

In the rest of the country the county occupies a position in importance and independence intermediate between the county of New England and that of the South. Here the county is the most important unit of local government (with the exception of the city), but it is subjected to considerable control and supervision by State administrative officials.

The town or township is always a smaller local governmental unit than the county, but the New England town is not subordinate to the county. The New England town is a unit of popular self-government, every voter having a voice in the affairs of the town as conducted in a town meeting. The chief functions of local self-government are carried on by the town. In New England, however, the town is much more independent of the State government than is the county.

Township boundaries and governments were established in some of the Southern States after the Civil War, but they were apparently unsuited to the geographic conditions and social customs of the region, and they now are little more than boundaries on the map. They are sometimes used as deputy assessors' districts or local road districts, but they are of no consequence as units of government.

In the Western States and most of the Southern States there are no political townships. In the North Central States the township government has been copied from New England, although modified to some extent. The political township in the public-land States is mostly coterminous with the government-survey township of 36 square miles, about the size of a New England town. It is of about the same area in the original States outside of New England.

The political township of the Northern States outside of New England has a representative form of government as contrasted with the popular government of the New England town. Township business is conducted by a township board, one of whose members is often a member of the county board, the legislative body of the county.

The school district is generally a smaller unit of government than the town, although the boundaries of school districts often overlap township lines. The elected school board is the governing body of the district. As transportation conditions become better, local school districts are being consolidated to form township or county school districts, which, however, are generally governed by a board more or less independent of the township or county government.

As between the States and their subordinate political units, there has developed a fairly standard separation of functional and financial

spheres, although the demarcation is not rigid in any State, and the organization among the several States is by no means uniform.

In recognition of the political organization of the United States, as thus briefly sketched, it is usual in the United States to refer to three grades of government—Federal, State, and local. The relative functional importance of these three grades may be indicated in a general way by comparison of their total governmental cost payments (which do not include debt redemption). In the fiscal year 1929 these expenses were estimated as shown in table 1 (*3, p. 20*).

TABLE 1.—*Governmental cost payments in 1929*

Governmental unit	Total expenditures	Percentage of total
Federal Government	$3,262,000,000	27.3
The 48 States	1,954,000,000	16.4
Local units, including District of Columbia	6,720,000,000	56.3
Total	11,936,000,000	100.0

FINANCES OF THE FEDERAL GOVERNMENT

The governmental cost payments of the Federal Government (exclusive of debt redemption) amounted to 3,262 million dollars in 1929. A broad classification distributes these expenditures among the various functions of government in the proportions shown in table 2 (*3, p. 20*).

TABLE 2.—*Distribution of Federal expenditures in 1929*

Function	Amount	Percentage of total	Function	Amount	Percentage of total
Protection	$1,568,000,000	48.1	Education	$16,000,000	0.5
General government	438,000,000	13.4	Miscellaneous	19,000,000	.6
Economic development	194,000,000	5.9	Interest	680,000,000	20.8
Public utilities	163,000,000	5.0			
Highways	97,000,000	3.0	Total	3,262,000,000	100.0
Social welfare	87,000,000	2.7			

Protection is by far the most expensive function of the Federal Government.

Not all of this total is spent directly by the Federal Government. The Federal and State governments have entered into a number of cooperative arrangements whereby the Federal Government grants to a State certain sums of money for a purpose which the Federal Government would like to encourage, generally on condition that the State will appropriate some amount from its own resources. On the basis of amounts appropriated, these Federal aids to the States in 1929 amounted to 97 million dollars, or 5.7 percent of the net expenditures of the Federal Government exclusive of expenditures for protection. These Federal appropriations in 1929 were as follows (*4, pp. 44–77*):

For forest fire prevention and control	$1, 200, 000
For distribution of forest tree seeds and plants	75, 000
For forestry extension work	60, 000
For highways	[11] 75, 000, 000
For agricultural extension work	7, 440, 000
For vocational education	7, 185, 000
For flood relief	3, 654, 000
For maternity and infancy hygiene	1, 202, 000
For civilian vocational rehabilitation	1, 023, 000
Total	96, 839, 000

In addition to these grants, Federal appropriations provide for agricultural and forestry research to be carried on in cooperation with State agencies.

It is important to note that the Federal Government, in insisting on certain specifications and standards in connnection with these cooperative enterprises, indirectly exercises some supervision and control over State expenditures.

The tax revenue of the Federal Government in 1929 amounted to 3,550 million dollars and was derived as shown in table 3 (*3, p. 102*).

TABLE 3.—*Tax revenue of the Federal Government, 1929*

Source	Amount	Percentage of total
Income taxes	$2, 331, 000, 000	65. 7
Custom receipts	612, 000, 000	17. 2
Excise taxes	539, 000, 000	15. 2
Death taxes	62, 000, 000	1. 7
Other taxes	6, 000, 000	. 2
Total taxes	3, 550, 000, 000	100. 0

As will appear later, the Federal tax system, while it employs certain bases that are also used by the State, presents distinctive characteristics which set it apart from the tax system of the States.

The figures used in the foregoing discussion are for the fiscal year 1929, since that is the latest year for which comparable figures relating to Federal, State, and local governments are available. Federal finances have undergone spectacular changes during the period of economic depression that commenced in the fall of 1929. Expenditures have been increasing, while revenues have fallen off sharply. Whereas, since the World War surpluses have been the regular order, a deficit appeared in 1931. In 1932 the total governmental cost payments (expenditures chargeable against ordinary receipts) were 4,886 million dollars, with total ordinary receipts (practically synonymous with revenue receipts as usually defined) of only 2,006 millions; the deficit was 2,880 millions (*7, pp. 341–342*). The ordinary receipts in 1932 were as shown in table 4 (*7, pp. 341, 343, 375*).

TABLE 4.—*Tax and other ordinary revenue of the Federal Government, 1932*

Source	Amount	Percentage of total	Source	Amount	Percentage of total
Income taxes	$1, 057, 000, 000	52. 7	Miscellaneous taxes	$6, 000, 000	0. 3
Custom receipts	328, 000, 000	16. 4	Other ordinary receipts	112, 000, 000	5. 6
Excise taxes	456, 000, 000	22. 7			
Death taxes	47, 000, 000	2. 3	Total	2, 006, 000, 000	100. 0

[11] $158,000,000 in 1931.

FINANCES OF THE STATES

FUNCTIONS AND EXPENDITURES

The governmental cost expenditures of all of the 48 State governments in 1929 were about two-thirds of those of the Federal Government. These State expenditures (exclusive of debt redemption) amounted to 1,954 million dollars, which had the functional distribution shown in table 5 (*3, p. 20*).

TABLE 5.—*Distribution of State expenditures, 1929*

Function	Amount	Percentage of total	Function	Amount	Percentage of total
Highways	$669,000,000	34.2	Public utilities	$15,000,000	0.8
Education	548,000,000	28.1	Miscellaneous	7,000,000	.4
Social welfare	254,000,000	13.0	Interest	94,000,000	4.8
Protection	175,000,000	8.9			
General government	127,000,000	6.5	Total	1,954,000,000	100.0
Economic development	65,000,000	3.3			

Table 5 does not include expenditure of the sums received as grants from the Federal Government, since these have been accounted for among the Federal expenditures. Among State expenditures, protection assumes a minor role, and roads and schools account for the greater portion of the total. This is in sharp contrast with the functional distribution of Federal expenditures.

If attention be given to the separate States, it appears that in all sections of the country and in every State, expenditures for highways are either the largest or the second largest item of State governmental expense. In Vermont 74.4 percent (*3, p. 24*)[12] of net State expenditures were for highways, a larger proportion than in any other State. On the other hand, New York spent the least share, only 22.9 percent, of its funds for road purposes.

State expenditures for education in the New England States constitute a much smaller share of the whole than in the other parts of the country. On the other hand, in New England and the Middle Atlantic States, expenditures for social welfare are much more important than elsewhere.

Expenditures for general government purposes are not a large part of the total in any State except Rhode Island, where they make up over 21 percent of the total. Expenditures for State-operated public utilities, i.e., expenditures not charged off against operating revenue, are important, 24½ percent of the total, in North Dakota, while in all other States they are relatively unimportant (*3, pp. 24–25*). The maximum and minimum expenditures by State and rate for each of the various functions are presented in table 6.

[12] In computing these percentages for individual States, payments for interest were not included. This omission makes all the percentages slightly larger than they would otherwise have been. These percentages therefore do not correspond precisely to those for all the States together in the table immediately above; of course the relative positions of the States and of the items of expenditure are not affected.

TABLE 6.—*Range of functional distribution of expenditures by States, 1929* [1]

Function	Maximum		Minimum	
	State	Ratio to total expenditures	State	Ratio to total expenditures
		Percent		*Percent*
Highways	Vermont	74.4	New York	22.9
Education	Delaware	49.4	Vermont	6.3
Social welfare	Massachusetts	38.1	Arkansas	3.0
Protection	do	13.5	Vermont	4.4
General government	Rhode Island	21.5	Michigan	3.0
Public utilities	North Dakota	24.5	25 States	0
Economic development	Florida	9.6	Tennessee	1.8
Miscellaneous	Idaho	1.8	Mississippi	(2)

[1] Source of data: National Industrial Conference Board, Inc. (*3, pp. 24–25*).
[2] Less than 0.05 percent.

GRANTS BY THE STATES TO THEIR SUBORDINATE GOVERNMENTS

The financial relationship between the States and their minor civil or local governmental units is very complex. There has grown up a system of State aid or grants to the counties, towns, townships, and school districts for the purpose of education and highway operation and maintenance. Every one of the 48 State governments grants a considerable sum to the local governments to aid in the maintenance of the school system. As noted above, education constitutes the second largest functional item of State expense. Yet, as a matter of fact, in 1929 slightly over 60 percent of State educational funds were distributed among the minor civil divisions, on the basis of number of teachers or pupils or average daily attendance, or assessed valuation back of each teacher or some other measure, and were expended by local officials, though generally under some State supervision (*5, pp. 90–91*). There are still other taxes collected by the States for school purposes in which the States act merely as agents for the local governments.

At least 16 of the States grant some aid to their minor civil divisions for the repair and upkeep of their highways. In these 16 States slightly over 10 percent of the total expenditure for highways out of State revenue is turned over to the minor civil divisions to be spent by them for the upkeep of roads. These amounts are in addition to certain taxes, such as a portion of the gasoline or automobile-license tax, which go directly to those minor civil divisions on the basis of the amounts collected there. The importance of this form of State aid varies greatly. In Vermont and Wisconsin a little more than 94½ percent of all State road maintenance funds are expended through the local government officials, but in Connecticut and Utah only 0.4 and 0.3 percent, respectively, of the State road maintenance funds are so spent. Expressing this contrast in another way, the ratio between the State aids to the local governmental units for highway maintenance and the total State expenditures for highway purposes, both in the form of capital outlay and repair and upkeep, was 44 percent in Vermont, 21.1 percent in Wisconsin, and 0.1 percent in Connecticut and Utah (*5, pp. 86, 87, 100–101*).

As has been pointed out previously, the larger share of the Federal expenditures for education and highways is in the form of aid to the

States and is spent by the State governments. In turn, a large share of the State expenditures, out of State tax revenues, for education and highways is paid to the minor civil divisions and is spent by the local governments. For example, of the extremely large share of State expenditures going for highways in Vermont, nearly one-half is not spent directly by the State but rather by the towns.

REVENUES

The total tax revenues of all the State governments amounted to 1,612 million dollars in 1929 (*3, p. 110*). This was a little less than half the amount of the tax revenues of the Federal Government. State revenues were derived from the various forms of taxation as indicated in table 7 (*3, pp. 110, 112*).

TABLE 7.—*Tax revenue of States, 1929*

Source	Amount	Percentage of total	Source	Amount	Percentage of total
General property taxes	$350,000,000	21.7	Income taxes	$75,000,000	4.6
Licenses and permits	287,000,000	17.8	Poll taxes	4,000,000	.2
Motor-vehicle registration	287,000,000	17.8	Other special taxes	69,000,000	4.3
Gasoline taxes	282,000,000	17.6			
Death taxes	149,000,000	9.2	Total	1,612,000,000	100.0
Special property taxes	109,000,000	6.8			

While there is by no means complete segregation of revenue sources as between the Federal Government and the States, comparison of their respective tax systems will show that they are marked by certain distinctive characteristics. Both the Federal Government and some of the States make use of the income tax. Eleven States received a substantial revenue from this source in the fiscal year 1929. But whereas the income tax is the chief reliance of the National Government, producing 66 percent of the tax revenue in 1929, only eight States derived as much as 10 percent of their tax revenue from this tax in that year. The States, of course, obtain no revenue from customs. Excise taxes are as yet unimportant as a source of State revenue. Death taxes are an important source of revenue (over 10 percent of the total) in 9 of the 48 States, but unimportant as a source of Federal revenue.

The general property tax remains as the principal source of State revenue in the United States, although its importance in this connection is declining from year to year. In 1929, 2 of the States (Pennsylvania and North Carolina) did not use the general property tax as a source of State revenue, but in 4 other States (Arizona, Utah, Nevada, and Nebraska) it still accounted for more than 50 percent of the total (table 8). The income tax is gradually becoming more important as a source of revenue for State governments. At present (1933) it is employed by some 20 States.

TABLE 8.—*Range of source distribution of State revenues, by States, 1929* [1]

Source of revenue	Maximum		Minimum	
	State	Ratio to total revenues	State	Ratio to total revenues
		Percent		*Percent*
General property tax	Arizona	67.2	Pennsylvania, North Carolina	0
Licenses and permits	California	46.9	Nevada	2
Motor vehicle registrations	Oregon	37.4	Montana	0
Gasoline taxes	Florida	43.4	New York, Illinois	0
Death taxes	Rhode Island	33.3	4 States	0
Special property taxes	Pennsylvania	30.7	17 States	0
Income taxes	North Carolina	24.0	36 States	0
Poll taxes	Texas	2.2	39 States	0
Other special taxes	Delaware	21.1	California, Texas	0

[1] Source of data: National Industrial Conference Board, Inc. (*3, pp. 112–113*).

While there is no important difference in sources of State revenue as between regions or geographic divisions, there are considerable differences as between individual States. The maximum differences as regards their respective dependence on the several sources of tax revenue in 1929 are shown in table 8.

Gasoline taxes and business licenses are the only sources of State revenue which are common to all the States. The failure of New York and Illinois to show revenue from the gasoline tax (table 8) is owing to the fact that their laws, enacted in 1929, were not in effect in time to produce any yield before the close of the fiscal year on June 30.

DEBTS

The aggregate debts of the State governments amounted to $1,577,341,000 in 1929 (*3, p. 60*). This was less than one-tenth of the amount of the Federal debt. The Federal debt was decreasing steadily during the decade preceding 1929, while both the State and local government debts were increasing during this period. Since 1930 the Federal debt has grown enormously. The functional distribution of State debts in the aggregate, together with the maximum shares by geographic divisions, is presented in table 9.

TABLE 9.—*Functional distribution of State debt and geographic division with maximum share of debt by functions, 1929* [1]

Function	Distribution, all States	Maximum share for each function	
		State group	Ratio to total debt of group
	Percent		*Percent*
Highways	54.4	West South Central	76.0
Public utilities	14.1	West North Central	50.3
Protection	11.6	East North Central	29.2
Social welfare	3.0	New England	15.5
Education	2.2	Mountain	12.3
General government	1.3	do	9.5
Economic development	1.2	Pacific	6.2
Miscellaneous	12.1	East South Central	41.1

[1] Source of data: National Industrial Conference Board, Inc. (*3, p. 57*).

The State borrowings have been principally for highways. Although education accounts for over 28 percent of State current expenditures, only 2.2 percent of the State borrowings were made for

this purpose. Borrowings for highway purposes account for the largest share of the State debt in all geographic divisions excepting in New England and in the West North Central division. In these two divisions, and in no others, the larger share of the State borrowings has been for the purpose of financing public utilities.

FINANCES OF THE COUNTIES, TOWNS, AND OTHER SUBORDINATE GOVERNMENTS

The governmental cost expenditures of the local governments in 1929 amounted, according to the estimates of the National Industrial Conference Board, to 6,720 million dollars (*3, p. 21*); this is more than twice as much as the expenditures of the Federal Government and nearly one-third greater than the combined expenditures of the Federal Government and the 48 States. However, about half of this sum was spent by cities having a population in excess of 30,000. These figures for local expenditures do not include grants from the States that were included in the figures for State expenditures.

Since forests are a part of the tax base of rural rather than urban local government, the finances of the rural local governments are of particular interest in connection with this report. The local governments having jurisdiction over forest lands are the counties or parishes, the towns or townships, the school districts, road districts, and the various rural special improvement and protection districts, such as drainage, irrigation, fire, and weed districts.

Information regarding the expenditures of the rural local units is neither so complete nor so reliable as for the larger cities and the States. As estimated by the National Industrial Conference Board, the expenditures of these local bodies, excluding the cities of population exceeding 30,000, were distributed as follows (*3, p. 21*):

	Amount	Percent
Education	$1,113,000,000	32.6
Highways	621,000,000	18.2
All other functions	1,336,000,000	39.2
Interest	341,000,000	10.0
Total	3,411,000,000	100.0

The tax revenues of all local governments in the United States, including counties or parishes, towns and townships, cities and villages, school districts, road districts, and all other local improvement and protection districts amounted to $4,818,872,000 in 1929 (*3, p. 114*).

This is only 7 percent less than the combined tax revenues of the Federal Government and the 48 State governments. Of the local tax revenue, 92.3 percent was derived from the general property tax. The local property tax thus stands out as by far the most important part of the tax burden on forest property. In each of 38 States over 90 percent of the local tax revenue comes from the general property tax. Oregon is the State receiving the maximum share (98.8 percent) of its local revenue from this source. At the other extreme is Alabama in which only 75.6 percent of its local taxes are general property taxes.

The remainder of local tax revenues throughout the United States comes from licenses and permits (4.4 percent) and other taxes (3.3 percent). The former are found chiefly in the South. For example, local governments in Alabama get 23.8 percent of their revenues from licenses and permits—more than those of any other State.

The outstanding public debt of counties, townships, towns, villages, cities, school districts, and all other local governmental subdivisions amounted to $11,874,800,000 in 1929 (*3, table 19*). This was seven and one-half times as large as the combined debt of all the State governments and equal to seven-tenths of the Federal debt. About one-half of this total local debt represents the obligations of the cities of over 30,000 population.

FINANCES OF FOREST AND AGRICULTURAL COMMUNITIES

GENERAL DESCRIPTION OF THE SAMPLES SELECTED

It is significant that the picture of local expenditures and revenues thus described for entire States is not materially different from that presented by the forest localities and the agricultural localities separately considered. This was tested in various parts of the country, and particularly in New Hampshire, Massachusetts, New York, Minnesota, Washington, Oregon, and California. In New Hampshire and Massachusetts the town was the locality tested, in the other States the county. In each case the finances of all subordinate taxing districts, except cities and villages, were consolidated with the finances of the town or county, respectively. The town or county was classified as forest, semiforest, or agricultural on various grounds explained in detail below. Urban and suburban areas were avoided so far as possible, although their presence could not be entirely escaped. An attempt was made to obtain a representative sample of forest, agricultural, and mixed conditions. The localities as chosen and classified are listed in table 10.

TABLE 10.—*Representative localities selected for study of finances of forest and agricultural communities*

NEW HAMPSHIRE (TOWNS)

Forest	Semiforest	Agricultural
Barrington	Alstead	Bath
Clarksville	Barnstead	Bedford
Deering	Bow	Belmont
Dorchester	Columbia	Colebrook
Dummer	Hollis	Epsom
Effingham	Hopkinton	Farmington
Errol	Langdon	Greenland
Fremont	Lee	Haverhill
Gilsum	Londonderry	Henniker
Groton	Loudon	Hudson
Hill	Lyme	Lancaster
Nelson	Milan	Stratham
New Hampton	Pembroke	Unity
Nottingham	Piermont	Walpole
Pittsburg	Plainfield	Westmoreland
Richmond	Sanbornton	Wilton
Salisbury	Tuftonboro	
Sharon	Weare	
Springfield		
Surry		
Washington		
Webster		

TABLE 10.—*Representative localities selected for study of finances of forest and agricultural communities*—Continued

MASSACHUSETTS (TOWNS)

Forest	Semiforest	Agricultural
Blanford	Ashfield	Bolton
Chester	Boxboro	Brimfield
Douglas	Buckland	Brookfield
Erving	Charlton	Concord
Florida	Colrain	Deerfield
Freetown	Hampden	Dighton
Leverett	Heath	Eastham
Monroe	Leyden	East Longmeadow
Mount Washington	Marshfield	Franklin
New Salem	New Marlboro	Hadley
Pelham	Raynham	Hatfield
Plainfield	Shirley	Littleton
Plympton	Southboro	Monson
Royalston	Stow	Newbury
Russell	Sudbury	Rehoboth
Shutesbury	Tyringham	Somerset
Tolland	Warren	Sunderland
Warwick	Westboro	Swansea
Wendell	Westford	Whately
Westhampton	Windsor	Wrentham

NEW YORK (COUNTIES)

Essex	Franklin	Chenango
Hamilton	Herkimer	Genesee
Warren	Lewis	Madison
	Washington	Orleans
		St. Lawrence
		Tioga
		Wayne
		Wyoming

MINNESOTA (COUNTIES)

Aitkin		Winona
Beltrami		
Crow Wing		
Hubbard		
Koochiching		
Lake		
Lake of the Woods		
Pine		

WASHINGTON (COUNTIES)

Clallam		Adams
Cowlitz		Asotin
Jefferson		Benton
Lewis		Chelan
Mason		Columbia
Pacific		Douglas
Skamania		Franklin
Wahkiakum		Garfield
		Grant
		Lincoln
		Okanogan
		Stevens
		Walla Walla
		Whitman
		Yakima

OREGON (COUNTIES)

Clatsop		Benton
Coos		Marion
Curry		Polk
Lincoln		Washington
Tillamook		Yamhill

TABLE 10.—*Representative localities selected for study of finances of forest and agricultural committees*—Continued

CALIFORNIA (COUNTIES)

Forest	Semiforest	Agricultural
Del Norte Eldorado Mendocino Nevada Plumas Sierra Siskiyou Trinity		Colusa Glenn Kings Sutter Yolo

Some interesting facts about the various localities in these selected States are shown in table 11.

TABLE 11.—*Area and population of representative localities; selected States* [1]

State, date, and type of locality	Total area	Crop land		Population	
		Area	Ratio to total	Total	Per square mile
New Hampshire, 1929:	*Acres*	*Acres*	*Percent*	*Number*	*Number*
Forest towns	587,992	24,740	4.2	7,683	8.4
Semiforest towns	455,934	54,940	12.0	15,988	22.4
Agricultural towns	341,354	56,160	16.5	25,509	47.8
Massachusetts, 1926:					
Forest towns	358,621	22,331	6.2	13,435	24.0
Semiforest towns	332,882	57,936	17.4	32,541	62.6
Agricultural towns	295,911	59,059	20.0	56,174	121.5
New York, 1928:					
Forest counties	2,823,680	101,241	3.6	71,286	16.2
Semiforest counties	3,356,160	577,130	17.2	179,196	34.2
Agricultural counties	4,388,480	1,470,076	33.5	341,152	49.8
Minnesota, 1927:					
Forest counties	9,164,800	502,743	5.5	117,392	8.2
Agricultural county (Winona)	407,680	188,595	46.3	34,744	54.5
Washington, 1927:					
Forest counties	6,931,200	128,587	1.9	121,700	11.2
Agricultural counties	21,000,960	5,041,271	24.0	266,322	8.1
Oregon, 1927:					
Forest counties	3,964,160	61,987	1.6	71,455	11.5
Agricultural counties	2,582,400	608,583	23.6	139,760	34.6
California, 1928:					
Forest counties	12,890,880	278,873	2.2	83,556	4.1
Agricultural counties	3,365,120	1,169,072	34.7	82,374	15.7

[1] Sources of data: Crop figures from the U. S. Census of Agriculture; population figures computed from the Fifteenth Census of the United States, 1930 (*6*) by use of straight line interpolation between 1920 and 1930; total area figures from local official records.

In New Hampshire, Massachusetts, and New York the selection of localities was made with the help of State tax and forest officials. The character of the tax base was the guiding factor in making the selections. Forest localities, for instance, were those in which forest property predominated in the tax base; while agricultural localities were selected on the basis of predominating agricultural property. The forest localities in each of these three States have little crop land and small population per unit of area in comparison with the agricultural localities. Though there are no official statistics to show it, the forest localities are largely covered with second-growth forests, some of which are quite valuable.

In Minnesota, on the other hand, the forest localities are much nearer to a bare land condition. The forests have been cut over or

burnt over rather recently and do not have the value per unit of area which is found in the Northeastern States. The forest counties were selected as typical of a cut-over region in which strenuous efforts have been made to develop a profitable agriculture. The efforts have been successful only in especially favorable locations.

An entirely different set of conditions is found on the Pacific coast. Here, old-growth timber predominates in the tax base of the forest counties. Indeed, these counties were chosen expressly because timber did thus predominate. The eight forest counties selected in Washington, for instance, are those counties in western Washington whose valuation of timber and unimproved lands for 1928 amounted to more than 40 percent of the value of all real and personal property as equalized by the county boards. The 15 agricultural counties, on the other hand, are those counties in eastern Washington in which timber lands represent less than 5 percent of the value of all real and personal property as equalized by the county boards for 1928 and in which city lots and improvements represent less than half of the same equalized value.

In Oregon the five forest counties are those in the western part whose valuation of timber and nontillable lands for 1928 amounted to more than half of the value of all real and personal property equalized by the county boards of equalization. The five agricultural counties are all located in the Willamette Valley, and none of them has more than a third of its tax base in timber and nontillable lands or more than a third of its tax base in city lots and improvements.

In California the eight forest counties chosen have more than 12 percent of their total land area in privately owned timberland and, at the same time, have no more than 3 percent of their land area in crop land and have little urban development. Not all the counties conforming to these conditions are included, but only those which comprise essentially contiguous areas in the two principal forest regions—the coastal range and the eastern part of the State. Four counties were chosen in each region.

The 5 agricultural counties, on the other hand, were chosen from the 11 counties which have more than 25 percent of their land area in crop land. Of these 11, the 5 selected are those which have the smallest portions of their tax base in municipalities. Less than 20 percent of the tax base is so classified by the 1929–30 report of the California State Board of Equalization.

GOVERNMENTAL-COST PAYMENTS

The governmental-cost payments of the various towns and counties were tabulated and distributed by functions. The functional distribution is presented in tables 12 and 13, where the various items are self-explanatory except those for social service and miscellaneous. Social service includes development and conservation of natural resources; conservation of health and sanitation; charities, hospitals, and corrections; recreation; and expenses of public-service enterprises. All of these items are of relatively minor importance in the selected localities and are combined for the sake of convenience in presentation. Miscellaneous includes relief to soldiers and other special classes, judgments and losses, and unclassifiable items. In California it

includes also agency transactions for subordinate districts. The functional distribution of these agency transactions in California could not be ascertained from the data available.

Everywhere, payments for highways and education predominate and usually amount to from 60 to 80 percent of all governmental-cost payments. This fact is as true of the forest localities as of the agricultural. Educational payments are larger than highway payments in every State and town or county group except New Hampshire, the semiforest counties of Massachusetts, and the agricultural counties of New York.

TABLE 12.—*Governmental-cost payments of representative localities distributed according to purpose; New Hampshire, Massachusetts, and New York* [1]

State, date, and purpose	Forest localities		Semiforest localities		Agricultural localities	
New Hampshire, 1929:	*Dollars*	*Percent*	*Dollars*	*Percent*	*Dollars*	*Percent*
General government	31,829	6.0	36,866	5.6	104,509	8.9
Protection	6,247	1.2	12,973	1.9	31,466	2.7
Highways	301,697	56.7	332,917	50.4	521,720	44.6
Education	170,987	32.1	243,978	36.9	463,308	39.7
Social service	15,465	2.9	22,647	3.4	79,300	6.8
Miscellaneous	1,000	.2	2,763	.4	7,251	.6
Interest	6,335	1.2	12,386	1.9	31,791	2.7
Gross total	533,560	100.3	664,530	100.5	1,239,345	106.0
Refund receipts	1,625	.3	3,553	.5	70,478	6.0
Net total	531,935	100.0	660,977	100.0	1,168,867	100.0
Massachusetts, 1926:						
General government	42,575	4.5	73,031	4.2	124,312	4.7
Protection	16,625	1.8	96,180	5.6	193,392	7.2
Highways	371,778	39.6	734,135	42.5	681,552	25.5
Education	389,966	41.6	624,921	36.1	1,083,604	40.5
Social service	83,623	8.9	130,800	7.6	435,379	16.3
Miscellaneous	12,202	1.3	33,683	1.9	33,498	1.3
Interest	21,621	2.3	35,958	2.1	120,732	4.5
Total	938,390	100.0	1,728,708	100.0	2,672,469	100.0
New York, 1928:						
General government	459,745	11.0	651,280	8.6	1,252,848	8.1
Protection	70,975	1.7	138,054	1.8	270,411	1.7
Highways	1,102,618	26.3	2,340,829	30.9	5,445,895	35.0
Education	1,446,045	34.6	2,573,467	33.9	5,198,958	33.4
Social service	521,156	12.4	733,990	9.7	1,413,896	9.2
Miscellaneous	354,000	8.5	730,066	9.6	1,369,419	8.8
Interest	230,064	5.5	418,326	5.5	587,141	3.8
Total	4,184,603	100.0	7,586,012	100.0	15,538,568	100.0

[1] Sources of data: Columns 2, 4, and 6: New Hampshire from reports of the State tax commission and from public records of town and school district finances; Massachusetts from records of town finances as printed by the commissioner of corporations and taxation; New York from the State department of audit and control and other official public records; columns 3, 5, and 7 by computation.

TABLE 13.—*Governmental-cost payments of representative counties distributed according to purpose; Minnesota, Washington, Oregon, and California* [1]

State, date, and purpose	Forest counties		Agricultural counties	
Minnesota, 1927:	*Dollars*	*Percent*	*Dollars*	*Percent*
General government	420,717	8.0	65,714	6.3
Protection	139,076	2.7	21,881	2.1
Highways	1,023,629	19.6	237,892	22.8
Education	2,725,307	52.2	623,138	59.7
Social service	208,182	4.0	40,760	3.9
Miscellaneous	186,233	3.6	31,765	3.0
Interest	523,515	10.0	24,500	2.3
Gross total	5,226,659	100.1	1,045,650	100.1
Refund receipts	4,774	.1	1,356	.1
Net total	5,221,885	100.0	1,044,294	100.0

[1] Sources of data: Columns 2 and 4: Minnesota from county records; Washington from county auditors' reports; Oregon from estimates based on State treasurer's reports, and State and county records; California from records in the office of the State controller. Columns 3 and 5 by computation.

TABLE 13.—*Governmental-cost payments of representative counties distributed according to purpose; Minnesota, Washington, Oregon, and California*—Con.

State, date, and purpose	Forest counties		Agricultural counties	
	Dollars	*Percent*	*Dollars*	*Percent*
Washington, 1927:				
General government	686, 157	11. 5	1, 031, 598	8. 2
Protection	157, 405	2. 6	338, 454	2 7
Highways	1, 168, 558	19. 6	2, 039, 445	16. 2
Education	2, 725, 506	45. 6	6, 653, 166	52 9
Social service	615, 752	10. 4	1, 476, 339	11. 7
Miscellaneous	70, 117	1. 2	135, 884	1 1
Interest	551, 966	9. 2	901, 159	7. 2
Gross total	5, 975, 461	100. 1	12, 576, 045	100 0
Refund receipts	3, 392	. 1	3, 472	. 0
Net total	5, 972, 069	100. 0	12, 572, 573	100. 0
Oregon, 1927 and 1928:				
General government	460, 853	4. 8	492, 183	5. 1
Protection	190, 671	2. 0	191, 424	2. 0
Highways	2, 736, 430	28. 6	2, 866. 299	29. 9
Education	3, 988, 453	41. 7	4, 716, 178	49. 3
Social service	1, 269, 360	13. 3	254, 937	2. 7
Miscellaneous	588, 577	6. 2	909, 803	9. 5
Interest	322, 921	3. 4	146, 098	1. 5
Total	9, 557, 265	100. 0	9, 576, 922	100. 0
California, 1928:				
General government	532, 317	12. 2	467. 143	6. 7
Protection	220. 503	5. 1	271. 115	3. 9
Highways	971, 718	22. 3	948. 231	13. 6
Education	2, 015, 783	46. 3	2, 320, 397	33. 3
Social service	289, 728	6. 6	387, 930	5. 6
Miscellaneous	272. 204	6. 2	2, 227, 549	32. 0
Interest	54, 868	1. 3	339, 307	4. 9
Total	4, 357, 121	100. 0	6, 961, 672	100. 0

General government and protection costs are quite small in the New Hampshire and Oregon localities, and are moderate elsewhere. They compose from 6 to 17 percent of all governmental cost payments.

Social service forms an item of expense somewhat less important than general government and protection, except in the forest and agricultural towns of Massachusetts, the forest counties of Oregon, and the agricultural counties of Washington. In Massachusetts social-service payments are very high, especially payments for municipal light and water companies. These public-service enterprises flourish even in the forest towns. In the forest counties of Oregon, on the other hand, payments for port districts form the large item of social-service expense, while in the agricultural localities of Washington the development and conservation of natural resources predominate.

Interest payments give an indication as to the burden of public debt. The ratios of these payments to all governmental cost payments may be read from tables 12 and 13. The forest counties of Minnesota and of Washington bear the heaviest interest burdens. In Minnesota uneconomic drainage developments have sapped the resources of many of the cut-over counties, while in Washington dike districts are the largest borrowers.

The interest payments in Oregon include only those made by the county itself. Interest payments by school districts in this State could not be isolated from other school expenditures and hence are included under the head of education. A similar situation holds

with respect to road and other minor taxing districts. Probably interest charges in Oregon would have amounted to as much as in Washington if they could have been segregated in the same way.

REVENUES

The revenues of the various towns and counties were tabulated and distributed by sources. This distribution is presented in tables 14 and 15, where property tax, other taxes, and miscellaneous are the only items which are not self-explanatory. Property tax includes poll taxes in Massachusetts, special assessments in California and New Hampshire, special property taxes in California, and the mortgage-registry tax in Minnesota. These are all of negligible magnitude and cannot be separated in the given States from property tax receipts as listed in the official reports. Other taxes, except as indicated in the preceding sentence, include poll taxes, income taxes, special property taxes, and license taxes. Miscellaneous includes fines, forfeits, escheats, and donations. It includes also in Washington teachers' retirement assessments, and in Oregon county budget estimates of all other revenue.

TABLE 14.—*Revenues of representative forest, semiforest, and agricultural localities compared by source; New Hampshire, Massachusetts, and New York* [1]

State, date, and source	Forest localities		Semiforest localities		Agricultural localities	
New Hampshire, 1929:	*Dollars*	*Percent*	*Dollars*	*Percent*	*Dollars*	*Percent*
Property tax	302,897	57.5	411,604	57.6	675,263	56.7
Other taxes	57,196	10.9	116,250	16.3	217,261	18.2
Subventions and grants	159,108	30.2	175,456	24.5	227,981	19.1
Miscellaneous	106	(2)	912	.1	3,980	.3
Interest	1,805	.3	4,373	.6	9,541	.8
General departments	10,448	2.0	11,520	1.6	57,068	4.8
Public-service enterprises	857	.2	0	0	8,356	.7
Gross total	532,417	101.1	720,115	100.7	1,199,450	100.6
Refund payments	5,742	1.1	5,099	.7	7,274	.6
Net total	526,675	100.0	715,016	100.0	1,192,176	100.0
Massachusetts, 1926:						
Property tax	385,146	48.7	1,012,301	65.8	1,781,189	66.3
Other taxes	139,029	17.6	222,446	14.5	347,743	13.0
Special assessments	735	.1	4,143	.3	3,353	.1
Subventions and grants	142,888	18.0	166,197	10.8	121,748	4.5
Miscellaneous	62,486	7.9	12,026	.7	30,063	1.1
Interest	12,041	1.5	33,209	2.2	52,223	2.0
General departments	32,387	4.1	63,666	4.2	78,144	2.9
Public-service enterprises	16,542	2.1	23,545	1.5	270,432	10.1
Total	791,254	100.0	1,537,533	100.0	2,684,895	100.0
New York, 1928:						
Property tax	2,739,019	69.9	4,516,977	64.9	8,544,140	61.2
Other taxes	113,192	2.9	243,800	3.5	510,200	3.7
Special assessments	1,378	(2)	3,796	.1	27,381	.2
Subventions and grants	676,552	17.3	1,652,998	23.8	3,485,925	25.0
Miscellaneous	6,104	.2	12,711	.2	22,101	.2
Interest	23,875	.6	48,824	.7	70,324	.5
General departments	203,733	5.2	351,911	5.0	772,527	5.5
Public-service enterprises	160,019	4.1	128,506	1.8	522,684	3.7
Gross total	3,923,872	100.2	6,959,523	100.0	13,955,282	100.0
Refund payments	7,307	.2	1,885	(2)	2,756	(2)
Net total	3,916,565	100.0	6,957,638	100.0	13,952,526	100.0

[1] Source of data: Columns 2, 4, and 6: New Hampshire from reports of the State tax commission and from public records of town and school district finances; Massachusetts from records of town finances as printed by the commissioner of corporations and taxation; New York from the State department of audit and control and other official public records. Columns 3, 5, and 7 by computation.

[2] Less than 0.05 percent.

TABLE 15.—*Revenues of representative forest and agricultural counties compared by source; Minnesota, Washington, Oregon, and California.* [1]

State, date, and source	Forest counties		Agricultural counties	
	Dollars	*Percent*	*Dollars*	*Percent*
Minnesota, 1927:				
Property tax	3,573,487	65.7	869,750	83.1
Other taxes	8,471	.2	5,102	.5
Special assessments	232,091	4.3	0	0
Subventions and grants	1,386,759	25.5	113,038	10.8
Miscellaneous	25,416	.4	3,523	.3
Interest	13,999	.3	1,850	.2
General departments	206,211	3.8	53,133	5.1
Gross total	5,446,434	100.2	1,046,396	100.0
Refund payments	10,227	.2	114	(2)
Net total	5,436,207	100.0	1,046,282	100.0
Washington, 1927:				
Property tax	4,988,738	81.1	8,957,258	70.3
Other taxes	52,737	.8	88,143	.7
Special assessments	21,036	.3	968,685	7.6
Subventions and grants	762,002	12.4	1,833,924	14.4
Miscellaneous	22,391	.4	68,496	.5
Interest	46,987	.8	99,128	.8
General departments	180,722	2.9	728,485	5.7
Public-service enterprises	77,248	1.3	0	0
Total	6,151,861	100.0	12,744,119	100.0
Oregon, 1927 and 1928: [3]				
Property tax	8,436,486	81.4	7,127,599	73.1
Special assessments	33,329	.3	5,834	.1
Subventions and grants	1,725,393	16.7	2,426,348	24.9
Miscellaneous	165,001	1.6	182,523	1.9
Total	10,360,209	100.0	9,742,304	100.0
California, 1928:				
Property tax	3,050,338	73.1	6,219,002	85.2
Other taxes	12,755	.3	2,967	.1
Subventions and grants	874,854	21.0	806,184	11.1
Miscellaneous	80,965	1.9	83,552	1.1
Interest	37,672	.9	59,725	.8
General departments	114,943	2.8	124,715	1.7
Total	4,171,527	100.0	7,296,145	100.0

[1] Sources of data: Columns 2 and 4: Minnesota from county records; Washington from county auditor's reports; Oregon from estimates based on State treasurer's reports, and State and county records; California from records in the office of the State controller. Columns 3 and 5 by computation.
[2] Less than 0.05 percent.
[3] These figures are for the biennial period.

The property tax supplies from 49 to 85 percent of all revenue in the representative localities. The lower limit is found in the forest towns of Massachusetts, where many wealthy individuals reside and help support local revenues through donations and the local share of the State-administered income tax. The upper limit is found in the agricultural counties of California, where there are no donations to speak of, little revenue from taxes other than the property tax, and State aid in an amount below the average.

Other taxes supply a fairly important share of all revenue in New Hampshire and Massachusetts, but very small amounts in other States.

Special assessments are of little importance anywhere, but do comprise 4 percent of all revenues in the forest counties of Minnesota and 8 percent in the agricultural counties of Washington. These assessments in Minnesota are largely for drainage purposes and in Washington for irrigation.

Revenues from miscellaneous sources, interest, general departments, and public-service enterprises, are all of minor importance.

They are relatively largest in Massachusetts, where they amount, in aggregate, to from 9 to 16 percent of all revenue and are mainly earnings of public-service enterprises.

The discussion of subventions and grants has been reserved to the last because these items are of so much interest and importance to this study. Except in Massachusetts, subventions and grants are second to the property tax as a source of local revenue. They are obtained largely from the State governments, although the Federal Government supplies a certain amount of aid. In States containing national forests (with the exception of Arizona and New Mexico where a different method is used), the Federal Government pays the State 25 percent of the national-forest gross receipts from timber sales and other uses for the support of schools and roads in the counties where these forests are located. In addition, it contributes to the building and maintenance of roads in and adjacent to national forests. In Oregon, Federal aid has been increased by substantial contributions to counties in place of taxes on revested railroad and wagon-road land grants. These contributions amount to $788,198 in the forest and $764,030 in the agricultural counties of Oregon, 7.6 and 7.8 percent, respectively, of all revenues.

Highways constitute the chief purpose for which State aid is granted in New Hampshire, Massachusetts, and Oregon, and a substantial purpose, though second to education, in California. Except in Oregon, the forest localities of these States receive more revenue in percentage of total from subventions and grants than do the semiforest and agricultural localities. This is largely due to the fact that the forest localities are the less thickly settled and hence highways represent a relatively more important part of all governmental activities. The State-aided roads in thinly settled regions often benefit city dwellers more than they do the local residents. Such aids are thus not strictly of a subsidy nature, but are rather payments to localities for performing general State functions.

In Oregon, on the other hand, agricultural localities receive more revenue from subventions and grants proportionately to all revenue than do the forest localities. When the data are reduced to per capita terms, however, it is evident that in Oregon, as in New Hampshire, Massachusetts, and California, the forest localities receive a larger amount of State aid than do the agricultural localities. Population figures and per capita revenue are presented in table 16.

TABLE 16.—*Population and per capita revenues by principal sources, in representative localities, selected States* [1]

State, date, and type of locality	Population	Per capita revenue			
		Property tax	Subventions and grants	Other	Total
New Hampshire, 1929:	*Number*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Forest towns	7,683	39.42	20.71	8.42	68.55
Semiforest towns	15,988	25.74	10.97	8.00	44.72
Agricultural towns	25,509	26.47	8.94	11.33	46.74
Massachusetts, 1926:					
Forest towns	13,435	28.67	10.64	19.59	58.89
Semiforest towns	32,541	31.11	5.11	11.03	47.25
Agricultural towns	56,174	31.71	2.17	13.92	47.80
New York, 1928:					
Forest counties	71,286	38.42	9.49	7.03	54.94
Semiforest counties	179,196	25.21	9.22	4.40	38.83
Agricultural counties	341,152	25.04	10.22	5.64	40.90
Minnesota, 1927:					
Forest counties	117,392	30.44	11.81	4.05	46.31
Agricultural county (Winona)	34,744	25.03	3.25	1.83	30.11
Washington, 1927:					
Forest counties	121,700	40.99	6.26	3.30	50.55
Agricultural counties	266,322	33.63	6.89	7.33	47.85
Oregon, 1927 and 1928: [2]					
Forest counties	[3] 72,005	58.58	11.98	1.38	71.94
Agricultural counties	[3] 140,942	25.29	8.61	.67	34.56
California, 1928:					
Forest counties	83,556	36.51	10.47	2.95	49.92
Agricultural counties	82,374	75.50	9.79	3.29	88.57

[1] Sources of data: Column 2 computed from the Fifteenth Census of the United States (*6*) by use of straight-line interpolation between 1920 and 1930; columns 3, 4, 5, and 6 computed from column 2 and from tables 14 and 15.

[2] The biennial revenue is divided by 2 before being reduced to per capita revenue. This is for the purpose of making the per capita revenue in Oregon comparable to that in other States, where revenue is reported on an annual basis.

[3] Population as of Jan. 1, 1928.

Education overwhelmingly predominates as an object of State aid in the remaining States studied, i. e., Minnesota, Washington, and New York. Educational aid is frequently apportioned on the basis of ability to support schools. This is the case in Minnesota, for instance, where the cut-over forest counties are distinctly poorer in natural resources and in wealth than is Winona or other agricultural or farm-woodlot counties in the southern portion of the State. Subventions and grants account for 26 percent of all revenue in the cut-over forest counties of Minnesota, but only 11 percent in Winona County.

In Washington subventions and grants form about the same relative portion of all revenues in the forest as in the agricultural counties; but in New York the agricultural counties receive, proportionately, half again as much aid as do the forest counties. In per capita terms, however, State aid in forest counties is little different from that in agricultural counties in either State (table 16).

In each State, except California, the forest localities receive a per capita revenue greater than do the agricultural localities (table 16). This may in certain cases be the result of a greater taxable value per capita in forest localities and in other cases of a more expensive government necessary in a thinly settled region.

If assessed value per capita in any locality be taken as a rough indication of its taxpaying ability, the forest localities in New Hampshire, Massachusetts, New York, and Oregon have higher taxpaying ability than the agricultural localities. Assessed values and assessed

values per capita are shown in table 17. In Minnesota the forest counties have relatively low assessed value per capita. In spite of this relative lack of taxpaying ability, the tax revenues of these counties are even higher in per capita terms from those of the agricultural county, Winona. Greater State aid makes total revenue per capita still higher in the forest counties than in Winona. The cost of government is ordinarily high in a sparsely settled region, and while the forest counties are making strenuous efforts to pay for these heavy costs, they will be inclined to lean heavily upon the State.

TABLE 17.—*Total assessed value and assessed value per capita by representative localities; selected States* [1]

State, date, and type of locality	Assessed value		State, date, and type of locality	Assessed value	
	Total	Per capita		Total	Per capita
New Hampshire, 1929:			Minnesota, 1927:		
Forest towns	$15, 245, 799	$1, 984	Forest counties	$155, 173, 353	$1, 322
Semiforest towns	18, 803, 566	1, 176	Agricultural county [2]	62, 218, 673	1, 791
Agricultural towns	26, 830, 048	1, 052	Washington, 1927:		
Massachusetts, 1926:			Forest counties	220, 536, 885	1, 812
Forest towns	20, 041, 423	1, 492	Agricultural counties	545, 416, 968	2, 048
Semiforest towns	39, 821, 187	1, 224	Oregon, 1927:		
Agricultural towns	67, 374, 093	1, 199	Forests counties	100, 352, 046	1, 404
New York, 1928:			Agricultural counties	111, 823, 715	800
Forest counties	89, 403, 714	1, 254	California, 1928:		
Semiforest counties	166, 108, 067	927	Forest counties	94, 424, 643	1, 130
Agricultural counties	336, 813, 036	987	Agricultural counties	118, 384, 345	1, 437

[1] Sources of data: Column 2 from reports of State tax commissions or other official records; column 3 by computation from this table and table 16.
[2] Winona County.

DECADENT LOCALITIES

The localities chosen were meant to be representative of general forest, intermediate, and agricultural conditions to be found in the various States studied. Extreme examples have been avoided. However, extreme examples are of value in indicating what can happen under certain conditions, and therefore it is quite proper to cite a few of them. New York is the State chosen for this purpose, although almost any other State would have done as well.

With the aid of public officials, 10 decadent townships in New York were selected for study. Financial data for these townships were obtained from public records. These townships were, until recently, recognized as agricultural in character, but so many farms are being abandoned and so much brush is appearing on the vacant fields and pastures that the townships are now more forest than agricultural—and very poor forest at that. The forest stands are lightly stocked, and the trees have attained to no great age or size.

In these decadent townships, highways and education account for 92 percent of the cost of government. The communities can afford only those services which are supported in part by the State, and all other services are cut to the bone. Governmental-cost payments in 1928 are shown in table 18.

TABLE 18.—*Governmental-cost payments of 10 decadent townships in New York, 1928*

Function	Amount	Percentage of total
General government	$11,894	4.2
Protection	1,165	.4
Highways	125,262	44.0
Education	137,294	48.2
Social service	3,811	1.3
Miscellaneous	3,137	1.1
Interest	2,255	.8
Total	284,818	100.0

The predominance of subventions and grants in the support of the decadent townships is strikingly shown in table 19.

TABLE 19.—*Sources of revenue of 10 decadent townships in New York, 1928*

Source	Amount	Percentage of total
Property tax	$118,607	42.6
Other taxes	8,626	3.1
Special assessments	0	0
Subventions and grants	146,335	52.5
Miscellaneous	79	0
Interest	210	.1
Earnings of general departments	5,050	1.8
Earnings of public-service enterprises	0	0
Gross total	278,907	100.1
Less school refunds	154	.1
Net total	278,753	100.0

Subventions and grants supply slightly over one-half of all revenue in the decadent townships, and the property tax supplies practically all of the balance. There are no special assessments and no earnings of public-service enterprises. The townships are obviously in a pauper condition.

PART 3. THEORY OF FOREST TAXATION WITH SPECIAL REFERENCE TO THE PROPERTY TAX

CONTENTS

RELATION OF TAXES TO THE THREE TYPES OF INCOME

TWO TYPES OF TAX BASE

In the apportionment of direct taxes among the several subjects (taxpayers) two bases are predominant, namely, (1) the possession of property (capital), and (2) the receipt of income (services rendered by capital or free persons).

Income from capital means the services rendered by capital. These services may take the form of money returns, returns in other tangible forms (such as products used by the owner, for instance), and intangible returns through the primary uses of the capital (such as the shelter furnished by a dwelling house) or in more remote forms (such as the pleasure of ownership, the consciousness of commendable public service, the respect of associates, and the like). The sum total of these different forms of return constitutes income in the economic sense of that term.

Most capital occasions also certain disagreeable events, such as the necessity of making repairs, paying taxes, and all burdens that possession of capital places upon the owner. These events may all be included in the general term costs. Mathematically, costs may be regarded as negative income. Like income, costs may be in the form of money payments, sacrifices in other tangible forms, or intangible burdens.

The difference between income (i. e., gross income) and costs is net income. It is the expectation of net income that gives value to capital. Wherever in the following discussion reference is made to this relation between capital and income, it will be understood that net income is implied.

The meaning of income in common business usage is, of course, somewhat different. Intangible income is generally not considered, nor do all forms of tangible income, not in money, always get into the picture. Thus, in the business terminology, a private park which

yields no money or other tangible returns has value as capital but yields no income. Only in the case of the economic definition, however, is there a direct relationship between the value of the income and the value of the capital from which it flows. The value of capital is a mathematical function of the value of income in the economic sense. This does not hold of the value of income in the sense given to it in ordinary business usage.

In actual tax legislation, the concept of net income follows generally the business idea, including only incomes and costs that appear in tangible forms and not being entirely consistent even at that. For one thing, the income tax itself is not deducted in determining taxable net income (though this is not a serious matter in practice).

Throughout this report the term income (of capital), unless limited specifically or by the context, will be used in the economic sense as defined above, including all of the services rendered by capital.

THREE TYPES OF INCOME

Three types of income may be recognized, depending on the relation of the current income realized to the interest on the capital value of the investment. (1) The current income from a property may be equal to the interest on its capital value. In this case there is what may be called "annual sustained yield", since the capital is neither being increased nor depleted from year to year and the annual income will continue in the same amount as long as present conditions affecting value remain unchanged. (2) The current income may be less than the interest on the capital. In this case there is what may be called "deferred yield", since the capital is being built up at the expense of current income, which may be regarded as deferred for realization at some future time. (3) The current income from a property may be greater than the interest on the capital. In this case, which may be called "depletion yield", the capital is being depleted to provide current income greater than interest, which process may continue until the capital is exhausted. All investments must, at any one time, belong to one or the other of these three types.

RELATION OF UNANTICIPATED TAXES TO THE THREE TYPES OF INCOME

The value of capital is theoretically the present worth of all its expected future net income. This is the value intended to be found by the assessor. Given such a value, the subsequent imposition of an unanticipated tax of any amount, either on income or on property value, would diminish the expected future net income, and thus also diminish the value of the capital. This is true for each of the three types of income described above—the annual sustained yield, the deferred yield, and the depletion yield.

The three types may be illustrated by the following example of three brothers, each of whom has just received a legacy of $13,333. This example is suggested by Fisher (*8*, *pp. 247–254*), where, however, the illustration is used for another purpose than the one which is involved here. Assume an interest rate of 3 percent. The first brother invests his fortune in a perpetual annuity of $400 a year. The second puts his capital in trust to accumulate at 3 percent interest for 17⅔ years, at which time, having increased to $22,478, it is

to be invested in a perpetual annuity of $674 a year. (The reason for the choice of 17⅔ years is for convenience in calculation, as will appear at a later point. Any other period of years, however, would have served.) The third brother, desiring immediate enjoyment of a larger income, purchases an annuity of $3,333 a year terminating in a little under 5 years, after which his capital is used up and he receives no further income.

Assume now that immediately subsequent to the making of these several investments a tax, not heretofore anticipated, of 1 percent on property value or of 25 percent on income is imposed. The capital of each of the three brothers will be diminished. In other words, while each paid $13,333 for his annuity, he would not be able to dispose of it at that price, if immediately after purchase the above-mentioned tax were announced. Anyone purchasing one of these annuities would then discount the effect of the tax in each case and pay only so much as the tax-free income (i. e., the net income each year after payment of the tax) showed it to be worth. And, of course, if the annuities could not be sold for $13,333, which they cost, they could not be taxed on that amount under the property tax, since that would no longer be the value and value is the legal base of the property tax. The effect of this tax innovation on the value of these three types of investment and the resultant tax situation of the several brothers will each be considered separately.

The situation of the first brother represents the ordinary case. Taxes—both property and income—are usually assessed and levied once a year. Usually they are also collected once a year. And if they are in some cases payable in two or more installments during the year, that does not materially affect the situation. The 25-percent income tax decreases successively the net annual incomes from $400 to $300 and consequently the value of the capital from $13,333 to $10,000, a drop of 25 percent in each case. The 1-percent property tax on the value must, for its part, leave sufficient net income after taxes to capitalize to this value at 3 percent. In other words, $400 minus the tax must equal 3 percent of the value. In equation form, $400-0.01X=0.03X$, where X stands for the value of the capital. The solution of this equation gives a value of $10,000. On this value the tax is $100 and the net income after tax $300, exactly as in the case of the 25-percent income tax. A 1-percent property tax is, thus, equivalent to a 25-percent income tax in the case of the first brother, when interest is 3 percent. The present worth (discounted value) of each tax in perpetuity is $3,333, or 25 percent of the capital before taxes.

In the case of the second brother the capital is so invested that it will yield no net income for a period of 17⅔ years, after which it will yield a perpetual annual income of $674. The present worth of such a deferred income, discounted at 3 percent, is $13,333, the same as the value of the annual income of $400 beginning now. An income tax, subsequently imposed at the rate of 25 percent, would exact nothing for the first 17⅔ years, after which it would take $168.50 a year. The present worth of these future tax payments is $3,333, or 25 percent of the value of the capital before tax, exactly as in the case of the annual income of $400 beginning at once.

It is now in order to inquire how the annual property tax affects this second type of investment. After the period of deferment, 17⅔

years, the value of the capital may be obtained by considering that the perpetual annual income of $674, less the tax at 1 percent, must be 3 percent of the value of the capital, just as in the case of the first brother. In equation form, $674-0.01X=0.03X$, where X stands for the value of the capital. Solving this equation gives $16,850 as the value of the capital, and the property tax on this value at 1 percent will be $168.50, or the same as the income tax of 25 percent. The present worth of this value, assuming a property tax of 1 percent, is that amount which, with 3 percent for interest and 1 percent for taxes, will equal $16,850 in 17⅔ years. In other words, the present worth (the value of the capital after taxes) is $16,850 discounted at 4 percent for the period in question. Since money doubles at 4 percent in approximately 17⅔ years, the value of the capital after taxes is one-half the above amount, or $8,425. The present worth of the property taxes is the difference between this amount and $13,333, the value of the capital before taxes. This difference is $4,908, 36.8 percent of $13,333. The corresponding reduction in the tax-free value of the capital under an income tax has just been shown to be $3,333, 25 percent of $13,333.

The third brother receives an annual income of $3,333 for a little under 5 years, thereby diminishing and finally exhausting entirely his capital. An income tax, at 25 percent, would be $833 each of the first 4 years, $274 the fifth year, and nothing thereafter. The present worth of these amounts is $3,333, which is, as in the case of the other two brothers, exactly 25 percent of the capital before taxes. A 1-percent property tax, on the other hand, takes just enough each year to make the capital for the succeeding year, before deduction of the $3,333, greater than that for the preceding by interest (3 percent) and taxes (1 percent). In mathematical terms, taking V_n as the value at the end of year n, $V_{n+1}=V_n(1+0.03+0.01)-\$3,333$. Where $n=4$, however, the equation is: $V_5=0=V_4(1+0.03+0.01)-\$1,094$, since the income for the fifth year is only $1,094. The solution of this last equation is $V_4=\$1,052$. From this the value of V_3 can be found, by use of the first equation, to be $4,216, and so on to V_0, which is $12,998, the value of the capital after property taxes. Since the value of the capital before property taxes is $13,333, property taxes have reduced this value by $335, or 2.5 percent.

From these three typical examples, it may readily be concluded that, when measured by the effect on the present worth of the capital, a net-income tax under the given assumptions would treat with equality all forms of investment. A permanent net income tax at any given rate has the same effect as taking once and for all that fraction of the original capital represented by the tax rate. The 25-percent income tax is the same as taking at the beginning 25 percent of the capital of each of the brothers in the example. Each could have "compounded" his taxes forever by setting aside a permanent fund of one-fourth of his capital before taxes, $3,333.

On the contrary, the property tax deals unequally with the several forms of investment, in terms of its effect on the present worth of the capital. Only in the case of an investment producing a regular annual income equal to the interest on the capital does the property tax (at an appropriate rate) produce the same effect as the net-income tax. This is illustrated by the investment of the first brother, whose

1-percent property tax amounts to 25 percent of the present worth of his original capital before the tax in question was considered. When capital is so employed that its income is deferred, thereby causing a gradual increase in the value of the capital, the property tax takes a larger toll of the capital value before tax, as illustrated by the 36.8-percent burden in the case of the second brother in the example. Finally, those investments which, by securing an income greater than the interest, gradually exhaust the capital are favored by the property tax. In the case of the third brother, the present worth of all his taxes is only 2.5 percent of the value of his original capital.

The ratios which have occurred in this discussion, 25 percent for the first brother, 36.8 percent for the second, and 2.5 percent for the third, are called "tax ratios." The term tax ratio as used throughout this report is defined as the ratio of taxes to net income before taxes, both compounded or discounted, as the case may be, to the same point in time, and both covering the same income cycle. It is an important measure of tax burden. In the present illustration of the three brothers, the present worth of each of the two factors is used, the present worth of the net income being the value of the original capital.

EFFECTS OF CAPITALIZATION OF AN ESTABLISHED PROPERTY TAX

Suppose now that, immediately before the receipt of the three bequests, there is announcement of the imposition of a property tax like that described above. Assume that the effects of this tax are fully known and are fully capitalized in connection with all investments. Owing to such tax capitalization, any investment subject to this property tax (at the rate of 1 percent; interest being at the rate of 3 percent) loses one-fourth of the present value it would have had had there been no such tax. Regardless of the character of investments to be chosen, each bequest as received is worth only $10,000 rather than $13,333.

The annual income in the first brother's case is, as before, $400, and the annual property tax $100. The tax ratio is 25 percent, but, since there is no reduction in original capital value, the first brother is not conscious of any burden from this tax.

As for the second brother, an investment which increases at the rate of 3 percent is no longer satisfactory to him, since he must pay 1 percent annually in taxes. He will demand an investment which increases at the rate of 4 percent, and if he does not get it, he will put his money into something which will yield an annual or a diminishing return. All those people who are situated like the second brother will follow the same course, and as a result the demand for deferred-yield investments will so diminish that borrowers will have to pay 4 percent to secure money on a deferred-yield basis. Suppose that the second brother puts his $10,000 in trust so that it will compound at 4 percent for 17⅞ years, at which time it will have doubled in value. (The reason for the choice of a 17⅞ year period is now apparent, since money doubles at 4 percent in approximately such a period. Any other period would have served.) The $20,000 capital at the end of 17⅞ years is invested in a perpetual annuity of $800 a year, out of which $200 must be paid in taxes. The present value, at 3 percent.

of these distant taxes and of the immediate future taxes which must be paid during the period of waiting is $5,820. The present value of the capital before taxes is $15,820, and the tax ratio is 36.8 percent. Since the value of the capital after taxes is $10,000, however, just what the second brother received in his legacy, he has no complaint against his tax burden.

A similar conclusion can be drawn with respect to the third brother. In his case the present value at 3 percent of all taxes which he will be required to pay before his legacy has vanished is $264. The present value of the capital before taxes is then $10,264, and the tax ratio 2.6 percent. Here again the value of the capital after taxes is $10,000, the amount that was received in his legacy. He thus gains no advantage from the comparatively low tax ratio. The details of the incomes for the several brothers and the corresponding values of the respective capitals and taxes from year to year are shown in table 20.

TABLE 20.—*Capital, tax, and income of three brothers, each having different income streams* [1]

Time	First brother			Second brother			Third brother		
	Capital	Tax	Income	Capital	Tax	Income	Capital	Tax	Income
At beginning	$10,000			$10,000			$10,000		
In 1 year	10,000	$100	$400	10,400	$100.00	0	7,900	$100.00	$2,500
In 2 years	10,000	100	400	10,816	104.00	0	5,720	79.00	2,500
In 3 years	10,000	100	400	11,249	108.16	0	3,450	57.20	2,500
In 4 years	10,000	100	400	11,699	112.49	0	1,080	34.50	2,500
In 5 years	10,000	100	400	12,167	116.99	0	0	10.80	1,130
In 6 years	10,000	100	400	12,653	121.67	0	0	.00	0
In 7 years	10,000	100	400	13,159	126.53	0	0	.00	0
In 8 years	10,000	100	400	13,686	131.59	0	0	.00	0
In 9 years	10,000	100	400	14,233	136.86	0	0	.00	0
In 10 years	10,000	100	400	14,802	142.33	0	0	.00	0
In 11 years	10,000	100	400	15,395	148.02	0	0	.00	0
In 12 years	10,000	100	400	16,010	153.95	0	0	.00	0
In 13 years	10,000	100	400	16,651	160.10	0	0	.00	0
In 14 years	10,000	100	400	17,317	166.51	0	0	.00	0
In 15 years	10,000	100	400	18,009	173.17	0	0	.00	0
In 16 years	10,000	100	400	18,730	180.09	0	0	.00	0
In 17 years	10,000	100	400	19,479	187.30	0	0	.00	0
In 18 years	10,000	100	400	20,000	194.79	$267	0	.00	0
In 19 years and thereafter	10,000	100	400	20,000	200.00	800	0	.00	0

[1] Assessment date is at beginning of year. Tax is paid at end of year; tax rate, 1 percent. Capital is the sum of all future net incomes after tax discounted at 3-percent interest.

With proper capitalization of taxes, therefore, owners who acquired their capital after the present tax was established can charge no present injustice to the property tax on account of the tax ratio as long as the tax rate remains the same. It is probable, however, that taxes are seldom completely capitalized, owing to the inherent optimism of buyers and sellers and to their ignorance of what the future tax burden will be. In addition, land values are frequently so inelastic that apparently neither taxes nor any other expected item of expense or income can be said to be completely capitalized. In such cases prices are more or less traditional. To whatever extent capitalization of real estate taxes may fail to become fully effective, there is direct discrimination against real estate investments of the deferred-yield type.

TAX CAPITALIZATION AND DEFERRED INCOMES

It has been shown that, under a permanently fixed property-tax rate, complete capitalization would so affect the present value of different types of income streams that discrimination could not justly be attributed to the present workings of the property tax so far as concerns owners who acquired their property after existing tax conditions had been established. But the tax rate does not usually stay permanently fixed for any great length of time. Suppose that the tax rate unexpectedly rises from 1 to 2 percent shortly after the three brothers have made their investments. The first brother's net income after tax is then so reduced that it, plus the 2 percent tax on its capital value, equals $400. In mathematical terms, $(0.03+0.02)V_0=\$400$, where V_0 is the capital value. The solution of this equation gives $V_0=\$8{,}000$, and the annual tax on this value is $160. The tax ratio is $\frac{160}{400}$, or 40 percent. In the case of the first brother, therefore, the sudden doubling of tax rate increases the tax ratio from 25 to 40 percent, or, in other terms, lowers the initial value from $10,000 to $8,000, a loss of 20 percent.

In the case of the second brother, the capital value at the end of 17⅔ years and thereafter is reduced from $20,000 to $16,000, while the annual tax is increased from $200 to $320. The income is, as before, $267 the eighteenth year and $800 thereafter. The present value of these incomes before tax is also, as before, $15,820, but the present value after tax is not $10,000, but considerably less than that. In fact, it is that value which, with 3 percent interest and 2 percent taxes, will equal $16,000 at the end of 17⅔ years. The discount of $16,000 for 17⅔ years at 5 percent yields $6,759. The tax ratio is $\frac{15{,}820-6{,}759}{15{,}820}$, or 57.3 percent. In the case of the second brother, therefore, the sudden doubling of tax rate increases the tax ratio from 36.8 to 57.3 percent, or in other terms, lowers the initial value from $10,000 to $6,759, a loss of 32 percent.

It is not necessary in this connection to consider the depletion annuity of the third brother. The loss in his case is very small.

Doubling the tax rate causes a 20 percent loss in capital to the first brother and a 32 percent loss to the second. Here is clearly distinguishable the magnified effect of tax capitalization where deferred yields are involved. An unexpected decrease in the tax rate would, of course, have the opposite effect—that is, the owner of a deferred-yield investment would benefit more than the annual-yield owner. One of the indictments against the property tax, even when perfectly administered in accordance with the law, is, thus, that it makes the net returns from deferred-yield properties more uncertain than those from the ordinary run of property. In other words, its tendency is to intensify the risk element in a deferred-yield investment.

The tax ratio is an index for the determination of what areas are or are not supermarginal for a deferred-yield use. Consider a certain property, close to a bare-land condition, whose value before taxes is $5 per acre for a deferred-yield use (like forestry) and $4 for some use (like grazing) which would yield an annual return. If there is no tax obligation in either case, the former use will be chosen in

preference to the latter; but if a property tax is imposed, the tax ratio in the case of the deferred-yield use may be twice as great (say 40 percent) as in the other case (20 percent). The value for the deferred-yield use is, under these circumstances, reduced to $3; and for the annual-yield use, to $3.20. The annual-yield use now has the advantage over the deferred yield, and will be chosen in preference to the other. The tax burden as measured by the tax ratio has here so shifted the margin for deferred yield that certain areas, economically suited for such use if the property tax could be abolished, are no longer suitable. From its very nature, the property tax favors a use which yields an early income. Of course this effect is controlling only in the case of those properties which are on the margin between use for a deferred yield and use for an annual return. The property tax in these marginal cases throws the balance to the side of an annual return.

SUMMARY

From the examples given, it may readily be concluded that the property tax as measured by tax ratios deals unequally with different types of investment. Only in the case of an investment producing a regular annual net income equal to the interest on the capital is the tax ratio the same as under an income tax with corresponding rate, as illustrated by the 25-percent ratio in the case of the first brother. When capital is so employed that its income is deferred, thereby causing a gradual increase in the value of the capital, the property tax takes a larger toll of the capitalized future incomes, as illustrated by the 36.8-percent burden in the case of the second brother in the example. Finally those investments which, by securing an income greater than the interest, gradually exhaust the capital are favored by the property tax. In the case of the third brother, the present worth of all his taxes was only 2.5 percent of the capitalized incomes.

If taxes are fully capitalized at the time of making the investment, the inequalities of tax ratio are so taken into account that equal sums of money will purchase investments of equal value in the three types of income; and there will be no discrimination between the three owners so long as the tax rate remains unchanged. If taxes are at the beginning not wholly capitalized, the value of the capital for each brother will eventually be reduced by later capitalization, but the reduction in the case of the second brother will be the largest. In any case, the uncertainty of future tax burdens is of far greater moment in the case of the second brother than in the case of either of the other two. Finally, the number of properties which are supermarginal for deferred-yield use (second brother) is reduced by the presence of the property tax. Here, in a nutshell, is the theoretical indictment of the property tax in its effect on different types of income streams.

Insofar as the inequities are between owners only and do not affect the use of land or the practice of forestry, they are of minor importance in this investigation. In the marginal cases, however, these inequities do affect the use of land and the practice of forestry, and it is to these marginal cases that this part is especially directed. The marginal cases are, in general, those in which the owners must begin from a bare-land condition or from a condition which approaches bare land. The tax problem is far less acute in the case of owners who start from

mature timber or from second growth well advanced toward maturity. In accordance with the practice of physicians, the theoretical diagnosis in this part is concentrated upon the ailments of the patient rather than upon his well points. Incidentally, even those who start from a favorable present condition must eventually pass through a cut-over-land stage on parts of their forests or, where clear cutting is not practised, a stage when parts of their forests can be cut over with a minimum sacrifice of values that depend on continuing the forest use, and at such time their decisions as to investment in a future crop will be influenced by the tax burden.

The theoretical discrimination of the property tax against deferred-yield forests may be expressed in terms of the necessity of paying taxes in advance of the receipt of income. The annual recurrence of the ordinary business income is so much regarded as a matter of course that people have generally failed to appreciate the profound significance of the annual character of the property tax. If the property tax were so modified that it fell due only when income was obtained and in proportion to the income received, its correspondence to the income tax would be complete. Thus, in the case of the second brother if no property tax were levied during the 17-year period of waiting, and then a 1-percent tax were imposed on the capital for as long as an equal annual income were received, the situation would be exactly the same as under a 25-percent income tax. The adverse effects inherent in the property tax as applied to deferred-yield properties are hence due to the fact that the cycle of governmental demands is shorter than the cycle of deferred-yield income.

RELATION OF TAXES TO THE VALUE OF FOREST INVESTMENTS

GENERAL STATEMENT

The most important applications of the foregoing general analysis to forest investment and industry are obvious. (1) A deferred-yield forest is overburdened under the property tax as compared with property yielding a regular annual income. The excess burden is greater the longer the period of deferment. In particular this applies to second-growth forests not yielding a current income and to old-growth forests held for future disposition. Periodic sustained-yield forests in which the income cycle is longer than 1 year are also overburdened, but the amount of excess burden becomes less serious as the income cycle becomes relatively short; it would not be a serious matter with a cycle of about 5 years or less. (2) An old-growth forest which is being converted to sustained yield (necessitating reduction in timber value) or which is being destructively exploited receives favorable treatment from the property tax. (3) A forest with annual sustained yield is treated by the property tax on a basis of equality with property generally; in other words, taxes take no larger portion of the owner's income than they would if he had invested his capital in some sustained-yield enterprise other than forestry.

The third conclusion with reference to annual sustained-yield forests is subject to the qualification that the standard of comparison is an income tax levied on both tangible and intangible income. However, the ordinary income tax is applied only to money income or other

tangible income with a definite money value. To the extent that the value of an annual sustained-yield forest reflects intangible income in addition to money and other tangible income, a situation found in certain countries of Europe, the property tax would be in excess of the ordinary income tax.

In all of the above discussion no account has been taken of irregularities in the administration of the property tax, the present assumption being a property tax theoretically correct and perfectly administered. In particular nothing here should be taken as denial of the possibility of just complaint against the property tax on the part of the sustained yield forest, as well as of other types of property, on account of illegal discriminatory administration of the property tax.

The remainder of this part is devoted to a rigid mathematical demonstration of the foregoing general propositions together with the formulation and demonstration of certain other propositions dealing with the relation of different kinds of taxes to the value of forest investments under various conditions.

GENERAL DEFINITIONS

For the purpose of the following mathematical analysis, it will be convenient to set forth at this point formal definitions of certain terms and the corresponding symbols which will be used in the equations and formulas.

In the absence of complete data as to the complex considerations of various sorts that enter into the consummation of sales and the making of value, a simplified approximation to value is employed, namely, the sum of all expected future returns discounted to some point in time at a given interest rate, minus all expected future expenses, including taxes, discounted to the same point in time and at the same interest rate. This balancing of income and cost, both discounted to the present, is the identical procedure which buyers and sellers must use in arriving at a price, although buyers and sellers usually use "judgment" rather than a mathematical analysis. The future is so uncertain that judgment, for most practical purposes, is quite as satisfactory as the more seemingly exact mathematics, but the principle of both is the same—the discounting of expected future net returns. A value so found is herein assigned the symbol V, and if the chosen point in time is at the beginning of an income cycle, the symbol V is given a subscript 0. The income cycle is the period between successive major yields. The subscript 1 is given to V for the value at the end of the first year, and so on to n, when the first major yield is to be received. The income cycle, therefore, comprises a total of n years. When the forest is composed of a single age class the income cycle is equal to the rotation (the predetermined, approximate felling age), and V_0 becomes equal to the land value or soil expectation value, L, plus the cost of regeneration, C.

An uneven-aged forest, for the purposes of this discussion, may be regarded as a selection forest, in which case the series of age classes is represented by regular gradation of ages among individual trees, or it may equally well be regarded as composed of a regular series of even-aged stands.

By expected future returns are meant returns which buyers and sellers are reasonably sure to obtain from an average of a large number of properties of similar character, and over a period of years which includes one or more complete business cycles. The returns from individual properties in certain years will, of course, vary from such an average. These variations constitute profit and loss. Buyers and sellers, however, cannot predict variations—in other words, buyers and sellers cannot justifiably introduce profit and loss into a calculation of value. Therefore, this section will not introduce profit or loss into any of its demonstrations or examples.

Interest is taken in its pure economic sense as a payment simply for waiting and is symbolized p, as, for example, 3 percent, or 0.03 when expressed as a decimal. Risk and all other elements of the so-called interest rate, as sometimes employed in popular discussion and business calculations, are excluded. It is assumed that noninsurable risk is allowed for in estimating the expected incomes and costs. The departure of the actual event from what was expected is what causes profit or loss, and profit and loss, as has been shown above, cannot be introduced into the calculation of value.

Property taxes are assumed to be levied annually at a rate r on the value as of the beginning of each year, the taxes being payable at the end of the year. The sum of the taxes compounded at the p interest rate to the end of the income cycle is symbolized X.

Income taxes are assumed to be levied on the income received during the year less expenses to date. Expenses are considered as accumulated without interest and written off as early as sufficient income is received. In computing taxable income, no allowance for interest paid is appropriate, since the income tax under consideration relates to properties rather than to persons. As a substitute for the property tax, the income tax would apply to all of the income from a property, even though a part were used to pay interest on capital borrowed by the owner to purchase or carry the property in question where the total equity was divided between owner and creditor. Income taxes, computed on net income of properties calculated in this manner, are assumed to be collected on the last day of the year.

It is expected that major income Y will be received from the forest at the end of every n years, where n is the income cycle, and that a cost of regeneration C will be incurred at the same time. The cost of regeneration incurred at the beginning of the first income cycle is regarded as part of the permanent investment, while the cost of regeneration incurred at any later time is regarded as an expense chargeable to the major income received at that time. The total net income before taxes for one income cycle with compound interest to the date of the major yield is called S.

An assumption, not necessary to the mathematical analysis, but necessary to the proof that deferred-yield forests tend to suffer under the property tax, is that Y represents a reasonable expectation in excess of any regeneration cost. There are, of course, plenty of cases where the actual net income *received* from a forest is negative, but value, and hence property taxes, are based on expected rather than on received income, and the analysis here is hence predicated entirely on expected income. Expected income is, of course, positive, or the land would be without value.

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The tax ratio, as previously defined, is the ratio of taxes to net income before taxes, both compounded or discounted, as the case may be, to the same point in time, and both covering the same income cycle. For the present, the income, Y, the regeneration cost, C, and the taxes, X, are considered as the only items of income and expense connected with the forest. Incomes from thinnings, and expenses for administration, protection, etc., are brought into the analysis at a later point. The tax ratio, $\frac{X}{S}$, in the present simplified case is therefore equivalent to $\frac{X}{Y-C}$.

Underlying the entire discussion of tax ratios is the general assumption that only one set of conditions determines present worth in each case and that these conditions are fulfilled by that case.

INCOME TAX

In discussing the income tax as compared with the property tax, confusion may be avoided if it be kept in mind that reference is not to the United States Federal income tax. In this connection, an income tax is regarded as a substitute for the property tax and as applied to properties rather than to persons. Consequently it is assumed in this discussion that each property is taxed as a separate entity and that the tax is calculated with respect to that property alone, regardless of the financial situation of the owner or any limitation on his equity in the property. It is therefore necessarily assumed that this tax is levied at a flat rate (not at a progressive rate). It is also assumed that there are no other taxes, or that all other taxes are included in the expense items without distinction from the other expenses. Such an income tax on property might be called a tax on net yield in order to distinguish it from the personal income tax.

It should also be noted that the income tax or tax on net yield is principally of theoretical interest, as setting a standard by which the tax burden under other tax systems may be judged. The objections of a practical nature to the direct substitution of an income tax on property for the property tax appear to be insuperable. The accounting necessary to a proper determination of net income from the irregular forests that prevail in this country would be too difficult for most owners, and the revenue from such a tax would be too irregular to meet the needs of government.

For an annual sustained-yield forest or a depletion-yield forest, the tax ratio of the income tax is always equal to the rate of the income tax. Since the income tax, assuming a constant rate, always takes the same proportion of each year's income, the discounting or carrying forward to the same point in time of both taxes and income before taxes does not affect the ratio of one to the other. In terms of the interest rate, p, and the corresponding property tax rate, r, the income-tax rate, and therefore the tax ratio of a forest yielding an annual income, is $\frac{r}{p+r}$. This rate is equivalent to the property tax rate, r, in the sense that it gives the same tax when applied to an annual sustained-yield property.

In the case of a deferred-yield forest, if there were no expenses connected with its regeneration, maintenance, and improvement, each item of income received would be net income before taxes.

Therefore, the income tax on each such item would be determined by applying the income-tax rate, $\frac{r}{p+r}$. Since this same part of all income before taxes would be taken by taxes, the tax ratio would always equal the income-tax rate and could be determined from the interest rate and the rate under the property tax for which the income tax would be substituted.

For practical purposes it is necessary to take into account the necessary expenses connected with managing a deferred-yield forest, which may be considered to be the cost of regeneration, C, incurred at the beginning of each income cycle of n years after the first, and the annual expense, e. The cost of regeneration at the beginning of the first income cycle is considered part of the permanent investment, as previously explained. As a first approximation, consider a forest having only one major yield, at the end of the income cycle, and no intermediate yields from thinnings or otherwise. Both cost of regeneration and annual expense are chargeable to the yield, Y, which is received at the end of the cycle. Under an income tax, the taxable income for the entire cycle would equal $(Y-C-ne)$. Applying to this sum the income-tax rate $\frac{r}{p+r}$, the total tax, $X=\frac{r(Y-C-ne)}{p+r}$. The total net income before taxes with compound interest to the date of final yield, S, is obtained by subtracting from $Y-C$ the amount of the annual expense with compound interest, or $e\,\frac{(1+p)^n-1}{p}$. Thus, $S=Y-C-e\frac{(1+p)^n-1}{p}$. The tax ratio is then

$$\text{Formula 1, } \frac{X}{S}=\frac{\frac{r}{p+r}(Y-C-ne)}{Y-C-e\frac{(1+p)^n-1}{p}}.$$

If $n=1$, that is, if an income is received every year, $(Y-C-ne)=\left(Y-C-e\frac{(1+p)^n-1}{p}\right)$, and the tax ratio becomes $\frac{r}{p+r}$, which is also the rate of the income tax.

If n is greater than 1, and if there is an intermediate income from thinnings, T_m, received in the mth year from the beginning of the cycle, the income at the end of the cycle will be increased by this amount with compound interest from the year of the thinning, or by $T_m(1+p)^{n-m}$. Introducing this term as an addition to Y in formula 1 gives the formula for the tax ratio under the income tax where intermediate income from a thinning is involved,

$$\text{Formula 2, } \frac{X}{S}=\frac{\frac{r}{p+r}(Y+T_m(1+p)^{n-m}-C-ne)}{Y+T_m(1+p)^{n-m}-C-e\frac{(1+p)^n-1}{p}}.$$

Thus an income from a thinning has the same effect on the tax ratio as an increase in yield. If there is an annual expense, an income from thinnings reduces the tax ratio below what it would have been had there

been no such income and all other factors had remained the same. If there is no annual expense, an income from thinnings has no effect on the tax ratio, which remains equal to the rate of the income tax.

If in illustration of the foregoing formulas, an example is taken in which there is no expense, the tax ratio equals the income-tax rate, as previously noted, and depends entirely on the tax rate, r, and the interest rate, p. Thus if $r=1$ percent and $p=3$ percent, the tax ratio is then 25 percent, regardless of the values of Y, C, T_m, n, or m.

If, as in actual practice, there is an annual expense, e, it is necessary to make further assumptions to illustrate the use of the formula. Let $r=1$ percent, $p=3$ percent, $n=50$ years, $Y-C=\$100$, $T_m=0$, and $e=5$ cents. The tax ratio is then 26 percent. If the annual expense, e, is increased from 5 to 20 cents, the tax ratio under the income tax will be 29 percent. In the latter case, if a thinning yields an income so that $T_m=\$10$ and $m=25$, without change in the other factors, the tax ratio will be 28 percent.

It is evident, then, that there may be an increase in tax ratio for a deferred-yield investment over an annual sustained-yield investment even under an income tax, though it will be shown later that in the case of forest investments this increase is relatively moderate compared with the increase under the property tax. Furthermore, this increase in tax ratio under the income tax is not because taxes are imposed in advance of income, as under the property tax, but because the nature of the enterprise requires that expenses be incurred in advance of income. If the taxes on that part of the income which represents interest on these additional investments in the form of annual expenses were remitted, the tax ratio would remain the same as for an annual sustained yield investment. However, such remission would be contrary to generally accepted opinion as to justice in taxation, since it would fail to recognize that annual expenses in the case of a deferred-yield investment represent an increase in the amount of the investment and consequently in its tax-paying ability. Therefore, the income tax (tax on net yield) may be regarded as imposing a fair burden on deferred-yield forests, even though the tax ratio is not perfectly equalized with that of an annual sustained-yield forest.

UNMODIFIED PROPERTY TAX

SUSTAINED-YIELD AND DEFERRED-YIELD FORESTS

The Tax-ratio Formula (simplified)

In developing mathematically the relations between the unmodified property tax and the value of the forest, under sustained-yield or deferred-yield management, it will be convenient to start with a simplified case in which neither incidental income, as from thinnings, nor annual expenses are considered. These intermediate items of income and cost will be introduced into the formulas at a later point.

Assume an annual sustained yield forest with a net income before taxes ($Y-C$) of \$800, the interest rate being 3 percent and the tax rate 1 percent. Obviously, in order to satisfy the interest-rate and tax-rate proportions three-fourths of the net income before taxes must go for interest and one-fourth for taxes. Thus, the interest is \$600, and the taxes \$200, and the value of the forest is \$20,000, i. e., $\frac{\$600}{0.03}$. The tax ratio is 25 percent, i. e., $\frac{200}{800}$.

Assume now a deferred-yield forest having an income cycle of 2 years and a value at the beginning of the cycle of $20,000. The interest and taxes at the end of the first year amount to $800, but since no income is actually realized this interest and tax charge serves to augment the principal which becomes $20,800. Taxes on this sum for the second year amount to $208, while interest is $624, a total of $832. A total net income before taxes of $1,632 must, therefore, be received every 2 years in order to justify the initial value of $20,000. Taxes have amounted to $408 without interest. When 1 year's interest is added to the first year's taxes of $200, the total tax cost as of the end of the second year is $414. The tax ratio is $\frac{414}{1,632}$, or 25.4 percent. The general formula for the tax ratio is as follows:

Formula 3, $$\frac{X}{Y-C}=1-\frac{(1+p)^n-1}{(1+p+r)^n-1}.$$

Formula 3 may be derived as follows: The initial forest value at the beginning of an income cycle is, by definition, the sum of all future net incomes discounted at the interest rate, p. In symbols: $V_0=\frac{Y-X-C}{(1+p)^n-1}$. This is the ordinary type of formula for finding the present worth of a perpetuity.

The value at the beginning of the second year, V_1, equals V_0 plus 1 year's interest and taxes, or $V_0(1+p+r)$. The r in this expression capitalizes the taxes, that is, V_1 would differ from V_0 by a less amount if there were no taxes. Capitalization of taxes reduces the value in the early stages of a cycle in comparison with the value at later stages.

Similarly, the value at the beginning of the third year equals V_1 plus 1 year's interest and taxes, or

$$V_2=V_1(1+p+r)=V_0(1+p+r)^2, \text{ etc.}$$

Since the tax equals the tax rate, r, times the value, the first year's tax$=rV_0$, the second year's tax$=rV_0(1+p+r)$, etc. And the first year's tax payable at the end of the year, must be compounded at the interest rate, p, through each of the remaining years of the income cycle after the first, or in all $n-1$ years, to obtain its worth at the end of the income cycle. At this time, then, the worth amounts to $rV_0(1+p)^{n-1}$. The second year's tax likewise must be compounded in all for $n-2$ years, and it equals, at the end of income cycle, $rV_0(1+p+r)(1+p)^{n-2}$. The third year's tax$=rV_0(1+p+r)^2(1+p)^{n-3}$, and so on. The sum of all these quantities is

$$X=rV_0[(1+p)^{n-1}+(1+p+r)(1+p)^{n-2}+(1+p+r)^2(1+p)^{n-3}+\ldots+(1+p+r)^{n-1}].$$

Factoring out the quantity $(1+p)^{n-1}$ from the bracketed part of the expression results in

$$X=rV_0(1+p)^{n-1}\left[1+\frac{1+p+r}{1+p}+\frac{(1+p+r)^2}{(1+p)^2}+\cdots+\frac{(1+p+r)^{n-1}}{(1+p)^{n-1}}\right].$$

The above expression is that of a geometric series of the general form, $Q=g\frac{1-q^n}{1-q}$, where Q, the desired summation, is X; g is $rV_0(1+p)^{n-1}$; q is $\frac{1+p+r}{1+p}$; and n is the number of terms in the series.

Therefore

$$X=rV_0(1+p)^{n-1}\left[\frac{1-\left(\frac{1+p+r}{1+p}\right)^n}{1-\frac{1+p+r}{1+p}}\right].$$

Reducing the compound fraction to a simple fraction

$$X=rV_0(1+p)^{n-1}\left[\frac{(1+p+r)^n-(1+p)^n}{r(1+p)^{n-1}}\right].$$

Canceling the term $r(1+p)^{n-1}$ from both numerator and denominator, and substituting $\frac{Y-X-C}{(1+p)^n-1}$ for its equivalent, V_0,

$$X=\frac{(Y-C-X)[(1+p+r)^n-(1+p)^n]}{(1+p)^n-1}.$$

Cross multiplying and collecting terms

$$X[(1+p)^n-1+(1+p+r)^n-(1+p)^n]=(Y-C)[(1+p+r)^n-(1+p)^n], \text{ or}$$

$$X=\frac{(Y-C)[(1+p+r)^n-(1+p)^n]}{(1+p+r)^n-1}, \text{ or}$$

$$\frac{X}{Y-C}=\frac{(1+p+r)^n-(1+p)^n}{(1+p+r)^n-1}.$$

Dividing the numerator of this fraction by the denominator,

$$\begin{array}{l|l|l} (1+p+r)^n-1 & (1+p+r)^n-(1+p)^n & 1-\frac{(1+p)^n-1}{(1+p+r)^n-1} \\ & \frac{(1+p+r)^n-1}{-(1+p)^n+1} & \end{array}$$

there results formula 3, the tax ratio, or

$$\frac{X}{Y-C}=1-\frac{(1+p)^n-1}{(1+p+r)^n-1}.$$

Suppose that $r=1$ percent, $p=3$ percent, and $n=50$ years. With these quantities in formula 3, the tax ratio is 45 percent. If n were 10 years, p and r remaining as above, the tax ratio would be 28.4 percent; in a previous example, where n was 2 years, it was 25.4 percent; and for an annual sustained-yield forest, in which n is 1 year, the tax ratio has been shown to be 25 percent. In all of these cases, the tax ratio under the income tax, according to formula 1, would be 25 percent.

Effect of Change in Income Cycle

The tax ratio increases as n increases. In other words, a larger portion of the net income before taxes is taken by the Government as the income cycle is lengthened. To demonstrate this proposition, it will be sufficient to prove that $\frac{(1+p)^n-1}{(1+p+r)^n-1}$ decreases as n increases, or what is the same thing, that $(1+p+r)^n-1$ increases faster than $(1+p)^n-1$. This fact, which is almost self-evident, is capable of mathematical verification.

Resort to the differential calculus (that branch of mathematics which has to do with rates of change) will yield the demonstration. Taking the derivative of both $(1+p+r)^n-1$ and $(1+p)^n-1$ with respect to n, there results $(1+p+r)^n \log (1+p+r)$ and $(1+p)^n \log (1+p)$. Since both p and r are positive from their nature, the first of these derivatives is obviously greater than the second, and hence $(1+p+r)^n-1$ increases faster than $(1+p)^n-1$.

If, in formula 3, $Y-C=\$1$, the term $1-\frac{(1+p)^n-1}{(1+p+r)^n-1}$ represents the number of cents taken by the Government and $\frac{(1+p)^n-1}{(1+p+r)^n-1}$

the number of cents left to the owner. The sum of the two quantities is \$1.

The minimum tax ratio resulting from the use of formula 1 is $\frac{r}{p+r}$ when $n=1$. That is, when the forest is on an annual sustained yield, the tax ratio equals the tax rate divided by the sum of the tax and interest rates. In the example already given, for instance, the tax ratio is $\frac{0.01}{0.03+0.01}$, or 25 percent. The income cycle is here 1 year, which means that an equal annual income may be received each year.

The statement that an annual sustained yield forest gives a minimum tax ratio is true so long as the tacit assumption holds that the forest is not overstocked. Of course, if there is more timber on the forest than is necessary for sustained yield, it is strictly speaking not an annual sustained-yield forest, and in consequence some of the timber may be cut off at once, whereupon the extra immediate income will reduce the tax ratio to subnormal. This situation is discussed in more detail later on in connection with mature forests (p. 63).

Effect of Change in Tax Rate or Interest Rate

An unexpected increase or decrease in the tax rate or interest rate is much more unfavorable or favorable in the case of a deferred-yield forest than in the case of an annual sustained-yield forest. The definitions and assumptions are the same as for formula 3, with the addition of the following: (1) The tax rate or interest rate is unexpectedly changed by u at the end of q years, q being less than n, but not negative; and (2) the percentage change in value caused by the change in rate is called z, the percentage being based, of course, on the value before the change. The formula for z is

Formula 4, $$z=1-\frac{(1+p+r+u)^{q-1}\,[(1+p+r)^n-1]}{[(1+p+r+u)^n-1]\,(1+p+r)^{q-1}}.$$

Formula 4 may be derived as follows: By definition, $z=\frac{V_{q-1}-\frac{V_q}{1+p+r+u}}{V_{q-1}}$, or $z=1-\frac{V_q}{V_{q-1}\,(1+p+r+u)}$, V_{q-1} being the value just before the change in tax or interest rate, and V_q the value 1 year afterwards. V_q is discounted 1 year by dividing by 1 plus the new interest and tax rates, $p+r+u$.

By analogy from the first part of the proof of formula 3,

$$V_{q-1}=\frac{(Y-C-X)\,(1+p+r)^{q-1}}{(1+p)^n-1}.$$

Substituting the value of X from formula 3, this becomes

$$V_{q-1}=(Y-C)\,\frac{\frac{(1+p)^n-1}{(1+p+r)^n-1}\,(1+p+r)^{q-1}}{(1+p)^n-1},$$

or

$$V_{q-1}=(Y-C)\,\frac{(1+p+r)^{q-1}}{(1+p+r)^n-1}.$$

A similar formula holds for V_q, though here u must be added to p and r,

$$V_q=(Y-C)\frac{(1+p+r+u)^q}{(1+p+r+u)^n-1}.$$

Thus

$$z=1-\frac{(Y-C)\frac{(1+p+r+u)^q}{(1+p+r+u)^n-1}}{(Y-C)\frac{(1+p+r)^{q-1}}{(1+p+r)^n-1}(1+p+r+u)}.$$

Simplifying this expression—formula 4.

$$z=1-\frac{(1+p+r+u)^{q-1}[(1+p+r)^n-1]}{[(1+p+r+u)^n-1](1+p+r)^{q-1}}.$$

Assume, for instance, that 1 year after the purchase of a forest recently cut over, having an income cycle (and rotation) of 50 years, the tax rate is unexpectedly increased from 1 to 1½ percent, the interest rate remaining constant at 3 percent. Or if the tax rate remains 1 percent, assume the interest rate to increase to 3½ percent. In either case, the decrease in value is, according to formula 4, 24 percent. If, on the other hand, the forest were on annual sustained yield, the income cycle being 1 instead of 50, the decrease in value, according to formula 4, would be 11 percent, only 46 percent as much as in the case of the deferred yield forest.

Formula 4 applies equally well whether u is negative or positive. For negative values of u, z is negative and measures the percentage increase in the value of the forest with an unanticipated decrease in the tax rate or interest rate. It will be found that z is larger absolutely the longer the period, n. Deferred-yield forests are thus favored more than sustained-yield forests by a drop in tax or interest rates.

The General Tax Ratio Formula

The effects of thinnings, annual expenses, and regeneration expenses will now be examined. The possibility of a thinning sometime during the income cycle changes the value of a forest property and consequently changes the taxes. If a thinning T_m is made at the end of m years and every n years thereafter, m being less than n, the following formula holds:

$$X=Y-C+T_m(1+p)^{n-m}-[Y-C+T_m(1+p+r)^{n-m}]\cdot\left[\frac{(1+p)^n-1}{(1+p+r)^n-1}\right].$$

The tax ratio is defined as $\frac{X}{S}$. After finding X as above, the result must be divided by S, which in this case is $Y-C+T_m(1+p)^{n-m}$, since this quantity is the income with compound interest as of the end of the income cycle. Carrying out the division indicated,

Formula 5, $$\frac{X}{S}=1-\frac{[Y-C+T_m(1+p+r)^{n-m}][(1+p)^n-1]}{[Y-C+T_m(1+p)^{n-m}][(1+p+r)^n-1]}.$$

Formula 5 may be derived as follows: In the case of no thinnings and no costs of any kind, it was found (formula 3) that the tax ratio, $\frac{X}{Y-C}=1-\frac{(1+p)^n-1}{(1+p+r)^n-1}$. Therefore $X=(Y-C)\left[1-\frac{(1+p)^n-1}{(1+p+r)^n-1}\right]$. To this must be added the value of

the taxes to be imposed on the material entering into the thinnings T_m occurring at the end of m years and every n years thereafter. The value of these thinning taxes as of the time the principal yield, Y, is received will be called X_t.

The discounted worth of all future thinnings directly after one thinning has been made is $\frac{T_m}{(1+p+r)^n-1}$. This is the ordinary formula for the present worth of a perpetuity wherever the tax rate r is levied on value in exactly the same way as is the interest rate p. At the beginning of the next income cycle, this discounted worth of all future thinnings must be revalued to allow for the decreased period of waiting before the next thinning. By analogy from the proof of formula 1, it is obvious that the revaluation factor is $(1+p+r)^{n-m}$. At the beginning of the Y income cycle, therefore, the value of future expected thinnings is $\frac{T_m(1+p+r)^{n-m}}{(1+p+r)^n-1}$. Next year the value is $\frac{T_m(1+p+r)^{n-m+1}}{(1+p+r)^n-1}$, and so on until the beginning of the mth year, when the value becomes $\frac{T_m(1+p+r)^{n-1}}{(1+p+r)^n-1}$. One year later the value drops to $\frac{T_m}{(1+p+r)^n-1}$, but thereafter it increases again until it reaches $\frac{T_m(1+p+r)^{n-m-1}}{(1+p+r)^n-1}$ the year prior to the final yield. The thinning taxes are levied at the rate r on these values, and with compound interest to the end of the rotation, they amount to X_t. Hence

$$X_t=\frac{T_m r}{(1+p+r)^n-1}[(1+p+r)^{n-m}(1+p)^{n-1}+(1+p+r)^{n-m+1}(1+p)^{n-2}+\cdots$$
$$+(1+p+r)^{n-1}(1+p)^{n-m}+(1+p)^{n-m-1}+(1+p+r)(1+p)^{n-m-2}+\cdots$$
$$+(1+p+r)^{n-m-1}].$$

The bracket, which will be called B, may be divided into two power series, the point of division occurring between the terms $(1+p+r)^{n-1}(1+p)^{n-m}$ and $(1+p)^{n-m-1}$. This point marks the end of the mth year, when the thinning is made. Factoring out $(1+p+r)^{n-m}(1+p)^{n-1}$ from the first part of B and $(1+p)^{n-m-1}$ from the second part, there is

$$B=(1+p+r)^{n-m}(1+p)^{n-1}\left[1+\frac{1+p+r}{1+p}+\cdots+\frac{(1+p+r)^{m-1}}{(1+p)^{m-1}}\right]+$$
$$(1+p)^{n-m-1}\left[1+\frac{1+p+r}{1+p}+\cdots+\frac{(1+p+r)^{n-m-1}}{(1+p)^{n-m-1}}\right].$$

Combining these terms in each of the brackets according to the power series law,

$$B=(1+p+r)^{n-m}(1+p)^{n-1}\frac{\frac{(1+p+r)^m}{(1+p)^m}-1}{\frac{1+p+r}{1+p}-1}+(1+p)^{n-m-1}\frac{\frac{(1+p+r)^{n-m}}{(1+p)^{n-m}}-1}{\frac{1+p+r}{1+p}-1}.$$

Simplifying the complex fractions and canceling terms occurring in both numerator and denominator,

$$B=\frac{(1+p+r)^{n-m}(1+p)^{n-m}[(1+p+r)^m-(1+p)^m]+(1+p+r)^{n-m}-(1+p)^{n-m}}{r}.$$

Rearranging terms

$$B=\frac{(1+p)^{n-m}[(1+p+r)^n-1]-(1+p+r)^{n-m}[(1+p)^n-1]}{r}.$$

But it was found above that $X_t=\frac{T_m r B}{(1+p+r)^n-1}$.

Therefore,

$$X_t=\frac{T_m[(1+p)^{n-m}[(1+p+r)^n-1]-(1+p+r)^{n-m}[(1+p)^n-1]]}{(1+p+r)^n-1}.$$

Adding this equation to that previously found for taxes where no thinnings were involved, and simplifying,

$$X=Y-C+T_m(1+p)^{n-m}-[Y-C+T_m(1+p+r)^{n-m}]\cdot\frac{(1+p)^n-1}{(1+p+r)^n-1}.$$

The tax ratio is then (formula 5)

$$\frac{X}{S}=\frac{X}{Y-C+T_m(1+p)^{n-m}}=1-\frac{[Y-C+T_m(1+p+r)^{n-m}][(1+p)^n-1]}{[Y-C+T_m(1+p)^{n-m}][(1+p+r)^n-1]}.$$

Formula 5 is exactly the same as formula 3, except for the expression $\frac{Y-C+T_m(1+p+r)^{n-m}}{Y-C+T_m(1+p)^{n-m}}$. Since $n-m$ is, by its nature, a positive integer, and $Y-C$, T_m, p, and r are also positive, the expression is obviously greater than 1. This means that the subtrahend on the right of the tax-ratio formula is greater than if no thinning had occurred, and hence the tax ratio is smaller. A thinning, therefore, reduces the tax ratio, provided, of course, a net income is received from the thinning. A thinning conducted at a loss, on the other hand, increases the tax ratio.

Take, as in the example discussed previously, $r=1$ percent, $p=3$ percent, and $n=50$ years, and add to these $Y-C=\$100$, $T_m=\$10$, and $m=25$ years. The tax ratio is then 42 percent, as compared with 45 percent if no thinning has been made, and 25 percent under the income tax. The reduction in tax ratio is logical, since the effect of a thinning is to decrease the deferment of income.

Annual expenses, on the other hand, being in the nature of negative intermediate incomes, tend to increase the tax ratio of a deferred-yield forest. If, for instance, the annual expenses, e, are 5 cents, and the other variables as in the case just mentioned where a thinning was made in the twenty-fifth year, the tax ratio becomes 43 percent. Under these conditions, as has been shown, the tax ratio under the income tax would be 26 percent. Incorporating annual expenses in formula 5 gives the following result:

Formula 6,

$$X=Y-C+T_m(1+p)^{n-m}-[Y-C+T_m(1+p+r)^{n-m}]\left[\frac{(1+p)^n-1}{(1+p+r)^n-1}\right]$$
$$-\frac{re}{p+r}\left[\frac{(1+p)^n-1}{p}\right].$$

In this case $S=Y-C+T_m(1+p)^{n-m}-e\,\frac{(1+p)^n-1}{p}$, and the tax ratio is the ratio of X to this quantity.

The effect of an annual expense on the tax ratio may be deduced from the preceding formulas. It has been shown that the tax ratio for deferred-yield forests is always greater than the income-tax rate, $\frac{r}{p+r}$, or, in other words, that the numerator of the tax-ratio fraction always exceeds the denominator multiplied by $\frac{r}{p+r}$. It should be noted, however, that the effect of the annual expense, e, is to decrease

the denominator of the tax-ratio fraction, S, by $e\frac{(1+p)^n-1}{p}$, the amount of that expense accumulated with compound interest through the income cycle, and to decrease the numerator, X, by the same amount times $\frac{r}{p+r}$. Thus the introduction of the expense item results in a smaller proportionate reduction in the numerator than in the denominator, and makes the tax ratio larger than it would have been without any expense. This conclusion, while true for deferred-yield forests, does not apply to annual sustained-yield forests. In the case of annual sustained-yield forests $n=1$, the tax ratio becomes exactly $\frac{r}{p+r}$, and the effect of introducing the expense item is to reduce the numerator and denominator of the tax-ratio fraction in exactly the same proportion, thus making no change in the tax ratio.

Formula 6 may be derived as follows: Assume, for the moment, that e is an income rather than an outgo. By formula 3, then, the annual tax on the capital represented by the annual income e is $e\frac{r}{p+r}$. The balance left to the owner is obviously $e-e\frac{r}{p+r}$, or $e\frac{p}{p+r}$. This capitalized at p percent is $\frac{e}{p+r}$. Since mathematically it makes no difference whether e is an income or an outgo, the term $\frac{e}{p+r}$ remains intact irrespective of the algebraic sign of e. If e is an expense, $\frac{e}{p+r}$ is the capitalized expense. The tax rate times this capitalized expense compounded to the end of the income cycle at the interest rate p is $\frac{re}{p+r}[(1+p)^{n-1}+(1+p)^{n-2}+\ldots+(1+p)+1]$, the bracketed portion of which simplifies to $\frac{(1+p)^n-1}{p}$. This entire quantity, i.e., $\frac{re}{p+r}\left[\frac{(1+p)^n-1}{p}\right]$, must now be subtracted from the expression on the right of the equation given in formula 5 to obtain the next subformula for X, namely (formula 6),

$$X=Y-C+T_m(1+p)^{n-m}-[Y-C+T_m(1+p+r)^{n-m}]\left[\frac{(1+p)^n-1}{(1+p+r)^n-1}\right]-\frac{re}{p+r}\left[\frac{(1+p)^n-1}{p}\right].$$

In this case $S=Y-C+T_m(1+p)^{n-m}-e\frac{(1+p)^n-1}{p}$, and the tax ratio is the ratio of X to this quantity.

Effect of the Property Tax on the Initial Forest Value and Most Profitable Rotation

As previously indicated, the initial forest value is the expected future net income discounted to the beginning of the income cycle and in the case of an even-aged forest equals the soil expectation value plus the cost of regeneration. The general formula for this initial forest value is as follows:

$$V_0=\frac{Y-C+T_m(1+p)^{n-m}-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1}.$$

Substituting the value for X as given in formula 6 and combining like terms,

$$V_0=\frac{[Y-C+T_m(1+p+r)^{n-m}]\left[\frac{(1+p)^n-1}{(1+p+r)^n-1}\right]+\left[\frac{re}{p+r}-e\right]\frac{(1+p)^n-1}{p}}{(1+p)^n-1}.$$

Dividing numerator and denominator by $[(1+p)^n-1]$ and simplifying,

$$V_0=\frac{Y-C+T_m(1+p+r)^{n-m}-e\,\frac{(1+p+r)^n-1}{p+r}}{(1+p+r)^n-1}.$$

This last formula for V_0 is the same as the original except that X is omitted and r is added to the rate of discount, p. Thus the effect of the property tax is to increase the rate of discount applicable to the expected income by the amount of the tax rate. As the property-tax rate increases, the initial forest value will be reduced, other factors remaining the same. This is tax capitalization.

The effect of the property tax at any given rate on the rotation that is most profitable from the financial viewpoint, commonly called the financial rotation, may be predicted in the case of any managed forest for which a money yield table is available.

The financial rotation is the same whether the forest in question is composed of one or of many age classes, since the aggregating of a number of age classes in one forest property so as to shorten the interval between realization of income in no way changes the relation between income and investment so long as the investment is assumed to equal the cost of growing the existing timber together with interest and other carrying charges. Therefore, it is sufficient for theoretical purposes to consider only even-aged forests in which the income cycle and rotation are equal.

An even-aged forest, as it grows older, is expected to increase from year to year in realization value, that is, in the sum which could be realized by cutting the timber and selling the land. The current increase in realization value, less the expense during the period when it accrues, constitutes the current net value increment. The ratio of this current net increment to the current realization value, expressed as a percent, is known as the "indicating percent." From the time that the timber has a substantial merchantable value, the indicating percent drops sharply. The point at which this percent reaches equality with the interest or discount rate marks the most profitable rotation, since beyond that age any increase in net increment from lengthening the rotation would yield less than this interest rate. For the same reason a rotation stopping at that point gives maximum figures, computed at the accepted interest rate, for the initial forest value and the soil expectation value.

It was shown above that the effect of the property tax is to increase the rate of discount applicable to the expected income by the amount of the tax rate. Therefore, the sum of interest and tax rate may be treated as the interest or discount rate in estimating the financial rotation by the use of the indicating percent, provided that in calculating the indicating percent the property tax be excluded from the annual expense in order to avoid double allowance for this tax.

The first step, then, in predicting the financial rotation under the property tax is to determine the indicating percent at different ages excluding the property tax from the annual expense. The next step is to find at what age this indicating percent equals the sum of interest and tax rate.

The indicating percent may be approximated with sufficient accuracy for this purpose by means of a formula suggested by Hiley (*9, p. 159*), as follows:

$$\text{Indicating percent}=\frac{(Y_{a+b}-Y_a-be)}{(Y_a+Y_{a+b}+2L)}\times\frac{200}{b},$$ in which Y_a and Y_{a+b} are money yields at ages a and $a+b$, respectively, b is the interval in years between the ages at which successive yields are shown in the yield table, e is the annual expense, and L is the land value before cost of regeneration. The results obtained by this formula may be plotted with values for a as abscissa and the corresponding indicating percents as ordinates. The points representing the indicating percents at different ages may then be connected by a smoothed curve. The point on this curve where the indicating percent becomes equal to the sum of interest and tax rate marks the age when cutting yields the greatest financial profit, or the financial rotation.

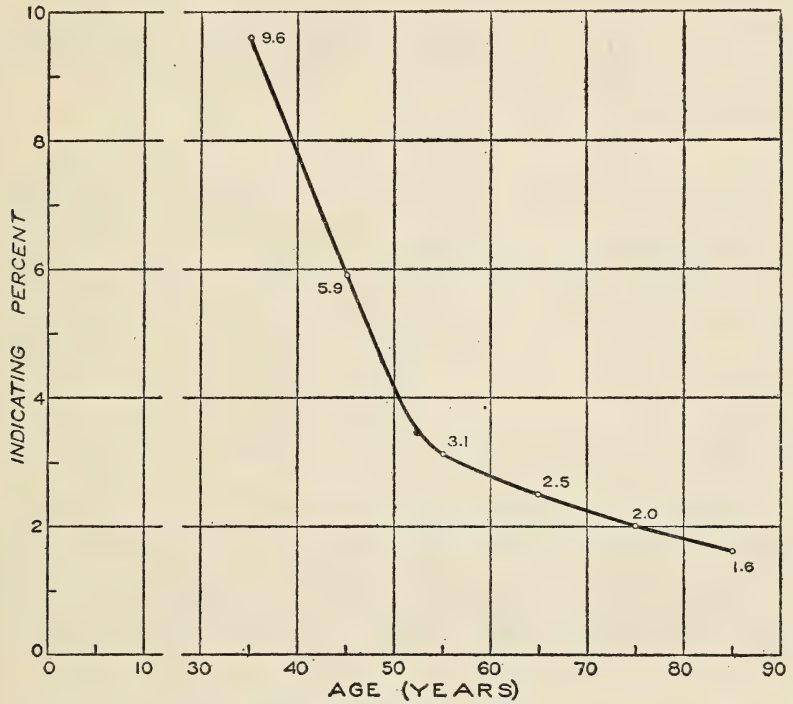

FIGURE 1.—Curve of indicating percent for second-growth white pine on medium sites in New Hampshire. For basic data, refer to part 7, page 239.

For purposes of illustration an indicating percent curve is shown fig. (1) for second-growth white pine on medium sites in New Hamp-

shire. The data used in constructing this curve are those used in calculating table 93, part 7. It is evident that if the interest rate is 3 percent and the tax rate 2 percent, the financial rotation, indicated by the point on the curve where the indicating percent becomes 5 percent, is 48 years. A reduction in the tax rate to 1 percent will increase the financial rotation in this case to 51 years.

Some general deductions as to the influences affecting the financial rotation may be drawn from inspection of the above formula for the indicating percent. It is evident that in normal cases the effect of both the annual expense, e, and of the land value, L, is greatly overshadowed by the effect of the money yields Y_a and Y_{a+b}. Consequently changes in the amount of annual expense and land value would in general have only a small effect on the financial rotation regardless of the tax rate. It may also be seen that the curve of the indicating percent is likely to decline very steeply, since the term Y_a is negative in the numerator and positive in the denominator. Therefore, changes in the sum of interest and tax rate because of increases or decreases in the tax rate are likely to have only a moderate effect on the financial rotation.

FINANCIALLY IMMATURE OLD-GROWTH FORESTS

An old-growth forest is not, in general, so heavily burdened under the property tax as is a cut-over forest. If, however, it must be held for a large number of years before the timber can be cut (because of inaccessibility, competition with better timber, possibility of flooding the market, and the like), the tax ratio may mount rather high, although not so high as frequently happens in the case of a cut-over forest. The only difference between an old-growth forest and the deferred-yield forest analyzed in the preceding portion of this section is that the latter type of forest has a cyclic income (every n years) while the former type has not. Slight changes in the deferred-yield tax formulas will make these formulas applicable to the old-growth type.

To start with the simplest case, assume an old-growth forest which must be held for k years, at the end of which period the timber is entirely removed and the land is abandoned. No income and no expense, other than taxes, occur in any year except the last. The reasoning involved in the proof of formula 3 applies without change except that the initial value (called V'_0 in this analysis to distinguish it from the initial forest value at the beginning of an income cycle, V_0) equals $\frac{Y-X}{(1+p)^k}$ rather than $\frac{Y-X-C}{(1+p)^k-1}$. This change is, of course, due to the noncyclic character of the old-growth forest income, and with this change the tax ratio is

Formula 7, $$\frac{X}{Y}=1-\frac{(1+p)^k}{(1+p+r)^k}.$$

Formula 7 may be derived as follows: It can be shown by analogy from the proof of formula 3 that $X=V'_0[(1+p+r)^k-(1+p)^k]$, and since $V'_0=\frac{Y-X}{(1+p)^k}$, $X=(Y-X)\left[\frac{(1+p+r)^k-(1+p)^k}{(1+p)^k}\right]$. Multiplying both sides by $(1+p)^k$ and combining the X's, $X[(1+p)^k+(1+p+r)^k-(1+p)^k]=Y[(1+p+r)^k-(1+p)^k]$, or $\frac{X}{Y}=\frac{(1+p+r)^k-(1+p)^k}{(1+p+r)^k}$. This reduces to formula 7, $\frac{X}{Y}=1-\frac{(1+p)^k}{(1+p+r)^k}$.

In other words, formula 7 is identical with formula 3 except that the -1 in both numerator and denominator is lacking, thus denoting its noncyclical character. If land is not abandoned following cutting, but is used to produce a second crop, formula 3 applies rather than formula 7.

Suppose that $p=3$ percent, $r=1$ percent, and $k=20$ years. The tax ratio is then 17.6 percent. If $k=40$ years, however, the tax ratio is 32.1 percent; if $k=50$ years, it is 38.3 percent. The longer the period of waiting, the greater the tax ratio. Over any given period of waiting, however, the tax ratio is somewhat less than that for a deferred-yield second-growth forest. In the case of a 50-year period of waiting, for instance, the tax ratios are 38.3 and 44.6 percent, respectively.

Formulas corresponding to formulas 4 and 5 could also be derived, but they are not necessary to prove the main point here presented—that financially immature old-growth forests, although they partake of much the same nature as deferred-yield forests in regard to the tax ratio, are at less disadvantage under the property tax.

OLD-GROWTH FORESTS BEING LIQUIDATED

If cutting can be commenced immediately in an old-growth forest, to be carried on for, say, k years, at the end of which period either all of the timber will have been removed and the bare land will be without appreciable value, or the residual growing stock will be reduced to a sustained-yield basis, the tax ratio will be small. Such an old-growth forest is in whole or in part in the nature of a mine. The value is depleted from year to year and taxes take a lower percentage of income than in the case of other wealth. This fact may be proved, assuming that the net income each year before taxes is d, and the value which the forest would have had if there had been no taxes is W_0, all other variables being as in formula 1. The tax ratio in this case is the ratio of the difference in values of a forest property before and after the imposition of a property tax to the value before such imposition. If the present value is V'_0 (to distinguish it from the initial forest value, V_0), the tax ratio is, in symbols, $\frac{W_0-V'_0}{W_0}$, and is equal to the following:

Formula 8, $\frac{W_0-V'_0}{W_0}=1-\frac{[(1+p+r)^k-1]\,p(1+p)^k}{(1+p+r)^k(p+r)\,[(1+p)^k-1]}$.

Formula 8 may be derived as follows: $V'_{k-1}=\frac{d-rV'_{k-1}}{1+p}$ by definition, the land having zero value at the end of the k year period. Simplifying $(1+p)V'_{k-1}+rV'_{k-1}=d$, or $V'_{k-1}=\frac{d}{1+p+r}$.

And $V'_{k-2}=\frac{V'_{k-1}}{1+p}+\frac{d-rV'_{k-2}}{1+p}$. Substituting for V'_{k-1} and simplifying.

$$(1+p)V'_{k-2}+rV'_{k-2}=\frac{d}{1+p+r}+d, \text{ or } V'_{k-2}=\frac{d[1+(1+p+r)]}{(1+p+r)^2}.$$

Similarly, it may be shown that $V'_{k-3}=\frac{d[1+(1+p+r)+(1+p+r)^2]}{(1+p+r)^3}$, and, in general,

$$V'_{k-i}=\frac{d[1+(1+p+r)+\ldots+(1+p+r)^{i-1}]}{(1+p+r)^i}.$$

This expression may be simplified to

$$V'_{k-i}=\frac{d[(1+p+r)^i-1]}{(1+p+r)^i(p+r)}.$$

In particular

$$V'_0=\frac{d[(1+p+r)^k-1]}{(1+p+r)^k(p+r)}.$$

On the other hand,

$$W_0=\frac{d}{1+p}\left[1+\frac{1}{1+p}+\ldots+\frac{1}{(1+p)^{k-1}}\right]$$

$$=\frac{d}{1+p}\,\frac{(1+p)^k-1}{p(1+p)^{k-1}}=d\,\frac{(1+p)^k-1}{p(1+p)^k}.$$

Therefore,

$$\frac{W_0-V'_0}{W_0}=\frac{\frac{(1+p)^k-1}{p(1+p)^k}-\frac{(1+p+r)^k-1}{(1+p+r)^k(p+r)}}{\frac{(1+p)^k-1}{p(1+p)^k}},$$

or (formula 8)—

$$\frac{W_0-V'_0}{W_0}=1-\frac{[(1+p+r)^k-1]p(1+p)^k}{(1+p+r)^k(p+r)[(1+p)^k-1]}.$$

If, now, p and r be 3 percent and 1 percent, respectively, as in the example under formula 3, and k be 50 years, the tax ratio is 17 percent. This compares with 25 percent for the sustained-yield forests and 45 percent for the deferred-yield forests under formula 3, and 38.3 percent for the financially immature timber under formula 7. If the virgin forest had been entirely cut over in only 20 years, the tax ratio would have been but 9 percent, still further emphasizing the tax advantage of cutting a financially mature forest rather than of holding it for speculation. The tax ratios for different tax rates are shown for three kinds of forests, annual sustained yield, deferred yield, and depletion yield, in figure 2.

CERTAIN MODIFICATIONS OF THE PROPERTY TAX FOR DEFERRED- AND SUSTAINED-YIELD FORESTS

ADJUSTED PROPERTY TAX

As one remedy for the inherent disability of the property tax when applied to deferred-yield forests, it will be proposed in part 12 that the required tax payments under the property tax be so adjusted as to compensate for the lack of conformity between the sequence of

these payments and the flow of income. This plan would give every forest property whose income is deferred for more than 1 year a tax that would be less than the usual property tax, the amount of the reduction being proportional to the deferment of income. It would not give equality in tax ratio between deferred yield and annual sustained-yield forests, because in the case of deferred-yield forests there are expenses other than taxes which must be paid in advance of the receipt of income. The income tax is the only widely accepted form of taxation under which tax payments conform to the flow of

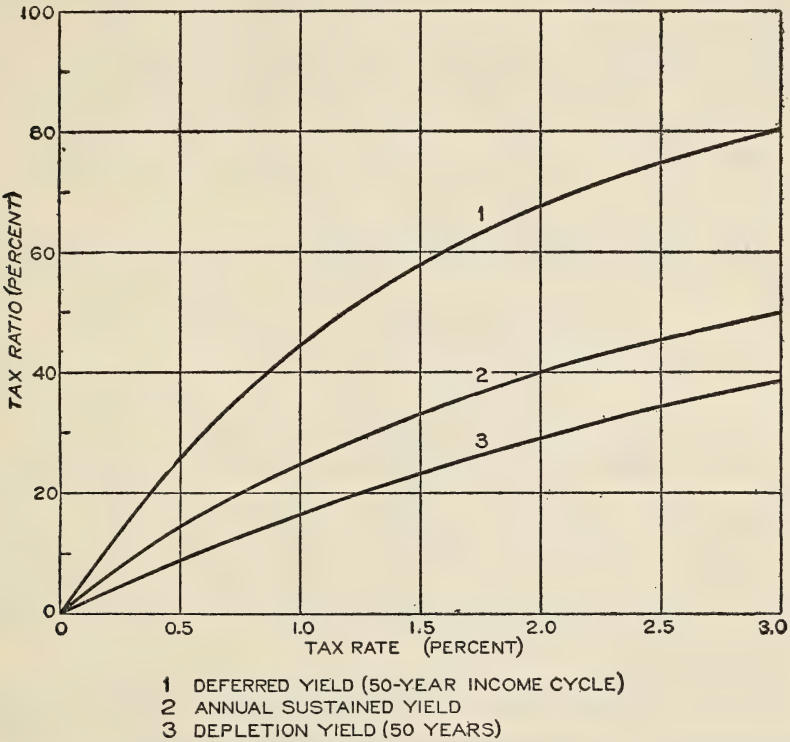

FIGURE 2.—Tax ratios under the property tax at different tax rates for deferred-yield, annual sustained-yield, and depletion-yield forests, interest rate 3 percent, no expenses, no thinnings. (Sources of data: Deferred yield, formula 3; annual sustained yield, $\frac{r}{p+r}$; and depletion yield, formula 8.)

income, and even under this tax, if applied to property as a substitute for the property tax, a difference in tax ratio between deferred-yield and annual sustained-yield forests would remain because of the expense items in advance of income in the case of the deferred-yield forests. The adjustment under the proposed plan would give the same or approximately the same tax burden as would be sustained under such an income tax levied at a rate equivalent to that of the property tax. The adjustment consists in reducing the value to which the property-tax rate is applied by that part of the entire expected value increment which remains after excluding the rise in value due to the payment of expected costs other than taxes. Hence

if no costs are incurred and if the value increment accrues in the expected amounts, the plan reduces to a tax on the initial value. If annual expenses other than taxes are incurred, however, the tax after the first year is something more than an initial value tax. In fact, it increases each year by the amount of taxes on that part of the preceding year's increase in value which reflects annual expense until the current yield becomes equal to the current increment in value.

In all cases of a deferred-yield forest managed on a regular rotation, the tax burden under the adjusted property tax is exactly equal to that produced by a tax on the net income from the property at an equivalent tax rate.

The tax sequence is rV_0, $r(V_0+e)$, $r(V_0+2e)$, . . . $r[V_0+(n-1)e.]$ The sum of these taxes, with interest, to the end of the income cycle is

$$rV_0\frac{(1+p)^n-1}{p}+re\left[\frac{(1+p)^{n-1}-1}{p}+\frac{(1+p)^{n-2}-1}{p}+\ldots+1\right]=$$

$$rV_0\frac{(1+p)^n-1}{p}+\frac{re}{p}\left[\frac{(1+p)^n-1}{p}-n\right].$$

Since

$$V_0=\frac{Y-C-X-e\dfrac{(1+p)^n-1}{p}}{(1+p)^n-1},$$

$$X=\frac{r}{p}\left[Y-C-X-e\frac{(1+p)^n-1}{p}+e\frac{(1+p)^n-1}{p}-ne\right].$$

Simplifying the right member $X=\frac{r}{p}[Y-C-X-ne]$.

Cross multiplying and transposing terms $(p+r)X=r(Y-C-ne)$, or Formula 9, $X=\frac{r}{p+r}(Y-C-ne)$.

This is the identical form of the equation for the income tax with a tax rate of $\frac{r}{p+r}$ and hence will give the same tax ratio. The tax ratio when an intermediate thinning, T_m, is realized is still identical with that for the net income tax (formula 2).

LAND-VALUE TAX, TIMBER EXEMPT

The complete exemption of timber, leaving only the land value subject to the property tax, is a proposal which is discussed in part 12. A mathematical analysis of this proposal is in order here.

An annual land tax, rL, in the case of an even-aged deferred-yield forest regenerated without expense, produces a tax ratio equivalent to that of an annual sustained-yield forest. The value as of the end of the rotation (or income cycle) of land-value-tax payments is

$$rL[1+(1+p)+(1+p)^2+\ldots+(1+p)^{n-1}], \text{ or } X=rL\frac{(1+p)^n-1}{p}.$$

Since $L=\frac{Y-X}{(1+p)^n-1}$, therefore $X=\frac{r(Y-X)}{p}=\frac{rY}{p+r}$ and the tax ratio, Formula 10, $\frac{X}{Y}=\frac{r}{p+r}$.

Annual expenses or incidental income during a rotation cause no changes in formula 10. Annual expenses may all be capitalized in the term $e\frac{(1+p)^n-1}{p}$, which must be subtracted from Y to get net income before taxes. Therefore

$$L=\frac{Y-X-e\,\frac{(1+p)^n-1}{p}}{(1+p)^n-1},\quad X=\frac{r\left[Y-X-e\frac{(1+p)^n-1}{p}\right]}{p},$$

and the tax ratio,

$$\frac{X}{Y-e\,\frac{(1+p)^n-1}{p}}=\frac{r}{p+r}.$$

Incidental incomes, for their part, must be added to Y, with interest, to get net income before taxes. Therefore

$$L=\frac{Y+T(1+p)^{n-m}-X}{(1+p)^n-1},\quad X=\frac{r[Y+T(1+p)^{n-m}-X]}{p},$$

and the tax ratio,

$$\frac{X}{Y+T(1+p)^{n-m}}=\frac{r}{p+r}.$$

A regeneration expense, however, does cause a change in formula 10. It has been shown that $X=rL\,\frac{(1+p)^n-1}{p}$, or in an even-aged forest $X=r(V_0-C)\frac{(1+p)^n-1}{p}$, C being the cost of regeneration. By definition,

$$V_0=\frac{Y-C-X-e\,\frac{(1+p)^n-1}{p}}{(1+p)^n-1}.$$

Substituting this expression for V_0,

$$X=\frac{r}{p}\left[Y-C-X-e\,\frac{(1+p)^n-1}{p}-C[(1+p)^n-1]\right].$$

Cross multiplying and transposing terms,

$$(p+r)\ X=r\left[Y-C-e\,\frac{(1+p)^n-1}{p}-C[(1+p)^n-1]\right],\ \text{or}$$

$$X=\frac{r\left[Y-C-e\,\frac{(1+p)^n-1}{p}\right]-rC[(1+p)^n-1]}{p+r}.$$

Since $S=Y-C-e\,\frac{(1+p)^n-1}{p}$, the tax ratio,

Formula 11, $\frac{X}{S}=\frac{r}{p+r}\left[1-\frac{C[(1+p)^n-1]}{Y-C-e\,\frac{(1+p)^n-1}{p}}\right]$.

It should be noted that in the above demonstration n measures a complete rotation and that consequently V_0-C equals L, the land value. If n were something less than the rotation, V_0-C would not be the land value, and formulas 10 and 11 would not apply. Due to the remote possibility of a land tax only, it was not thought worth while to derive formulas for cases where n is less than a rotation. Such formulas for the combined yield and land taxes are, however, derived at a later point.

DEFERRED TIMBER TAX

As a second plan for overcoming the inherent disability of the property tax when applied to deferred-yield forests, it will be proposed in part 12 that all of the required tax payments on the timber value under the property tax be deferred without interest until income from forest products is realized, the loss in revenues being made good through payments from a State timber-tax fund.

The taxes under this plan may be computed from the following formulas:

Formula 12,

$$X=\frac{r}{p+r}\left[Y-C-e\frac{(1+p)^n-1}{p}\right]+\frac{r}{p+r}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right],$$

and

Formula 13,

$$X=rV_0\frac{(1+p)^n-1}{p}+\frac{r}{p}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right].$$

When these formulas are applied to uneven-aged forests with regular series of age classes (having k income cycles to the rotation of kn years) the land value, L, is the land value of a corresponding even-aged forest with yield equal to kY and cost of regeneration equal to kC. In symbols,

$$L=\frac{kY-kC-X-e\dfrac{(1+p)^{kn}-1}{p}}{(1+p)^{kn}-1}-kC.$$

To develop formulas 12 and 13 it is necessary first to consider the value sequence of a forest having an initial forest value of V_0, with an annual land tax rL and annual expense e. From the nature of this plan the timber tax is only payable in case of a yield, and therefore there is no value increment accruing because of the payment of annual timber taxes. Assume that there are no intermediate yields, in which case $T_m=0$. The value at the beginning of the first year is V_0, the second year, $V_0(1+p)+e+rL$, the third year, $V_0(1+p)^2+(e+rL)(1+p)+e+rL$, and the nth year $V_0(1+p)^{n-1}+(e+rL)(1+p)^{n-2}+(e+rL)(1+p)^{n-3}+\ldots+e+rL$. Each year's timber tax will be the tax rate times the difference between the value for the year and the land value. Hence, the timber tax sequence is,

$$rV_0-rL,\ rV_0(1+p)+r(e+rL)-rL,\ rV_0(1+p)^2+r(e+rL)(1+p)+r(e+rL)-rL,$$
$$\ldots,\ rV_0(1+p)^{n-1}+r(e+rL)(1+p)^{n-2}+r(e+rL)(1+p)^{n-3}+\ldots+r(e+rL)-rL.$$

These taxes summed to the end of the income cycle, without interest, by methods for summing series as used in connection with preceding formulas, are

$$rV_0\frac{(1+p)^n-1}{p}+\frac{r}{p}(e+rL)\left[\frac{(1+p)^n-1}{p}-n\right]-nrL.$$

The annual land tax, rL, accumulated to the end of the income cycle, with interest at the p rate, is $rL\dfrac{(1+p)^n-1}{p}$.

The timber and land taxes combined are then

$$X=rV_0\frac{(1+p)^n-1}{p}+\frac{r}{p}(e+rL)\left[\frac{(1+p)^n-1}{p}-n\right]-nrL+rL\frac{(1+p)^n-1}{p}.$$

This when simplified reduces to formula 13,

$$X=rV_0\frac{(1+p)^n-1}{p}+\frac{r}{p}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right].$$

This formula is preferable to formula 12 whenever V_0 is known. By definition,

$$V_0=\frac{Y-C-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1}.$$

Substituting this value for V_0 in formula 13 and simplifying, results in formula 12,

$$X=\frac{r}{p+r}\left[Y-C-e\frac{(1+p)^n-1}{p}\right]+\frac{r}{p+r}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right].$$

The tax ratio will be the ratio of either expression for X to

$$Y-C-e\frac{(1+p)^n-1}{p}.$$

A useful expression for the stocked land value of an even-aged forest, V_0, with X eliminated and V_0-C substituted for L, may be found by solving formula 13 simultaneously with

$$V_0=\frac{Y-C-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1}.$$

This results in

Formula 14,

$$V_0=\frac{p}{p+r}\cdot\frac{Y-C-e\frac{(1+p)^n-1}{p}-\frac{r}{p}\left[e-(p+r)C\right]\left[\frac{(1-p)^n-1}{p}-n\right]}{\left[(1+p)^n-1\right]+r\left[\frac{(1+p)^n-1}{p}-n\right]}.$$

DIFFERENTIAL TIMBER TAX

As a third remedy for the inherent disability of the property tax when applied to deferred-yield forests, it will be proposed in part 12 that the required tax payments under the property tax be lowered, under certain conditions, by reducing the assessed value of the timber by a certain percent termed "the reduction factor." Since, under this plan, only the tax on timber is affected, the tax burden will obviously lie between a full property tax and a bare-land tax, its position in relation to these depending on the reduction factor. Let r' represent the ratio of the taxes paid on timber to the value of the timber and w the reduction factor. Then $r'=r(1-w)$. The taxes under this plan may be computed from the following formulas:

Formula 15,

$$X=(Y-C)\left[1-\frac{(1+p)^n-1}{(1+p+r')^n-1}\right]-\frac{er'-p(r-r')L}{p+r'}\,\frac{(1+p)^n-1}{p}, \text{ and}$$

Formula 16,

$$X=V_0\left[(1+p+r')^n-(1+p)^n\right]+\left[e+(r-r')L\right]\frac{(1+p+r')^n-1}{p+r'}$$

$$-e\frac{(1+p)^n-1}{p}.$$

When these formulas are applied to uneven-aged forests, the land value, L, is the land value of a corresponding even-aged forest, as explained in connection with formulas 12 and 13.

Formulas 15 and 16 are derived as follows: The tax the first year is $(r-r')L+r'V_0$, the second year $(r-r')L+r'V_0(1+p+r')+r'[(r-r')L+e]$, the third year $(r-r')L+r'V_0(1+p+r')^2+r'[(r-r')L+e](1+p+r')+r'[(r-r')L+e]$, and the nth year $(r-r')L+r'V_0(1+p+r')^{n-1}+r'[(r-r')L+e](1+p+r')^{n-2}+r'[(r-r')L+e](1+p+r')^{n-3}+\cdots+r'[(r-r')L+e]$.
Assume that there are no intermediate yields, in which case $T_m=0$. These taxes accumulated to the end of the income cycle at the p rate of interest, by methods for summing series as used in connection with preceding formulas, are

$$X=(r-r')L\frac{(1+p)^n-1}{p}+r'V_0\frac{(1+p+r')^n-(1+p)^n}{r'}$$

$$+\frac{(r-r')L+e}{p+r'}r'\left[\frac{(1+p+r')^n-(1+p)^n}{r'}-\frac{(1+p)^n-1}{p}\right].$$

Simplifying

$$X=V_0[(1+p+r')^n-(1+p)^n]+(r-r')L\left[\frac{(1+p)^n-1}{p}+\frac{(1+p+r')^n-(1+p)^n}{p+r'}\right.$$

$$\left.-\frac{r'}{p+r'}\frac{(1+p)^n-1}{p}\right]+e\left[\frac{(1+p+r')^n-(1+p)^n}{p+r'}-\frac{r'}{p+r'}\frac{(1+p)^n-1}{p}\right],$$

or

$$X=V_0[(1+p+r')^n-(1+p)^n]+\frac{(r-r')L}{p+r'}[(1+p+r')^n-1]+\frac{e}{p+r'}[(1+p+r')^n-1]$$

$$-e\frac{(1+p)^n-1}{p}.$$

Collecting similar terms results in formula 16.

$$X=V_0[(1+p+r')^n-(1+p)^n]+[e+(r-r')L]\frac{(1+p+r')^n-1}{p+r'}-e\frac{(1+p)^n-1}{p}.$$

This equation is simpler than formula 15 and is preferable wherever V_0 is known.

Formula 15 is derived by solving formula 16 and the initial value formula,

$$V_0=\frac{Y-C-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1},$$

simultaneously for X and V_0 ;

$$X=V_0[(1+p+r')^n-(1+p)^n]+\frac{(r-r')L+e}{p+r'}[(1+p+r')^n-1]-e\frac{(1+p)^n-1}{p}.$$

$$X=-V_0[(1+p)^n-1]+Y-C-e\frac{(1+p)^n-1}{p}.$$

Subtracting these two equations,

$$0=V_0[(1+p+r')^n-1]+\frac{(r-r')L+e}{p+r'}[(1+p+r')^n-1]-Y+C,$$

or

$$V_0=\frac{Y-C-\frac{(r-r')L+e}{p+r'}[(1+p+r')^n-1]}{(1+p+r')^n-1},$$

which becomes

$$V_0=\frac{Y-C}{(1+p+r')^n-1}-\frac{(r-r')L+e}{p+r'}.$$

Substituting this value for V_0 in the second equation for X above,

$$X=-\left[\frac{Y-C}{(1+p+r')^n-1}-\frac{(r-r')L+e}{p+r'}\right][(1+p)^n-1]+Y-C-e\frac{(1+p)^n-1}{p}.$$

This reduces to

$$X=(Y-C)\left[1-\frac{(1+p)^n-1}{(1+p+r')^n-1}\right]-\frac{er'-p(r-r')L}{p+r'}\cdot\frac{(1+p)^n-1}{p},$$

which is the same as formula 15.

The tax ratio will be the ratio of either expression for X to $Y-C-e\frac{(1+p)^n-1}{p}$.

Theoretically it is possible to construct a formula showing the relationship of the various factors to give the precise reduction factor which, if applied to timber only, would result in the same tax ratio as an income tax or tax on net yield.
Formula 17, below, is an expression of this relationship:

$$\begin{aligned}&\left[p(Y-C)-p\frac{r}{p+r}(Y-C-ne)+rL(1+p)^n-rL\right](1+p+r')^n\\&+\left[Y-C-\frac{r}{p+r}(Y-C-ne)-(e+pL)\frac{(1+p)^n-1}{p}\right](1+p+r')^nr'\\&-\left[(Y-C)(1+p)^n-\frac{r}{p+r}(Y-C-ne)-(e+pL)\frac{(1+p)^n-1}{p}\right]r'\\&=p(Y-C)(1+p)^n-p\frac{r}{p+r}(Y-C-ne)+prL\frac{(1+p)^n-1}{p}.\end{aligned}$$

Formula 17 may be derived in the following manner: As previously stated, the income tax formula is $X=\frac{r}{p+r}(Y-C-ne)$.
According to the above assumption the tax under the differential timber tax plan must equal this income tax. Hence

$$\frac{r}{p+r}(Y-C-ne)=(Y-C)\left[1-\frac{(1+p)^n-1}{(1+p+r')^n-1}\right]-\frac{er'-p(r-r')L}{p+r'}\frac{(1+p)^n-1}{p}.$$

Simplifying and collecting the terms containing the unknown, r', to the left member of the equation the formula reduces to formula 17 above.

It may be noted that the unknown, r', in formula 17 occurs in the three terms of the left member in the following forms $(1+p+r')^n$, $r'(1+p+r')^n$, and r'. While these are somewhat complicated relationships, it is possible to determine values for r', when all other factors are known, which will give a value equal to the right member of the equation to as great a degree of accuracy as desired. Then

the reduction factor is determined by the simple relationship, $w=1-\frac{r'}{r}$.

Values for w were obtained under a wide range of conditions, and it was found that the variable which had the predominant influence in determining these values was the length of the income cycle. The longer the income cycle, the greater was the true exemption rate. Accordingly, these values were averaged by means of a curve based on length of income cycle. Using this curve as a guide, approximations of the values of w were then made for various ranges of income cycles for practical application. They will be given in part 12 in connection with the discussion of the plan. For practical reasons, which will also be explained in connection with the plan, the reduction factor is limited to a maximum of 50 percent.

YIELD TAX

YIELD TAX, WITH AND WITHOUT LAND TAX

In the agitation for the yield tax, which has been going on now since the beginning of the century, the yield-tax rate was intended to be so adjusted that the tax ratio $\frac{r}{p+r}$ would be as nearly as possible obtained. That is, the yield tax was to be an equivalent of the property tax on an annual sustained-yield forest. It has been found impossible to obtain this result without assuming, contrary to the fact, a constant ratio of net to gross income in forest investments. This is due to the fact that the yield tax is based on gross income, while the tax ratio is based on net income.

If the yield tax rate is s, there are no intermediate thinnings, and the only expenses connected with the forest are the annual expenses, e, of administration and protection and the cost of regeneration, C, the net income is $Y-C-e\frac{(1+p)^n-1}{p}$, and the tax ratio under the pure yield tax is

Formula 18, $$\frac{X}{S}=\frac{sY}{Y-C-e\frac{(1+p)^n-1}{p}}.$$

If $s=20$ percent, for instance, and $e\frac{(1+p)^n-1}{p}+C$ is 20 percent of Y, then the tax ratio is $\frac{0.20Y}{0.80Y}=25$ percent.

Suppose that, in addition to a yield tax, a land tax were imposed at the property-tax rate, the trees being exempt. The part of the total tax due to the yield tax is sY, while that due to the land tax is $rL\frac{(1+p)^n-1}{p}$. Hence

$$X=sY+rL\frac{(1+p)^n-1}{p}, \text{ and}$$

Formula 19, $$\frac{X}{S}=\frac{sY+rL\frac{(1+p)^n-1}{p}}{Y-C-e\frac{(1+p)^n-1}{p}}.$$

For an even-aged forest that part of the total tax due to the land tax is, according to the proof of formula 11,

$$\frac{r\left[Y-sY-C-e\frac{(1+p)^n-1}{p}\right]-rC[(1+p)^n-1]}{p+r}.$$

Simplifying and combining this with the yield tax, sY, the total tax is,

$$X=\frac{psY+r\left[Y-C(1+p)^n-e\frac{(1+p)^n-1}{p}\right]}{p+r}.$$

Since $S=Y-C-e\frac{(1+p)^n-1}{p}$, the tax ratio=

Formula 20,
$$\frac{psY+r\left[Y-C(1+p)^n-e\frac{(1+p)^n-1}{p}\right]}{(p+r)\left[Y-C-e\frac{(1+p)^n-1}{p}\right]}.$$

This formula has the advantage of not containing L, but is applicable only to even-aged forests.

Theoretically it is possible to construct a formula showing the relationship of the various factors to give the precise yield tax rate which, together with the land tax, would result in the same tax ratio as an income tax (tax on net yield).

An expression of this relationship is

Formula 21,
$$s=\frac{\frac{r}{p+r}(Y-C-ne)-rL\frac{(1+p)^n-1}{p}}{Y}.$$

Formula 21 may be derived in the following manner: As previously stated, the income tax formula is $X=\frac{r}{p+r}(Y-C-ne)$.

Equating this with the expression for the yield tax,

$$\frac{r}{p+r}(Y-C-ne)=sY+rL\frac{(1+p)^n-1}{p}.$$

Simplifying and solving for s this reduces to formula 21 above.

Equating the expression for the income tax, $\frac{r}{p+r}(Y-C-ne)$, and that for the total yield tax for an even-aged forest,

$$\frac{psY+r\left[Y-C(1+p)^n-e\frac{(1+p)^n-1}{p}\right]}{p+r},$$

the relationship is

Formula 22,
$$s=\frac{r}{p}\cdot\frac{\left(C+\frac{e}{p}\right)[(1+p)^n-1]-ne}{Y}.$$

This formula does not contain the term L, the land value. For practical application it seemed necessary to set up a corresponding general formula for s. Assume k income cycles of n years in each rotation. Hence the length of the rotation is kn years, total yield, kY, and the total cost of regeneration, kC. Then

Formula 23,

$$s=\frac{r}{Y}\cdot\frac{(Y-C-ne)[(1+p)^{kn}-1]-\left[kY-kC(1+p)^{kn}-e\frac{(1+p)^{kn}-1}{p}\right]\cdot[(1+p)^{n}-1]}{(p+r)[(1+p)^{kn}-1]-rk[(1+p)^{n}-1]}.$$

Formula 23 may be derived from formula 21 by eliminating L, the land value. By definition,

$$L=\frac{kY-kC-X-e\frac{(1+p)^{kn}-1}{p}}{(1+p)^{kn}-1}-kC.$$

The total yield tax for the even-aged forest is

$$X=kYs+rL\frac{(1+p)^{kn}-1}{p}.$$

Eliminating X in these two equations, the value of L is determined—

$$L=\frac{p}{p+r}\cdot\frac{kY-kC(1+p)^{kn}-kYs-e\frac{(1+p)^{kn}-1}{p}}{(1+p)^{kn}-1}.$$

Then substituting this value for L in formula 21,

$$s=\frac{\frac{r}{p+r}(Y-C-ne)-\frac{r}{p+r}\left[kY-kC(1+p)^{kn}-kYs-e\frac{(1+p)^{kn}-1}{p}\right]\frac{(1+p)^{n}-1}{(1+p)^{kn}-1}}{Y}.$$

Simplifying and solving for s, this reduces to formula 23 above.

$$s=\frac{r}{Y}\cdot\frac{(Y-C-ne)[(1+p)^{kn}-1]-\left[kY-kC(1+p)^{kn}-e\frac{(1+p)^{kn}-1}{p}\right][(1+p)^{n}-1]}{(p+r)[(1+p)^{kn}-1]-kr[(1+p)^{n}-1]}.$$

Values for s were obtained under a wide range of conditions, and it was found that in cases where the income cycle is the same as the rotation (even-aged forests) it is impossible to pick out any factors which have a predominant influence, since the result is likely to vary materially with changes in any of the conditions. If even-aged forests are eliminated from consideration, the property-tax rate and the rotation still have a pronounced influence on the value of the yield-tax rate, but the other factors have relatively little effect.

In connection with the discussion of the yield tax in part 12, there is a table showing, for different rotations and property-tax rates, the range of values for s under a number of representative assumptions (table 150). There is also a table giving the average values for s under the same assumptions when the income cycle equals one-half and smaller fractions of the rotation (table 151).

SPECIFIC TAX WITH YIELD TAX

Formulas 19 and 20 apply to cases which combine a yield tax with the ordinary property tax on the value of the land alone. In a number

of States, however, a yield tax is combined with a specific tax of so much per acre on the land. The tax ratio in such States obviously varies with the land value per acre, the ratio being high for a low value and vice versa. If t is the specific tax, then the tax ratio may be derived as follows:

The part of the total tax due to the yield tax is sY, while the part due to the specific tax with compound interest to the end of the income cycle is

$$t[1+(1+p)+(1+p)^2+\cdots+(1+p)^{n-1}], \text{ or } t\frac{(1+p)^n-1}{p}.$$

Total taxes are then $X=sY+t\frac{(1+p)^n-1}{p}$.

Since $S=Y-C-e\frac{(1+p)^n-1}{p}$,

Formula 24, $$\text{the tax ratio}=\frac{sY+t\frac{(1+p)^n-1}{p}}{Y-C-e\frac{(1+p)^n-1}{p}}.$$

A common combination of rates is 10 percent on yield plus 10 cents an acre each year. If it be further assumed that $n=50$ years, that $S=\$50$, that $C+e\frac{(1+p)^n-1}{p}=20$ percent of Y, and that $p=3$ percent, then the tax ratio is 35 percent. This is approximately the same as a 1-percent tax on value throughout a 50-year income cycle (example under formula 3). The initial forest value, under these conditions, using the following formula,

$$V_0=\frac{Y-C-e\frac{(1+p)^n-1}{p}-sY}{(1+p)^n-1}-\frac{t}{p},$$

is found to be \$9.60. If S were \$100, however, the tax ratio would be only 24 percent instead of 35 percent, and the inital forest value would be \$22.50. Whether or not the combination tax is favorable to the owner depends, therefore, on the comparative productivity of the site. An owner of the best land is taxed more lightly in proportion to value than are other owners.

The arbitrary and irrational nature of the fixed annual tax may be illustrated by two examples, the foundation data of which are drawn from an earlier publication (*10*).

Hardwoods will yield 6,000 board feet per acre every 100 years, provided the timber is cut clean, and 6,000 board feet every 60 years, provided care is used in logging to leave the small trees standing. In both cases, the average stumpage price is computed as \$6.50 per thousand, or \$39 for the total yield. But an annual tax of 10 cents an acre compounded at 5 percent for 100 years equals \$261, and for 60 years, \$35. Obviously, a 10-cent annual tax is confiscatory in either case (*10*, *pp.* 51–56).

The situation of jack pine may now be considered. The following statement occurs on page 56 of the bulletin referred to above: "With

no more than mere protection against fire, young jack pine stands will almost certainly yield 20 cords per acre within 40 years." With a $2.50 stumpage price, the value of the total yield will be $50, while an annual tax at 10 cents per acre compounded at 5 percent for 40 years equals only $12, leaving an ample margin for yield tax and other expenses.

APPLICATIONS

The formulas for taxes, tax ratios, and the like, which have been developed in this chapter are applied in succeeding parts of this report. The different tax methods are compared in part 12, tables 159 to 162, by means of examples which involve the use of these formulas.

PART 4. THE PROPERTY TAX: ASSESSMENT AND APPORTIONMENT

CONTENTS

INTRODUCTION

From the earliest colonial settlements down to the present day the chief financial reliance of the American Colonies and States and their various subdivisions has been upon the property tax. This statement still holds true in spite of a recent decline in the relative importance of the tax. The special problem of forest taxation is essentially a property-tax problem, and it is therefore necessary to give special attention to this tax.

The property tax is a direct tax levied annually, usually at a uniform rate within a given taxing district, on the assessed value of all taxable property within that district. During the early history of the property tax so little property was exempt from the tax that it was given, and well deserved, the name of "general property tax", meaning a uniform tax on all or virtually all kinds of property; in recent times so many classes of property have been removed from the tax base that the term "general", in this sense, does not always seem appropriate.

The name "general property tax" is now commonly used, as by the United States Census, to distinguish the direct tax upon real estate and upon other property treated by the same methods as real estate from "special property taxes", frequently imposed, by methods different from those applied to property generally, upon public-utility companies, banks, savings banks, insurance companies, and other corporations. This terminology is followed in the present report.

In this report the term "property tax" is used in its broadest sense to include all direct taxes upon property, whether general or special. The present part, however, concerns itself only with the general property tax as commonly applied to real estate and personal property subject to it. Special property taxes do not ordinarily come within the field of the forest-tax problem. Special modifications of the property tax with reference to forest property are examined later in this bulletin (pt. 9).

The property tax is provided by statute for the purpose of enabling the States and the counties, cities, towns or townships, and other local jurisdictions to obtain the revenues necessary to their needs. The law determines what classes of property shall be taxable and what shall be exempt and prescribes a mass of administrative details. About the only legislative discretion left to the subordinate bodies is the power to fix the tax rates which shall be applied within their respective jurisdictions. The selection of assessors, collectors, and other administrative officers, and the actual work of administration, however, are almost wholly in the hands of either the towns or the counties, although there is a certain power of supervision and control lodged in the State tax commissioner or similar officer or board, the extent of which control varies greatly among the States.

In the operation of the property tax there are three distinct processes: Assessment, apportionment, and collection.

Assessment is the discovery and valuation of all taxable property of each person liable to the tax, within the assessment district (usually county or town) as of a certain date each year. A list is prepared for each taxpayer, showing in more or less detail the description and value of all his taxable property. Assessment includes review of the original assessments by a local board whose function is to hear and settle appeals from any taxpayer who may feel that his property has been wrongly assessed. The tax lists, as corrected, are combined to form the town or county list (as the case may be), which contains at the least either a list of the names of all taxpayers in the town or county with the total value of the property assessed against each or a list of properties with their values.

Where the assessing district is the town, each town next reports the total amount of its tax list to a county board, known as the county board of equalization, except in a few States, where the town lists are reported to the State board of equalization. The principal duty of the board of equalization is to determine after investigation whether the assessment in the several towns in its jurisdiction has been performed according to law, particularly whether the total value of property as assessed is equal to the full true value in each town. The board makes such changes in the town valuations as, in its judgment, will make the ratios between assessed and true value the same in all the towns.

Having corrected the lists of such towns as in its opinion require revision, the county board makes up its county tax list, which is a list of all the towns with the total assessed value of the property in each town. The total for the whole county is then reported to the State board of equalization or corresponding board or official. This board performs, with respect to the several counties, the same process of equalization as has just been performed by each county board with respect to its towns.

Where the county is the original assessment district, there is obviously equalization only by the State board.

The final result, after the State board has made its revisions, is the State tax list, showing the total assessed value of property in the entire State as distributed among the several counties.

The reason for equalization is that, as will presently appear, the county and State taxes are to be apportioned among the towns and counties in proportion to their respective tax lists, and any town or

county which undervalues its taxable property or, more precisely, undervalues it in greater degree than the average of all the towns or counties is thereby escaping a part of its share of the county or State tax and correspondingly burdening the other districts.

The next step is the apportionment of the tax. Each taxing district decides what amount of income it must obtain from the general property tax; this amount divided by the total assessed value of the taxable property within its jurisdiction gives the tax rate for that particular unit. The tax rate applicable to any given property will be the sum of the rates of all the jurisdictions by which it is taxable.

The final act is the collection of the tax. In some States each town and county and the State has its own collector. The taxpayer may thus receive two, three, or more separate tax bills and make as many separate payments. In other States the entire tax is collected by the town or county collector, who then distributes its proper share to each jurisdiction concerned.

The reader should be reminded that the foregoing is only a very brief sketch, intended to be typical rather than descriptive of any particular State, and that very many modifications are to be found. There are certain States in which the State government has given up all share in the proceeds of the general property tax. The process of apportionment is not always carried out in all the refinement here described, and in two States an entirely different method is employed. There are States in which certain of the tax rates are fixed by statute in advance of assessment, so that the assessment determines the amount of the yield. Various matters of detail will be discussed in the following sections of this report.

It is a matter of common knowledge that the property tax, as employed in the United States, has developed serious imperfections. In view of the heavy reliance of the State and local governments upon the general property tax and the fact that this is the chief form of taxation applied to the forests, it becomes essential to examine critically and in detail the present operation of the property tax in the United States with special reference to its impact upon forest property.

ASSESSMENT

MEANING OF ASSESSMENT

Assessment is the heart of the property tax, since it determines how well or how poorly the burden of the property tax is to be distributed. The assessment consists of two parts: (1) the listing of taxable property, and (2) the discovery of the value of each parcel listed. The listing, though frequently very difficult in the case of personalty, is comparatively easy for forest or other real property. The chief problem of forest assessment is therefore concerned with the valuation rather than the listing.

As will be developed at greater length (p. 100), the value of anything, as that term is defined in economic science and generally employed in the tax laws, is the quantity of some other thing that would be given in exchange for it, this quantity being almost always expressed in terms of money.

While all States require the assessor to find the value, certain States instruct him to reduce the value so found by certain arbitrary percentages before entering it on the assessment roll. In Alabama

the laws provide for assessment at 60 percent of the full value, in Minnesota 33⅓ percent (for the class to which forest property belongs), in Montana 30 percent (for the class to which forest property belongs), in North Dakota 75 percent, in Vermont 1 percent, and in Washington 50 percent (*38, pp. 153–161; 50*). In Arkansas the State tax commission is authorized to file with the assessors annually a certificate showing percentage of market value to be used in assessment. These are the only exceptions to the rule that 100 percent of rural real estate value is by law the value to which the tax rate must be applied. And even in those States which are the exceptions, it is, as noted above, the duty of the assessor to find first the full value and then apply the legal percent.

ORIGINAL ASSESSMENT

ORGANIZATION

Assessment District

The process of assessment is prescribed by the constitutions and laws of the several States. These provide for assessors and for some method of review of the acts of these assessors. Each State is divided into assessment districts, within which one assessor or board of assessors is responsible for the valuation of all property not exempt by law from the property tax or not assessed by a State board. Public utilities are generally assessed by a State board, and mines are sometimes so assessed.

In the New England States, in New York, Pennsylvania, and New Jersey, and in the North Central States of Michigan, Wisconsin, Indiana, Illinois, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas, the town or township is the assessment district. In some of the above-mentioned North Central States there are county officials who supervise the township assessments. In Maine the northern part of the State is without town organization and is constituted a single assessment district in which the assessment is made directly by State officials. In New Hampshire and Vermont certain unorganized towns are likewise assessed by State officials. In 28 States, including all of the Pacific and Rocky Mountain States (excepting in the two Washington counties which have township organizations), and in all of the Southern States, the assessment district or unit is the county, although in a number of States where the county is the legal unit the work of assessment is actually done by townships (*38, pp. 153–161, 147–152; 50*).

Where the township is the assessment district, the boundaries are sometimes so chosen as to include a large area of uninhabited forest region. As much as 600 square miles are assessed annually by one of the township supervisors in Michigan, whereas the ordinary township is only some 36 square miles in area.

In Michigan incorporated villages are assessment districts of themselves, overlapping and included within the township assessment district. As a result, village property is subject to two independent assessments—upon one is applied the village tax rate, and upon the other the combined State, county, township, and school-district tax rate (*33, Rept. 16, p. 8*). In Connecticut 2 of the cities and 2 of the boroughs, not consolidated with towns within which they are located, are assessment districts, making assessments entirely

independent of the towns. Thus, the taxpayer may pay taxes on two different valuations of the same property.[13] As for California, where the county, as already noted, is the unit of local tax administration, 165 of the 268 cities in the State make their own independent assessments of property within their borders upon which to levy city taxes (*12, p. 122*).

Assessor

In New York, New Jersey, and all of the New England States, the assessing is done by town boards of assessors, while in Delaware, where the assessing unit is the county, there is a county board of assessors. In all other States, except Alabama, Georgia, and North Carolina, the responsibility for the original assessment in a given district is with a single assessing official. In some counties in States having a county assessor, the actual practice may be little different from that which prevails under township assessors. In Tillamook County, Oreg., for instance, it was found that the county had been divided into districts, each having a deputy assessor of its own responsible to the county assessor. This system did not work well, and when there came a demand for a complete reassessment, it was made by the assessor himself.

In Alabama the county assessor is little more than a clerical officer, receiving the lists submitted by property owners and preparing the assessment roll. Each county commissioner assumes responsibility for fixing the assessed values in his part of the county. In most instances the assessed value of real property is carried forward year after year at the same figure. It is the custom for a commissioner to recommend an increase or decrease in assessment only when he observes, or has brought to his attention, a property that has markedly changed in value.

In Georgia the county tax receiver performs the first official functions in preparing the assessment. As the name implies, he is a sedentary official who at stated times and places receives tax lists from the taxpayers. He assembles these lists and presents them to the county board of tax assessors, likewise a sedentary body, which makes such changes as it chooses. He also presents, or is supposed to present, the lists to the grand jury, which also may make such changes as it chooses. These latter changes do not affect the current year's assessment, however, but must be taken as a guide for the next year's assessment. The law provides:

> If the taxpayer shall return his property below the valuation made by the grand jury, the receiver and taxpayer each shall select an arbitrator, and these two shall select an umpire to whom the question of valuation shall be referred.

Another arbitration tribunal is permitted with respect to the work of the county board of tax assessors. The responsibility for the assessment in Georgia is evidently very much divided.

In North Carolina the county commissioners appoint the assessor, generally choosing either the register of deeds or the county accountant. The register of deeds is an elective official, while the county accountant is appointed by the commissioners. The commissioners also appoint the local township assistant assessors or list

[13] Com. Statutes, 1926 (Pub. Doc. 48), p. 201-202.

takers, who are thus responsible to both the county assessor and the commissioners. The county assessor seldom views property and is seldom called upon to exercise his judgment. His chief function is to compile the returns sent in by the list takers for presentation to the county commissioners.

In all but four of the remaining States the assessor, or assessors, are elected by the voters of their districts. In Kansas the township assessors are appointed by and work under the responsible direction of the county commissioners and the county assessing officer; in Delaware and Maryland the county assessors are appointed by the county levy court or county commissioners; while in South Carolina the county assessors are appointed by the governor.

The assessor's term of office is generally from 2 to 4 years, although in four States (Maine, Michigan, South Dakota, and Wisconsin) the assessor is elected for only 1 year (*41, p. 74*).

The rural assessor usually receives little better than laborer's wages. The following examples are taken at random: (1) The three selectmen in Loudon, N. H., were paid an average of $115 apiece in 1927 for their combined services as selectmen and as assessors; (2) the assessor of Grays Harbor County, Wash., a rather populous and wealthy county with both rural and urban property, was paid a salary of $2,196 in 1927; (3) Minnesota provides by law that a township assessor shall receive $4 for each day employed in assessing; and (4) Georgia establishes a fixed wage of $3 for each day the "receiver of taxes" is occupied with his assessment duties. In Washington it was found that the county assessor of one of the counties was also the county treasurer, and he received only $1,500 per year for performing the duties of both offices. As the county commissioners would not reimburse him for his traveling expenses, this county assessor was necessarily a sedentary official and readily admitted never having been in the western part of his county.

Frequently a piece-rate system of compensation is employed. In Arkansas the assessor receives 20 cents for each name listed on his roll, while in Missouri and West Virginia the assessor is paid on a sliding scale—the more names listed the less the rate per name.

A variant of the piece-rate system of compensation is employed in still other States; i. e., the greater the assessed value, or the greater the taxes levied, the greater the compensation. In Texas, for instance, the assessor is paid a commission of 5 cents on each $100 of the first $2,000,000 valuation, 2.25 cents on each $100 additional up to $5,000,000 valuation, and 1.7 cents on each $100 of the balance. In addition, he receives 5 cents for each poll listed. In Alabama, on the other hand, the commission is based on taxes levied (*26, pp. 343–345*).

The law fixes no special qualifications for the assessor, except that he must be a voter residing in the assessment district. There are assessors of all degrees of competency. The wide variations found in the character and the quality of the assessors themselves furnish in large part the cause of inequality in assessment methods and results. In general, neither knowledge of valuation methods nor sometimes even rough and ready familiarity with local values is required as a qualification for the office of assessor. A community does not demand or expect high standards of its assessor.

Duty of Assessor

The laws of all of the States excepting Wisconsin provide, as the very first step in the assessment procedure, that the taxpayer submit to the assessor a list of his taxable property. In Nebraska this provision of law applies only to personal property, and in New York only to corporations (*37, pp. 153–161; 50*). In a majority of the States the law provides that, if the taxpayer fails to submit a list, the assessor shall list his property and add to the value a certain amount, varying from 5 percent in Mississippi to 300 percent in New Hampshire, the more common additions being 25 percent and 50 percent. The filing of lists by the taxpayer does not constitute assessment; such lists are merely information to aid the assessor. Making use of these lists and all other available information, it is the duty of the assessor to prepare what is usually called a "tax list", "assessment roll", or "grand list" covering all of the property within his district. This list is to contain the names of the property owners, a proper description of the property which they own or control, and the value of each property. In many States having the county-assessment system, the clerical work involved in listing property is done by an official other than the assessor, leaving the assessor the important duty of making the actual valuations.

In making the valuations the assessor may or may not be aided by data furnished by the taxpayer. In any case the resulting assessment or valuation is intended to represent the personal judgment of the assessor. The State statutes often specifically provide that the assessor shall exercise his judgment. The laws of Washington provide that the assessor shall value each property "at such price as he believes the same to be fairly worth in money at the time such assessment is made."[14] The laws of Maine say that "the assessors shall ascertain, as nearly as may be, the nature, amount, and value of the estate, real and personal, for which in their judgment the owner is liable to be taxed . . ." (*32, sec. 75, ch. 10, 1927, p. 72*). In Delaware and Wyoming also it is provided that the assessor's judgment shall govern the assessed valuation (*41, p. 27*). The Supreme Court of Michigan has stated that—

> the listing of property is clerical, but the ascertaining and determining its value is judicial, requiring the judgment of the supervisor under his oath of office and cannot be dispensed with in making a valid assessment roll.[15]

In every case the legal assessment is the work of the assessor, who is responsible for determining the total value of property to be assessed to each taxpayer. The law generally gives the assessor ample power to demand all necessary information from the taxpayer or from other witnesses.

In spite of these laws and court decisions, the assessor frequently shirks his duty of exercising judgment. Many instances of particularly incompetent assessors were found in the course of this investigation. In one Minnesota township the assessor stated that he was simply copying the rolls of the previous assessor, that he was tired of the job, that everybody was hounding him for lower assessments, and that he was going to give it up.

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[14] Washington Revenue Laws, 1926, pp. 61–62.
[15] *Woodman* v. *Auditor General*, 52 Mich. 30.

In an Oregon county, which is among the leading counties of the State in quantity of standing timber, the county assessor admitted that he knew nothing of timber values. The actual field assessing had been done by local deputies who were instructed to keep out of the timber and assess only the improved properties. The taxes were calculated and extended on a contract basis, and it was said that the original contractor sublet much of the computations at one-half the price he received for them from the county. Thus the county assessor had little personal contact with the assessment roll and very little personal knowledge of property in the field.

In contrast there are assessors who have long been leading and highly respected citizens of their community. These assessors feel a real sense of responsibility to the community and devote a large part of their time to study of local property values. Such assessors do not do a perfect job of assessing, but they probably do as well as the conditions laid down in the law and the funds at their disposal permit.

Time and Frequency of Assessment

It is the duty of the assessor to value rural real estate, including forest property, annually in 27 of the States. In 8 States, Arkansas, Iowa, Minnesota, Mississippi, North Dakota, Oklahoma, Tennessee, and Washington, a reassessment of real estate is made only every 2 years; in Pennsylvania every 3 years; in 7 States, Illinois, Indiana, Kansas, Nebraska, North Carolina, South Carolina, and Vermont, every 4 years; in Maryland and Virginia every 5 years; in Ohio every 6 years; in Connecticut a general reassessment every 10 years; and in Delaware the frequency of the assessment varies with the county. In all of the States excepting Oklahoma the value of new improvements is required to be added to the assessment annually. In Oklahoma this is only required biennially.

The work of assessing is generally regarded as a part-time job; it is almost invariably so in rural districts. In a few States, as already noted, it is even added as an extra duty to the responsibilities of some other office. The work is usually done hurriedly in the spring months. Colorado is the only State in which all of the assessors are expected to make and revise assessments over a period of 12 months, although a number of cities maintain an all-year-round assessment service. In 19 States the assessment must be accomplished in a period of 3 months or less. As Maine, Michigan, South Dakota, and Wisconsin have town assessors elected annually, and the town elections are held in the spring, the assessors in these four States are forced to begin their assessing immediately after election. For this reason they are likely to begin without adequate preparation and training, and as they may not be reelected to office, the whole business of inventorying and valuing property is suspended from June, or when their roll is finished, until the following spring. The assessment dates and the periods allowed by law for assessment in 1931 are given in table 21.

TABLE 21.—*Assessment dates and periods allowed for assessment in 46 States, 1931*

State	Assessment date	Period	State	Assessment date	Period
		Months			*Months*
Arkansas	Jan. 1	7½	Oregon	March, first Monday	6
Florida	do	6	Colorado	Apr. 1	12
Georgia	do	3½	Illinois	do	2
Iowa	do	3	Maine	do	4
Louisiana	do	4	Massachusetts	do	3
Nevada	do	6	Nebraska	do	2½
New Mexico	do	3	New Hampshire	do	3
North Carolina	do	1½	North Dakota	do	2
Oklahoma	do	4½	Vermont	do	2½
South Carolina	do	6	Wyoming	do	3
Texas	do	4	Michigan	April, second Monday	2
Utah	do	4	Ohio	do	3
Virginia	do	8	Minnesota	May 1	2
West Virginia	do	5	South Dakota	do	2
Arizona	January, first Monday	4½	Wisconsin	do	2
Tennessee	Jan. 10	4½	Missouri	June 1	7
Idaho	January, second Monday.	3½	Rhode Island	June 15	(1)
			Kentucky	July 1	4
Mississippi	Feb. 1	5	New York	do	1
Indiana	Mar. 1	3	Pennsylvania	September, second Monday	4
Kansas	do	2			
Washington	do	3	Alabama	Oct. 1	6
California	March, first Monday	4	New Jersey	do	3½
Montana	do	4	Connecticut	do	3½

[1] Not specified.

In Delaware and Maryland the dates of assessment vary locally among the counties and vary from year to year; however, the assessment usually takes place in the spring months.

The date of assessment is usually arranged so that crops are not on the farm to be taxed, for it will be noted from the preceding table that all but six States have assessment dates prior to July 1. Of these six States, Alabama, Connecticut, and Kentucky expressly exempt agricultural products in the hands of the producers (*50, pp. 7, 57, 140*).

METHODS OF VALUATION IN USE

There are almost as many methods of assessment in use as there are assessors, but certain typical devices are constantly found, among which the following are especially deserving of examination: (1) Use of sales, maps, surveys, and timber cruises, (2) employment of experts, (3) land classification and uniform per-acre assessments in each class, (4) copying or making horizontal changes in the previous year's assessment roll, (5) use of minimum and maximum values, and (6) intentional discriminations. Each of these practices is discussed at some length below.

SALES, MAPS, SURVEYS, AND TIMBER CRUISES

Many assessors, either by intention or otherwise, use sales in their work, but few, outside of the larger cities, do so systematically. The systematic use of sales requires intensive analysis of the value factors in the properties sold and the weighing of the relative importance of these value factors. As a simple example, assume two quarter sections, generally alike except that one is all cut-over land and sells for $800 while the other is one-half cut-over land and one-half crop land and sells for $3,200. The crop land is evidently worth $3,200 minus one-half of $800, or $2,800, which is seven times as much as the value of

an equal area of cut-over land. This method of analysis is discussed more in detail in a later section (p. 105), and in part 12, page 541.

The use of maps as an aid in assessment is coming more and more into vogue. It is impossible to trust any tax roll that is not accompanied by adequate tax maps. The use of maps is now required by law in Alabama, Florida, and New Jersey. The latest development has been the airplane map. A survey of real estate in certain towns of Connecticut by this method disclosed numerous parcels of land that had never appeared on the tax rolls, and the same condition undoubtedly could be duplicated in other places. In Fremont, N. H., on the other hand, the assessed area of 10,831 acres was only 273 acres short of the surveyed area. The trouble with the listing is not that it overlooks a great deal of property, but rather that it classifies high-value land types in low-value categories. This situation needs correction, and might easily be corrected by surveys and maps.

A recent reassessment in the town of Greenwich, Conn., involved a complete set of aerial maps for the town. The complete reappraisal and reassessment of property upon the basis of the aerial survey resulted in $70,500,000 in property being added to the tax rolls (*15, p. 7*).

It was found that all farm land not too isolated in Coos County, Oreg., was mapped, and that the particular type of land, bottom land, bench land, etc., together with its area, was noted directly on the map. There is much evidence that both the recent cruising of timber in this county and the mapping of the farm lands have been carefully done.

It was found, for another example, that cut-over land in Clallam County, Wash., was assessed at from $1 to $10 an acre, according to location and physical characteristics of the land. The physical characteristics were obtained at the same time as the county timber cruise (1913–14) and show for each forty the type of soil and topography. Maps were made by pacing and use of the compass. The assessor of this county places much trust in these maps and believes them to be accurate. Tillable land is also assessed at varying prices in this county by making use of the map.

The land economic survey forest cover and soil maps which are being made in Michigan are used to a considerable extent by the local assessors in that State. Maps have also been used by the assessors of Durham, Fremont, and Boscowen, N. H., among other New England towns.

In assessing timberland, the assessor sometimes is able to make use of private cruise data which may be made available to him. These aid him in arriving at figures which, in his judgment, represent the market value. In Washington and Oregon it was found that a number of counties had made county cruises of all forest lands. One county in Mississippi also had such a cruise. The results of these cruises show in detail the quantity of timber and wood products on each 40-acre tract. The county assessor then usually either marks on the map certain unit-value zones or designates them by description if there are distinct differences in timber and in cut-over-land values in different parts of the county. The value differences are based on species, accessibility, topography, climate, and other factors which are recognized as influencing market values. Given the cruise maps with the value zones delineated, it is a simple clerical task to assess

all of the forest land in these counties. This method of assessment does not require the exercise of judgment in assessing each individual property, but does require the exercise of judgment, based on a large array of facts, to determine the value zones and the unit values therein.

The results of assessments based on commercial timber cruises are good or bad, depending on the honesty and ability of the persons connected with the undertaking. In a certain county of Oregon the county cruise was let to a nonresident contractor who hired cruisers to do the work. The contractor was informed by the county court that his cruise would have to show an increase over the old or his contract would not be renewed, i. e., it was agreed even before the inventory was begun that the valuation was to be increased. It was pointed out by many citizens that this was a poor cruise and too hastily made. After considerable local controversy, the cruise was stopped before it was completed. In another Oregon county the county cruises did not take account of the alder timber, as it was considered to be a waste species of no value. Yet there were two mills in the county cutting nothing but alder and cutting a total of a million feet a year.

In contrast, the timber cruise in Coos County, Oreg., which was begun in 1926, may be cited as an example of a satisfactory cruise. All classes of property owners in this county seem to be well satisfied with the results and believe that most of the inequalities in timberland valuation have been eliminated. The cruisers were paid a fixed sum per day instead of being paid by the acre, and field expenses were paid by the county. Two lines were run through each timbered forty, while through some of the more heavily timbered forties, four lines were run. The three crews (cruiser and compassman) finished a timbered section in 2 days on the average. Merchantable trees were counted for 2 rods on each side of the line, and an average volume per tree estimated for each forty. The three crews worked 10 months a year for 2½ years to complete their work.

Experts

In California there is a—

large number of cases in which the local authorities have at great expense sought the assistance of outside commercial agencies in assessing real estate. In at least one county (Alemeda) there is a charter provision requiring the periodical employment of such an agency (*12, p. 130*).

In Ohio—

a number of the auditors [county assessors] employ appraisal companies to appraise all or part of the lands of their respective counties. Others appraise properties with the advice of local real estate boards and other bodies.[16]

This use of experts is, however, the exception rather than the rule in rural assessment practice.

Land Classification and Uniform Assessments Within a Class

Another method of valuation, more common than those given above, is the classification of land and the use of uniform rates per acre within each class. In Baker County, Oreg., it was found that cut-over land was assessed almost uniformly at $2.50 an acre. In Coos County, Oreg., the assessor made a practice of assessing cut-over lands at a

[16] Compton, R. T., Ohio report on property taxation. Unpublished manuscript.

uniform rate of $3 per acre, regardless of their condition or situation. The base assessed value of nontillable land in Tillamook County, Oreg., was $2.50 per acre. In Grays Harbor County, Wash., there has been a general standard of values in use by the assessors over a long period. In this county 13 classes of land were recognized, and this classification was based largely on topography. The values assigned to each class varied from $2.50 per acre for rough, steep, broken land to $7.50 per acre for no. 1 bottom land. This information is as of 1928, the year investigations were made in the Pacific Northwest.

A common method in determining value in use by assessors in North Carolina is as follows: In a rough way the assessor will break up the total acreage into 3 or 4 elements, give each a value per acre, add something for the buildings, and thus arrive at a total. In northern Michigan a uniform assessment per acre of cut-over land of the same general soil class is common over each township. Thus, sandy pineland will be valued at one price per acre, sandy hardwood land at another, and swamp land at yet another standard value. Even the Michigan State Tax Commission recommends this method of assessment for cut-over forest lands and, in fact, uses it in cases where it is called upon for a reassessment. On improved lands, however, the property as a whole is usually the unit of valuation.

The Louisiana Tax Commission, in its instructions of 1930, placed "tentative average minimum values" on certain classes of property as follows:

Hardwood timber	per M	$3. 00–$8. 50
Land on which hardwood stands	per acre	2. 00– 3. 00
Pine timber	per M	6. 00–10. 00
Land on which pine stands	per acre	2. 00
Cypress timber	per M	6. 50–10. 50
Land on which cypress stands	per acre	1. 50
Sea marsh, class A	do	4. 00
Sea marsh, class B	do	3. 00
Fresh-water marsh, class A	do	4. 00
Fresh-water marsh, class B	do	3. 00
Trapping lands	do	5. 00

A comparison of the actual average assessed values shows that they do not depart greatly from these minima (*30, pp. 23–26, 134–144*). Thus, the instructions have apparently resulted not only in a minimum per-acre assessment, but almost in a uniform per-acre assessment as well.

Copy of and Horizontal Change in the Previous Year's Assessment Roll

The assessment is often made by merely copying the descriptions and values on the previous year's assessment roll and revising the value of any property on which there has been a marked change in the nature of the improvements (*33, Rept. 14, p. 48*) or on which timber is reported cut. This is especially true in those States whose laws provide for an annual assessment of real estate.

> Investigations made in Michigan lead to the conclusion that there is no annual reassessment of property in many parts of this State * * * A check up * * * made in eleven townships shows that from 18 to 63 percent of the real estate descriptions of ten acres or more were assessed in 1926 at the figure fixed * * * from eight to fourteen years previous. * * * (*41, p. 23*).

Copying tax rolls is reported as common practice in New York, and, as a result, "there has been a progressive deterioration" in the accuracy of property descriptions (*42, p. 108*). Evidence that some properties have not been actually revalued in 20 years has been found in South Dakota (*19*). In Massachusetts attention has been drawn to a farm having the same assessed value for 100 years. Many properties in this State have not had their assessed value changed for 10 or 15 years (*59, pp. 97, 99*).

Failure to make the periodic reassessments as required by law is prevalent even in Connecticut, where the legal period between reassessments is 10 years, longer than in any other State. Not only individual properties but whole assessment districts have failed to receive this legal reassessment. With the exception of Ellington, Chaplin, Putnam, Naugatuck, and Norwich, all towns complied with the requirements of the act of the 1917 General Assembly (providing for general reassessment in 1920 and every 10 years thereafter) and had completed a general revaluation of property. The towns of Ellington and Putnam were (in 1921) unable to furnish the date of the last general revaluation, and Norwich had not had a general revaluation since 1880, although the officials of that town had been advised of the urgent need for such a general revaluation. The town of Chaplin had completed a general revaluation in 1915. Naugatuck had not had a general revaluation since 1909 (*14, p. 21*).

In West Virginia

> the present system of assessing all classes of property annually has not operated successfully, due largely to the fact that the immense amount of detail work required by an annual assessment cannot be thoroughly performed in the allotted time. As a consequence, the assessed valuations are copied over from one year's land books to the next (*57, p. 153*).

In many parts of the Lake States, repeated burning of cut-over land has completely obliterated all survey and property lines. In many cases even the landowners themselves cannot locate their property accurately enough to be sure that they are viewing their own land without the help of a professional surveyor. In such cases the assessor, with many such properties to evaluate, does not make an inspection of the property and has no better method of assessment than that of copying the previous valuation.

When an annual assessment is required by law and is not continuous but takes place within a few months, it is reasonable to suppose that the roll will be largely copied from the previous year. The assessor's judgment of land values is not accurate enough to detect the slight changes that usually take place within a year. In making an annual assessment roll, the assessor realizes that he cannot justify a change in real estate values each year, but he tends to overlook the fact that the continued postponement of a change in assessed value soon results in an appreciable discrepancy between assessed and true values. In localities where property is appreciating in value, the desire to let sleeping dogs lie and not to arouse too much public interest in assessments is the excuse for copying the previous year's descriptions and valuations. But in localities where land is decreasing in value, the practice of copying the previous year's assessment often leads to a public demand for a general reassessment.

Such a demand caused complete reassessment of farm property to be made in Tillamook County, Oreg., in 1927. The assessor of this

county stated that the timber valuations were of long standing; how long he was unable to state. He had not changed the assessments except when importuned to do so by the owner on pieces that had been burned, or when logging-off was reported to him. The same held true to a large extent for the nontillable land not owned by farmers, or that owned by real estate operators for purposes of resort development.

Not only property in the aggregate, but also certain classes of property, are kept at much the same valuation from year to year. There is a hesitation to reduce forest-land values after cutting, as with a stationary budget this would cause an increase in farm taxation. In decadent farm communities in cut-over forest regions, there is a hesitancy on the part of the assessors to reduce cut-over forest-land valuations as the prospect of the agricultural utilization of this land fades. By maintaining these valuations on their rolls at a constant figure, they hope to prevent an increase in tne tax levies on farm and other property and also to ward off farm abandonment. In the organized towns of Maine the practice of giving a relatively low assessed valuation to merchantable timberland and changing the valuation very little after cutting results in a relatively high assessed valuation of cut-over land, but serves to maintain constant the total valuation of a town. In Lake County, Minn., it was found that shore property on the inland lakes had been increased in assessed valuation for the purpose of offsetting reductions in valuations on forest lands recently cut over. As communities become decadent, there is a tendency for the ratio of assessment to market value to increase on all property because of this tendency of assessors to try to hold their total district valuations constant, even though it is evident to them that, in fact, the tax base is shrinking.

So many examples of assessment by simply copying are cited in assessment-practice literature and have been observed in original investigations, that the conclusion appears warranted that the most usual method of placing a valuation upon real estate consists of copying the figure found in the previous year's assessment roll.

Horizontal changes in value are less common than copying, but have much the same result. To change all assessments uniformly by the same percentage will obviously not change the incidence of the tax burden as between properties. A property which paid one-fortieth of the total tax in a district before the horizontal change in assessment will pay exactly the same fraction after the change.

Sometimes, however, only certain classes of property are subjected to the horizontal change; and in such case the selected classes are put at an advantage or at a disadvantage, depending on whether the change is downwards or upwards, as compared with other classes not changed. In Ohio, for instance, horizontal decreases in all real estate values in 59 counties (over half of all the counties in the State) have been made during a recent 6-year period between general reassessments. It was felt that there had been a general decrease in land values during this period, and the horizontal decrease was the least troublesome way of taking account of this trend. Interim reappraisals of specific real properties have been made in only 3 Ohio counties between 1926 and 1931.

A less innocent type of horizontal change is that which is made in order to increase the bonding limit of a district. In response to a

questionnaire submitted by a committee of the Oregon Legislature, the county assessor of Clatsop County made a statement as follows:

> For instance, in 1920 the small communities voted a 40 percent blanket increase in valuation of the county so that the Port District could issue a million dollars more bonds.

It is said that the assessed valuation as determined by the incorporated village assessors in Michigan is higher than the valuation of the same property by the township assessor, for the reason that the village assessors wish to maintain the legal borrowing limits of their villages.

Still another type of horizontal change is due to the mistaken idea of many assessors that their duties include the raising of revenue as well as the valuation of property. There is no question whatever but that the Rhode Island assessor who made the following statement was under a misapprehension as to his duties: "We had to increase our valuation last year in order to meet our budget, and are consequently in for a great deal of criticism." (*48, p. 9.*)

In speaking of cut-over forest land, the Michigan Tax Commission itself has said:

> From our investigation of the matter, we are convinced that much of this land is overvalued for taxes, but the economic condition is such that we do not see how these lands can be lowered in value if local governments and schools are to be maintained in many of the communities (*33, Rept. 15, p. 11*).

The principal reason given for the independent assessment in 165 of the 268 California cities is the need for more revenue than can be obtained by applying the maximum tax rates legally allowable to the low county assessed valuations. Some of these cities achieve their ends by making a flat percentage increase in the valuations given in the county assessment roll, but the majority of them make an entirely independent assessment for city tax purposes (*12, p. 122*). This superimposed assessment would be entirely unnecessary if the county assessment were made to equal the market value as provided by law. The foregoing illustrations show how assessment officials often have a misconception of their duties, losing sight of the fact that the tax levy and not the valuation is the factor provided by law to determine the total amount of tax which will be raised.

Minimum and Maximum Values

Minimum values are sometimes maintained on assessment rolls regardless of actual value, the usual motive being the desire to meet certain revenue requirements. In Nevada a minimum assessed value for any land in the State is declared by law to be $1.25 per acre.[17] A minimum assessed value is established by ruling of the tax commissioner in Louisiana, Montana, and New Mexico (*41, p. 72*). These minimum assessments are especially applicable to grazing lands. In Cook County, Minn., the minimum assessment of any land was fixed by the assessors at $4.50 per acre in 1926. The Michigan State Tax Commission has from time to time recommended minimum per-acre values for large parts of the State, and these minima have persisted over many years in some townships, and in other townships the local assessors were quick to reestablish minima based on their individual judgments. An officer of this State has

[17] Nevada, Compiled Laws, 1929, sec. 6535.

given it as his opinion that relatively high minimum assessed values of cut-over lands were established by the tax commission in order that the average total tax rate in the State might not be greatly increased; because, as the tax paid by the railroads and other public utilities is determined by applying this average total tax rate in the State to the valuation fixed by the State tax commission, any large increase in the average tax rate would work a hardship on the public utilities.

The results of the artificial and arbitrary establishment of minimum values for taxation purposes may be made manifest in either one of two ways. The most usual result is that the land with a market value below the fixed minimum assessment is forced into government ownership through the operation of the tax laws relating to delinquency. A minimum assessed value may also keep government land out of private ownership. In Nevada the minimum assessed valuation of private land makes the continued public ownership of a large part of the range land a necessity. A recent report of the Nevada State Range Commission indicates that private ownership of the range cannot now be brought about because these lands do not have sufficient value to pay costs of supervision and the tax which would be levied on the present established minimum assessment (*40*).

Not only are arbitrary minimum values established by law or custom, but sometimes maximum values are established as well, and in the extreme case, all land is assessed at one uniform amount per acre regardless of quality or location. This is the case in a certain township of northern Minnesota. In this township all real estate, farm, timber, or cut-over, improved or unimproved, was assessed in 1926 at from $14.82 to $14.88 per acre. The assessor's excuse for this practice was the fact that it produced less opposition than if he had attempted to differentiate properties as to value. In another Minnesota township the assessor valued all of the land at the same unit rate, except in the case of a few 40-acre tracts containing clay soil. In other Minnesota districts, it is not the custom to assess farm land any higher than adjoining land in a wild state because many assessors hold that when the farmer has created value in his own land and adjoining land by his own industry he should not be penalized by a higher tax than that paid by the landowner who does nothing; or because they feel that he simply is unable to bear the tax burden on the actual value of his improved land.

Intentional Discriminations

Many of the assessment methods so far discussed are quite indefensible, though they do not necessarily represent intentional discrimination. In many cases, however, an assessor deliberately assesses property of certain individuals at relatively low or at unreasonably high amounts, with the idea of favoring friends or of punishing enemies. Just as bad from the legal, though perhaps not from the moral point of view, is the deliberate underassessment of certain industries which are deemed necessary to the prosperity of the town or county. A case of this type came to light in Wisconsin, where a town chairman admitted that a certain resort development in his town was assessed at only a small fraction of its value, much lower than the general level of assessment, because the owners of the

resort had been induced to locate in that particular town rather than in some other by the assurance of the town officials that the assessment of the resort would be held at a nominal amount only. This sort of agreement is, of course, entirely illegal and might easily subject the agreeing parties to prosecution for conspiracy. The difficulty about bringing any such charge is, of course, that the illegal agreement in question is undoubtedly supported by public opinion. A community is usually as much to blame for this type of assessment as are its officials.

REVISION OF ASSESSMENT

REVIEW

The term "review" is used here to denote the formal reconsideration and adjustment of the original assessments and the correction of errors in assessment. This is the duty of a board of review, or board of relief, which is provided by law for this purpose. The corrections or adjustments that seem necessary are made by the board on its own initiative or upon the appeal of a taxpayer who may feel that his property has been wrongfully assessed. Maine, New Hampshire, and Rhode Island are the only States in which this formal review of assessments is not provided by law (*41, pp. 76–77; 50*). New Hampshire, however, permits a taxpayer to appeal informally to the State tax commission, which has ample authority on its own initiative to reassess any property in the State. In Maine and Rhode Island, as well as in other New England States, the taxpayer may obtain relief comparable to a review by appealing to the town selectmen for a whole or partial abatement of taxes after such taxes have been levied upon an unjust or erroneous assessment.

In only 10 States, (Connecticut, Iowa, Michigan, Minnesota, New York, North Dakota, South Carolina, South Dakota, Vermont, and Wisconsin), are there town or township boards of review; and in Connecticut, New York, and Vermont these boards do not have the power to review and correct assessments on their own motion. The board of review is a county board in 35 States, i.e., those States with county assessment districts and, in addition, Massachusetts, New Jersey, Pennsylvania, Indiana, Illinois, Missouri, Kansas, and Nebraska. The board of review generally is at least partially composed of ex-officio members, county or township officials. In such States as Alabama, Indiana, Michigan, Missouri, Nebraska, New York, Ohio, Oklahoma, and Oregon the assessor is also a member of the board of review, whose duty it is to aid in correcting his own assessments (*41, pp. 76–77; 50*).

The one universal fact about boards of review is that they leave most of the errors in the original assessment uncorrected. The errors are so widespread that the board of review can only skim the surface of revision in the limited time allotted to the reviewing function. The members of the board are oftentimes ex officio and have other pressing duties, and in any event they are little animated by any missionary zeal to disturb the established order.

In many States (Connecticut, Idaho, Louisiana, Maine, Massachusetts, Montana, Nevada, New Hampshire, Rhode Island, Utah, and West Virginia) the failure to file a sworn statement showing all taxable property and its value bars the taxpayer from appeal, either

to the board of review or to the courts (*38, pp. 153–161*). The prevailing practice of undervaluation by the assessor not only encourages an owner to omit filing the required statement but is also a direct obstacle to an effective appeal for review even if he does file. It is apparent that in a district where property is assessed on the average at 40 percent of true value, if a certain property is assessed at 80 percent, its owner is entitled to relief, but all he can prove to the reviewing body with reference to his own property is that it is assessed 20 percent less than the law requires. Unless the reviewers know and are willing to recognize the actual situation, the owner is faced with proving that he has been discriminated against in comparison with the general level at which other properties of the same class are assessed, an impracticable procedure for the ordinary small taxpayer. A large taxpayer may protect himself through appeal to the courts, if he cares to risk incurring the enmity of the local tax authorities, since the right to an equitable assessment, even when equity means a much lower assessment than the full value prescribed by law, is recognized in a number of decisions of the Supreme Court of the United States, from among which the following[18] is quoted:

> This Court holds that the right of the taxpayer whose property alone is taxed at 100 percent of its true value is to have his assessment reduced to the percentage of that value at which others are taxed even though this is a departure from the requirement of statute. This conclusion is based on the principle that where it is impossible to secure both the standard of the true value, and the uniformity and equality required by law, the latter requirement is to be preferred as the just and ultimate purpose of the law.

The practices of the boards of review vary widely, from scarcely looking at the assessment rolls, to doing the work of the assessor in making the complete revision of the previous year's roll (*23, pp. 63, 200–204; 35, p. 99; 41, p. 27*).

In Vermont, for one example, there is no way in which a reviewing board can act on its own motion to correct an abnormally low original valuation. This can be accomplished only by the appearance of an aggrieved taxpayer before the board of abatement, composed of the town assessors, which board can correct the appraisals which it itself previously made in its other capacity as a board of assessors. Then, if the aggrieved taxpayer is not satisfied, he can appeal to the board of civil authority, composed, in addition to the assessors, of the clerk, the three selectmen, and the justices. Further appeal is possible to a county board of appraisers appointed by the tax commission (*50, p. 462*). Seldom does a taxpayer make appeals to other than the first of these boards.

EQUALIZATION

Organization

The term "equalization" is used in this report to denote an adjustment of assessments as between assessment districts or groups of such districts. The functions of review and of equalization are often confused in taxation literature. Perhaps this may be due to the fact that in the counties of many States the board of review and the board of equalization are comprised of the same personnel.

In some States, so-called "equalization" is accomplished by horizontal percentage increases or decreases in the assessment of every

[18] *Sioux City Bridge Co.* v. *Dakota County, Neb.*, 260 U. S. 441..

individual property in the district, that is, each individual assessment is changed on the rolls. In most States, however, equalization does not disturb the individual assessments, but only the total valuation. The total valuation of each taxing district is reported to the equalization board, whose duty it is to make the ratio between total assessed value and total market value the same in each taxing district. Thus, the function of the county board of equalization is to adjust the total value of each town in the county so that it will bear its just share of county and State taxes; and the function of the State board of equalization is to adjust the total value of each county in the State so that it will bear its just share of State taxes, or receive its just share of State funds which are distributed to counties on a valuation basis. In those States with town- or township-assessment districts, with the exception of the New England States, there is a county board of equalization; and in those States with town-assessment districts but no town board of review, the county board of equalization is also a board of review.

There is a State board of equalization in all but 7 States. Delaware, Maryland, Rhode Island, Texas, Vermont, Virginia, and West Virginia have no State board of equalization and no State equalization; and in Connecticut, Maine, Massachusetts, and New Hampshire, i. e., the remaining New England States, in which the county is of minor importance, the State board equalizes assessments only as between local assessment districts. California, North Carolina, and South Dakota have State boards of equalization, but as there is no State general property tax in those States, these boards do not attempt to equalize assessments as between counties. They determine the ratio of assessed to full value for the various counties, but only for the purpose of equitably distributing State funds or for a check to determine whether or not the State public utility tax rate is equitable. In the remaining 34 States, the State board of equalization adjusts assessments as between counties (*12, p. 46; 38, pp. 192–195; 50, pp. 39, 163, 180, 318*).

The principal purpose of State equalization, i. e., a just apportionment of the State tax, is accomplished in Connecticut, and more recently in Rhode Island, by a tax on the towns which is apportioned according to the amount of each town's tax levy for local purposes instead of the town's assessed valuation (*48, p. 38; 50, p. 59*). Thus the State takes a uniform fraction of each town's tax levy.

The necessity for equalization has been brought about by the competition among county assessing units to escape State taxes and by the competition among township assessing units to escape their just share of State and county taxes. One of the reasons for undervaluation is the common interest of the whole town in a low scale of assessments, since thereby the town reduces its share of the apportioned county and State taxes. The New York State Tax Commission (*43, p. 28*) reports that—

> it [equalization] is necessary because assessors in the various tax districts of the several counties value property at such widely differing percentages of full value. The 1930 table indicates that in one county property is assessed on the average at 95 percent of full value, whereas in another county it is assessed at 33 percent of full value.

Where a State has no State property tax (as in California, North Carolina, and Virginia) or apportions its tax on the basis of local tax

levies instead of assessed values (as in Connecticut and Rhode Island) equalization for apportioning the State tax is, of course, unnecessary.

Methods of Equalization in Use

Equalization by a county board is, of course, attempted only in those States, other than in New England, which have assessment districts smaller than the county. In New England, where the county is of little importance, State boards make the equalization, which is only as between towns. In Ohio and North Carolina the county assessors themselves sometimes equalize the valuations as between the individual appraisers or assistants.[19] In North Carolina, also, the county board may equalize between townships by making uniform increases or decreases in the valuation of all property in a township (*53, pp. 70, 110–111*).

County equalization is in most cases the duty of a board composed of the same officers who are responsible for the original assessment. In view of the lack of factual data, the total values of each district as assessed are accepted for equalization purposes, or else arbitrary changes in the totals are made on the basis of fragmentary evidence.

In Wisconsin the true value of each town in the county is approximated by the supervisor of assessments, an agent of the State tax commission with jurisdiction over a group of counties. The supervisor of assessments obtains his estimate of the total value of each town by comparing the assessed value of properties sold with the actual considerations, by appraising samples of all classes of property, and by obtaining evidences of property values in every way possible. A total value for each town in the county is recommended by the supervisor of assessments to the county board of equalization, which board generally adopts the recommendations for the purpose of county equalization. This Wisconsin practice is a notable advance over the general practice of county equalization in the various States, in that it is based on systematic data collected by an agency of the State (*58, Rept. 1932, pp. 20, 42*).

State equalization is generally taken more seriously than county equalization and is the product of considerable time, effort, and expense on the part of the State boards. Methods of State equalization used in Georgia, Michigan, Maine, New York, and Wisconsin are mentioned here as examples of the various methods used with minor modifications in all the States which attempt State equalization.

In Georgia State equalization is accomplished by arbitration, much the same as the arbitration of individual assessments. When the State tax commissioner determines the valuation of a county, the county assessors have a right to, and do, demand arbitration. The county assessors and the State tax commissioner each name an arbitrator, and these two arbitrators select a third. This board of arbitration must, according to law, be made up of neither citizens nor property owners in the county whose valuation is to be determined. Within a time limit of 3 days these strangers must establish a county valuation which is to stand as final. (*31, p. 101.*) Thus the accumulation of factual data over a long period, upon which expert judgment in equalization might be based, is effectually discouraged.

[19] Committee on Research of the Governor's Taxation Committee, Ohio Report on Property Taxation, pt. I, ch. III, p. 5. (Unpublished report.)

In Michigan the State tax commission annually announces and presents to the State board of equalization recommended valuations for each county. Two weeks later a hearing is held before the State board of equalization at the State capitol. This hearing is participated in by representatives of practically all of the counties, who, being partisans for their county, endeavor to show why their county's valuation for purposes of State taxation should be reduced below the valuation fixed by the tax commission. After arguments pro and con, but based on only sketchy factual data, each county's valuation is finally fixed by the State board of equalization; but this valuation is used only to determine the percentage of State tax which shall be borne by each county. The unsatisfactory nature of this procedure is shown by a quotation from the 1930 report of the State tax commission.

> This annual meeting of the State board of equalization causes a good deal of dissatisfaction and protest and bitter feeling, and it is suggested that the law should be changed so that a meeting of this board should be held every 2 or 3 years. In addition to the feeling aroused, it also entails a large expense on each county which sends its representatives to this meeting. (*33, Rept. 16, p. 6*).

In Maine the State equalization is accomplished by means of a conference. Members of the State board of equalization visit each county once a year and there hold a meeting at which the assessors of each town are represented. At this meeting, of from 10 to 70 assessors, assessment standards are discussed and general information is obtained by means of which a State valuation of each town is established, which valuation serves as a basis for the levy of State and county taxes (*32, sec. 5, ch. 9, p. 6.*)

New York and Wisconsin serve as excellent examples of the real estate sales method of equalization. In general, the State board of equalization in these States collects data regarding the actual sales that have taken place during a certain period of years. These sales are selected carefully to eliminate those that, due to circumstances, would not be representative of the market. Then the market values as established by these actual sales of particular properties are compared with the assessed valuation of the same and similar properties.

The assessment ratio prevailing in each county is determined by the New York Tax Commission by dividing the assessed value of those properties recently sold and for which actual considerations are known by the sales value of the same properties.

> The rate [ratio] so produced is not conclusive, but it does form the basis for the rate which is finally determined after all of the evidence, other than sales prices, available to the commission has received careful consideration (*43, p. 73*).

The assessed value of the real property of each county is then divided by the assessment ratio of that county as expressed in percent to determine the full value of taxable real property. This full value of each county is then multiplied by the average rate of equalization [assessment ratio] determined for all counties in the State, and the result is the equalized value of real property. Thus the equalized value of all counties when totaled is equal to the total valuation of the State as assessed (*43, pp. 68–69*).

> The purpose of this [the equalization] table is the correct distribution of the direct State tax among the counties and not the determination of the actual full value of the assessed reality (*43, p. 29*).

The sales data supporting the 1930 equalization, for example, consist of about 81,000 transfers, chiefly during the period 1924 to 1926. Seventy thousand of these sales considerations were obtained by means of the Federal stamps attached to deeds and mortgages. Now that the Federal stamp tax has been repealed, the New York Commission is without adequate means of determining ratios of assessed to true value.

The Wisconsin Tax Commission seems to have gone one step farther than New York in determining equalized county valuations by means of sales data. In New York and in Wisconsin, prior to 1925, the tax commission made the assumption that the assessor was assessing all property in his district at the ratio revealed by the sales. The Wisconsin Tax Commission has come to the following conclusion:

> As a matter of fact, however, the sales do not constitute a random sample in either country or city. Certain classes of property sell more frequently than do other classes. As a result, the sales are often nearly all of one type of property and the ratio of the assessment to the sales value of this type of property may be quite different from that of the types for which there are few or no sales. Thus, in rural districts farms may sell and wild lands not sell, or small farms may sell and large farms not sell, or poor farms sell and good farms not sell. In cities, manufacturing plants practically never sell except at a great sacrifice in winding up the affairs of a defunct concern or as a part of a transfer of a whole business including good will. Mercantile establishments, especially the larger ones, very seldom sell. Even large residences are not sold as frequently as the smaller ones. Since classification of property has been instituted, we have learned that different classes and types of property are usually assessed at different ratios of sales value. Using the ratio of assessments to the sales prices of the property which sold usually gave a ratio which, if applied to the total real estate assessment, produced a result which was far from the actual value of property (*58, Rept. 1930, pp. 14–15*).

The supervisor of assessments, working under the direction of the Wisconsin Tax Commission, obtains sales data by land and property classes. By the use of these sales, by personal inspections, and by use of other evidences of value, he computes—

> assessment ratios for each class of land and of improvements and applies these ratios to the classified assessment of the town. These valuations by the supervisor are used to build equalized values (*58, Rept. 1930, p. 19*).

Limited Results of Equalization

The failure of boards of equalization to produce equal and legal assessments and to do away with maladjustment is a necessary corollary to their limited powers. Their powers extend only to the equalization of assessments between districts, where only a minor part of the maladjustment lies. The major part lies within the districts themselves and can be remedied only by improvement in the initial assessment. Moreover the correction made by State equalization relates only to the State tax, and county equalization corrects only the county and State taxes, not the town or other subordinate-district taxes. The State tax is generally far less in amount than the local taxes.

The tax commission of the State of Washington realized the shortcomings of equalization in making the following statement.

> While in theory the statutory prescribed method of valuing property and equalizing assessments was intended to equalize the tax burdens, actual practice and experience have amply demonstrated that if through erroneous initial assessments the valuations of assessed property lack relative uniformity, no subsequent action by boards of review or equalization can rectify the inequalities and injustice that inevitably follow (*54, p. 8*).

Even if the burden of the State tax could be perfectly equalized as among counties by the State board of equalization, the relief to those now overburdened by all property taxes—State, county, and local—would be negligible. Suppose that the State tax were one-fifth of all taxes, and that this tax were perfectly equalized not only as among counties, but as among individual properties as well. Then, obviously, only one-fifth of the existing inequalities in the tax burden resulting from faulty assessment would be eliminated. As a matter of fact, however, State equalization is not between individual properties, but rather between counties, and in consequence much less than one-fifth of the existing inequalities would be eliminated. For many properties the existing inequalities would even be increased, although in general it would be reasonable to expect some slight improvement. In a study of the effect of equalization in Wisconsin, however, a State in which the technic of equalization is highly developed, it was found that State equalization caused no improvement in the dispersion of the average assessment ratios of farm, cut-over, timber, resort, and residential property classes. These ratios were, on the average, just as far, if not farther, from the average assessment ration after equalization as before.

As far back as 1906, a California tax commission reported (*12, p.* 121).

> Equalization so-called, does not equalize and, in the nature of things, cannot equalize. After the officers have exhausted their best efforts in this direction, there are inequalities—glaring ones—between real estate and personal property; between different classes of personal property; between county and county; between city and city; between city and country; between man and man. All of which are rarely removed and often intensified by so-called "equalization."

It is stated in regard to Washington that—

> equalization among counties necessarily operates by increasing the State levy on all of the counties found underassessed as a whole. Thus, property that may be actually overassessed in such a county is further penalized by the increased State levy in the effort to properly tax the property that is underassessed (*55, p. 20*).

To cite a concrete example from Michigan: The Michigan State Board of Equalization raised the total valuation of Menominee County $3,000,000 above the value determined by the county board. It was frankly admitted that the reason for the increase was that industrial corporations were undervalued by $3,000,000. Thus the additional State tax borne by the county as a result of equalization fell on all property in proportion to the original assessments, though farms and forests were not found to be underassessed (*34, p. 47*).

ARBITRATION

The arbitration of assessments is a legal provision of long standing peculiar to the State of Georgia. There are relatively few appeals to boards of arbitration in Georgia to make the final determination as to assessed value (*2, p. 18*). However, the effect of the law is considerable. In testimony before the United States Supreme Court, taxing officials of this State explained:

> that if they attempted to impose anything like the real value, an arbitration was demanded, and the invariable result was a reduction of the assessment, so that there had come to be a generally understood acquiescence by county officials in low percentages.[20]

[20] *Bohler* v. *Callaway*, 267 U. S. 490.

The objections to arbitration of assessments are many. It has been pointed out—

> that this privilege of arbitration detracts from the proper dignity and authority of administrative courts, that the arbitrators have no record of consistent action to maintain since most of them serve in only one case, and that appeals should look to the harmonizing of law and its administration, while under the method of arbitration a dozen cases which are appealed from one county board of assessors may be, and in all probability will be, decided by a dozen different groups of arbitrators (*2, p. 19*).

The arbitration of assessments has been practiced in Mississippi but has proved to be unsatisfactory, as indicated in the following statement, which appeared in the report of the State tax commission of that State in 1928 and was repeated in the 1930 report:

> Section 10, chapter 323, laws of 1920 [repealed in 1930—editor's note], provides that a taxpayer may appeal to a board of arbitration in case he is dissatisfied with his assessment. This law was enacted so that the small taxpayer could take an appeal without having to employ counsel or incur court expenses. In other words, it was intended to supply an inexpensive, simple method for the adjudication of appeals by taxpayers having small assessments. So far as this office can ascertain, no appeal to a board of arbitration has been taken except by the largest taxpayers, and the result of these appeals has been uniformly in favor of the taxpayer. A statute, which was designed for the benefit and protection of the small taxpayer, has been used as an avenue of escape by the larger taxpayers (*36, p. 200*).

COURT APPEAL

The district courts and the State supreme courts are the last resorts open to individuals and assessment districts in appealing from an unjust assessment. In practice the courts are appealed to only in extraordinary cases because of the costs involved. And the only justification for an assessment determined by the court is an error on the part of the legal agencies for review and equalization.

In 11 States (Connecticut, Idaho, Louisiana, Maine, Massachusetts, Montana, Nevada, New Hampshire, Rhode Island, Utah, and West Virginia) the right of appeal from an unfair assessment is forfeited by noncompliance with the law requiring the taxpayer to file with the assessor a list of his property (*38, pp. 153–161*). In 1932, however, the Rhode Island Legislature gave taxpayers the right of appeal even though they had failed to file sworn statements of taxable property as required.

PRINCIPLES OF VALUATION

As has been previously observed, the chief task of assessment is to ascertain the value of taxable property. Critical analysis of the actual results of assessment requires a clear notion of the meaning of value as that term is employed in the property tax statutes.

As already defined, the value of anything, in economic science, is the quantity of some other thing, usually money, that would be given in exchange for it. This will be recognized as agreeing about as closely as any precise definition can with the popular concept of value. The plain meaning of the tax statutes and the decisions of the courts indicate that, with few if any exceptions, the legislators of the several States had in mind essentially the concept of value as used in economic science. The legislatures have often gone out of their way to specify in the laws that property shall be assessed at its "actual", "full",

"cash", "true", "money", "fair", "true and just", or "market" value, or the "value which could ordinarily be obtained therefor at private sale." These adjectives are of significance only as adding emphasis. They do not change the meaning of the term "value."

Thus, in Rhode Island, where the law provides for assessment at "fair cash value", the supreme court has said:

> The standard of value for the purpose of taxation * * * is the price which the property would probably bring in a transaction in a fair market between a willing seller and a willing purchaser.[21]

The New Hampshire Supreme Court has held that the "just value" provided by law

> is the market value, or the price which the property will bring in a fair market after reasonable efforts have been made to find the purchaser who will give the highest price for it.[22]

Market value is defined by the United States Treasury Department as "that amount which would induce a willing seller to sell and a willing buyer to purchase" (*52, p. 58*).

The United States Supreme Court has added weight to the meaning of the term "value" as used in State tax statutes by saying:

> It is a cardinal rule, which should never be forgotten, that whatever property is worth for purposes of income and sale, it is worth for the purpose of taxation.[23]

There is little occasion for misunderstanding or dispute as to the meaning of value in the property tax laws. The obstacles in the path of property tax assessment arise, not chiefly from confusion as to the meaning of value, but rather from the practical difficulties of ascertaining the value in any given case.

It must never be forgotten that assessment is an act of appraisal—an act of judgment by the assessor. His judgment should be guided by all the available facts which may serve to throw light upon the value of the particular parcel under consideration.

The information which is most useful to anyone who is called upon to appraise a property is knowledge of the considerations realized in sales of comparable properties and of the factors affecting those considerations, as well as of the conditions affecting the value of the property in question. If this knowledge is joined with an understanding of valuation principles and sound judgment, the appraiser is in a position to arrive at a correct result.

On the other hand, the mechanical and unintelligent use of sales considerations, even when the sales involve the same kind of property as that which is being assessed, often leads to incorrect results. One parcel of real estate cannot be valued at the price realized in a free market sale of another parcel in the same vicinity, unless the two properties are similar with respect to the different factors affecting value, or unless such differences as may appear in these factors are in opposite directions and offset each other. Even the sale of the identical property may give a value different from that sought because conditions may have changed during the time intervening between the date of the sale and that of the appraisal. As stated by the

[21] *Aspegren* v. *Tax Assessors of City of Newport*, 125 Atl. 213.
[22] *Company* v. *Gilford*, 67 N. H. 517.
[23] *Adams Express Co.* v. *Ohio State Auditor*, 166 U. S. 220.

Supreme Court of New Hampshire in reference to a case involving this point:

> The price at which it [a parcel of real estate] was sold or leased at any former time is evidence only so far as its proof of a former value tends to show the price for which it could have been sold for the first day of April [the assessment date].[24]

The use of sales considerations by mathematical rule with no room for exercise of judgment may also give unsatisfactory results, even though considerations realized in forced sales are excluded. Many sale values may be more or less unrepresentative of the statutory standard of value prescribed for assessment on account of circumstances affecting those particular sales. Therefore, unless the properties sold in free market transactions are fairly representative of the district and constitute a large enough sample so that minor variations in the values realized offset each other, the use of these unadjusted values will be misleading. This subject is discussed at length in a report of the Wisconsin Tax Commission, which concludes with reference to a mechanical sales method which had formerly been in use for the purpose of equalization:

> As a consequence of these defects in the sales method referred to above it was officially abandoned by the commission in 1925. This does not mean that sales were abandoned as a basis for property valuation. On the contrary, the effort was made, by a more critical and intelligent use of sales, to get back more closely to the statutory provision that property should be assessed at what it will ordinarily bring at private sale and to recognize that this statutory standard applies with as much force to assessments of taxation districts made by the county board and assessments of counties made by the tax commission as to assessments of the property of the citizen made by the local assessor (*58, Rept. 1930, pp. 17–18*).

Not only are knowledge of valuation factors and sound judgment required if satisfactory results are to be obtained through use of information in regard to sales, but there must also be a sufficient number of sales to establish a market. Most kinds of real estate are transferred frequently enough for that purpose. Where the market values are erratic, as sometimes happens, especially in the case of cut-over forest lands, more judgment is required in appraisal, and the results are less certain than where the market values are stable. However, certain kinds of real estate are sold so seldom under conditions establishing value that it can fairly be said that no market for them exists. Oper ting mines and public-utility properties are subject to this difficulty. In these cases, recourse must necessarily be had to other evidence, including all the available facts that might be presumed to be in the minds of sellers and buyers. In these cases a formula involving such facts may often be a useful aid in estimating value. In any case, the appraisal should aim at the value that would be determined in an actual and fair market with free competition between willing sellers and willing purchasers.

The application of sale prices to the assessment of real estate involves the question of the relation between the values of large and small tracts when there is no market for the large tracts and only a limited market for land of the same character when subdivided. Recently a Louisiana district court was called upon to make a decision on this point with respect to a large tract of cut-over land. It was held by the court that the land should be valued as the owner actually holds it, that is, at the amount it would sell for in the wholesale market. The selling price of a few small parcels

[24] *Railroad* v. *The State*, 60 N. H. 142.

taken by settlers did not determine the unit price of the larger tract held as a whole.[25]

This principle in valuation is apparently considered by the State Tax Commission of Michigan, for, in reassessing a township in the forest-land region of Michigan, a considerably lower value per acre was placed upon cut-over land, which was part of a large lumber-company holding, than upon a small parcel of the same physical character but owned by a farmer. The farmer's small tract could be sold at retail for a higher price than could be obtained for the larger adjoining tract. To be sure, the larger tract was divisible into 40-acre units and was, in fact, assessed in such units; but, because no large number of these small units could be sold, the tract was held as a whole and valued at the amount which it would bring on the wholesale land market. This principle is an important one in the valuation of forest lands.

Sale prices of course reflect the capacity of a property to yield income, both at the time of sale and in the future. The laws in three of the States specifically provide that income may be considered as a factor in determining assessed value. The laws of Oregon provide that value shall be—

> taken to mean the amount such property would sell for at a voluntary sale made in the ordinary course of business, taking into consideration its earning power and such other factors as may be applicable for determining such value (*45*).

Since 1924 the Iowa assessment laws have provided that—

> in arriving at said actual value the assessor shall take into consideration its productive and earning capacity, if any, past, present, and prospective, its market value, if any, and all other matters that affect the actual value of the property (*25, p. 220*).

The laws of North Carolina now provide that the assessors, in determining the value of real property—

> shall consider the past income derived therefrom, its probable future income * * *[26].

In many other States, capitalized income is used to determine the assessed value of certain classes of property, such as mines and public utilities which are rarely, if ever, sold in the open market and consequently have no real market value. In determining value, even when there is actually no market, all conditions that would affect a market if there were one must be considered (*60, p. 4*).

It is being repeatedly urged (*24, p. 17; 41, pp. 48–49*) that income or earning capacity be used to a greater degree and even be the primary consideration in fixing assessed valuations, although at present it is mentioned as a legal basis for fixing assessments in only three States.

It should be kept in mind that income is one of the factors that influence the determination of value in the actual market, and no State laws forbid the assessors from collecting income data to support their estimate of market value.

The courts seem to be in general accord that all factors or evidences of value must be considered in deducing a market value. In Utah—Idaho Sugar Co. v. Salt Lake County—a Utah Supreme Court case, 210 Pac. 106, 27 A. L. R. 874, the court says: "In arriving at the actual value of tangible property for taxation, everything, such as goodwill, earning capacity, the productiveness of the property, and actual earnings which may influence or enhance the actual value of the tangible property, should be considered (*60, p. 6*).

[25] *Long-Bell Lumber Co.* v. *Louisiana Tax Commission*, Fourteenth District Court of Louisiana, Allen Parish.

[26] North Carolina Revenue and Machinery Acts, 1931, p. 164.

In the last analysis assessment is the result of personal judgment, based upon factual data in varying degrees. In fact the Supreme Court of Michigan has held that the assessment will rarely be invalidated if the assessing officials actually do exercise their best judgment, for "fraud cannot be predicated upon or inferred from an honest difference in judgment." [27] The United States Supreme Court has said:

> The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be reasonable judgment having its basis in a proper consideration of all relevant facts.[28]

ASSESSMENT RATIOS

DEFINITION AND SIGNIFICANCE

The measure of the accuracy of an individual assessment is found in its relation to the legal standard. This relation is represented by the "assessment ratio", which is the ratio, expressed in percent, of the assessed value to the true value (or whatever fraction of true value is the statutory basis of assessment).[29] The assessment ratio of a group of properties—that is, the ratio of the aggregate assessed value to the aggregate true value, is equivalent to a weighted average of the individual assessment ratios and measures the level of assessment of the group.

It follows from the above definition that absolute perfection in assessment would give to each individual property an assessment ratio of 100 percent. If all properties within a particular political district are assessed at practically the same ratio of true value—regardless of whether that ratio is 5, 50, or some other percent—there is impartiality between the taxpayers within that district so far as taxes levied by that district are concerned. But if the assessment ratios vary materially, the assessment and the consequent taxation favor the owners of properties having the lower ratios.

Since all determinations of value are estimates, all assessment ratios are estimates. Since determinations of value for a group of properties are more accurate than for individual properties, a group assessment ratio is more accurate than the individual assessment ratios of the properties comprising the group.

The testing of assessment practice by means of assessment ratios is by no means unique with this study. Tax officials in a number of States have made excellent use of such ratios as a basis for equalization among the taxing districts. The assessment ratio for such a district is usually determined on the basis of sample properties, taken as representative of the district as a whole, which have been either sold or very carefully appraised. The true or equalized value of taxable property in each district is then obtained by dividing the assessed value of the district or county by the appropriate assessment ratio. In Wisconsin the more accurate method is used of determining assessment ratios in each district by classes of real estate and weighting the ratio of each class by the total value of that class within the district in order to obtain the assessment ratio for the district.

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[27] *Lumber Co.* v. *City of Alpena*, 176 Mich., 578.

[28] The Minnesota Rate Cases, 230 U. S. 434.

[29] The parenthetical clause relates to: Arkansas, whose statutory basis of assessment is fixed annually by the tax commission; Alabama, whose statutory basis of rural real estate assessment is 60 percent; Minnesota, 33⅓ percent; Montana, 30 percent; North Dakota, 75 percent; Vermont, 1 percent; and Washington, 50 percent. In Minnesota and Montana the percentage given does not apply to all real estate, but only to that class which includes forest property.

Studies of assessment ratios have frequently been made by economists for the purpose of obtaining information as to various aspects of assessment practice. The purposes indicated in these studies have been to measure inequalities in assessment among individual ownerships, among different political divisions, between country and city real estate, between large and small properties, and among various classes of owners. The results have been used to throw light on the causes of inequalities and on methods of improving assessment practice. Much of the technic which has been developed in these studies was used in the additional investigations which seemed desirable from the standpoint of the forest-tax investigation. The results of these studies will be drawn upon later in connection with the results of the original investigations.

Since studies of assessment ratios made by other investigators have not been especially concerned with conditions in forest regions or with the inequality that may exist among different kinds of forest property and other property, additional studies of these subjects seemed necessary. In order that the results of these studies may be properly understood, it is necessary to indicate more specifically the kind of data that were used.

METHODS OF ESTIMATING TRUE VALUE

General

The numerator of the assessment ratio is the assessed value of the property or group of properties, which is a matter of public record. The denominator of the assessment ratio is the true value of the property or group of properties at the assessment date and is therefore of necessity an approximation. As explained in a preceding section of this part, true value may be estimated by appraisals or approximated by considerations realized in sales.

Appraisals may be made intensively; that is, through a detailed study of each property. In arriving at an opinion of value, the appraiser is guided by knowledge of transactions in comparable properties and of the values realized in those transactions. His experience enables him to give due weight to the different factors affecting value in making comparisons between each property sold and the property being appraised. If appraising on a large scale, he will require maps, tabulations, and other statistical aids. Such intensive appraisals by experts afford the best estimates of value, but even they are of course not infallible.

Appraisals may also be made in a more extensive fashion, involving a rapid examination and giving consideration only to the more important factors affecting value. Such appraisals are reliable only when they have no persistent bias and when they are aggregated in large enough groups so that errors may be presumed to offset each other.

Owing to the difficulty of obtaining reliable expert appraisals in sufficient number to test assessment, it has been the usual practice to use considerations realized in sales as if they were true values. Since each sale represents an actual agreement as to value between buyer and seller confirmed by a transaction, it is prima facie evidence of the value of the property at the time and under the conditions of the sale and is not subject to the suspicion of bias or fallible judgment that necessarily attaches to the finding of an appraiser. However,

the conditions of an actual sale rarely reflect perfectly the equal balance of bargaining power between buyer and seller necessary to reach a consideration that would be conclusive as to the value. Also the value at the time of the sale may not equal the value at the date of assessment. Transactions which are clearly subject to bias, such as forced sales or sales between closely related parties, must be eliminated. In other transactions it may be presumed that sometimes the buyer has the greater bargaining power and sometimes the seller, but since there is nothing to indicate that either has any consistent advantage, the aggregate consideration of a group of sales is probably not far from the aggregate value of the properties sold at or about the time of sale. That the properties sold may not be representative of all the properties within a given class or district is another factor, which will be considered as occasion arises.

Appraisals

Complete studies of taxation in selected localities were made for the purpose of obtaining specific knowledge of all phases of the subject for typical forest communities in different regions of the United States. The more intensive of these studies involved appraisals of all the rural real estate within the selected districts. These studies covered 15 townships or parts of townships in Minnesota, 9 towns in Wisconsin, and 3 towns in New Hampshire. One of the uses of these appraisals is to permit the calculation of assessment ratios by various significant groups. Some comment on the nature and reliability of these appraisals is called for at this point.

The appraisals in Minnesota, Wisconsin, and the town of Loudon, N. H., were of an extensive character. Those in Minnesota and Wisconsin were based on comparisons with values established in recent transactions, and those in Loudon, N. H., primarily on individual appraisals after these had been checked by sales. The values of the individual properties obtained by these extensive methods are such as would be derived by taking an average price in unbiased sales of a considerable number of quite similar but not identical properties and applying to each that average price, ignoring the minor differences which distinguish them one from the other and which give each a true value different from the average though within reasonable limits of it. For this reason any attempt to show how much or how little the assessed values of individual properties vary from the average appraised values found for them would fail of its purpose. However, when aggregated by large enough groups, such appraisals are likely to be reliable, since the minor differences tend to offset each other.

The appraisals in the towns of Fremont and Richmond, N. H., were made more intensively. Every property was separately appraised by two experts temporarily attached to the Forest Service for this purpose through the cooperation of the New Hampshire State Tax Commission. These men were experienced in making official reappraisals for the State tax commission, and the results obtained may be assumed to be those which would have been obtained in an official State reappraisal and as close to true value as could be expected without tax maps or systematic study of valuation data collected over a period of years for the towns in question.

Sales

Considerations realized in sales were also used to indicate true values. Very complete sales data, collected by the Wisconsin Tax Commission, were available for that State and were used to test assessment practice in all of the northern counties where the forest-land area was important. Sales data were also collected by the staff as the basis for assessment-ratio studies in selected counties in Oregon, Washington, and North Carolina. Care was taken to eliminate all cases not representing bona fide sales such as would be presumed to establish market value. It was the rule to reject sales from one member of a family to another, and those in which the cash value of the consideration was uncertain, or which took place under conditions that would suggest extraordinary pressure either to buy or to sell. Considerations were verified when possible by information from one or both parties to the transfer, this information being obtained by questionnaire or personal interview. The term "verified" is used to distinguish such sales from those in which the considerations were obtained from deeds, inferred from revenue stamps, or obtained by other indirect means. This verification and sifting of sales records had already been done in Wisconsin by the tax commission, so that there it was necessary only to check and complete the arrangement by property classes. In general, sales values were compared with the latest previous assessment, although it was found desirable to make exceptions in Oregon, Washington, and North Carolina, using in certain cases the next succeeding assessment.

It would have been desirable to limit the period covered in a comparison of sales with assessments to a single year, but this was impossible where sales were used, owing to the difficulty of getting a sufficient volume of sales to indicate the assessment level of the different property classes. The longest period used was in Washington and Oregon, 1921–28. However it is believed that rural land values did not change very much in those States during that period. Evidence that such was the case in Oregon from 1921 to 1926 was found in investigations conducted by the State Agricultural College (*17, p. 35*). In these States the assessments were made annually, but the level did not change materially during that period in the counties studied. In North Carolina the period of 1925–30 was used, but during this time only two real-estate assessments were in effect, those of 1923 and 1927; also land values are believed to have been reasonably stable. In Wisconsin only 3 years were used, 1925–27, and tests showed but very little difference in average assessment ratios by property classes among the three periods, 1925–27, 1925–26, and 1927 alone. Where appraisals were the basis of assessment ratios, they relate to values at the date of the particular assessment with which they were compared.

In Wisconsin the assessment district is the town, but it was not possible to get enough sales in a single town for adequate samples of assessment ratios by property classes or other groups. Therefore the assessment ratios were arranged first by counties and then by property classes and other groups. It is reasonable to suppose that, with supervision of assessment by State district officers and with similar local influences, variation in assessment ratios within the towns would be similar to that within the county, and that the variation in ratios

arranged by counties could not be ascribed to differences among the constituent towns. This assumption was verified by selecting 6 counties and 26 towns in those counties so as to obtain a random sample of the towns with the largest number of sales best distributed between the timber, cut-over, and farm property classes, and by considering assessment ratios in each town separately. While the results showed some irregularities because of the small number of cases in certain groups, the ratios followed in general the same pattern as assessment ratios in similar groups in which all the cases were assembled by counties, and the relationships between the assessment ratios of the property classes were found to be similar.[30] Thus it appeared that the summarization by counties did not seriously misrepresent assessment practice.

ELIMINATION OF EXTREME RATIOS

It has been pointed out that assessment ratios resulting from comparison of appraisals and sale values with assessed values are subject to the possiblity of material error, in that there might have been a mistake in the appraisal, the selling price might not even approximate market value, or there might have been failure properly to identify in the assessment books the property sold or appraised. Such errors are naturally more likely to be reflected in the extreme assessment ratios than elsewhere. However, since the assessed value is being tested in these studies by reference to the appraisal and sale values, it seemed necessary to use caution in making eliminations. Therefore these were limited to the extreme and widely separated assessment ratios, usually not more than 1 or 2 in a single county or town group. The method used is illustrated later in tables 30–38, where the discarded ratios are indicated by footnotes.

APPRAISAL METHODS IN DETAIL

A more detailed explanation of the method of making extensive appraisals may be of interest to some readers. Those used in the three States varied somewhat, and each State is therefore taken up separately in the following sections.

Minnesota

COLLECTION OF DATA

The area, the owner's name, and the assessor's "full and true" value of each parcel within the selected townships were copied directly from the town assessment rolls of 1926 in the county auditors' offices of the several counties. The records of the office of register of deeds in each county concerned, except St. Louis, were examined to get the location, the date, the area, and the parties to all warranty deed transactions since 1921. In St. Louis County these data were taken from the transaction cards of the supervisor of assessments. Wherever procurable, information concerning the physical condition of the selected towns was obtained before entering the field. Thus in St. Louis County the cruise records of the county assessor of unorganized territory and of various lumber companies furnished considerable data on cover, soil, rock, and other characteristics. Information from such sources was used to facilitate and supplement field examination.

The limited time allotted to this study and the comparatively large area to be covered dictated an extensive rather than an intensive field examination. It was found practicable to carry on most of the work from roads, which in the north-

[30] The procedure and results of this test are given in detail in Progress Report 12, pp. 10–11, and tables 12–17. See footnote 7, on p. 13.

eastern counties are nearly always on section lines. The roads were traversed by automobile, using the speedometer to measure distances. Plats made up from the county records, showing names of owners and the location of buildings with respect to the forties and other descriptions, assisted greatly in determining approximately the property boundary lines. Where more exact orientation was especially desirable, such as on farm properties, fences usually marked boundaries. Locations were also obtained by interviews with residents. The territory which could not be covered directly by road was reached by foot traverse or in many cases was filled in from sources of information considered reliable.

DESCRIPTION OF BUILDINGS

As much detailed information in regard to improvements as it seemed practical to record and use was entered in the field schedules. All of the major buildings, such as houses, barns, and stables, in the selected townships, except in St. Louis County, were examined to determine their size, construction, and depreciation. No record was kept of the minor buildings usually found on the farm, such as chicken coops, pig pens, garages, and small granaries. Note was also made if houses were of construction adapted to summer use only. The area occupied by each building was estimated by eye, checking the accuracy by actual measurements at frequent intervals. The heights of barns and stables were estimated in feet, making allowance for any unusual roof construction which would increase or decrease the cubical content from that of the building of usual construction. The heights of houses were recorded in stories; where an external inspection indicated that the attic was finished off or where an upper floor was of the dormer type of construction, a half story was added to the full stories below; basements or cellars were not taken into consideration. In order to compute cubic contents, the number of stories was later converted into feet: 1 story equaling 13 feet; 1½ stories, 15 feet; 2 stories, 22 feet; and 2½ stories, 24 feet. Each building was classified also on the basis of its construction, as follows: log, hewn timber, frame (two qualities), stucco, brick, or stone.

Finally each building was classified as to its condition in four categories (A, B, C, and D), representing different degrees of depreciation. In a few cases, in which it was judged that a particular building had a value different from its replacement cost less depreciation, there was substituted in the record for the actual condition such condition as would reflect its actual value. For example, a farmhouse too expensively built for its location might be quite new, but nevertheless it would be recorded so that its value would be calculated by a discount from replacement cost sufficient to account for obsolescence, in order that the calculated value might be valid under the circumstances.

In many cases a field appraisal of the improvements was made as a check on the other data.

APPRAISAL OF BUILDINGS

After a critical examination of the literature on the appraisal value of buildings it was decided that for an extensive appraisal method such as this study entailed, adequate values could be secured from a table of unit values originally constructed by an underwriter, J. N. Brown, in 1902, and compiled by Arthur (*11*). Haas (*21*), working in Minnesota in 1922 with the values given in that table, found, after corrections due to the difference in purchasing power of the dollar, that the figures obtained were very acceptable. The original 1902 values, as given by Arthur (*11*), were corrected by an index of building values prepared by Conrad H. Hammar while at the University of Minnesota. Using the values for frame houses and barns as a base, values were selected by comparison for the cruder types of construction, log, hewn log, frame covered with building paper, and summer cottage. These unit values were checked by applying them to typical buildings and comparing the computed values with direct appraisals by members of the staff and others competent to make such appraisals. The value for stucco construction may appear low to those familiar with the cost of such construction in cities and villages. However, of the comparatively few stucco houses on the selected townships, most were refinished log houses. The unit values per cubic foot used for various types of construction are listed in table 22.

TABLE 22.—*Unit values used in appraisal of buildings*

Type of construction	Houses	Barns
	Value per cu. ft.	*Value per cu. ft.*
Log	$0.04	$0.015
Hewn log	.06	.025
Frame (paper exterior)	.09	.03
Frame (lumber exterior)	.12	.04
Stucco	.12	----------
Private summer cottages	.08	----------
Commercial summer cottages	.05	----------

The 1926 value of each building was computed by multiplying the cubic contents by the appropriate unit value and deducting for depreciation. For example, a frame barn in B condition with an area of 360 square feet and a height of 10 feet contains 3,600 cubic feet, which at $0.04 per cubic foot gives a replacement cost of $144. Since B-condition barns are assumed to have depreciated 35 percent, the present value is 65 percent of $144, or $93.60.

Buildings in the selected towns in St. Louis County were appraised by four members of the technical staff, instead of by the method just described. These appraised values were later adjusted to make them as closely comparable as possible to the values as determined by formulas in the other counties. This and certain other minor differences in the methods employed in the field study in St. Louis County, the first county studied, as compared with the other counties, are the consequence of improvements in technic as the work progressed.

DESCRIPTION OF LAND

Detailed information as to the physical character of the different forties or descriptions was recorded on field schedules. The land surface was described by cover classes, which included different types of farmland (plowland, stumpland, meadowland, and old field); the various forest types [31] (aspen-paper birch, jack pine-oak, spruce-balsam-birch, mixed hardwoods, spruce-tamarack, and others); and open swamp.

The topography, soil, and stoniness of each cover class within the description were also recorded for all selected townships except those in St. Louis County. Five grades of topography were recognized running from level to mountainous. Four soil classes were identified by direct inspection or by the vegetation growing on them. They were sand, medium loams, heavy loams, and peat. All land was divided also into four classes on the basis of surface stone, the first class being free from stone, the second class being moderately stony but tillable in accordance with local practice, the third very stony, and the fourth rock outcrop.

After the completion of the field examination, each 40-acre description or other unit of assessment was given a property class designation on the basis of all the information which had been obtained. These property classes included farm, both operated and abandoned; resort; merchantable timber; and cut-over forest.

APPRAISAL OF LAND

The unplatted land was appraised by comparison with values established in recent transactions. This comparison was expressed in a valuation formula worked out for each township. The basis for this formula was in each case local sales of real estate since 1920, giving most weight to those since 1923. The information in regard to these sales was obtained, as previously mentioned, from county records and was supplemented by interviews with parties to the transactions, by questionnaires when it was not practicable to interview the parties, and by information from real-estate agents and others. It was necessary to eliminate sales that obviously would not reflect values, such as those between relatives, transfers for perfecting title, and those with considerations of uncertain value at date of sale.

The variables in the valuation equation were the most obvious and readily measured factors affecting value in each township, such as land use, soil, topography, distance from local market or population centers, distance from roads, and quantity of merchantable timber. By restricting each formula to a given

[31] The forest types were based on those described by Kittredge (27).

locality and basing it primarily on local sales, many valuation factors such as accessibility to general markets, climatic conditions, and development of the community were eliminated from consideration, thus making it possible to use a relatively small number of sales with confidence.

The constants in the valuation formula used to measure the effect of the different valuation factors were determined by inspection. This was accomplished by successively grouping the properties on the basis of the different factors, so as to find out how each factor appeared to affect the selling price. Most of the sales involving farm land included buildings, making it necessary to allocate to buildings a part of the purchase price. This was done by using the building value estimated by the formula method previously described, except in the rare cases when definite allocations of the price had been made for buildings by the parties concerned. In such cases these allocations were used. An element of judgment, based in part on comparison with similar towns, was usually necessary to evaluate certain factors not sufficiently covered in the available sales. A preliminary formula thus obtained from a consideration of all the sales and related information was then tested by applying it to all the properties which were included in these sales. Comparison between values computed by this formula and the actual selling prices usually pointed to certain improvements in the formula. The constants were adjusted accordingly, and the process was repeated until the formula would fit the greatest number of the reliable selling prices. The small number of sales available in the northern Minnesota townships chosen made this inspection method of determining the valuation formulas more satisfactory than the standard statistical method.

Wisconsin

It is unnecessary to repeat the detailed procedure used in Wisconsin, where the field studies were made the year following that of the Minnesota work and in general followed the methods just described. The experience gained in Minnesota proved useful, and more time was available for fieldwork, so that a more thorough examination of the selected towns was possible. Not only were the roads traversed, but at least one foot traverse was made through every section. The route being usually along the quarter line directly bisecting the section. In the towns of Henrietta and Three Lakes, where the survey lines could not be readily followed on account of lakes and hills, the assessors were employed to assist in making locations.

The property classes used in Wisconsin were not quite so well adapted to the purposes of the forest-taxation study as those recognized in the Minnesota work, as they were based primarily on ownership and do not permit definite segregation of timber and cut-over properties. Their choice was determined by the desire to make the data collected in Wisconsin comparable with certain other data collected in the previous year for a general economic study in Lincoln County, Wis., and to facilitate cooperation with the State College of Agriculture, which was in a position to offer valuable assistance and which was interested in using the results of both the later study and of the Lincoln County investigation for purposes somewhat different than those contemplated by the forest-tax study.

Major buildings were recorded on field schedules much as in Minnesota, and the number and condition of outbuildings were also noted. The unit values for buildings of different types used in Minnesota were modified to fit Wisconsin conditions. In the course of the fieldwork, whenever a building had just been constructed, an endeavor was made to ascertain the cost from the owner or from someone else having knowledge of the facts; and wherever a property had been purchased, the owner was asked to divide the purchase price between buildings and land. With all this information, the unit values per cubic foot were computed for different types and conditions of buildings, and these unit values were applied to obtain a total value of the buildings on the property, much as was done in Minnesota. The unit values adopted in Wisconsin were slightly higher on the whole than those used in Minnesota. For a frame farmhouse in average condition, the unit value per cubic foot was taken as 9.2 cents in Wisconsin, as compared with 7.8 cents in Minnesota.

New Hampshire

It has already been explained that the appraisals in Fremont and Richmond were made individually by expert appraisers. In Fremont the two men worked together, so that the results there represented the combined judgment of both.

In Richmond they worked entirely independently in order to economize time, and the results in this town must be regarded as subject to the differences in judgment which practically always occur between two or more qualified appraisers, especially where there is no background for their work in local-valuation data systematically collected and compiled.

In the town of Loudon the appraised values of the land, exclusive of buildings, were computed by means of a statistical formula. This formula took into account the principal factors affecting value and was based on values of 134 individual properties, as determined by one of the same expert appraisers who was responsible for the individual appraisals in Fremont and Richmond. Also these appraised values were tested by the available information in regard to sales and were found to be in accord with selling prices. The larger number of basic values made the use of the standard statistical method more desirable than the inspection method of correlation which was used in Minnesota and Wisconsin. The building values were approximated by a formula which took into consideration the cost of production and depreciation, as well as the obsolescence owing to overbuilding and other causes.

The elements of real-estate value in Loudon were improvements, merchantable timber, and bare land. The improvements consisted largely of farm buildings, and the merchantable timber was principally second-growth white pine, 30 to 50 years of age. The unmerchantable timber (young growth) was included with bare land. In all of these appraisals land and improvements were valued separately.

After experimenting with the various possible factors affecting timber and land values, the following were combined and treated by multiple correlation:

X_0 = value per acre of total area.
X_1 = volume of merchantable timber per acre of total area in thousand board feet.
$X_2 = X_1^2$.
X_3 = ratio of area in crop land to total area plus 0.45 times ratio of area in pasture to total area.
X_4 = ratio of area in forest to total area.
n = age of the unmerchantable timber in years.
b_1–b_4 = the unknown unit values, to determine which the correlations were carried through.

The equation became:

$$X_0 = b_1X_1 + b_2X_2 + b_3X_3 + b_4(1.04)^n X_4.$$

The introduction of $(1.04)^n$ implies that the unmerchantable timber increases in value by 4 percent of the total value of land and timber each year, an assumption which was checked by inspection of the appraisals. It was found, however, that a slight alteration of timber values would improve the accuracy of the formula. When the residuals from the unaltered formula were plotted against timber volume per acre, the freehand curve drawn indicated that the low and high volumes per acre were overappraised and that those in the middle range were underappraised. Adjustments were made for X_1 and X_2 by substituting readings from a second freehand curve drawn in terms of unit value per thousand and volume per acre for the values computed in the original formula.

SUMMARY OF ASSESSMENT RATIO DATA

The data obtained in original studies of assessment ratios are summarized in tables 23 to 29. These tables show the assessment ratios of the principal groups of properties with which these studies are concerned, together with the aggregate assessed values and aggregate estimates of true value on which these ratios are based. They also show the areas of land in each group for which this information is available. The number of properties and coefficients of dispersion are given for the studies in which the individual properties were valued by considerations realized in sales, or by fairly intensive appraisals. The more important of these figures will be repeated in smaller tables in connection with the following discussion of assessment results.

TABLE 23.—*Summary of assessment ratio data by property classes, 1926; selected townships, Minnesota* [1]

TIMBER AND CUT-OVER

County and township	Timber				Cut-over [2]			
	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio
	Acres	*Dollars*	*Dollars*	*Percent*	*Acres*	*Dollars*	*Dollars*	*Percent*
Beltrami:								
Eckles	0	0	0	-------	9,037	89,290	63,968	140
Frohn	0	0	0	-------	9,010	144,463	81,460	177
Hagali (part)[3]	0	0	0	-------	2,561	35,710	12,803	279
Hubbard:								
Clay	0	0	0	-------	17,050	253,546	85,704	296
Crow Wing Lake	476	16,958	9,052	(4)	6,337	93,650	32,461	289
Lake Emma	291	4,812	2,310	(4)	9,032	135,243	69,813	194
Schoolcraft	680	9,370	3,830	245	16,883	234,013	75,767	309
Lake:								
T. 59 N., R. 8 W. (in Beaver Bay)	11,351	138,768	131,345	106	3,430	17,769	19,290	92
T. 58 N., R. 6 W. (in Cramer)	0	0	0	-------	20,871	145,965	57,998	252
T. 54 N., R. 10 W. (in Silver Creek)	0	0	0	-------	19,972	167,970	131,463	128
St. Louis:								
Embarrass	120	330	1,290	(4)	10,968	50,296	77,679	65
Toivola	0	0	0	-------	33,137	279,789	182,984	153
T. 54 and 55 N., R. 14 W	880	26,559	24,158	110	39,958	222,968	103,457	216

FARM

County and township	Land				Improvements			Total		
	Area	Assessed value	Appraised value	Assessment ratio	Assessed value	Appraised value	Assessment ratio	Assessed value	Appraised value	Assessment ratio
	Acres	*Dollars*	*Dollars*	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*	*Dollars*	*Percent*
Beltrami:										
Eckles	11,577	111,836	126,610	88	4,275	32,216	13	116,111	158,826	73
Frohn	9,699	164,208	209,490	78	5,506	73,286	8	169,714	282,776	60
Hagali (part)[3]	2,685	34,056	28,150	121	3,220	22,461	14	37,276	50,611	74
Hubbard:										
Clay	2,040	30,350	15,830	192	2,941	5,414	54	33,291	21,244	157
Crow Wing Lake	7,206	171,672	165,860	104	15,871	31,512	50	187,543	197,372	95
Lake Emma	3,602	60,622	52,660	115	13,695	26,252	52	74,317	78,912	94
Schoolcraft	1,410	18,666	10,200	183	2,577	7,561	34	21,243	17,761	120
Lake:										
T. 59 N., R. 8 W. (in Beaver Bay)	2,038	9,465	25,230	38	1,782	7,930	22	11,247	33,160	34
T. 58 N., R. 6 W. (in Cramer)	399	1,990	3,606	(4)	332	1,328	(4)	2,322	4,934	(4)
T. 54 N., R. 10 W. (in Silver Creek)	3,047	27,249	39,980	68	9,829	32,613	30	37,078	72,593	51
St. Louis:										
Embarrass	9,627	34,629	133,300	26	29,908	110,192	27	64,537	243,492	26
Toivola	7,231	60,828	118,800	51	22,365	62,009	36	83,193	180,809	46
T. 54 and 55 N., R. 14 W	78	558	370	(4)	0	0	-------	558	370	(4)

See footnotes at end of table.

TABLE 23.—*Summary of assessment ratio data by property classes, 1926; selected townships, Minnesota*—Continued

RESORT AND TOTAL

County and township	Resort [2]				All classes			
	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio
	Acres	*Dollars*	*Dollars*	*Percent*	*Acres*	*Dollars*	*Dollars*	*Percent*
Beltrami:								
Eckles	109	1,541	1,034	[4]	20,723	206,942	223,828	92
Frohn	1,049	14,341	19,815	72	20,066	332,804	386,511	86
Hagali (part)[3]	832	12,030	11,304	106	6,478	90,410	77,886	116
Hubbard:								
Clay	1,959	32,360	22,079	147	21,049	319,197	129,027	247
Crow Wing Lake	2,857	52,329	49,241	106	19,437	396,592	301,786	131
Lake Emma	4,257	101,112	120,703	84	17,182	315,484	271,738	116
Schoolcraft	0	0	0	-------	18,973	264,626	97,358	272
Lake:								
T. 59 N., R. 8 W. (in Beaver Bay)	363	1,635	1,341	[4]	17,182	169,419	185,136	92
T. 58 N., R. 6 W. (in Cramer)	0	0	0	-------	21,270	148,287	62,932	236
T. 54 N., R. 10 W. (in Silver Creek)	0	0	0	-------	23,019	205,048	204,056	100
St. Louis:								
Embarrass	0	0	0	-------	20,715	115,163	322,461	36
Toivola	0	0	0	-------	41,424	372,285	373,563	100
T. 54 and 55 N., R. 14 W	281	2,742	1,140	[4]	42,431	261,290	132,745	197

[1] Sources of data: Areas and assessed values (assessors' "full and true" values) from township assessment rolls of 1926. Appraised values by members of the staff, using methods which are explained in the text. Assessment ratios computed from assessed and appraised values.

[2] Improvement values are included under cut over and resort. Those under cut over are negligible in amount.

[3] Based only on those areas which were examined, representing 31 percent of the entire area of the township and 34 percent of the total assessed value.

[4] Areas under 500 acres and improvement values totaling less than $2,500 are not considered sufficient samples to warrant computing assessment ratios.

TABLE 24.—*Summary of assessment-ratio data by predominant cover and topography, 1926; selected townships, Minnesota* [1]

County and township	Forest upland, level to moderately sloping				Forest upland, rough and sandy				Total forest upland			
	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio
	Acres	*Dollars*	*Dollars*	*Percent*	*Acres*	*Dollars*	*Dollars*	*Percent*	*Acres*	*Dollars*	*Dollars*	*Percent*
Beltrami:												
Eckles	1,029	11,138	11,160	100	12,251	129,323	96,190	134	13,280	140,461	107,350	131
Frohn	6,228	117,256	87,160	135	4,939	77,747	34,050	228	11,167	195,003	121,210	161
Hagali (part) [2]	2,883	41,460	20,990	198	0	0	0	--------	2,883	41,460	20,990	198
Hubbard:												
Clay	10,627	172,808	59,220	292	6,229	97,594	36,140	270	16,856	270,402	95,360	284
Crow Wing Lake	579	13,949	7,460	187	5,415	86,283	31,450	274	5,994	100,232	38,910	258
Lake Emma	3,361	51,881	29,670	175	5,912	91,905	44,120	208	9,273	143,786	73,790	195
Schoolcraft	1,099	16,128	7,400	218	10,033	188,928	57,630	328	11,132	205,056	65,030	315
Lake:												
T. 59 N., R. 8 W. (in Beaver Bay) [3]	7,393	102,126	115,885	88	1,184	11,937	17,340	69	8,577	114,063	133,225	86
T. 58 N., R. 6 W. (in Cramer)	8,606	60,753	26,320	231	7,401	46,884	19,194	244	16,007	107,637	45,514	236
T. 54 N., R. 10 W. (in Silver Creek)	11,247	112,143	90,140	124	2,999	29,121	21,930	133	14,246	141,264	112,070	126
St. Louis:												
Toivola	9,745	90,630	107,120	85	36	315	360	(4)	9,781	90,945	107,480	85
T. 54 and 55 N., R. 14 W	10,687	72,416	36,170	200	10,305	69,522	31,800	219	20,992	141,938	67,970	209
	Swamp forest				Total forest land				Cleared land			
Beltrami:												
Eckles	558	6,162	3,180	194	13,838	146,623	110,530	133	1,535	17,655	39,450	45
Frohn	170	2,790	2,010	(4)	11,337	197,793	123,220	161	1,928	39,743	93,230	43
Hagali (part) [2]	638	10,710	3,110	344	3,521	52,170	24,100	216	215	3,660	6,410	57
Hubbard:												
Clay	194	2,957	370	(4)	17,050	273,359	95,730	286	80	1,785	1,050	(4)
Crow Wing Lake	923	16,887	4,270	395	6,917	117,119	43,180	271	2,356	82,762	102,850	80
Lake Emma	25	618	200	(4)	9,298	144,404	73,990	195	1,120	23,448	27,220	86
Schoolcraft	350	4,762	1,270	(4)	11,482	209,818	66,300	316	85	1,690	1,620	(4)
Lake:												
T. 59 N., R. 8 W. (in Beaver Bay) [3]	2,159	33,582	27,280	123	10,736	147,645	160,505	92	0	0	0	--------
T. 58 N., R. 6 W. (in Cramer)	1,033	4,680	1,140	411	17,040	112,317	46,654	241	0	0	0	--------
T. 54 N., R. 10 W. (in Silver Creek)	542	5,571	4,100	136	14,788	146,835	116,170	126	435	4,524	14,960	30
St. Louis:												
Toivola	24,120	207,528	106,450	195	33,901	298,473	213,930	140	980	10,560	40,340	26
T. 54 and 55 N., R. 14 W	6,796	37,137	15,030	247	27,788	179,075	83,000	216	0	0	0	--------

[1] Sources of data: Areas and assessed values (assessors' "full and true" values) from township assessment rolls of 1926. Appraised values by members of the staff, using methods which are explained in the text. Assessment ratio computed from assessed and appraised values.

[2] Based only on those areas which were examined, representing 31 percent of the entire area of the township and 34 percent of the total assessed value.

[3] In this township all selected descriptions classified as forest land contain merchantable timber.

[4] Areas of cleared land under 200 acres and of other land under 500 acres are not considered sufficient samples to warrant computing assessment ratios.

TABLE 25.—*Summary of assessment ratio data by predominant cover, 1926; selected towns, Wisconsin* [1]

Town	Timber				Cut-over				Cleared land			
	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio	Area	Assessed value	Appraised value	Assessment ratio
	Acres	*Dol.*	*Dol.*	*Pct.*	*Acres*	*Dol.*	*Dol.*	*Pct.*	*Acres*	*Dol.*	*Dol.*	*Pct.*
Athelstane	196	1,440	2,160	[2]	49,367	289,160	290,740	99	4,200	26,870	93,010	29
Bartelme	3,120	106,800	173,270	62	9,804	108,485	77,220	140	786	11,500	26,270	44
Bayview	53	200	550	[2]	17,880	153,850	123,810	124	793	22,179	27,810	80
Henrietta	280	5,210	4,820	[2]	1,132	22,909	19,830	116	1,823	51,180	80,940	63
Laona	24,976	366,995	1,572,860	23	25,971	92,774	230,068	40	1,669	11,844	68,980	17
Little Rice	405	2,335	6,150	[2]	27,678	135,869	168,500	81	706	4,765	14,880	32
Morse (nonmineral part)	5,522	134,010	160,930	83	37,530	450,405	462,250	97	1,263	27,000	34,080	79
Murry	2,918	90,285	[3]	[3]	22,496	294,165	182,830	161	1,301	31,165	46,650	67
Three Lakes	3,306	58,175	90,690	64	22,952	162,675	230,270	71	2,290	64,035	113,620	56

[1] Sources of data: Areas and assessed values from town assessment rolls of 1926. Appraised values by members of the staff, using methods which are explained in the text. Assessment ratios computed from assessed and appraised values.

[2] Areas under 500 acres are not considered sufficient samples to warrant computing assessment ratios.

[3] Timber was not appraised in Murry.

TABLE 26.—*Summary of assessment ratio data by property classes, 1928; selected towns, New Hampshire* [1]

Town and ownership	Forest						Farm					
	Properties	Area	Assessed value	Appraised value	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value	Appraised value	Assessment ratio	Coefficient of dispersion
	Number	*Acres*	*Dollars*	*Dollars*	*Percent*	*Percent*	*Number*	*Acres*	*Dollars*	*Dollars*	*Percent*	*Percent*
Fremont:												
Resident	84	2,972	72,515	94,039	77	25	68	2,804	89,340	138,513	64	24
Nonresident	120	3,370	71,940	141,145	51	37	12	786	22,255	32,965	68	19
Total	204	6,342	144,455	235,184	61	38	80	3,590	111,595	171,478	65	23
Loudon:												
Resident	23	1,164	19,250	19,276	100	------	222	17,744	367,750	491,960	75	------
Nonresident	78	4,483	65,413	71,850	91	------	36	2,383	42,585	48,440	88	------
Total	101	5,647	84,663	91,126	93	------	258	20,127	410,335	540,400	76	------
Richmond:												
Resident	73	4,176	72,650	89,087	82	26	58	2,714	53,910	77,453	70	23
Nonresident	200	15,228	210,380	295,397	71	34	13	597	11,150	13,437	83	12
Total	273	19,404	283,030	384,484	74	32	71	3,311	65,060	90,890	72	22

Town and ownership	Other						All classes					
	Properties	Area	Assessed value	Appraised value	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value	Appraised value	Assessment ratio	Coefficient of dispersion
Fremont:												
Resident	[2] 82	268	79,955	125,300	64	18	234	6,044	241,810	357,852	68	24
Nonresident	22	194	28,090	42,885	66	23	154	4,350	122,285	216,995	56	34
Total	[2] 104	462	108,045	168,185	64	19	388	10,394	364,095	574,847	63	28
Loudon:												
Resident	62	530	39,723	58,041	68	------	307	19,438	426,723	569,277	75	------
Nonresident	41	987	24,358	29,248	83	------	155	7,853	132,356	149,538	88	------
Total	103	1,517	64,081	87,289	73	------	462	27,291	559,079	718,815	78	------
Richmond:												
Resident	29	266	19,475	24,886	78	18	160	7,156	146,035	191,426	76	25
Nonresident	13	60	3,550	3,591	99	27	226	15,885	225,080	312,425	72	33
Total	42	326	23,025	28,477	81	20	386	23,041	371,115	503,851	74	30

[1] Sources of data: Number of properties, areas, and assessed values from town records. Appraised values by experts temporarily attached to the Forest Service through the cooperation of the New Hampshire State Tax Commission. Properties in Fremont and Richmond were appraised individually in the field; those in Loudon in the office by comparison with sample individual appraisals and sales. Assessment ratios computed from assessed and appraised values. Coefficients of dispersion computed from assessment ratios of the individual properties in each group, weighted by appraised value, as explained in the text.

[2] 1 property assessed at $100 and with consideration of $75, without any area.

TABLE 27.—*Summary of assessment ratio data by property classes, 1925–27; selected counties, Wisconsin*

County	Timber						Cut-over					
	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion
	No.	*Acres*	*Dol.*	*Dol.*	*Pct.*		*No.*	*Acres*	*Dol.*	*Dol.*	*Pct.*	
Ashland	11	770	18,735	31,615	59	16	80	10,080	64,402	45,945	140	41
Bayfield	1	40	1,600	4,000	[1] 40	------	107	11,826	118,883	95,145	125	33
Burnett	5	336	3,434	10,000	34	------	133	11,092	95,913	106,450	90	33
Douglas	0	0	0	0	------	------	116	7,614	102,635	100,377	102	38
Florence	4	602	6,550	20,760	32	------	80	9,552	50,255	69,494	72	26
Forest	29	12,700	232,723	600,800	39	28	90	7,382	42,862	52,300	82	27
Iron	8	1,170	32,727	42,700	77	29	66	6,819	52,629	46,636	113	30
Langlade	14	2,598	72,270	135,350	53	17	144	16,823	113,476	92,427	123	49
Lincoln	14	876	18,495	33,850	55	13	155	11,740	111,342	133,100	84	25
Marinette	0	0	0	0	------	------	237	20,715	169,485	192,760	88	48
Oneida	3	480	6,590	10,100	65	------	90	7,933	56,268	64,564	87	26
Price	9	1,048	25,770	36,500	71	18	347	29,721	279,035	249,889	112	29
Richland	0	0	0	0	------	------	1	20	600	400	[1] 150	------
Rusk	0	0	0	0	------	------	63	6,290	73,095	66,106	111	29
Sawyer	5	1,279	15,890	47,360	34	------	68	6,282	50,622	53,342	95	43
Shawano	7	653	9,205	22,555	41	25	119	6,652	74,250	76,510	97	28
Taylor	7	408	15,230	18,100	84	12	308	24,644	334,699	299,760	112	19
Vilas	2	280	9,750	14,450	67	------	96	11,889	82,604	86,834	95	31
Washburn	0	0	0	0	------	------	79	7,047	77,468	78,536	99	38
	Farm						Resort [2]					
Ashland	55	4,110	121,731	122,349	99	22	34	------	18,275	27,082	67	26
Bayfield	85	5,260	165,934	202,934	82	25	89	------	24,430	62,431	39	45
Burnett	24	1,272	38,460	69,000	56	30	49	------	15,241	31,133	49	53
Douglas	35	1,520	60,950	85,700	71	24	122	------	16,663	38,752	43	47
Florence	14	780	7,720	26,150	30	55	139	------	38,365	83,275	46	44
Forest	22	1,095	11,703	23,399	50	49	39	------	14,470	31,939	45	34
Iron	19	1,141	23,479	40,700	58	42	41	------	44,925	108,831	41	49
Langlade	85	5,091	230,423	341,047	68	21	75	------	33,095	70,635	47	42
Lincoln	129	9,334	234,535	410,120	57	25	133	------	48,190	92,130	52	36
Marinette	116	7,509	193,270	343,426	56	34	19	------	11,877	19,817	60	33
Oneida	40	2,563	58,535	97,950	60	36	143	------	100,080	174,159	57	40
Price	144	8,525	188,621	249,126	76	25	11	------	9,550	11,187	85	22
Richland	68	5,548	304,875	386,950	79	13	0	------	0	0	------	------
Rusk	99	6,315	169,866	286,066	59	26	67	------	27,381	48,890	56	49
Sawyer	51	3,292	56,933	108,204	53	35	99	------	83,980	173,378	48	49
Shawano	153	10,909	478,252	657,380	73	19	117	------	62,438	141,997	44	32
Taylor	230	14,876	510,460	585,272	87	19	1	------	100	200	[1] 50	------
Vilas	38	2,135	36,580	75,635	48	45	282	------	191,556	396,406	48	43
Washburn	10	597	17,008	30,750	55	23	187	------	39,815	66,763	60	52
	Residential and business [2]						All classes [2]					
Ashland	49	------	41,135	57,403	72	24	229	------	264,278	284,394	93	33
Bayfield	47	------	22,595	35,580	64	31	329	------	333,442	400,090	83	38
Burnett	35	------	10,366	16,699	62	24	246	------	163,414	233,282	70	39
Douglas	22	------	10,345	13,765	75	40	295	------	190,593	238,594	80	39
Florence	92	------	30,462	65,616	46	35	329	------	133,352	265,295	50	42
Forest	75	------	35,361	83,825	42	37	255	------	337,119	792,263	43	32
Iron	53	------	31,843	52,300	61	51	187	------	185,603	291,167	64	50
Langlade	42	------	24,392	51,800	47	44	360	------	473,656	691,259	69	35
Lincoln	36	------	23,400	45,320	52	29	467	------	435,962	714,520	61	30
Marinette	40	------	31,635	62,852	50	39	412	------	406,267	618,855	66	43
Oneida	60	------	45,820	91,550	50	34	336	------	267,293	438,323	61	37
Price	43	------	25,000	28,750	87	29	554	------	527,976	575,452	92	30
Richland	38	------	43,195	61,500	70	24	107	------	348,670	448,850	78	14
Rusk	17	------	6,665	10,215	65	38	246	------	277,007	411,277	67	35
Sawyer	45	------	11,010	29,195	38	46	268	------	218,435	411,479	53	48
Shawano	67	------	78,207	173,735	45	33	463	------	702,352	1,072,177	66	30
Taylor	58	------	34,432	39,065	88	25	604	------	894,921	942,397	95	21
Vilas	25	------	14,266	18,305	78	41	443	------	334,756	591,630	57	45
Washburn	18	------	6,555	12,360	53	47	294	------	140,846	188,409	75	47

[1] Based on 1 sale only.

[2] Area not available.

Sources of data: Number of properties, areas, assessed values, and considerations from records of the Wisconsin State Tax Commission. Assessment ratios computed from assessed value and consideration. Coefficients of dispersion computed from assessment ratios of the individual properties in each group, weighted by consideration, as explained in the text. Since these coefficients are of little meaning if based on a very small number of ratios, they are omitted for groups in which the number of properties is less than 7.

TABLE 28.—*Summary of assessment ratio data by property classes, 1921–28; selected counties, Oregon and Washington* [1]

State, class of sale, and county	Timber						Cut-over and grazing [3]					
	Properties	Area	Assessed value [2]	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value [2]	Consideration	Assessment ratio	Coefficient of dispersion
	Number	*Acres*	*Dollars*	*Dollars*	*Percent*		*Number*	*Acres*	*Dollars*	*Dollars*	*Percent*	
Oregon (verified):												
Baker	13	1,415	12,140	21,050	58	39	24	6,505	22,735	21,639	105	48
Grant	8	1,720	11,700	18,300	64	46	34	13,869	54,550	58,144	94	35
Klamath	87	18,681	164,270	333,409	49	40	32	5,752	29,250	65,372	45	43
Lane	47	9,118	95,510	227,587	42	49	35	3,367	19,870	35,685	56	32
Oregon (unverified):												
Clatsop [4]	28	25,544	730,302	1,799,933	41	19	44	1,970	38,080	137,306	28	37
Coos	34	4,824	96,203	237,623	40	47	104	6,063	55,152	138,660	40	53
Tillamook	16	4,451	173,547	243,850	71	34	29	1,994	24,020	62,035	39	25
Washington (verified):												
Clallam	13	1,992	77,836	97,251	80	32	13	311	5,938	12,852	46	45
Grays Harbor	34	4,136	180,210	251,032	72	36	59	4,212	24,988	57,003	44	68

State, class of sale, and county	Farm						Other						All classes					
	Properties	Area	Assessed value [2]	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value [2]	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value [2]	Consideration	Assessment ratio	Coefficient of dispersion
	Number	*Acres*	*Dollars*	*Dollars*	*Percent*		*Number*	*Acres*	*Dollars*	*Dollars*	*Percent*		*Number*	*Acres*	*Dollars*	*Dollars*	*Percent*	
Oregon (verified):																		
Baker	59	12,515	243,735	393,915	62	32	10	44	10,435	15,228	69	57	106	20,479	289,045	451,832	64	34
Grant	35	9,903	61,645	122,309	50	38	3	163	1,420	7,713	18	-------	80	25,655	129,315	206,466	63	46
Klamath	44	6,869	84,010	278,494	30	33	8	95	4,650	13,632	34	56	171	31,397	282,180	690,907	41	44
Lane	185	13,360	261,815	789,371	33	34	60	361	28,795	102,763	28	44	327	26,206	405,990	1,155,406	35	40
Oregon (unverified):																		
Clatsop [4]	24	1,999	33,040	135,117	24	49	24	49	7,818	42,105	19	55	120	29,562	809,240	2,114,461	38	21
Coos	72	6,371	216,265	459,701	47	34	37	38	14,285	38,110	37	43	247	17,296	381,905	874,094	44	41
Tillamook	88	6,705	325,880	788,924	41	31	20	17	20,800	43,650	48	37	153	13,167	544,247	1,138,459	48	39
Washington (verified):																		
Clallam	15	769	30,240	51,923	58	33	2	21	660	3,050	22	-------	43	3,093	114,674	165,076	69	42
Grays Harbor	85	2,524	58,040	203,879	28	52	33	1,380	24,600	85,233	29	65	211	12,252	287,838	597,147	48	55

[1] Sources of data: Number of properties, areas, and assessed values from public records. Considerations reported by parties to the transactions (verified), or inferred from deeds (unverified). Assessment ratios computed from assessed value and consideration. Coefficients of dispersion computed from assessment ratios of the individual properties in each group, weighted by consideration, as explained in the text. Since these coefficients are of little meaning if based on a very small number of ratios, they are omitted for groups in which the number of properties is less than seven.

[2] The legal rate of assessment in Washington is 50 percent of "true and fair value." Assessed values in Washington as given in this table should, therefore, be divided by 2 if the legal assessments are desired.

[3] Columns 8, 9, 10, and 11 in the western counties (Clatsop, Coos, Lane, Tillamook, Clallam, and Grays Harbor) represent cut-over and burned forest land exclusively; in the eastern counties (Baker, Grant, and Klamath) they represent land generally used for grazing, whether cut-over forest or nonforest.

[4] Includes 13 verified sales not treated independently because of their small number.

TABLE 29.—*Summary of assessment ratio data, by property classes, 1925–30; selected counties, North Carolina*

County	Forest and transitional						Farm and pasture					
	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion
	No.	*Acres*	*Dol.*	*Dol.*	*Pct.*	*Pct.*	*No.*	*Acres*	*Dol.*	*Dol.*	*Pct.*	*Pct.*
Beaufort	43	3,531	56,843	59,331	96	27	80	4,253	173,116	206,448	84	29
Chatham	31	1,756	23,515	31,614	74	44	111	6,627	127,097	161,137	79	27
Macon	22	1,313	13,882	17,132	81	55	60	2,791	54,037	66,006	82	30

County	Other						All classes					
	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion	Properties	Area	Assessed value	Consideration	Assessment ratio	Coefficient of dispersion
	No.	*Acres*	*Dol.*	*Dol.*	*Pct.*	*Pct.*	*No.*	*Acres*	*Dol.*	*Dol.*	*Pct.*	*Pct.*
Beaufort	8	89	19,597	12,930	152	47	131	7,873	249,556	278,709	90	31
Chatham	39	154	24,845	36,004	69	46	181	8,537	175,457	228,755	77	32
Macon	31	430	43,041	77,033	56	32	113	4,534	110,960	160,171	69	37

Sources of data: Number of properties, areas, and assessed values from county records. Considerations reported by parties to the transactions, or inferred from deeds. Assessment ratios computed from assessed value and consideration. Coefficients of dispersion computed from assessment ratios of the individual properties in each group, weighted by consideration, as explained in the text.

RESULTS OF ASSESSMENT

INEQUALITY AMONG INDIVIDUAL PROPERTIES

The fact that individual properties are in general unequally assessed is so well-known as scarcely to require proof by studies of assessment ratios. Since real estate is assessed either by properties or by parcels, it is inevitable that whatever inequality may exist within assessment districts is reflected in different assessment ratios for different properties or parcels. The extent to which individual assessment ratios vary within the same county as well as within certain property classes is illustrated by tables 30–38, which represent counties in Wisconsin, Oregon, Washington, and North Carolina, where forests are a substantial part of the real estate.

TABLE 30.—*Number and value of properties sold by assessment ratio and property classes, 1925–27; Forest County, Wis.*[1]

Assessment ratio class [2]	Timber		Cut-over		Farm		Resort		Residential and business		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
0–9	1	33.5	0	-------	0	-------	0	-------	1	1.4	2	34.9
10–19	1	16.2	1	2.0	1	2.8	0	-------	9	12.0	12	33.0
20–29	4	175.8	1	.7	4	5.8	5	2.9	10	13.0	24	198.2
30–39	5	32.6	2	1.3	2	1.2	10	15.6	17	12.3	36	63.0
40–49	3	227.6	4	2.4	2	1.8	2	2.9	8	22.1	19	256.8
50–59	6	86.1	8	3.3	4	3.5	10	4.4	7	6.4	35	103.7
60–69	2	4.4	13	7.0	1	.6	3	1.6	8	9.1	27	22.7
70–79	3	7.6	16	6.2	5	3.9	3	1.9	10	5.0	37	24.6
80–89	1	2.0	19	9.9	0	-------	3	1.3	3	2.1	26	15.3
90–99	1	6.5	4	7.9	3	3.8	0	-------	0	-------	8	18.2
100–109	1	2.5	10	6.4	0	-------	1	.2	2	.4	14	9.5
110–119	1	6.0	1	.5	0	-------	1	1.0	0	-------	3	7.5
120–129	0	-------	4	2.5	0	-------	1	.1	0	-------	5	2.6
130–139	0	-------	2	1.1	0	-------	0	-------	0	-------	2	1.1
150–159	0	-------	2	.4	0	-------	0	-------	0	-------	2	.4
200–209	0	-------	1	.3	0	-------	0	-------	0	-------	1	.3
230–239	0	-------	1	.4	0	-------	0	-------	0	-------	1	.4
240–249	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
260–269	0	-------	0	-------	0	-------	-------	-------	[3] 1	[4]	-------	-------
Total	29	600.8	90	52.4	22	23.4	39	31.9	75	83.8	255	792.3

[1] Source of data: Information from records of the Wisconsin Tax Commission (refer to table 27).
[2] No sales in classes omitted.
[3] Eliminated in computing totals.
[4] Value of $50 or less.

TABLE 31.—*Number and value of properties sold by assessment ratio and property classes, 1925–27; Langlade County, Wis.*[1]

Assessment ratio class [2]	Timber		Cut-over		Farm		Resort		Residential and business		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
0–9	0	-------	0	-------	0	-------	3	1.4	0	-------	3	1.4
10–19	0	-------	0	-------	0	-------	6	2.3	1	1.8	7	4.1
20–29	0	-------	2	2.8	2	6.0	13	19.1	3	14.3	20	42.2
30–39	2	7.3	4	1.7	4	11.0	8	7.3	6	8.0	24	35.3
40–49	5	47.8	6	6.6	12	36.3	8	5.2	3	6.5	34	102.4
50–59	4	48.5	12	9.0	13	54.9	14	14.7	6	7.8	49	134.9
60–69	1	20.0	10	9.2	18	82.3	9	9.2	4	4.6	42	125.3
70–79	0	-------	3	1.1	20	83.8	2	6.0	3	2.6	28	93.5
80–89	1	8.3	11	4.3	3	16.6	6	1.9	5	2.6	26	33.7
90–99	1	3.5	12	8.6	9	33.9	2	1.9	1	.1	25	48.0
100–109	0	-------	11	4.8	2	9.8	4	1.7	5	2.4	22	18.7
110–119	0	-------	10	10.3	2	6.4	0	-------	2	.4	14	17.1
120–129	0	-------	11	5.6	0	-------	0	-------	0	-------	11	5.6
130–139	0	-------	9	3.4	0	-------	0	-------	1	.3	10	3.7
140–149	0	-------	4	2.2	0	-------	0	-------	0	-------	4	2.2
150–159	0	-------	6	2.8	0	-------	0	-------	2	.4	8	3.2
160–169	0	-------	4	1.7	0	-------	0	-------	0	-------	4	1.7
170–179	0	-------	3	1.2	0	-------	0	-------	0	-------	3	1.2
180–189	0	-------	2	.9	0	-------	0	-------	0	-------	2	.9
190–199	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
200–209	0	-------	5	3.4	0	-------	0	-------	0	-------	5	3.4
210–219	0	-------	2	.7	0	-------	0	-------	0	-------	2	.7
220–229	0	-------	2	3.5	0	-------	0	-------	0	-------	2	3.5
240–249	0	-------	2	.5	0	-------	0	-------	0	-------	2	.5
250–259	0	-------	2	.5	0	-------	0	-------	0	-------	2	.5
260–269	0	-------	1	.3	0	-------	0	-------	0	-------	1	.3
270–279	0	-------	2	1.7	0	-------	0	-------	0	-------	2	1.7
300–309	0	-------	2	.8	0	-------	0	-------	[3] 1	[4]	2	.8
330–339	0	-------	1	.2	0	-------	0	-------	0	-------	1	.2
350–359	0	-------	1	4.0	0	-------	0	-------	0	-------	1	4.0
390–399	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
420–429	0	-------	1	.3	0	-------	0	-------	0	-------	1	.3
440–449	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
Total	14	135.4	144	92.4	85	341.0	75	70.7	42	51.8	360	691.3

[1] Source of data: Information from records of the Wisconsin Tax Commission (refer to table 27).
[2] No sales in classes omitted.
[3] Eliminated in computing totals.
[4] Value of $50 or less.

TABLE 32.—*Number and value of properties sold by assessment ratio and property classes, 1925–27; Lincoln County, Wis.*[1]

Assessment ratio class [2]	Timber		Cut-over		Farm		Resort		Residential and business		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
10–19	0	-------	0	-------	0	-------	2	3.9	0	-------	2	3.9
20–29	0	-------	1	0.6	4	9.1	9	9.3	3	7.4	17	26.4
30–39	2	2.0	3	4.4	12	52.4	16	13.8	4	8.9	37	81.5
40–49	2	10.8	5	4.8	28	98.6	14	25.6	5	2.8	54	142.6
50–59	6	12.2	18	15.5	25	90.4	22	10.6	6	10.0	77	138.7
60–69	2	4.6	21	12.6	23	72.1	21	10.4	8	11.0	75	110.7
70–79	1	3.8	14	24.6	15	40.4	17	10.3	5	3.5	52	82.6
80–89	0	-------	21	15.4	9	22.7	9	2.0	0	-------	39	40.1
90–99	0	-------	11	10.3	8	12.9	2	.9	2	1.4	23	25.5
100–109	0	-------	28	29.9	3	6.7	7	2.7	2	.2	40	39.5
110–119	0	-------	7	6.2	0	-------	0	-------	0	-------	7	6.2
120–129	1	.4	10	4.1	1	1.5	2	.3	0	-------	14	6.3
130–139	0	-------	2	.9	1	3.3	2	1.0	1	.2	6	5.4
140–149	0	-------	2	.7	0	-------	1	.2	0	-------	3	.9
150–159	0	-------	5	1.5	0	-------	3	.6	0	-------	8	2.1
160–169	0	-------	2	.6	0	-------	0	-------	0	-------	2	.6
180–189	0	-------	1	.3	0	-------	1	.1	0	-------	2	.4
190–199	0	-------	1	.3	0	-------	0	-------	0	-------	1	.3
200–209	0	-------	1	.2	0	-------	2	.2	0	-------	3	.4
210–219	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
280–289	0	-------	0	-------	0	-------	1	(3)	0	-------	1	(3)
300–309	0	-------	1	.1	0	-------	0	-------	0	-------	1	.1
350–359	0	-------	0	-------	0	-------	2	.2	0	-------	2	.2
430–439	0	-------	[4] 1	[4] .2	0	-------	0	-------	0	-------	0	-------
Total	14	33.8	155	133.1	129	410.1	133	92.1	36	45.4	467	714.5

[1] Source of data: Information from records of the Wisconsin Tax Commission (refer to table 27).
[2] No sales in classes omitted.
[3] Value of $50 or less.
[4] Eliminated in computing totals.

TABLE 33.—*Number and value of properties sold by assessment ratio and property classes, 1921–28; Baker County, Oreg.*[1]

Assessment ratio class [2]	Timber		Cut-over and grazing		Farm		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
0–9	1	0.8	0	-------	1	0.4	0	-------	2	1.2
10–19	1	.4	0	-------	0	-------	0	-------	1	.4
20–29	1	1.5	0	-------	4	20.1	2	2.9	7	24.5
30–39	1	.3	0	-------	5	89.7	1	3.1	7	93.1
40–49	2	9.2	3	3.8	5	23.8	2	2.2	12	39.0
50–59	1	2.2	2	4.9	6	64.6	0	-------	9	71.7
60–69	0	-------	1	.6	11	83.2	0	-------	12	83.8
70–79	0	-------	0	-------	8	37.6	2	1.2	10	38.8
80–89	3	3.1	2	2.3	6	35.6	0	-------	11	41.0
90–99	1	1.7	0	-------	0	-------	0	-------	1	1.7
100–109	1	1.6	2	.6	2	12.8	1	.7	6	15.7
110–119	0	-------	4	3.1	5	17.9	1	5.0	10	26.0
120–129	1	.2	0	-------	2	3.5	0	-------	3	3.7
130–139	0	-------	2	1.5	1	.7	0	-------	3	2.2
140–149	0	-------	1	1.0	0	-------	0	-------	1	1.0
150–159	0	-------	2	1.6	0	-------	0	-------	2	1.6
170–179	0	-------	0	-------	1	.8	1	.1	2	.9
200–209	0	-------	2	.2	0	-------	0	-------	2	.2
210–219	0	-------	0	-------	1	.6	0	-------	1	.6
220–229	0	-------	0	-------	1	2.7	0	-------	1	2.7
250–259	0	-------	1	.8	0	-------	0	-------	1	.8
280–289	0	-------	2	1.2	0	-------	0	-------	2	1.2
480–489	[3] 1	[3] .5	0	-------	0	-------	0	-------	0	-------
Total	13	21.0	24	21.6	59	394.0	10	15.2	106	451.8

[1] Source of data: Information from public records and parties to the transactions (refer to table 28).
[2] No sales in classes omitted.
[3] Eliminated in computing totals.

TABLE 34.—*Number and value of properties sold by assessment ratio and property classes, 1921–28; Lane County, Oreg.*[1]

Assessment ratio class [2]	Timber		Cut-over and grazing		Farm		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
0–9	0	-------	0	-------	4	9.7	1	1.4	5	11.1
10–19	6	33.2	2	3.1	24	122.9	17	28.9	49	188.1
20–29	11	43.1	5	2.0	57	245.7	20	44.0	93	334.8
30–39	6	58.3	4	3.5	42	190.6	4	4.9	56	257.3
40–49	6	41.8	5	4.0	27	108.5	6	6.1	44	160.4
50–59	5	20.4	5	10.4	16	79.5	6	9.7	32	120.0
60–69	2	3.6	4	3.6	7	13.4	3	6.7	16	27.3
70–79	3	7.9	1	.3	2	1.9	1	.5	7	10.6
80–89	2	6.1	5	4.7	1	8.0	0	-------	8	18.8
90–99	2	3.6	2	3.7	3	7.9	0	-------	7	15.2
100–109	0	-------	0	-------	0	-------	2	.6	2	.6
120–129	0	-------	1	.4	0	-------	0	-------	1	.4
150–159	1	2.6	1	[3]	1	.6	0	-------	3	3.2
160–169	2	6.8	0	-------	1	.6	0	-------	3	7.4
220–229	1	.2	0	-------	0	-------	0	-------	1	.2
240–249	0	-------	[4] 1	[4] .3	0	-------	0	-------	0	-------
Total	47	227.6	35	35.7	185	789.3	60	102.8	327	1,155.4

[1] Source of data: Information from public records and parties to the transactions (refer to table 28).
[2] No sales in classes omitted.
[3] Value of $50 or less.
[4] Eliminated in computing totals.

TABLE 35.—*Number and value of properties sold by assessment ratio and property classes, 1921–28; Grays Harbor County, Wash.*[1]

Assessment ratio class [2]	Timber		Cut-over and grazing		Farm		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*	*Number*	*1,000 dollars*
0–9	0	-------	4	7.0	12	17.8	6	12.0	22	36.8
10–19	2	2.8	10	9.6	23	59.9	7	35.9	42	108.2
20–29	0	-------	9	12.7	16	60.0	7	14.6	32	87.3
30–39	1	2.0	5	6.4	10	14.4	1	.7	17	23.5
40–49	8	99.2	10	11.2	8	24.5	3	12.2	29	147.1
50–59	2	27.0	0	-------	6	15.6	0	-------	8	42.6
60–69	1	1.0	3	.8	2	1.9	5	4.6	11	8.3
70–79	4	25.7	3	.9	1	2.0	1	1.6	9	30.2
80–89	3	38.3	4	1.7	1	1.4	0	-------	8	41.4
90–99	2	29.2	1	.3	3	4.7	0	-------	6	34.2
110–119	1	.5	0	-------	1	1.1	1	2.4	3	4.0
120–129	2	4.1	2	.9	0	-------	1	.7	5	5.7
130–139	1	4.5	1	.1	0	-------	1	.5	3	5.1
140–149	0	-------	2	.9	0	-------	0	-------	2	.9
150–159	2	11.4	0	-------	0	-------	0	-------	2	11.4
160–169	1	2.1	2	2.8	1	.3	0	-------	4	5.2
170–179	0	-------	2	1.7	0	-------	0	-------	2	1.7
200–209	0	-------	1	[3]	0	-------	0	-------	1	[3]
220–229	2	1.6	0	-------	0	-------	0	-------	2	1.6
230–239	1	1.5	0	-------	0	-------	0	-------	1	1.5
240–249	1	.1	0	-------	1	.3	0	-------	2	.4
450–459	0	-------	[4] 1	[4] 1.4	0	-------	0	-------	0	-------
Total	34	251.0	59	57.0	85	203.9	33	85.2	211	597.1

[1] Source of data: Information from public records and parties to the transactions (refer to table 28).
[2] No sales in classes omitted.
[3] Value of $50 or less.
[4] Eliminated in computing totals.

TABLE 36.—*Number and value of properties sold by assessment ratio and property classes, 1925–30; Beaufort County, N. C.* [1]

Assessment ratio class [2]	Forest and transitional		Farm and pasture		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*
30–39	0	----------	1	5.0	0	----------	1	5.0
40–49	1	9.0	5	22.9	1	0.6	7	32.5
50–59	4	2.9	7	21.4	1	.8	12	25.1
60–69	6	6.1	11	28.7	0	----------	17	34.8
70–79	2	1.2	10	19.5	1	3.0	13	23.7
80–89	1	.6	10	24.4	0	----------	11	25.0
90–99	3	1.4	12	40.6	0	----------	15	42.0
100–109	15	26.3	5	6.4	1	1.2	21	33.9
110–119	1	.6	4	9.6	1	.9	6	11.1
120–129	2	3.4	5	8.0	0	----------	7	11.4
130–139	1	2.0	3	6.0	0	----------	4	8.0
140–149	0	0	4	10.5	0	----------	4	10.5
150–159	2	1.3	0	----------	0	----------	2	1.3
160–169	1	.4	1	1.0	1	(3)	3	1.4
170–179	1	3.2	0	----------	0	----------	1	3.2
190–199	0	----------	1	.7	0	----------	1	.7
200–209	1	.4	1	1.8	0	----------	2	2.2
220–229	0	----------	0	----------	1	6.1	1	6.1
230–239	1	.3	0	----------	0	----------	1	.3
250–259	0	----------	0	----------	1	.3	1	.3
260–269	1	.2	0	----------	0	----------	1	.2
400 [4]	1	.1	1	.1	0	----------	0	----------
Total	43	59.3	80	206.5	8	12.9	131	278.7

[1] Sources of data: Information from public records, parties to the transactions, and from deeds (refer to table 29).
[2] No sales in classes, omitted.
[3] Value of $50 or less.
[4] Eliminated in computing totals.

TABLE 37.—*Number and value of properties sold by assessment ratio and property classes, 1925–30; Chatham County, N. C.* [1]

Assessment ratio class [2]	Forest and transitional		Farm and pasture		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*
0–9	1	2.2	0	----------	1	2.5	2	4.7
10–19	0	----------	0	----------	2	3.2	2	3.2
20–29	1	2.0	2	2.5	2	.5	5	5.0
30–39	0	----------	2	3.2	2	3.4	4	6.6
40–49	3	6.1	7	9.0	2	1.7	12	16.8
50–59	1	2.0	10	20.6	3	1.7	14	24.3
60–69	4	1.8	17	36.1	10	13.6	31	51.5
70–79	4	5.9	12	27.0	1	.5	17	33.4
80–89	3	1.0	11	19.1	1	2.0	15	22.1
90–99	2	2.3	9	9.3	1	.8	12	12.4
100–109	4	4.2	16	12.4	7	.9	27	17.5
110–119	0	----------	6	8.0	1	.9	7	8.9
120–129	3	1.1	3	2.5	2	2.7	8	6.3
130–139	0	----------	5	6.3	0	----------	5	6.3
140–149	1	.7	2	1.0	0	----------	3	1.7
150–159	1	.4	3	1.3	0	----------	4	1.7
160–169	2	.7	3	1.0	0	----------	5	1.7
180–189	1	1.2	0	----------	0	----------	1	1.2
200–209	0	----------	3	1.8	1	.4	4	2.2
250–259	0	----------	0	----------	1	.2	1	.2
260–269	0	----------	0	----------	1	1.1	1	1.1
300–309	0	----------	0	----------	1	(3)	1	(3)
400 [4]	0	----------	1	.3	0	----------	0	----------
Total	31	31.6	111	161.1	39	36.1	181	228.8

[1] Sources of data: Information from public records, parties to the transactions, and from deeds (refer to table 29).
[2] No sales in classes omitted.
[3] Value of $50 or less.
[4] Eliminated in computing totals.

TABLE 38.—*Number and value of properties sold by assessment ratio and property classes, 1925–30; Macon County, N. C.* [1]

Assessment ratio class [2]	Forest and transitional		Farm and pasture		Other		All classes	
	Sales	Value	Sales	Value	Sales	Value	Sales	Value
	Number	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*	*Number*	*1,000 dol.*
20–29	0		0		3	12.2	3	12.2
30–39	2	3.5	4	7.7	5	6.7	11	17.9
40–49	2	3.3	0		3	10.4	5	13.7
50–59	4	3.4	3	3.3	3	21.2	10	27.9
60–69	1	.2	12	14.1	1	2.5	14	16.8
70–79	2	1.2	6	9.0	5	13.8	13	24.0
80–89	2	.7	4	3.1	3	5.8	9	9.6
90–99	0		4	2.1	1	.7	5	2.8
100–109	2	1.1	10	17.7	3	1.3	15	20.1
110–119	2	.8	6	4.9	1	.7	9	6.4
120–129	0		1	.4	0		1	.4
130–139	1	.2	0		2	1.5	3	1.7
140–149	0		3	1.9	1	.3	4	2.2
150–159	1	.1	3	.9	0		4	1.0
160–169	0		1	.3	0		1	.3
180–189	0		1	.3	0		1	.3
190–199	1	2.5	0		0		1	2.5
200–209	1	[3]	0		0		1	[3]
210–219	0		1	.2	0		1	.2
220–229	1	.1	0		0		1	.1
230–239	0		1	.1	0		1	.1
Total	22	17.1	60	66.0	31	77.1	113	160.2

[1] Sources of data: Information from public records, parties to the transactions, and from deeds (refer to table 29).
[2] No sales in classes omitted.
[3] Value of $50 or less.

It will be noted that the distributions in tables 30–38 indicate a tendency on the part of the ratios to spread out more widely toward the upper end of the range. This is a general characteristic of assessment-ratio distribution, when equal class intervals are used. While an assessment ratio can never be less than zero, it has no fixed upper limit. It is evident that the greatest absolute inequalities in assessment occur on the side of overassessment rather than underassessment.

Inequality in assessment within a group of properties may be measured by the average deviation of their assessment ratios from the average assessment ratio of the group. A weighted average deviation is obtained by multiplying each individual deviation expressed in percent by the estimated true value of the property, adding the products, and dividing the total by the total of the true values. In making this computation, algebraic signs are of course disregarded. However, average deviations are not directly comparable, since they are measured from different average assessment ratios. To get an absolute measure of variation, it is necessary to divide the average deviation for each group by the corresponding average assessment ratio. The result, expressed in percent, is known as the coefficient of dispersion. This coefficient measures relative variability. A low coefficient indicates a low degree of variability in assessment, while a high coefficient indicates a high degree of variability.

The manner of calculating the coefficient of dispersion is illustrated in table 39 by a simplified example involving a group of five assessment ratios.

TABLE 39.—*Example showing method of calculating the coefficient of dispersion*

Assessment group	Assessed value	True value	Assessment ratio	Deviation [1]	
	Dollars	*Dollars*	*Percent*	*Percent*	*Dollars*
A	2,000	5,000	40	−30	1,500
B	1,100	2,000	55	−15	300
C	7,200	10,000	72	+2	200
D	6,000	8,000	75	+5	400
E	5,400	6,000	90	+20	1,200
Total or average	21,700	31,000	[2] 70	[3] 12	3,600

Coefficient of dispersion $=\frac{12}{70}=17$ percent.

[1] Individual deviation percent equals individual ratio minus average ratio; this percentage (ignoring signs) times true value gives deviation in dollars.

[2] Total assessed value divided by total true value, $\frac{21,700}{31,000}=70$ percent, average assessment ratio.

[3] Total deviation divided by total true value, $\frac{3,600}{31,000}=12$ percent, average deviation.

The coefficient of dispersion for a group of properties (when computed from an average deviation that is weighted by value) has the advantage, not only of being a measure of variation in assessment, but also of having a definite relationship to the portion of the taxes, levied at a uniform rate on the group, which is misplaced as the result of unequal assessment within the group. If the coefficient were precisely determined, it would equal twice the percent of misplaced tax. This may be readily understood from the facts that the total of deviations above the average assessment ratio is equal to the total of those below and that the tax on properties with assessment ratios above this average is out of place and should be paid on those properties with assessment ratios below the average. A mathematical proof of this relationship follows.

Let—

D = coefficient of dispersion, defined as the ratio of the average deviation of individual assessment ratios weighted by true values to the weighted average assessment ratio of the entire group,

$v_1, v_2, \ldots v_n$ = the true value of each individual property in the group, in which n is the number of properties,

$a_1, a_2, \ldots a_n$ = the assessed value of each individual property in the group,

T = the total tax,

M = the amount of misplaced tax (aggregate tax transferred between properties by inequalities in assessment ratio),

t = tax rate which applied to the total assessed value gives the required total tax, T,

t' = tax rate which applied to the total true value gives the required total tax, T,

$r_1, r_2, \ldots r_n$ = the assessment ratio for each individual property in the group,

R = the average assessment ratio (weighted by true values), or aggregate assessed value divided by aggregate true value, times 100.

The problem is to prove that $M=\frac{1}{2}\, D \cdot T$.

The average deviation of assessment ratios, weighted by true values, is determined by multiplying the absolute difference between each individual assessment ratio and the average assessment ratio by the true value of that individual prop-

erty, and dividing the sum of the products thus obtained by the aggregate true value. Dividing the result by the average assessment ratio, R, gives the coefficient of dispersion, or

$$(1) \qquad D=\frac{(R-r_1)v_1+(R-r_2)v_2+\ldots+(R-r_n)v_n}{R(v_1+v_2+\ldots+v_n)}$$

in which each term of the form $(R-r_n)$ is considered as positive regardless of sign. Also, by definition

$$(2) \qquad T=t'(v_1+v_2+\ldots+v_n).$$

Multiplying each member of equation (1) by the corresponding member of equation (2)

$$(3) \qquad D\cdot T=\frac{(Rt'-r_1t')v_1+(Rt'-r_2t')v_2+\ldots+(Rt'-r_nt')v_n}{R}.$$

However, by definition,

$$t(a_1+a_2+\ldots+a_n)=t'(v_1+v_2+\ldots+v_n);$$

whence

$$\frac{a_1+a_2+\ldots+a_n}{v_1+v_2+\ldots+v_n}=\frac{t'}{t}, \text{ or } R=\frac{t'}{t}.$$

Substituting for R in (3)

$$D\cdot T=\frac{\left(\frac{t'}{t}t'-r_1t'\right)v_1+\left(\frac{t'}{t}t'-r_2t'\right)v_2+\ldots+\left(\frac{t'}{t}t'-r_nt'\right)v_n}{\frac{t'}{t}}.$$

Simplifying

$$(4) \qquad D\cdot T=(t'-r_1t)v_1+(t'-r_2t)v_2+\ldots+(t'-r_nt)v_n.$$

The misplaced tax is determined directly as follows:

$$M=\frac{(v_1t'-a_1t)+(v_2t'-a_2t)+\ldots+(v_nt'-a_nt)}{2}$$

in which each term of the form $(v_nt'-a_nt)$ is considered as positive regardless of sign.

However, $a_1=v_1r_1$, $a_2=v_2r_2$, etc.

Substituting these values, and multiplying by 2,

$$2M=(v_1t'-v_1r_1t)+(v_2t'-v_2r_2t)+\ldots+(v_nt'-v_nr_nt),$$

or

$$(5) \qquad 2M=(t'-r_1t)v_1+(t'-r_2t)v_2+\ldots+(t'-r_nt)v_n.$$

From equations (4) and (5) $2M=D\cdot T$, or $M=\frac{1}{2}D\cdot T$.

Thus the amount of taxes misplaced because of dispersion in assessment ratios is equal to one-half of the coefficient of dispersion times the total tax.

In practice it is impossible to determine a precise coefficient of dispersion, since the estimates of true value are subject to error and where a sample is used it would not be likely to give a perfect representation of the group. Where there is equalization of the county tax levy among districts, as in Wisconsin, a coefficient of dispersion for the county tends to exaggerate the actual misplacement of county taxes provided there is greater uniformity in assessment, by and large, within the separate districts than within the county as a whole.

It would be possible, in measuring inequality in assessment among individual properties, to treat all properties alike, regardless of their respective values. In that case the average deviation, measured from

either an unweighted or a weighted average of assessment ratios, would not be weighted by value in calculating the coefficient of dispersion. Since this investigation is primarily concerned with inequality in assessment as measured by value, the coefficient of dispersion is in all cases weighted by value.

The appraisals which were made in the course of the original investigations, when considered singly, are not sufficiently accurate to warrant the application of as precise a measure as the coefficient of dispersion to the assessment ratios based upon them, with the possible exception of those made by local experts in the towns of Fremont and Richmond, N. H. Coefficients of dispersion for these two towns and for counties in the other States where sales were used as the basis for assessment ratios are given in tables 40 and 41. It is evident that in all of the political units represented in these tables the variation in assessment ratios is great enough to impose a serious burden of unequal taxation on the overvalued properties, with corresponding advantage to the undervalued.

TABLE 40.—*Coefficients of dispersion by property classes; Wisconsin, Oregon, and Washington* [1]

State, county, and period covered	Timber	Cut-over	Farm	Resort	Residential and business [2]	All classes
Wisconsin, 1925–27:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Ashland	16	41	22	26	24	33
Bayfield	----------	33	25	45	31	38
Burnett	----------	33	30	53	24	39
Douglas	----------	38	24	47	40	39
Florence	----------	26	55	44	35	42
Forest	28	27	49	34	37	32
Iron	29	30	42	49	51	50
Langlade	17	49	21	42	44	35
Lincoln	13	25	25	36	29	30
Marinette	----------	48	34	33	39	43
Oneida	----------	26	36	40	34	37
Price	18	29	25	22	29	30
Richland	----------	----------	13	----------	24	14
Rusk	----------	29	26	49	38	35
Sawyer	----------	43	35	49	46	48
Shawano	25	28	19	32	33	30
Taylor	12	19	19	----------	25	21
Vilas	----------	31	45	43	41	45
Washburn	----------	38	23	52	47	47
Oregon, 1921–28 (verified):						
Baker	39	48	32	----------	57	34
Grant	46	35	38	----------	----------	46
Klamath	40	43	33	----------	56	44
Lane	49	32	34	----------	44	40
Oregon, 1921–28 (unverified):						
Clatsop [3]	19	37	49	----------	55	21
Coos	47	53	34	----------	43	41
Tillamook	34	25	31	----------	37	39
Washington, 1921–28:						
Clallam	32	45	33	----------	----------	42
Grays Harbor	36	68	52	----------	65	55

[1] Source of data: Refer to tables 27 and 28.
[2] The figures for Oregon and Washington represent the "other" property class.
[3] Includes 13 verified sales not treated independently because of their small number.

TABLE 41.—*Coefficients of dispersion by property classes; New Hampshire and North Carolina* [1]

State, subdivision, and period covered	Forest	Farm	Other	All classes
New Hampshire, 1928:				
Town of Fremont:	*Percent*	*Percent*	*Percent*	*Percent*
Resident	25	24	18	24
Nonresident	37	19	23	34
Total	38	23	19	28
Town of Richmond:				
Resident	26	23	18	25
Nonresident	34	12	27	33
Total	32	22	20	30
North Carolina, 1925–30: [2]				
Beaufort County	27	29	47	31
Chatham County	44	27	46	32
Macon County	55	30	32	37

[1] Source of data: Refer to tables 26 and 29.
[2] In North Carolina, Forest includes transitional and Farm includes pasture lands.

It might be expected that within property class groups the variations in assessment ratios would be less than in the entire political unit of which they are a part. This appears to be generally the case in the homogeneous groups. The most homogeneous groups represented in tables 40 and 41 are timber in table 40 and farm in both tables. In spite of the small size of the timber sample in most counties, the timber group shows a lower coefficient than the county as a whole in 13 out of the 17 counties in which timber is represented by more than six sales. All of the four exceptions are in Oregon. The farm group shows a lower coefficient than the county or town as a whole in 29 out of the entire 33 counties and towns. The cut-over class is not so uniform in character as either farm or timber. It includes very low value properties, which tend to have extreme ratios as shown by the frequency distributions. This group (table 40) has 8 cases out of 27 in which the degree of inequality within the class appears to be greater than that of the corresponding county taken as a whole. The resort group and the residential and business group as segregated in Wisconsin are even more heterogeneous, and the resort group is especially unstable in market value. In many counties one or both of these classes show greater inequality in assessment than the cut-over class. The forest class in New Hampshire and North Carolina (table 41) is also one of the most heterogeneous, because it was impracticable in these States to segregate the properties with old-growth timber from those in different stages of second growth or from those which were partly in other than forest use. In this class 4 out of 5 counties or towns show greater degrees of variation within the forest class than within the corresponding political unit as a whole. In making the preceding comparisons, it is well to bear in mind the possibility that the coefficient of dispersion for the entire county or town may be influenced more than it should be by the dispersion which characterizes a particular class if that class happens to be over-represented in the sample.

In both of the New Hampshire towns there appears to be a tendency to assess resident-owned properties with a greater degree of equality than nonresident-owned properties, except in the farm category, where the reverse is true. The greater inequality in assessment of forest properties owned by nonresidents may be explained by the fact that in both Fremont and Richmond these properties are more

remote from the settled parts of the towns and are therefore not as well known to the assessors as the properties owned by residents.

The findings of this study in regard to the degree of variability in assessment practice in Oregon are corroborated by the report of another investigation, which gives coefficients of dispersion for assessment ratios of rural property representing the 4 years, 1921, 1923, 1925, and 1926, for the same counties covered in this study, as follows (*17, p. 38*): Baker, 33; Grant, 43; Klamath, 39; and Lane, 42. The average coefficients for the same 4 years range throughout the State from 24 to 46 for rural properties in the different counties, with an average for all counties of 37. The corresponding coefficients for city assessment ratios range from 20 to 50, with an average for all counties of 35 (*17, p. 39*). Apparently there is in Oregon no marked difference in equality between city and rural assessment.

In Iowa a somewhat better degree of equality in assessment is shown than in Oregon, although the results there are by no means satisfactory. A recent Iowa investigation (*39, pp. 37, 38, 44*) [32] shows coefficients of dispersion ranging from 16 to 29 in 8 cities, from 19 to 39 in 14 towns, and from 11 to 25 in 41 counties, considering rural properties only in the counties. The more homogeneous character of the property and greater stability of the market are suggested as factors in the higher degree of equality exhibited in Iowa. Also these coefficients are based on results of a single year, while in Oregon the necessity of using a period of years to obtain a sufficient sales sample may have exaggerated the coefficients a little.

The same investigation reports far better results in assessment for 12 agricultural counties of Wisconsin than those for the forest counties as indicated by this study. The coefficients of dispersion for rural property in 12 Wisconsin counties (1927) range between 8 and 29 (*39, p. 70*), as against a range of 21 to 48 for the 17 forest counties represented in table 40. While some of the difference is doubtless the result of using a 3-year period for the forest counties as against a single-year basis for the agricultural counties, most of the difference may be safely ascribed to the greater uniformity in property and greater stability of the real estate market at that time in the agricultural counties. This conclusion is supported by the close agreement between the Nelson and Mitchell coefficient of 11 for rural properties in Richland County for 1927 and the coefficient of 13 found in this study for farm properties in the same county (included as a sample of the region in which forest land is confined to farm wood lots) for 1925, 1926, and 1927 taken together.

In six Minnesota counties located outside of the predominantly forest region of the State, Nelson and Mitchell find a degree of inequality in assessment (1926–27) between that of the agricultural and that of the forest counties of Wisconsin. The coefficients of these six counties range from 14 to 29 (*39, p. 91*).

A study of assessment of real estate in Illinois shows a high degree of inequality between individual properties. In 1927 an analysis of sales in 10 counties outside of Chicago showed coefficients ranging from 31 to 62 and in the city of Chicago, a coefficient of 36.5 [33] (*49, p. 52*).

[32] The index referred to by Nelson and Mitchell (*39*) as the "average percentage deviation, value basis", corresponds to and is calculated in the same manner as the coefficient of dispersion.

[33] Apparently these coefficients, termed "average percentage deviations", were determined by the use of unweighted average deviations with reference to average assessment ratios weighted by value. In that case they are not exactly comparable to the coefficients used in this study.

In Cumberland County, Pa., a study of assessment ratios for 1926 showed coefficients of 29 for town properties, 29 for village properties, and 36 for farm properties. By 1929 a special effort to improve the quality of assessments in this county resulted in corresponding coefficients of 25 for town properties, 24 for village properties, and 33 for farm properties [34] (*56, pp. 29–30*).

In Delaware, assessment ratios, grouped into farm, town, and city, had coefficients of dispersion for 1921, 1924, 1926, and 1927 ranging from 21 to 41 [35] (*16, p. 27*).

In general, wherever precise studies such as those cited have been conducted, they have confirmed the well-known fact of marked inequality among individual assessments.

INEQUALITY AND THE LEGAL STANDARD

Undervaluation relative to the legal standard is a generally recognized characteristic of assessment practice. Evidence on this subject is available in reports of assessment ratio studies, such as those specifically referred to at other points in this part, and in many State tax commission reports. Undervaluation is also indicated by the State ratios of assessed value to estimated true value found by the United States Bureau of the Census *(51, p. 5)*.

It is reasonable to suppose that the prevailing tendency to aim at an average assessment much below the legal standard leads to greater inequalities in assessment than would otherwise occur. If an assessor is generally valuing properties at 30 percent of the legal standard, discrepancies between individual values are less noticeable and their correction is less likely to be insisted upon than if his general level is 80 or 90 or 100 percent. If this deduction is true, the political units with the highest assessment ratios should show the greatest equality, while those with the lowest assessment ratios should show the highest degree of inequality. That such is the case is indicated by table 42, which is a comparison of the 4 political units represented in tables 26 to 29 which have the highest assessment ratios, 90 or over, with the 4 units having the lowest assessment ratios, all of which are under 50. (In making the selection of these political units, the Oregon counties with assessment ratios based on unverified transactions were omitted.) The variation in each group is indicated not only by the coefficient of dispersion, but also by the percentage of the number of individual assessments that differ from the average by 20 percent or less (column 4) and by more than 50 percent (column 5). The counties with assessment ratios close to 100 percent (group 1) have generally coefficients of dispersion that are low compared with those of the counties with assessment ratios far from the legal standard (group 2). The only exception is Forest County, where the coefficient of dispersion is low because of the weight of several large timber properties with assessment ratios not very far from the average. The counties with assessment ratios close to the legal standard are also better assessed than those with assessment ratios far from the legal standard, if the percentage of the number of cases with either low or high deviations from the average is taken as the criterion (columns 4 and 5).

[34] It is not clear whether or not the coefficients in this case are weighted by value. If unweighted, they are not exactly comparable to the coefficients used in this study.

[35] In this case the coefficients were unweighted by value and therefore not exactly comparable to those used in this study.

TABLE 42.—*Inequality in assessment related to assessment ratio* [1]

Group, county, and State[2]	Assessment ratio	Coefficient of dispersion	Individual ratios with deviations of	
			20 percent or less	More than 50 percent
Group 1:	*Percent*	*Percent*	*Percent*	*Percent*
Ashland (Wisconsin)	93	33	40	28
Beaufort (North Carolina)	90	31	45	16
Price (Wisconsin)	92	30	41	17
Taylor (Wisconsin)	95	21	50	11
Group 2:				
Forest (Wisconsin)	43	32	24	52
Grays Harbor (Washington)	48	55	19	60
Klamath (Oregon)	41	44	26	40
Lane (Oregon)	35	40	26	32

[1] Sources of data: Columns 2 and 3: Refer to tables 27, 28, and 29; columns 4 and 5; computed from th individual assessment ratios summarized in tables 27, 28, and 29.

[2] Group 1 includes counties with assessment ratios close to the legal standard; group 2, counties with assessment ratios far from the legal standard.

Similar results have been obtained in other studies of assessment ratios. In Oregon the study previously referred to, involving assessment ratios based on sales in all of the counties, gives convincing evidence of the same tendency. It was found—

that with a general decrease in the ratios of assessed value to sale value of real property in the different counties, the inequalities in the assessments of individual properties tended to increase (*17, p. 43, footnote 1*).

Further confirmation of this tendency is found in an investigation of assessments in Illinois, to which previous reference has also been made. A comparison of the 1927 assessment in 10 Illinois counties (not including the city of Chicago) shows that the 4 districts with the greatest degree of equality are also those with the closest approach to legal standard in average assessment ratio *(49, p. 52)*.

INEQUALITY BETWEEN PROPERTIES OF LOW AND OF HIGH PRICE

When properties are classified according to price per acre, inequalities between the different price groups are revealed by comparison of their assessment ratios. The tendency to assess properties of low price at relatively high ratios has been found almost universal by investigators in all parts of the country and is often referred to as "regression" in assessment.[36] (Regression is also used to mean the related overassessment of properties of low value, without regard to unit price.) The tendency to overassess properties of low price is illustrated for the localities covered by this study in table 43. This table has been shortened somewhat, by selecting to represent Wisconsin the six counties which afford the largest samples in the forest land classes, and by omitting the Oregon counties with assessment ratios based on unverified transactions.

[36] See the following citations: (*4, p. 22; 13, p. 583; 16, pp. 18–19; 17, p. 13; 18, pp. 12–16; 20, pp. 16–19; 22, p. 18; 39, p. 63; 42, p. 110; 49, p. 34; 59, p. 111*).

TABLE 43—*Assessment ratios of properties grouped by price per acre*

State, county, or town, and period covered	$8 per acre or less	$9 to $20 per acre	$21 to $50 per acre	More than $50 per acre
	Percent	*Percent*	*Percent*	*Percent*
Wisconsin, 1925–27:				
Forest County	90	74	44	31
Langlade County	165	72	66	62
Lincoln County	109	81	61	52
Marinette County	154	79	61	43
Price County	142	91	76	62
Taylor County	140	110	85	87
Oregon, 1921–28:				
Baker County	112	74	49	70
Grant County	95	47	35	20
Klamath County	93	51	37	26
Lane County	83	61	36	30
Washington, 1921–28:				
Clallam County	188	99	92	62
Grays Harbor County	141	60	66	42
New Hampshire, 1928: [2]				
Town of Fremont	94	74	62	62
Town of Richmond	89	84	65	72
North Carolina, 1925–30: [2]				
Beaufort County	133	104	89	76
Chatham County	123	92	69	67
Macon County	124	90	71	47

[1] Sources of data: Compiled from assessment ratios of individual properties. The sources are the same as those cited in tables 26 to 29.

[2] The class intervals are $10 per acre or less, $11 to $20 per acre, $21 to $50 per acre, and more than $50 per acre.

In 3 of the 4 Oregon counties, the 2 Washington counties, and 3 of the 6 Wisconsin counties (Langlade, Marinette, and Price), the assessment ratios of the lowest price class are more than 50 percent higher than those of any of the other price classes. There appears to be no regression among the high price classes in the 2 New Hampshire towns studied nor in Baker County, Oreg. In Taylor and Langlade Counties, Wis., and in Chatham County, N. C., the "$21 to $50 per acre" and "More than $50 per acre" price classes have about the same assessment ratios, and in Grays Harbor County, Wash., the "$21 to $50 per acre" class has a somewhat higher assessment ratio than the "$9 to $20 per acre" class. With these exceptions, regression in assessment is regular in every sample county or town; the higher the price level, the lower the ratio of assessed value to true value. These relationships are shown graphically in figure 3.

The above-noted tendency in assessment is of importance in connection with taxation of cut-over forest lands, since such lands are almost invariably in the lowest price class.

INEQUALITY BETWEEN FOREST AND OTHER REAL ESTATE

As has been indicated, the chief purpose of making original studies based on assessment ratios was to discover the nature and extent of inequality in assessment among different kinds of forest property and between forest properties and other classes of real estate. Since it commonly happens that different forest, farm, and other land classes are mixed in single ownerships which are units of sale and sometimes of assessment, it was necessary to classify such ownerships in accordance with the land class that was predominant as measured by value in order to discover how the different land classes are assessed. Thus the farm-property class may include cut-over land and occasionally timber. An alternative method, possible where assessments and appraisals are made by separate forties or descriptions, was used in

Minnesota and Wisconsin. Here the forties containing a single or predominant land class were segregated in order to show how that class was assessed.

The assessment ratios of the different land and property classes will be compared, discussing first those based on appraisals and second

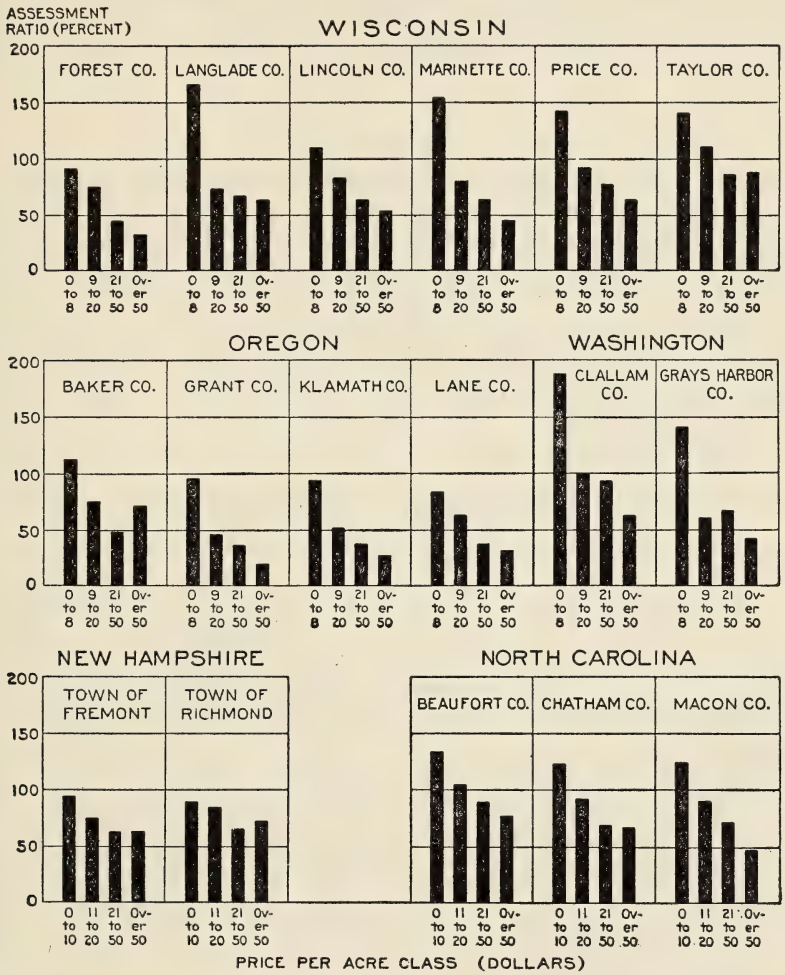

FIGURE 3.—Assessment ratios, by price classes, for selected political units, Wisconsin, Oregon, Washington, New Hampshire, and North Carolina (source of data: Table 43).

those based on sales. These average assessment ratios, as previously explained, are arithmetic averages weighted by value, or group-assessment ratios. In other words, they are ratios of aggregate assessed value to aggregate true value for their respective groups or property classes. The sales sample is usually a very small percentage of the total group which it represents, and the average of such a sample is more likely to represent the group correctly if the properties composing the group are similar in general character and unit price than

if the reverse is true. Therefore the assessment ratio of a single property class is likely to represent that class somewhat more accurately than the assessment ratio of all classes within the county represents the county. For information as to the size of the groups of properties represented by the different assessment ratios, reference should be made to summary tables 23 to 29. These tables also give coefficients of dispersion, weighted by value, for the different groups where sales or intensive appraisals were used to approximate true values.

Inequality as Shown by Appraisals

MINNESOTA

The most striking feature of the assessment ratios based on appraisals of real estate in the selected townships of Minnesota is the marked overvaluation of cut-over lands in comparison with farm lands (table 44). These ratios also indicate that farm improvements are heavily undervalued relative to other properties. At the time of the study the merchantable timber had been largely removed from Minnesota, and the only adequate sample obtained was that in the township of Beaver Bay in Lake County. Here the timber-property class, representing the bulk of the value in the township, was assessed at 106 percent of the appraised value, while the farm-property class was assessed at only 34 percent.

Table 44.—*Assessment ratios based on appraisals, by property classes, 1926; selected townships, Minnesota* [1]

County and township	Timber	Cut-over [2]	Farm			Resort [2]	All classes
			Land	Improvements	Total		
Beltrami:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Eckles	-------	140	88	13	73	[3]	92
Frohn	-------	177	78	8	60	72	86
Hagali (part) [4]	-------	279	121	14	74	106	116
Hubbard:							
Clay	-------	296	192	54	157	147	247
Crow Wing Lake	[3]	289	104	50	95	106	131
Lake Emma	[3]	194	115	52	94	84	116
Schoolcraft	245	309	183	34	120	-------	272
Lake:							
T. 59 N., R. 8 W. (in Beaver Bay)	106	92	38	22	34	[3]	92
T. 58 N., R. 6 W. (in Cramer)	-------	252	[3]	[3]	[3]	-------	236
T. 54 N., R. 10 W. (in Silver Creek)	-------	128	68	30	51	-------	100
St. Louis:							
Embarrass	[3]	65	26	27	26	-------	36
Toivola	-------	153	51	36	46	-------	100
T. 54 N. and 55 N., R. 14 W.	110	216	[3]	----------	[3]	[3]	197

[1] Source of data: Refer to table 23.
[2] Improvement values are included under cut over and resort. Those under cut over are negligible in amount.
[3] Areas under 500 acres and improvement values totaling less than $2,500 are not considered sufficient samples to warrant computing assessment ratios.
[4] Based only on those areas which were examined, representing 31 percent of the entire area of the town and 34 percent of the total assessed value.

When the Minnesota assessment ratios are averaged by cover classes, it is evident that the inferior rough and sandy forest uplands are, as a rule, overassessed, and the swamp lands even more so (table 45). In making these comparisons, only those descriptions were used in which the assessed values are predominantly related to single cover classes. As the assessed values of land are not subdivided by

cover classes, but by legal descriptions (usually 40 acres), it is not feasible to include in tables of this kind all the descriptions within each selected township. Hence those descriptions not containing at least 25 acres of a single cover type were excluded. Further eliminations were made of descriptions containing elements of high value which, though involving only small areas, might overshadow the value of the predominant cover type in their effect on the assessment. Accordingly the selected descriptions do not contain any with mineral, resort, or water-power values, nor any with minor areas of either cleared land or merchantable timber.

TABLE 45.—*Assessment ratios based on appraisals, of selected descriptions by predominant cover and topography, 1926; selected townships, Minnesota* [1]

County and township	Upland forest			Swamp forest	All forest land	Cleared land
	Level to moderately sloping	Rough and sandy	Total			
Beltrami:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Eckles	100	134	131	194	133	45
Frohn	135	228	161	[2]	161	43
Hagali (part) [3]	198	----------	198	344	216	57
Hubbard:						
Clay	292	270	284	[2]	286	[2]
Crow Wing Lake	187	274	258	395	271	80
Lake Emma	175	208	195	[2]	195	86
Schoolcraft	218	328	315	[2]	316	[2]
Lake:						
T. 59 N., R. 8 W. (in Beaver Bay) [4]	88	69	86	123	92	----------
T. 58 N., R. 6 W. (in Cramer)	231	244	236	411	241	----------
T. 54 N., R. 10 W. (in Silver Creek)	124	133	126	136	126	30
St. Louis:						
Toivola	85	[2]	85	195	140	26
T. 54 N. and 55 N., R. 14 W	200	219	209	247	216	----------

[1] Source of data: Refer to table 24.
[2] Areas of cleared land under 200 acres and of other land under 500 acres not considered sufficient samples to warrant computing assessment ratios.
[3] Based only on those areas which were examined, representing 31 percent of the entire area of the town and 34 percent of the total assessed value.
[4] In this township, all selected descriptions classified as forest land contain merchantable timber.

The generally high assessment ratios in Minnesota may be accounted for in part by the fact that the legal standard of assessment is low, being one-third of the "full and true" value for unplatted rural real estate. An assessed value may be very high in comparison with such a low standard, without this fact being so obvious as if it bore the same relation to full value. Also, in many of the selected townships, the values found by the local assessors had been uniformly increased by substantial percentages in the process of equalization.

WISCONSIN

The assessment ratios based on appraisals of real estate in selected towns of Wisconsin also show marked overvaluation of cut-over lands in comparison with cleared lands (table 46). The two towns containing extensive bodies of merchantable timber, Bartelme and Laona, have timber ratios about 35 to 40 percent in excess of the farm ratios. The figures are based on selected forties or descriptions in which single cover types predominate in fixing the value of the description, as previously explained in connection with table 45.

TABLE 46.—*Assessment ratios based on appraisals, of selected descriptions by predominant cover, 1926, selected towns, Wisconsin* [1]

Town	Timber	Cut-over	Cleared land	Town	Timber	Cut-over	Cleared land
	Percent	*Percent*	*Percent*		*Percent*	*Percent*	*Percent*
Athelstane	[2]	99	29	Little Rice	[2]	81	32
Bartelme	62	140	44	Morse (nonmineral part)	83	97	79
Bayview	[2]	124	80	Murry	[3]	161	67
Henrietta	[2]	116	63	Three Lakes	64	71	56
Laona	23	40	17				

[1] Source of data: Refer to table 25.
[2] Areas under 500 acres are not considered sufficient samples to warrant computing assessment ratios.
[3] Timber was not appraised in Murry.

NEW HAMPSHIRE

In the New Hampshire towns selected for special study, it was impossible to make any sharp distinction between cut-over and timbered forest lands, as all of the forests in that region are of second growth of different ages and sizes. It was also difficult to distinguish between forest and farm land because assessments are based on the entire property as a unit, and as a rule the properties in these towns contain both forest and farm land. However, the properties are segregated into forest, farm, and other, according to the use by which each is characterized. Forest property is subdivided into "forests, farm", which are forests owned by farm owners (i. e., owners of farms which are located in the same town), and "forests, commercial", which are those not so owned. Farm property may include considerable forest land, and in exceptional cases the forest use may be more important economically than the agricultural use. Other property includes land and improvements used for commercial, residential, and resort purposes, but land only in the case of gasoline stations and mill properties. These classes were also divided into resident and nonresident owned, depending on whether the owner was domiciled within the town or outside.

There is no evidence of material inequality between forest and farm property in the towns of Fremont and Richmond, considering each class as a whole, since the differences indicated in table 47 are not large enough to be significant. In Loudon, on the other hand, forest property is relatively overassessed. Considering property owned by residents separately from that owned by nonresidents, it is only in Loudon that forest property has a higher assessment ratio than farm property in both resident and nonresident groups. In Fremont and Richmond, forest property, compared with farm, is overassessed in the resident groups and underassessed in the nonresident. The reason for the relative underassessment of nonresident-owned forests in these towns is probably the fact that they are generally more remote from the well-settled parts of the towns than the resident-owned forests, and therefore the development of value by growth after cutting is less likely to be noticed by the assessors. A comparison of appraised values per acre, which may be made from the data in table 26, suggests that the general tendency to regressive assessment may also have something to do with the relatively high assessment of resident-owned forests in Fremont and may be the principal reason for the relatively low assessment of nonresident farms in all three towns.

TABLE 47.—*Assessment ratios based on appraisals, by property classes, 1928; selected towns, New Hampshire* [1]

Town and ownership	Forest	Farm	Other	All classes
Fremont:	*Percent*	*Percent*	*Percent*	*Percent*
Resident	77	64	64	68
Nonresident	51	68	66	56
Total	61	65	64	63
Loudon:				
Resident	100	75	68	75
Nonresident	91	88	83	88
Total	93	76	73	78
Richmond:				
Resident	82	70	78	76
Nonresident	71	83	99	72
Total	74	72	81	74

[1] Source of data: Refer to table 26.

INEQUALITY AS SHOWN BY SALES

WISCONSIN

A reasonably good sample of assessment ratios as determined by sales was possible in Wisconsin by use of the comprehensive collection of sales records made by the Wisconsin Tax Commission. The counties selected for study included all of the 17 northern or forest counties, being those in which less than 40 percent of the land area is in farms, and also one intermediate county (Shawano), in which neither forest nor farm interests predominate, and one southern county (Richland), in which the forest land is largely in farm wood lots. In the entire 19 counties, over 6,000 sales were classified in accordance with the predominant value, as above indicated. These sales had an aggregate value, as measured by considerations, of about $9,600,000 and involved an area of more than 300,000 acres.

The properties sold were classified as farm or forest in accordance with the predominant value, and forest properties were subdivided into those containing merchantable timber, under the heading "timber", and those without merchantable timber, under the heading "cut over." Certain forest and farm lands, because of location on streams or lakes or of other features, derive their principal value from recreational possibilities. Properties consisting of such lands were separately treated as "resort." The term "residential and business" was applied to those properties which, though outside of villages and cities, are chiefly valuable for the purposes indicated. Town properties which could not be assigned with a reasonable degree of certainty to any of the foregoing classes are not represented in table 48.

TABLE 48.—*Assessment ratios based on sales, by property classes, 1925–27; selected counties, Wisconsin*

County	Timber	Cut-over	Farm	Resort	Residential and business	All classes
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Ashland	59	140	99	67	72	93
Bayfield	[2] 40	125	82	39	64	83
Burnett	34	90	56	49	62	70
Douglas	----------	102	71	43	75	80
Florence	32	72	30	46	46	50
Forest	39	82	50	45	42	43
Iron	77	113	58	41	61	64
Langlade	53	123	68	47	47	69
Lincoln	55	84	57	52	52	61
Marinette	----------	88	56	60	50	66
Oneida	65	87	60	57	50	61
Price	71	112	76	85	87	92
Richland	----------	[2] 150	79	----------	70	78
Rusk	----------	111	59	59	65	67
Sawyer	34	95	53	48	38	53
Shawano	41	97	73	44	45	66
Taylor	84	112	87	[2] 50	88	95
Vilas	67	95	48	48	78	57
Washburn	----------	99	55	60	53	75

[1] Source of data: Refer to table 27.
[2] Based on 1 sale only.

It is evident from a study of the assessment ratios based on these data, as given in table 48 and in part shown graphically in figure 4, that in every county studied the cut-over forest property is the class with the highest assessment ratio. In most counties the disparities between this class and the highest of the other classes is marked. In 6 of the 17 northern counties, Florence, Iron, Langlade, Rusk, Vilas, and Washburn, the assessment ratios for cut-over land are about double the corresponding ratios for farm lands in the same counties.

As regards their assessment, the timber properties are in quite a different situation from the cut-over forest properties. The former appear to be among the most favored classes in 10 of the 13 northern counties where they are represented, as well as in the intermediate county of Shawano. In 6 of the 13 northern counties and in Shawano, the assessment ratio of timber is materially less than that of farm property. In several of the counties with timber represented, the small quantity of timber remaining made the number and size of the available sales insufficient for an adequate sample. Thus Bayfield, Burnett, Oneida, and Vilas Counties are each represented by less than $15,000 worth of property in the timber class. However the assessment ratios of timber in two of these counties, Bayfield and Burnett, show relationships generally similar to the counties that are represented by larger samples, and the indication of discrimination against timber in Vilas County (as well as the general overassessment of cut-over land) is corroborated by an earlier investigation (*37, p. 145*).

OREGON AND WASHINGTON

It was necessary to go to the county records in the Pacific Northwest States in order to get a complete list of recent sales and to the parties concerned for pertinent information, but the work was considerably facilitated in Oregon by records of sales prior to March 1, 1928, which were made available by the State tax commission. The dif-

ficulties of obtaining sales information resulted in a rather small sample, although a fairly long period—1921 to 1928—was covered. Verified data were obtained for over 900 sales in 4 counties of Oregon and 2 of Washington. These involved an aggregate consideration of over $3,000,000 and an area of about 120,000 acres. In 3 of the western Oregon counties the number of verified sales obtained was insufficient for use. In these counties therefore the less reliable sales, the considerations for which had not been verified but only

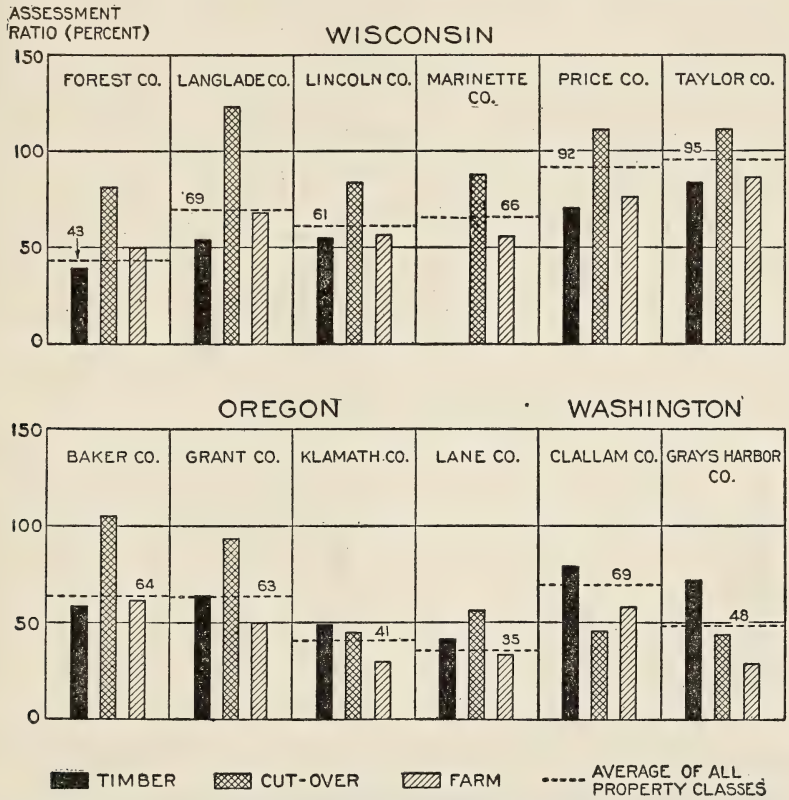

FIGURE 4.—Assessment ratios by property classes for selected counties, Wisconsin, Oregon, and Washington (source of data: Tables 27 and 28).

inferred from the deeds, were used; 107 in Clatsop, plus 13 verified, making 120 in all; 247 in Coos; and 153 in Tillamook.

The division into property classes is based primarily on use, but in such a way as to reflect predominant value so far as possible. Since only a small proportion of cleared tillable land makes the farm value predominant, properties with as little as 1 acre to the 40 of cleared tillable land were classified as farms. Forest property was divided into merchantable and cut-over, the former being easily distinguished in this region. In the counties east of the Cascade Mountains, there is in many cases no sharp distinction between grazing lands and cut-over forests, and therefore these classes were combined for the purpose of calculating average assessment ratios.

It is evident that there is a distinct tendency to overassess cut-over forest land in the Pacific Northwest in comparison with farm and other nonforest properties, although this tendency is not as marked as in the Lake States (table 49 and fig. 4). This class had a materially higher assessment ratio than other nonforest classes in all of the six counties for which there were verified sales, except Clallam. Among the counties represented by unverified sales, cut-over lands appear to have been overassessed relative to nonforest properties in Clatsop, but not in Coos or Tillamook. Merchantable timber, on the basis of this sample, appears to have been considerably overassessed in comparison with farm property, the only exceptions being in Coos and Baker Counties, where the differences are not very great. However the sales sample is of lower average value per acre than timberland generally in the respective counties, according to values reported by owners and operators of timber and independent estimates by a valuation expert.[37] This fact suggests that if there were regressive assessment, the assessment ratios of all timber properties in the county would be lower than those of the sample. Based on the above-mentioned estimates, this is definitely the case in 5 of the 9 counties. However the estimates give about the same assessment ratios as the sales data in Clatsop, Coos, Lane, and Klamath Counties, Oreg.

TABLE 49.—*Assessment ratios based on sales, by property classes, 1921–28; selected counties, Oregon and Washington* [1]

State, class of sale, and county	Timber	Cut-over and grazing [2]	Farm	Other	All classes
Oregon (verified):	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Baker	58	105	62	69	64
Grant	64	94	50	18	63
Klamath	49	45	30	34	41
Lane	42	56	33	28	35
Oregon (unverified):					
Clatsop	41	28	24	19	[3] 38
Coos	40	40	47	37	44
Tillamook	71	39	41	48	48
Washington (verified): [4]					
Clallam	80	46	58	----------	69
Grays Harbor	72	44	28	29	48

[1] Source of data: Refer to table 28.
[2] In the western counties (Clatsop, Coos, Lane, Tillamook, Clallam, and Grays Harbor) cut-over and grazing represents cut-over and burned forest land exclusively; in the eastern counties (Baker, Grant, and Klamath) it represents land generally used for grazing, whether cut-over forest or nonforest.
[3] Assessment ratio of verified sales alone 64 percent (13 out of 120 sales).
[4] The legal rate of assessment in Washington is 50 percent of "true and fair value." Assessment ratios in Washington counties should, therefore, be divided by 2 if the ratios between legal assessed value and actual value are desired.

On the other hand, it is quite probable that the assessment ratios shown for the cut-over and grazing class are lower than the average ratios for all properties of this class. Usually only the more accessible, the more productive, or the more scenic cut-over and grazing lands are sold, the poorer lands having practically no market. Locating on a map the cut-over sales of Clatsop and Tillamook Counties, for instance, indicates this situation quite clearly. No piece of property sold is more than one-half mile from some road, railroad, or body of water, and most of the tracts are directly on transportation or drainage lines. The location of cut-over and grazing lands in Klamath County shows a somewhat similar situation. Of the 32 verified sales, 27 lie on or within one-half mile of a road, and many

[37] For these values and estimates, refer to Progress Report 14. See footnote 9, on. p. 14.

are within irrigation districts or adjoin streams. Since most of the assessors make little attempt to distinguish between the value of cut-over lands on account of location, quite frequently putting all such land down at one flat rate or at very slightly differing rates, it is obvious that the assessment ratios of the more valuable cut-over lands are lower than those of the less valuable. Since it is chiefly the more valuable in which sales are made, an average assessment ratio based on sales is less than the average ratio for all cut-over properties.

NORTH CAROLINA

In the three counties selected for study in North Carolina it was again necessary to rely chiefly on the deed records as the original source of information as to sales. The process of verifying sales and identifying assessments with properties sold was made especially difficult by the lack of any rectangular survey system, lands being described by metes and bounds. Owing to the small number of usable sales which could be obtained, those in which the considerations were not verified were ultimately included with the verified sales, after ascertaining that the assessment ratios of the two classes, when compared by the different groupings, exhibited no marked differences. Altogether 425 transactions were used in the 3 counties of Beaufort, Chatham, and Macon, with an aggregate value based on considerations of over $660,000 and a total area of nearly 21,000 acres.

It was found impracticable to separate forest properties in these North Carolina counties into merchantable timber and cut-over classes, as the timber is largely second growth in all stages. Properties of 10 acres or more in area, not primarily of recreational or business value, having some cleared land or improvements, but not enough to be classified as farms, were originally distinguished as a separate class. However, the small number of sales made it undesirable to retain these properties in this separate class, and, since they partake more of the forest-property character than any other, they were combined with that class. For classification as farm or pasture, there were required a minimum of 3 acres of cleared plow or pasture land, with more than 25 percent of the total assessed value in cleared land and improvements. Pasture lands apart from farms were found in Macon County only.

So far as can be ascertained from the available sample, the results of which are summarized in table 50, there is no strongly characteristic distinction in the assessment ratio of forest property in North Carolina. In comparison with farm property, forest property appears to be treated a little less favorably in Beaufort County, and about the same in Chatham and Macon. The very high ratio for "other" property in Beaufort County may be accidental, as the sample is small.

TABLE 50.—*Assessment ratios based on sales, by property classes, 1925–30; selected counties, North Carolina* [1]

County	Forest and transitional	Farm and pasture	Other	All classes
	Percent	*Percent*	*Percent*	*Percent*
Beaufort	96	84	152	90
Chatham	74	79	69	77
Macon	81	82	56	69

[1] Source of data: Refer to table 29.

CAUSES OF INEQUALITY

In seeking the causes of inequality in assessment, it is necessary to consider first the individual assessment, since the differences between individual assessments are fundamental to differences between political units, property classes, and other groups.

It has been made plain that an assessment in the last analysis is an act of judgment. If the judgment is that of a person with adequate knowledge of the facts, with experience in valuation, and with the intention of assessing at a correct value, the resulting assessment will be a good approximation to the value called for by law. Thus the essential requirements of good assessment are intention to carry out the law, expert judgment, and a background of knowledge.

The prevailing undervaluation which studies of assessment ratios have revealed indicates that in general assessors do not intend to carry out the law. This condition does not necessarily imply moral turpitude in assessors greater than in other men. It means rather that the public encourages and even demands underassessment. There are a number of reasons for this situation. Part of the difficulty lies in wide-spread ignorance of taxation principles and confusion of the function of assessment with that of determining the tax rate. Many honest citizens identify low assessment with low taxes. Others not quite so honest think that, because their individual assessments are at less than full value, they are getting a much desired tax reduction to which they are not strictly entitled. Some of the resistance to assessment reform doubtless comes from those who think, often quite mistaken.y, that they are the beneficiaries of tax favoritism as matters stand. They do not realize that many other property owners may be receiving equally favorable or more favorable treatment. Low assessments, no matter how inequitable, bring fewer complaining taxpayers to the assessors' offices than would full-value assessments. Where equalization between districts, towns, or counties is imperfect or not understood (as is almost universal), there is likely to be competition in undervaluation among these political units. Counties hope by this method to reduce the burden of State taxes, while districts and towns want undervaluation for the purpose of reducing the local share of both county and State taxes. Assessors are generally elective officials and must carry out the will of their constituents in order to continue to hold office. In many places the sentiment is such that an assessor who seriously attempted to carry out the law would court certain defeat at the polls, as well as lasting unpopularity with his neighbors. There is often a lack of confidence on the part of the public in the equity of the tax administration and a feeling that in view of this uncertainty one is justified in seeking whatever tax advantage can be obtained. A general feeling that real estate is overburdened with taxes may also be partly responsible for the pressure to gain relief by illegal means. While undervaluation does not necessarily mean inequality between individuals within the local tax districts, it has been found to promote individual inequality. Furthermore not all assessors may desire to maintain individual equality within their districts. Prevalence of undervaluation makes it easy for the assessor to favor his own social class, his influential political supporters, or the local residents as against nonresident owners. Such favoritism has been cited as a cause of inequality by students

of assessment.[38] However, it is impossible to make any generalization as to intentional unfairness and discrimination. Assessors as a class are doubtless as honest and public spirited as any other group of citizens. But the conditions under which they work, which were described in detail in the earlier part of this section, appear to place a premium on intentional disregard of the law and to impose serious difficulties in the way of the assessor who wishes to fulfill the obligations of his office.

A cause of inequality in assessment that is probably even more important than intentional disregard of the law is lack of expert judgment. The idea of having all property assessed by local residents arose in the day when there was little property to assess except farms and modest dwellings, the values of which were widely known. The demand upon expert judgment was small. The chances of obtaining expert judgment in the assessor's office by the process of electing a local resident are not great. In some country districts the taxable wealth still consists of farm properties sufficiently alike to make the resident assessor with general farming and business experience fairly capable of handling the valuation problem. In some cases State tax commissions assess special types of property, such as mines or public utilities, and employ trained men for that purpose. In exceptional cases qualified appraisers are employed to assess all classes of property in a city or district. It is generally true however that the very important function of assessment is performed without benefit of expert judgment.

Even with intention to carry out the law plus expert judgment, it is impossible for an assessor to do his work properly if he has not at his command adequate information. Such information includes tax maps, detailed data as to the character of properties in the district, records of real estate sales extending over recent years, and other statistical aids. As the assessor's office is usually conducted, it is impossible to build up the proper records so that information of this type will be available. Such records cannot be kept where the work of assessing is done by part-time employees working for only a few months each year without clerical assistance or adequate office facilities. Sufficient valuation data are available only in those few assessment offices where the assessment district is large enough so that full-time employees can be used and proper records kept and filed under competent direction. Systematic compilation of valuation data in form available for use in assessment is quite exceptional, especially in rural districts.

Inequalities in assessment, originally established as a result of inexpert, ill-informed, or intentionally discriminatory assessment, are often increased by the tendency to continue the same assessments by the copying process regardless of changes in actual value. It has been found that (*17, p. 44*) there is at least considerable lag between changes in value of a particular class of property and corresponding changes in assessment. Obviously, shifting of values between localities or classes, without change in an originally erroneous assessment, will be likely to exaggerate the existing inequalities.

Statistical studies have brought out the fact that the tendency to overvalue property of low price in comparison with property of

[38] See the following citations: (*13, p. 587; 18, pp. 29–35; 42, p. 110; 49, p. 75; 58, Rept. 12, pp. 53–54; 59, p. 111*).

high price is practically universal. This tendency may arise from the natural inclination of assessors who do not know how to appraise values properly to rely too much on average figures, so that a property is likely to be overassessed if below the average in price and underassessed if above the average. The fact that localities where properties are not very diverse in character, as in the rural districts of Iowa (*39, p. 63*), are more uniformly assessed than city districts, seems to support this theory. Other possible causes for this tendency which have been suggested are the greater ease with which the small properties may be examined and appraised, the lack of comprehension of large values by assessors in moderate circumstances and of limited experience, and the influence and diligence of the larger property owners in looking out for their tax interests (*22, p. 19*). The fact that the property of a very small taxpayer may be seriously overassessed without resulting in the payment of more than a nominal amount in taxes may account for some of the extreme assessment ratios among low-value properties.

The tendency to overburden property of low price operates against cut-over or immature forests. In territories such as the Lake States, where a large part of the cut-over land is owned by nonresidents, the condition of public finance reinforces this tendency. Where the cost of governmental services is relatively heavy, because of scattered settlement, uneconomical organization of local government, and impoverishment of the tax base by removal of the merchantable timber, there is great pressure on the locally elected assessor to appraise cut-over lands with a view to getting as much revenue as possible from that source in the hope of keeping the taxes on farms owned by the local residents at a tolerable level. The fact that this policy eventually defeats itself by causing widespread delinquency has not seemed to prevent its application.

Forest property of high price is not necessarily immune from the same kind of pressure as cut-over land, as indicated by the relatively high rates at which timberlands are assessed in some of the counties studied in Oregon and Washington, where timber cutting has gone far enough to cause a noticeable shrinkage in the tax base. However, while it seems clear that low-priced forest property, that is, cut-over land and land with unmerchantable young trees, is usually overassessed, the evidence is conflicting with respect to high-priced forest property, that is, old-growth merchantable timber, which apparently is overassessed relative to other property only in occasional districts.

CONCLUSIONS

It is safe to conclude that the prevailing inequality in taxation through faulty assessment under the property tax places a serious handicap on ownership of forest lands in general and particularly of lands held for reproduction or growth after the more valuable old-growth timber has been removed. The remedy consists not in arbitrary fixed assessments nor in specific taxes, since these cures are likely to prove worse than the disease, by causing more serious inequality in taxation than results from erratic assessment (p. 553). Neither does it consist in equalization between property classes, which would be as difficult to carry out as equalization between political districts and as incapable of eliminating the individual

inequalities. The remedy is to be found only in the accurate assessment of individual properties. The benefits to the public generally from good assessment are so material as to promise support for a program of improving this function, if the public can be brought to see these advantages. Means of improving assessment will be suggested at a latter point in this report, in connection with the general summary and recommendations (p. 541).

APPORTIONMENT

THE TAX DISTRICTS

A tax district embraces all of the property that is taxed for the support of a unit of government or a single governmental function. The tax district may be coterminous with a unit of governmental administration, such as the State, county, town, village, or city; or it may be simply a unit of taxation for the support of a single governmental service, such as the school, road, or fire-protection district. A tax district may include several assessment districts or an assessment district may include several tax districts. Likewise, a political unit may include many tax districts or be included as a part of a tax district. It often happens that overlapping of tax districts occurs, i. e., one district may be superimposed on parts of two or more other districts.

The size of the tax district normally depends upon the territory served or capable of being served by the governmental function for which the tax is levied. Thus the smallest of the tax districts in a given State may be as large in area as a New England State, such as the county in sparsely settled districts of the West, or as small as a few hundred acres, as boroughs in Connecticut. The State is the largest of the tax districts in all of those States which levy a State property tax.

The number of tax districts is enormous. In a statement by Lacy (*28*), S. E. Leland is credited with an estimate of 250,000 units of government in the United States, each with power to levy taxes. Nine counties in northern Michigan with a total assessed value of less than $32,000,000 are reported to have 470 separate tax-levying districts (*29*).

The forest owner is often very much concerned with this multiplicity of tax districts. The function of the smaller tax district is nearly always to serve the residents, but the bulk of the cost may, through the process of gerrymandering, fall on the nonresident land owners. By gerrymandering is meant the division of a county or other civil division into tax or civil districts in an unnatural or unfair way. Large areas of unimproved land without any permanent residents are included within the minor tax districts in an unnatural way in order that they may aid in the support of functions desired only by the local settlement. Thus the people in the local settlement are given an advantage in being allowed to impose a share of the burdens of their particular local government on an area not bound to it geographically or economically.

In a township in northern Minnesota, for example, notices are posted on the wild cut-over land of absentee owners, miles from the nearest settlement, ordering them to cut their weeds or said weeds will be

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cut at their expense by the weed district. It would seem that this weed district exists simply as a means of providing work for the residents.

The inequalities in the tax burden caused by the unfair or unnatural delineation of the tax district are best seen in the school districts, since they are generally the smallest tax-levying units and perform the most costly public service.

In Ohio it is reported that long strips of property consisting of Lake Erie frontage or of railroad trackage are attached to certain school districts, merely that these strips of property may be taxed to aid in the support of the favored schools to the exclusion of others. There are other small poor school districts in the same part of the State with a tax base insufficient to support adequately a small one-room school. This unfair and unnatural districting sometimes results in two rural schools being located within sight of each other, an obvious example of inefficiency (*44, pp. 180–185*).

Tillamook County, Oreg., presents an excellent example of gerrymandering school districts. Figure 5 outlines the boundaries of the school districts. The Oregon laws authorize the district boundary board of the county to lay off convenient school districts. These boundaries are established and changed by petition of voters in the district (*46, p. 83*). The eastern part of Tillamook County is a forest region, largely uninhabited. This forest region is thus divided into convenient contiguous areas each tributary to the school in the settlement. Five of the sixty-two districts (shaded) are here specified as fairly typical—not representative of extreme conditions. District 1 contributes to the support of the high school located in the western part of the district and bears a school district rate of 0.39 percent. (Rates are as of 1927.) District 2 contributes to the high school located near its western extremity and bears a district rate of 1.13 percent. Timber in district 2 of the same value as timber in district 1 is required to pay nearly three times as much school tax. This difference is due merely to the influence of a few voters in obtaining the designation of certain remote timber as a tax base for the support of their particular school.

The gross inequality in the tax burden on forest land, thus established arbitrarily by the local voters, is further illustrated by comparing the districts labeled 3, 4, and 5 on the Tillamook County diagram. District 3 has a school tax rate of 0.11 percent, district 4 has levied no school tax at all, and the small district 5 has a school tax rate of 2.22 percent.

If all school district boundaries were eliminated in Tillamook County, and all of the schools now established were to be supported to the same extent by a county-wide school district, the school tax rate would be only 0.68 percent. Merely the elimination of these arbitrarily established district boundaries would cause a 33-percent reduction in the total burden on forests in district 5, a 28-percent increase in total taxes in district 4, and a 13-percent reduction in the tax burden in the large district 2. It is evident that the delineation of tax-district boundaries has a large influence on the burden of forest taxation.

The delineation of school-district boundaries is important also in determining the ability of the tax base to support the normal functions of the district. The assessed valuation per school child in the

districts of Tillamook County varies from a minimum of $1,410 to a maximum of $22,702 (*47, p. 71*). The timber property in the district having $22,702 in property back of every school child will be especially

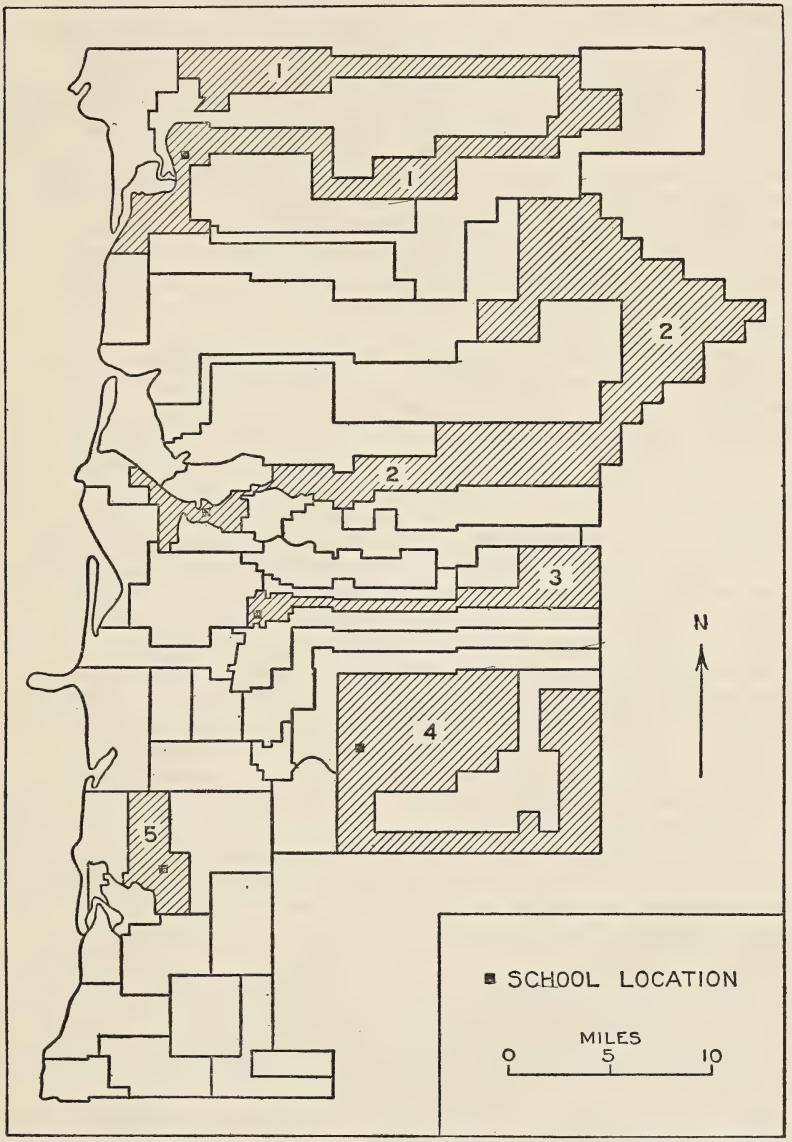

FIGURE 5.—Boundaries of school districts in Tillamook County, Oreg. (The figures designate school districts referred to in the text.)

favored in taxation. Timber is sometimes especially favored and sometimes penalized by the drawing of these boundaries.

There is a tendency toward extravagance in school and other governmental activities where large areas of valuable forest land owned

by nonresidents are assigned to support particular local activities. This is well illustrated by comparing those school districts of Clatsop County, Oreg., where the voters are the taxpayers, with the districts where there are large tracts of timber and the voters pay but little of the tax. In four districts having no timber the cost per capita for operating the schools varied from $52.83 to $85.61, while in four districts having large tracts of timber, the cost per capita for operating schools varied from $112.35 to $370.65.[39] In one forest-land district in Clatsop County the school costs per pupil are reported to be from $800 to $1,000 per school year. The county assessor of Clallam County, Wash., reported that there was one high-school district in the western end of this county, where timber is plentiful and children few, that maintained a high school for only 30 pupils at an annual cost of over $30,000. A part of the higher cost of schools in the forest-land districts may be due to a sparser school population and higher transportation costs, but without doubt a large part is due to the lack of incentive to be economical.

In contrast to this is the practice in Maine, where the school affairs of the forest region (unorganized territory), which is 50 percent of the entire area of the State, are administered as one huge school district by the State commissioner of education. The annual school cost (primary and high school) is 0.06 percent of the assessed valuation, or $107 per pupil. The school tax rate is 0.33 percent, and the difference between the tax and the cost, or 0.27 percent of the assessed valuation, is contributed by the forest region toward the support of all the schools in the farming and industrial sections of the State. As a result the school tax rate in the forest region of Maine is more uniform, averages less, and leads to a more equitable distribution of the tax burden than in the forest regions of other States.

The drawing of political township boundaries in sparsely populated forest regions also is often the result of gerrymandering. This is well illustrated by the accompanying sketch (fig. 6) of Iron County, Mich., showing township boundaries. Township 1 is an agricultural and forest-land township. All of the permanent residents live in the southern fourth of the township. The northern uninhabited forest land portion is attached for administrative and taxation purposes and assists in reducing the tax burden on the farming community. Township 2 is a mining and forest-land township. Practically all of the permanent residents live in the eastern third, which is the rich mining portion of the township. This mining community is abundantly able to support the local government with a very low tax rate and still indulge in some extravagance. However, the western uninhabited forest portion of the township is added for administrative and taxation purposes. As a consequence the timber lands in the western part, by being attached to a district with a high degree of ability to pay, are favored with a low township tax rate.

This situation is again contrasted with the unorganized forest region of Maine and the unorganized territory of St. Louis County, Minn., where the forest region, lacking permanent habitations and lacking community interest and voting power, is segregated for taxation purposes and contributes only to the support of general State and county functions and to governmental activities especially related to the forest region.

[39] Letter of Oct. 10, 1928, from E. E. Montague to Tri County Association of Portland, Oreg.

Inequalities in the tax burden are due also to differences between counties as taxing districts. Investigation shows that the total tax on timber in the various counties of Washington ranges from 1.2 cents per thousand board feet in some counties to 8.7 cents per thousand board feet in other counties. This difference is partly due to the governmental requirements and the efficiency and taxpaying ability of the different counties.

Such differences and inequalities are bound to occur where local districts are financially responsible for major governmental functions. The possibility of overcoming a part of these inequalities has been demonstrated, in the case of the smaller taxing districts, by separating

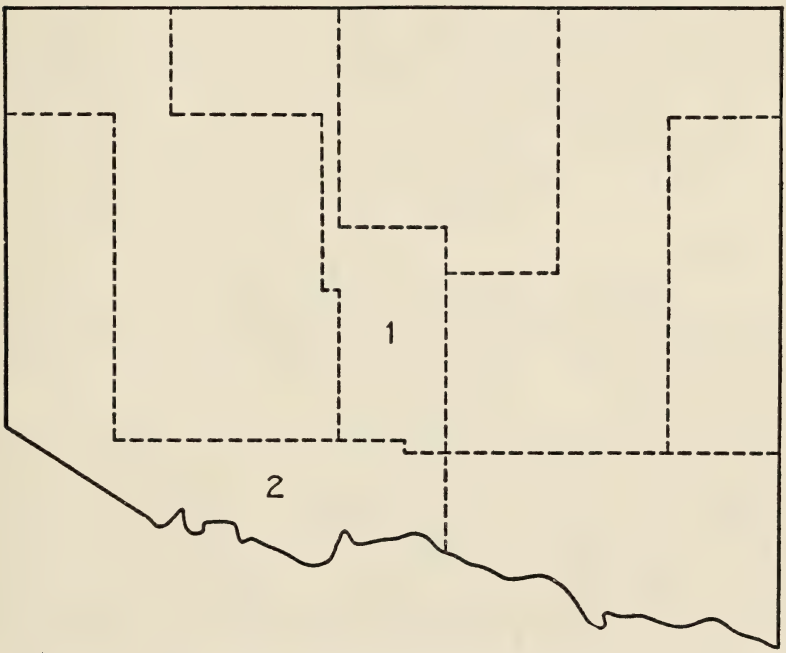

FIGURE 6.—Political townships in Iron County, Mich. (The figures designate townships referred to in the text.)

from local taxation the larger blocks of forest land, which, being uninhabited, have developed no local community interest or responsibility. Some more effective equalization of the tax burden is necessary than that which would result merely from better assessment practice. Tax districts are not delineated in such a way that adequate public services can be financed by taxes levied at a reasonably uniform tax rate in all of the districts.

TAX RATES

Each parcel of real estate is generally located within many taxing districts. In some cases property is located within the minimum of two districts, State and county, but most often it is located within many more, such as township, village, school, fire, road, port, drainage, irrigation, sanitation, weed, and mosquito-abatement districts.

The total annual estimated expenditures of each district (less income expected from other than the general property tax) is divided by the total assessed value or tax base of the district in order to determine the district tax rate. Each of the superimposed districts imposes its own tax rate, and the sum of all these tax rates constitutes the total tax rate borne by an individual property.

In New England it is the custom for tax districts larger than a town, such as the State and county, to levy a tax upon the town as a corporation. The town in turn includes the State and county tax in its town budget. The part of this budget which is to be balanced by receipts from the property tax is divided by the assessed value of all property in the town. The quotient is the town tax rate which is the total tax rate borne by each taxable property in the town.

There are States in which certain of the tax rates are fixed by statute in advance of assessment, so that the assessment determines the amount of the revenue from the tax in question. These rates provide a dependable income for certain governmental functions, assuming that the tax base will not fluctuate greatly from year to year. That part of the total tax rate which is fixed is added to the tax rate which is determined as in the preceding paragraph, and the sum of these is the total tax rate to be borne by each property in the district.

Fixed or limited total tax rates have been tried from time to time in various States, but have been universally unsuccessful. A limited tax rate is intended to force a reduction in governmental expenditures, but its effect may be avoided by one means or another, such as governmental borrowing or increasing the assessed values until they approach full market value.

Governmental economy may be achieved directly under the legal operation of the property tax by control of the budget. Budget control is often achieved indirectly, however, by an administrative limitation of the tax rate. The public may be accustomed to a certain range of tax rates, and the budget is controlled under ordinary circumstances by the inexpediency of fixing a tax rate much in excess of the usual one. The fixing of the tax rate is usually the duty of the county or town board, which has the responsibility for setting a rate which, applied to the corresponding tax base, will produce the required revenue.

PART 5. THE PROPERTY TAX: COLLECTION AND DELINQUENCY

CONTENTS

INTRODUCTION

The final step in the administration of the property tax is the collection of the tax. This is in the hands of the tax collector, who has not previously been concerned with the determination of the amount of the tax. The procedure in collecting taxes and handling delinquency will first be discussed generally, following which a sample calendar of procedure will be given for a typical State.

In general, methods of administering and enforcing the tax-collection provisions of the property tax become a problem only when they fail of their purpose and taxes become delinquent. Therefore this part will be chiefly concerned with the problem of tax delinquency with special reference to forests. Such questions as the following arise: How extensive is tax delinquency, and what have been the trends? What are the causes of tax delinquency? Is forest land—especially cut-over forest land—more subject to delinquency than other classes of real property? Does this land become delinquent because of discriminatory taxation? In what States has there been extensive reversion of land to public ownership through delinquency? What are the effects of delinquency and reversion on the revenues of local government and on political organization in sparsely settled areas? It is not possible, from the data which have been assembled, to answer all these questions fully and precisely, but it is possible to throw considerable light on this important aspect of the forest-tax problem.

TAX COLLECTION

STATUTORY PROCEDURE

THE TAX COLLECTOR

The machinery of tax administration is constantly being altered, so that no tabulation long remains correct; the enumerations given here are in accordance with a digest published in 1930 (*38*) and, while probably no longer strictly accurate, are not greatly out of date.

In New York, New Jersey, Michigan, Wisconsin, and the six New England States, taxes are collected by township officials. In Delaware, Illinois, and Nebraska they are collected in some counties by township collectors and in others by county officials. With these exceptions all property taxes, except in some instances city taxes, are collected by county officials. In Arkansas, Kentucky, Louisiana, Mississippi, North Carolina, Oregon, West Virginia, and the less populous counties of Texas, taxes are collected by the sheriff. In Alabama, Florida, Georgia, Maryland, Pennsylvania, and the more populous counties of Texas, they are collected by independent tax collectors. In the remaining 22 States they are collected by the county treasurer. In several States there are exceptions to the general practice, and frequently a different official collects delinquent taxes from the one who collects current taxes (*38, pp. 207–213*).

The most widely used system of collection—and probably the most satisfactory one—is collection by the county treasurer. Under this system all current taxes, except in some instances city taxes, are included in a single tax bill, and the proceeds are distributed by the collector to the various taxing units. The treasurer has other duties and can be employed full time at a stated salary. The practice of combining the duties of tax collector and sheriff has proved unsatisfactory. The two classes of work are so incongruous that rarely is one person qualified for both.

In 14 States—Florida, Idaho, Illinois, Massachusetts, Michigan, Montana, Nevada, New Hampshire, New Jersey, North Dakota, Utah, Virginia, Washington, and Wyoming—(*38, pp. 207–213*) collectors are required to send out tax bills, though this is not done consistently in some of these States. In the rural jurisdictions of several States bills are sent only when requested by the taxpayer. Probably in all States tax bills are sent out by the larger cities. The general practice, whether tax bills are sent or not, is to publish the time and places at which taxes may be paid.

The more usual method of compensating the tax collector in the Eastern States is the fee system. Under this system the collector receives a commission on taxes collected. In New York, which has township collectors, the fee is 1 percent for all current collections, 5 percent for collections of delinquent taxes, and 2 percent for taxes not collected. Obviously, such a system puts a premium on delay and would seem well designed to encourage delinquency. Where a separate collector is employed, the work of collecting taxes is not generally sufficient to occupy his entire time, and this has been offered as an objection to compensation on a salary basis.

TIME OF PAYMENT AND PENALTIES FOR DELAY

Taxes are most commonly due and payable during the fall and winter. This time was probably selected originally to meet the seasonal nature of the farmers' income. Twenty-one States have departed from this schedule to the extent of allowing payment in two installments, the second installment usually being payable 6 months after the first. These States are Arizona, California, Colorado, Connecticut, Idaho, Indiana, Iowa, Kansas, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Washington, and Wyoming (*38, pp. 214–217*).[40]

[40] Direct inquiry in the case of Connecticut.

The period allowed for payment of taxes before they become delinquent varies from 1 to 9 months, but in a majority of States is not more than 3 months. After a tax becomes delinquent it ordinarily becomes subject to an interest charge, a flat penalty, or both. Thus in Connecticut taxes become delinquent 1 month after the first publication of the collection date and are subject to an interest charge of 9 percent per annum. In Colorado the interest rate is 10 percent, being imposed 4 months after the tax becomes due. In Oklahoma the rate is 15 percent on the whole tax if the first half is not paid 60 days after the rolls are filed with the county treasurer. In none of these States is there a preliminary penalty. In Idaho there is a 2-percent penalty, then 10-percent interest; in Tennessee, a 7-percent penalty, then 6 percent interest; in Montana, a 10-percent penalty, then 12 percent interest. The dates of delinquency are 1 month, 7 months, and 40 days respectively after the tax becomes due. Examples of States which impose a flat penalty but no additional interest charge after a tax has become delinquent are: New York, 5 percent after 1 month; Indiana, 10 percent after 4 months; Minnesota, 5 percent after 5 months and 10 percent after 10 months. In Florida discounts are allowed for prompt payment of taxes but no penalties are imposed after delinquency. In Mississippi there are neither discounts nor penalties (*38, pp. 214–222*).

The penalties and interest charges mentioned above are those imposed for short periods only; they terminate or give way to other schedules after a tax sale, after the tax lien has been registered or reduced to a judgment, or after the delinquency has, by some other legal process, acquired a different status.

DISTRAINT OF PERSONAL PROPERTY

The laws ordinarily provide that as soon as taxes on either real or personal property become delinquent the collecting official must attempt to collect them by the distraint and sale of personal property. Tax liens on real estate usually attach directly to the property itself, regardless of whether it has been sold since the date of assessment. In the case of personal property, the lien attaches to all the property of the taxpayer, whether owned on assessment day or subsequently purchased, but not to any property that is sold by him after assessment day before it has been attached.

> Thus, while a subsequent purchaser becomes liable for any unpaid taxes levied upon real estate, he is not usually liable for payment of any taxes levied upon personal property * * *
>
> Personal property can usually be sold by the tax collector for either delinquent personal property taxes or delinquent real-estate taxes without court action. Court action is, however, usually prerequisite to real-estate sales, but this is not always the case. Most of the State laws also provide that the collectors may sue the taxpayers for any unpaid taxes (*38, pp. 74–75*).

Connecticut even permits imprisonment for tax delinquency, and the 1927 report of the State tax commissioner mentions the fact that 2 towns collected 9 personal taxes by imprisonment (*65, p.7*).

ENFORCEMENT OF REAL-ESTATE TAX LIENS

There has been no recent comprehensive study of the methods by which real estate tax liens are enforced, and the analysis which follows is based on information secured in selected States in connection with this investigation, supplemented mainly by material assembled in 1928

by the Municipal Administration Service (*64*). The statements based on the latter source have not all been verified by an examination of recent statutes, and hence the examples cited here as illustrative may have been modified in some instances by subsequent legislation.

Four Types of Procedure

The existing laws in respect to the enforcement of real-estate tax liens are of four general types: (1) The most common practice is to hold a tax sale[41] at which the liens are offered to private buyers. The purchaser acquires a certificate which, if not redeemed by the delinquent owner before the expiration of a fixed period, may be exchanged for a tax deed. If no private party purchases the lien, the State or county is assumed to be the purchaser, the landowner having the usual right of redemption. (2) In some jurisdictions a certificate is issued to the purchaser of the lien, and, after a fixed period of redemption has been allowed, the lien is enforced by foreclosure proceedings similar to those used in foreclosing a mortgage. (3) No tax sale is held, the State or county automatically becoming the possessor of all delinquent tax liens. The interest thus acquired is held for a fixed period and then liquidated by a sale of the property or of the lien created by the unpaid tax. (4) At the tax sale the land, or a fractional part of it, is sold instead of the tax lien, the purchaser acquiring clear title after certain legal requirements as to notification are met.

The tax sale law of Michigan illustrates the first type. The tax sale is held 2 years and 2 months after the delinquent rolls are sent to the county treasurer. The interest during the delinquent period is 0.75 percent per month plus a collection fee of 4 percent. The owner may redeem during the first year after the sale of the certificate by paying the sale price plus 1 percent per month. Any time after 1 year and before the expiration of 5 years the holder may apply for a tax deed, which may be perfected by notifying all holders of a recorded equity in the property. Any holder of a recorded equity may obtain a reconveyance within 6 months from the date of this notification by paying twice the face of the certificate, plus $5 for each description and the sheriff's fee if a notice were served. If the certificate is acquired by the State the redemption procedure is similar, except that the State may sell the land after 1 year or, if it is unoccupied, may acquire absolute title when it has been delinquent for 5 years' taxes.

An illustration of the second type of procedure is found in North Carolina. A tax sale is held 8 months after the tax first becomes due, the purchaser of the tax claim acquiring a certificate as in the first type of procedure. The certificate is made out to the county if there is no private bidder. The certificate bears interest at 12 percent per annum for the first year and 8 percent thereafter, provided that, if foreclosure proceedings are not started within 18 months, the interest rate is reduced to 6 percent. A tax certificate must be foreclosed within 3 years or the lien is no longer binding.

The California law is an illustration of the third type. It provides that all delinquent taxes shall be automatically purchased by the State. The delinquent owner may redeem his property any time within 5 years by paying a penalty, which increases gradually from

[41] These sales are often referred to as land sales, but what is actually sold is the tax claim, not the land The purchaser acquires at first only a lien upon the land.

10 percent, if redeemed within 6 months, to 50 percent after 4 years. If not redeemed by the owner within 5 years, a sale at public auction is held by the State to wipe out all existing liens. A deed is then issued by the State, and the owner loses his right of redemption if all legal technicalities have been complied with. The State does not guarantee the tax deed, however, nor give the purchaser possession. These rights must be established in court.

The fourth type of procedure is in use in Rhode Island,[42] where the purchaser at a tax sale is the bidder who will assume the tax, interest, and penalties for the least quantity of the delinquent land. The owner or any party with an interest must redeem within 1 year; otherwise the purchaser acquires a clear title if all legal requirements as to notification have been met.[43] A similar procedure is employed in Louisiana.

While these four types of procedure illustrate the principal methods by which tax liens may be foreclosed, there are slight variations from one or another of these general procedures in particular States. Thus in Oregon certificates may be offered for sale after a tax has been delinquent for 6 months, or the county may issue the certificate to itself. It may even dispense with the sale and assume all the liens itself. In Louisiana a tax sale is held 5 months after the date of delinquency, and any parcel not sold to a private bidder is adjudicated to the State. The owner has 1 year in which to redeem, after which the State's title becomes absolute, and it may sell, lease, or make other use of the land. In Ohio lands delinquent for taxes are certified to the State, and the lien is enforced by a foreclosure sale after the taxes have been delinquent for 4 consecutive years.[44]

Time of Tax Sales

The period allowed to elapse after a tax becomes delinquent before the tax sale is held varies widely among the States for which information is available. In Florida the law provides for a sale immediately after the expiration of the regular collecting period, and in Rhode Island the sale may be held after 3 weeks of advertising. In most States where tax liens are sold the period is from 3 to 6 months, though it is 13 months in South Dakota and 28 in Michigan. In States where there is no sale of tax liens but only a final foreclosure sale the period is much longer—being, for example, 4 years in Ohio and 5 in California.

Period of Redemption

The period allowed for redemption from a tax sale depends to some degree upon the method that can be used to enforce the lien, that is, whether a tax deed may be issued after the expiration of the period of redemption on a tax certificate or whether resort must be made to foreclosure proceedings. A certificate holder may apply for a deed after 1 year in Michigan and Louisiana; after 2 years in Maine, Mississippi, and South Dakota; after 3 years in Oregon and Montana; and after 5 years in Washington. In most States, however, the certificate holder does not have to demand title immediately after the expiration

[42] In 1931 a special commission appointed to examine the matter of revising the collection laws recommended the sale of tax liens rather than of the property itself, but their recommendations were rejected by the legislature.

[43] Rhode Island, General Laws, 1923, ch. 12, secs. 7 and 8.

[44] California, General Laws, 1931, Acts 8453–8454.

of the redemption period. In Wisconsin he may demand title after the expiration of 3 years, but he is not debarred from doing so until after 6 years have elapsed. If the certificate was acquired by the county and later assigned to an individual, the limitation does not apply until 6 years after the certificate was assigned, provided not more than 15 years have elapsed since the date of the tax sale. In Louisiana lands adjudicated to the State are eligible for redemption as long as title is vested in the State. In North Carolina the regular procedure requires that foreclosure proceedings be instituted within 3 years and that a certificate becomes invalid if this is not done, but this provision has been liberalized by subsequent legislation. Likewise in Minnesota the redemption period has been extended from 5 to 7 years by recent legislation.

Cost of Redemption

The cost of redemption is often fixed by statute at a definite rate of interest, this rate usually being sufficiently high to attract private buyers for the liens. A rate of 10 or 12 percent is the most common, though it is 15 percent in Nevada, 20 percent in Louisiana, and 25 percent in Mississippi. This is usually in addition to all the legal costs incurred by the certificate holder. In Texas the purchaser of the lien may charge the delinquent owner as much as twice the face of the certificate, and in Michigan, double the sale price plus $5 on each description. These charges are in lieu of interest and are independent of the length of time which has elapsed since the sale. In contrast to these heavy charges, Oregon limits the interest rate to 8 percent, and North Carolina has recently lowered the rate from 12 to 6 percent.

Although the cost of redemption from a tax sale is often fixed at a definite rate of interest, there is a growing tendency to establish a maximum rate of interest and to lower this by competitive bidding among the tax-title purchasers. Colorado, New Jersey, and New York have general or special statutes governing this method of competition.

Validity of Tax Deeds

In a few States a tax deed conveys a clear title. This appears to be the case in Ohio. Similarly Nevada gives the owner of property sold at a tax sale 1 year in which to redeem, after which the tax purchaser gets absolute title to the property. All technical errors of taxing officials are waived by statute. But in most States a tax deed issued at the expiration of the statutory redemption period of a tax certificate, with no judicial process involved, is a poor instrument in the eyes of the court. There is always the danger of having the title set aside for error. Even in California, where the ta sales are conducted by the State government, the tax deed seems to have little standing, for it does not give the holder possession. Because of the weakness of a tax deed, several States, including North Carolina and Missouri, have adopted a procedure which involves foreclosure of the lien as in the case of a mortgage. Wisconsin and New Mexico offer this course as an alternative procedure.

Trespass on Delinquent Lands

One aspect of tax delinquency which has not received much attention and regarding which the law is often somewhat obscure, is the

status of delinquent land before title is finally transferred. That is, what are the rights of the owner as his land advances through the various stages of delinquency? Michigan may be taken as an example of a State where the law is quite precise and definite information concerning its administration is available.

Taxes become due and payable on the 1st day of December and, if paid prior to March 1, are payable to the township treasurer. Until January 9 this official is only a passive receiver of taxes, but after this date he is required to go after them. Moreover, on and after January 10, if taxes are due, it becomes illegal for the owner to cut or attempt to cut any standing timber or to remove any timber, wood, logs, or buildings from the property.[45] As a matter of practice the treasurer does not investigate the activities of each delinquent property owner, but presumably he brings action for trespass if a case is called to his attention.

After March 1 delinquent taxes are collected by the county treasurer, and it is his duty to issue a warrant to the sheriff directing him to seize any timber, logs, wood, or buildings that are being removed and sell a sufficient quantity to satisfy the taxes, together with interest and charges (or penalties) thereon, and the cost of such seizure and sale. The county treasurer may also obtain an injunction to restrain a property owner who is delinquent in the payment of his taxes from removing such property.[46] According to local observers, the county treasurer is not particularly diligent in enforcing these provisions, usually waiting for some citizens to take the initiative before starting an action.

In May, 2 years and 2 months after a property first becomes delinquent, the county treasurer holds a tax-judgment sale. If the judgment or lien is purchased by a private party, the latter has the right to an injunction to restrain waste on any of the lands described in his certificate.[47] If the land is bid in by the State at the tax-judgment sale, the auditor general may prevent the removal of timber or other depletion of the property. If any person cuts or removes logs, wood, or timber from lands on which the State has a tax lien, the auditor general is required to issue a warrant to the sheriff of the county where such lands are situated, commanding him to seize and sell a sufficient quantity of such property to satisfy the taxes, with the interest and charges thereon and the cost of such seizure and sale.[48] Not only is it the duty of the sheriff and county treasurer to report to the auditor general all violations of the law in respect to delinquent lands but the auditor general furnishes the State trespass agent with lists or plats of land bid in by the State, and it becomes his duty to report all such trespass.

Until lands have been deeded to the State by the auditor general, occupancy by the original owner or tenant is not unlawful. Only the cutting or removal of timber or woods products or buildings is illegal.

After lands become State tax homestead lands, trespass and sale and management are in charge of the department of conservation. Treble damages are required if trespass is willful and single damages if involuntary.[49]

[45] Michigan, General Tax Law of 1893, as amended, 1923, sec. 155.
[46] See footnote 45, secs. 156–157.
[47] See footnote 45, sec. 115.
[48] See footnote 45, sec. 113.
[49] Michigan Compiled Laws of 1929, sec. 5947. See also secs. 5944–5950, 5882–5897.

A SAMPLE TAX CALENDAR

A recent comprehensive study of tax delinquency in Ohio, by Nilsson[50] furnishes a very good illustration of collection procedure in law and in practice. Statutory provisions are well illustrated by means of a calendar, taking a tax delinquent for 1925 as an illustration. The law has been somewhat revised (in 1931). However, since Nilsson's report is in terms of the old procedure, the old calendar is given here, with only a few of the more important changes mentioned parenthetically.

Second Monday in April 1925: Assessment date.

December 20, 1925: First half of 1925 tax on real estate becomes delinquent and subject to 10-percent penalty (sec. 5678).[51]

June 20, 1926: Second half of tax becomes delinquent and subject to 10-percent penalty (sec. 5678).

Between December 20, 1926, and second Thursday in February 1927: County auditor is required to publish in a local paper for 2 consecutive weeks a list of all parcels delinquent for two or more installments. He is also required to send a list of such delinquent lands to the State auditor (sec. 5704).

Second Thursday in February 1927: County auditor and county treasurer are required to begin on this date to prepare delinquent land tax certificates for the parcels which were advertised and on which the taxes and penalty have not been paid (sec. 5712). Since the certification is made only once a year, it is evident that there may be some parcels which are delinquent for three installments before certification. (In 1931 the date of certification was changed to August so that a current year's delinquency may be certified promptly.)

February 1927–February 1930: Any time within 3 years after certification the owner may redeem his land by paying the taxes and assessments mentioned in the certificate, a 10-percent penalty, 60 cents for advertising, 25 cents for making out the certificate, and interest at 8 percent from the date of delinquency (sec. 5713, modified in 1931).

February 1930: After lands have been de inquent for 4 years (3 years after certification) they are again certified to the State auditor. This certification (formerly called the quadrennial certification) requires a detailed statement showing the accumulation of taxes, assessments, penalties, and interest from the date of original default. A copy of each certificate must be delivered to the county treasurer (sec. 5718). (In 1931 the date of this certification was changed to August.)

Before May 1930: Within 3 months after the filing of the quadrennial certificate with the State auditor, foreclosure proceedings must be instituted in the name of the county treasurer for the enforcement of the tax lien. No proceedings may be instituted on delinquent lands unless the taxes, assessments, penalties, and interest have not been paid for 4 consecutive years (3 consecutive years after certification). From the proceeds of the sale of the land, the cost must first be paid, then the judgment for taxes, assessments, penalties, and interest, and then the balance distributed according to law (secs. 5717 and 5719). The State, through the attorney general, is also authorized to bring action (sec. 5722).

[50] NILSSON, A. E. PROPERTY TAX DELINQUENCY IN OHIO. Unpublished doctorate dissertation, Yale Univ., 1931.

[51] Ohio General Code, 1929.

Delinquent lands that are offered for sale by the country treasurer and that are not sold for want of bidders are considered forfeited to the State (sec. 5744). They continue to be listed for taxation in the name of the State (sec. 5745).

Second Monday in December 1930: Such forfeited lands, if not redeemed in the meantime by the payment of all taxes and charges due, are required to be offered for sale by the county auditor in December following their forfeiture to the State. (The date of this sale was changed in 1931 to March, sec. 5752.) Parcels which cannot be sold at the first forfeited-land sale for an amount sufficient to cover the taxes and penalties which stand against them are offered again at the next regular sale. If a parcel is offered for sale at two succeeding sales and still remains unsold, the commissioners of the county in which it is situated may order its sale at the next regular sale of forfeited lands to the highest bidder, irrespective of the amount of taxes and penalties due on it. Such sale shall convey the title of the said tract or parcel of land, divested of all liability for any arrearages of taxes or penalties which remain after applying thereon the amount for which it was sold (sec. 5755).

COLLECTING PROCEDURE IN PRACTICE

THE PRACTICE IN OHIO

The foregoing pages of this section have undertaken to present a picture of the statutory provisions relating to the collection of taxes in the States of the United States. No one can go far in the investigation of this subject, however, without discovering (1) that the procedure is often not conducive to the prompt payment of taxes, and (2) that the actual practice seldom, if ever, conforms perfectly with the statute and frequently departs widely therefrom. The results of the Ohio study already referred to are very illuminating, this being one of the few attempts to make a detailed check of the relation of administrative procedure to the requirements of the law, and to discover to what extent the provisions of the laws themselves appear to be responsible for a departure from them in practice.

The Ohio investigator directed questionnaries to the officials of every county in the State, inquiring about the actual performance in respect to each step in the procedure outlined above. The questions and summaries of the answers follow:

(1) *Are the delinquent lands advertised each year between the twentieth day of December and the second Thursday in February as required by law?*

59 county auditors advertise on time.
26 county auditors advertise later.
3 county auditors do not advertise at all.

The reason for the delay in advertising, in most cases, was attributed to the failure of the treasurer to close his books on time. Some justified a failure to advertise on the ground of economy. Nilsson concedes that—

there can be little doubt that the present advertising practice is unnecessarily expensive. It seems that the same purpose of public notification would be attained if some discretion were left to county auditors concerning the actual content of the delinquent land list which was to be published.

(2) *Is the February delinquent land tax certification made each year?*

26 county auditors make it regularly.
20 county auditors make it with irregularity.
1 county auditor has made none since 1924.
1 county auditor has never made it.

The reasons given for the failure to make the certification regularly were (1) an extension of the time for payment of the December installment beyond the 30-day collection period, (2) pressure of other duties, and (3) to save money.

(3) *Is the quadrennial certification of lands delinquent for 4 consecutive years made with regularity?*

69 auditors make it regularly.
14 auditors have omitted it some years.
5 auditors do not make it at all.

Many auditors maintain that the results obtained do not justify the time and expense involved. Nilsson says:

There seems to be no valid reason why foreclosure proceedings against delinquent lands should not be instituted 2 years after original notification, instead of waiting 4 years or more.

(4) *What actions are taken on foreclosure proceedings?*

In 29 counties the law is complied with.
In 7 counties foreclosures are made only when there is reasonable certainty of a sale.
In 10 counties the law breaks down with the auditor.
In 16 counties the law breaks down with the treasurer.
In 22 counties the law breaks down with the prosecutor.
In 4 counties the law breaks down with the courts.

(5) *Are foreclosure sales being held at which all tracts of land, on which the taxes, assessments, penalties, and interest have not been paid for 4 consecutive years, are offered?*

29 counties have had sales at which an attempt was made to sell all such parcels.
7 counties have had only a few sales.
52 counties have had no sales.

Nilsson comments as follows:

Only 29 counties of the State attempted to foreclose on all delinquent parcels after the expiration of the 4-year period from the date of original certification. In other words, one-third of the counties of the State carried out the law to the letter in endeavoring to dispose of delinquent lands. Whether or not a parcel would return enough in sale price to pay costs was not of prime importance. Sales were ordered, and if necessary the counties assumed all or a large portion of the costs of sale. All delinquent taxpayers stood equal before the law.

* * * From the point of view of the counties, foreclosure proceedings, on the whole, have proved to be a costly venture. The remedy for this situation, however, does not lie with the refusal of the counties to foreclose on delinquent properties in order to escape court and advertising costs, but rather with the minimizing of the "red tape" which gives rise to these excessive sale costs. The adoption of the former alternative opens the door for wholesale tax evasion.

(6) *Are sales of land forfeited to the State held regularly?*

No county holds such sales.

Nilsson attributes the absence of such sales to the fact that the selling price cannot be less than the sum of the accrued taxes and costs. He believes that the county auditors should be authorized to offer such properties for sale to the highest bidder. If no bid is received at the first sale it should be offered at the next succeeding sale, and if still no bid is received he believes that the land should actually be forfeited to the State and placed at the disposal of the State supervisor of public lands to be treated as other public lands. Moreover, he states that the further levy of taxes on lands that are bid in by the State appears to be futile and only adds to the difficulty of disposing of the lands later.

Nilsson's conclusion is that the principle underlying the present real property delinquency statutes (in Ohio) is sound, in that it provides a logical and orderly method of collecting delinquent real-

property taxes without resort to the sale of tax liens and the subjection of property owners to the exactions of tax lien buyers, but that the process of collection appears to have broken down in the past because of minor defects in the law which could be removed without discarding the underlying principle. The most important of the desired modifications are: simplification of the procedure, reduction of collection costs, and, particularly, shortening of the period of delinquency by substituting a biennial for the present quadrennial certification.

It was found that foreclosure statutes were being enforced in only 29 of the 88 counties, and that even in these counties the present legal period of 5 to 5½ years between original default and foreclosure is usually extended in practice to about 7 years. Nilsson therefore recommends that the foreclosure statutes should be rephrased to provide that the auditor of the State must "order" (rather than "cause") foreclosure, that he submit copies of all foreclosure orders to the State tax commission, that the treasurers be required to report to the tax commission within a short period after the final certifications the status of foreclosure suits, and that the tax commission be required to force negligent treasurers to take action by writ of mandamus proceedings. If these recommendations were adopted he believes that foreclosure sales would be undertaken shortly after the biennial certification.

As a final step in his investigation, Nilsson attempted to determine the subsequent history and final disposition of lands certified as delinquent in 1925. The study embraced 22 counties and the delinquency, including penalties, certified in 1925 amounted to $425,968. Before the end of that year redemptions had amounted to $177,033. During 1926 they amounted to $123,970, and during 1927, 1928, and 1929 up to the date of quadrennial certification, $67,223. Thus there remained $57,742 unpaid 4 years after the original certification, which therefore appeared in the quadrennial certification. These certificates represented 1,022 of 5,692 parcels originally delinquent. Unfortunately, he was unable to determine the final disposition of these lands. He says:

> The value of this study of redemption of delinquent lands would have been materially enhanced if it had been possible to determine the final disposition of parcels quadrennially certified in 1929. It was, however, impossible to obtain accurate data regarding these properties for the succeeding years. It was learned, however, that for all practical purposes the quadrennial certification completes the history of delinquent land in most counties, as it is only in the minority that foreclosure sales are made regularly.
>
> The statutes provide that property which has been offered for sale after quadrennial certification and which remains unsold shall be forfeited to the State and shall be offered for sale every 2 years thereafter. No cases in any county, however, were found in which such sales of forfeited lands had been held.

GENERAL COLLECTION PRACTICE

The Ohio practice has been described at considerable length because it illustrates a common condition. An examination of procedure and practice has been made in several other States, and nearly everywhere there is delay and evasion in the enforcement of the tax-collection laws. This is due partly to official indolence and carelessness, partly to political expediency, and partly to weaknesses in the procedure

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itself. A protracted procedure is an invitation to the officials to be dilatory as well as a temptation to delay action for political reasons. A briefer termination of proceedings would reduce costs, invite closer attention on the part of the public, and discourage owners from letting their land go delinquent in the first place.

Granting that the law itself is sometimes faulty, it is nevertheless true that official practice in the collection of taxes often departs widely from the legal requirements. Very often collection does not begin on the date fixed by law nor proceed with dispatch and impartiality. Personal property is not levied upon, sales are not held on time, penalties are not imposed. Even when officials carry out the first steps in the enforcement of the law with considerable vigor, they are likely to relent before taking the final steps toward foreclosure. Yet, without this final action all the preliminary steps are meaningless gestures.

The reasons, other than political, which frequently explain this reluctance to foreclose on real estate are (1) the inability of the State or county governments under existing laws to make any profitable use of the land; (2) the hope that the land, if left in private ownership, may again become taxpaying; and (3) a deep-seated aversion to the confiscation of private property.

More sinister than general inertia and leniency on the part of tax officials is deliberate favoritism for personal or political reasons. Instances could be cited where tax collectors have withheld the names of their friends from the list of those advertised for delinquency. In a certain State one sheriff made it a regular practice before making a tax settlement to detach the undelivered tax receipts of his friends and assume personal liability for their taxes. Another sheriff engaged in the same practice for 21 years before it was discovered, at his death, that he owed the county $120,000. Favored treatment of certain individuals or classes must inevitably shake the faith of the taxpayers generally in the collecting agents and invite further delinquency.

TAX DELINQUENCY

DEFINITIONS

It is evident from the foregoing description of tax-collection procedure that the term "tax delinquency" is generally used very loosely and that there are many degrees of delinquency which must be distinguished in any study of causes and effects. A useful general distinction is that between short-term delinquency, which may reflect only temporary influences, and long-term delinquency, which may result from more fundamental maladjustments. Short-term delinquency may be defined broadly as the degree of delinquency which has been attained when taxes have not been paid at the end of the legal period of collection and have become subject to certain penalties. The status of long-term delinquency may be said to have been attained when the taxes for several years remain unpaid and foreclosure is imminent. Each of these broad classifications may be subdivided according to period of delinquency and according to the steps which have been taken in the process of foreclosure or redemption. The legal terminology and administrative practices differ so widely among the States that no general definitions can be universally applied.

TREND IN TAX DELINQUENCY

EFFECT OF THE DEPRESSION

An increased amount of tax delinquency is to be expected in a period of depression, and there is abundant evidence that recent years have witnessed such an increase. The pronounced increase in delinquency in forest and agricultural regions began about 1921 or 1922 and thus followed closely the collapse in land values. Urban delinquency in serious proportions has now accompanied the depression in business and industry which began in 1929. A study of 145 cities of over 50,000 population shows an average rate of delinquency, measured by the portion of the current tax levy uncollected at the end of the fiscal year, of 12.9 percent in 1930, increasing to 26.3 percent in 1933 (*62*). Naturally these averages do not give an adequate idea of the situation in the cities which had to contend with extremes of tax delinquency. In some cases delinquent taxes at the end of the fiscal year ran as high as 30 and 40 percent. These cities have been affected by especially adverse economic situations, such as inactivity of the single dominant industry, failure of local banks, and collapse of a real estate boom.

Delinquency which appears during a depression is less related to other factors and less symptomatic of more fundamental maladjustments than that which appears in more normal times. The studies of delinquency which are included in this report for the most part cover a period which ended before the beginning of the general depression in 1929. They are probably the more significant from the viewpoint of indicating inappropriate taxation or uneconomic land use.

MICHIGAN

Probably in few other States are there delinquency records covering so long a period as in Michigan. The records in the office of the auditor general show the trend in delinquency for the last 30 years, in terms of area and assessed value. The figures show a large amount of delinquency at the beginning of the century, a rather steady decrease for the next 10 years, a fluctuating but slowly increasing amount for the next 10 years, and a sharp and steady increase since 1920, the amount by both measures having risen above the 1900 level by 1925. The following are the respective portions of the unplatted area and of total assessed value of all real estate returned delinquent in selected years (*73, Repts. 1900, 1905, 1910, 1915, 1920, 1925, 1928*) (*74, Repts. 1907–8, 1911–12, 1921–22, 1925–26, 1927–28*):

Year	Unplatted area	Assessed value	Year	Unplatted area	Assessed value
	Percent	*Percent*		*Percent*	*Percent*
1900	20	9	1920	15	5
1905	15	6	1925	21	12
1910	12	4	1928	25	18
1915	14	5			

Stated in absolute figures, the area delinquent in 1900 was 6,995,973 acres and in 1928, 8,756,732 acres. The assessed value of all delinquent real estate was $75,185,014 in1900 and $1,146,573,162 in 1928, a fourteenfold increase.

The preceding figures refer to short-term delinquency and depict the situation 50 days after the first penalty of 3 percent was added to the original tax bill. As the period of delinquency increases the amount of delinquency is very much reduced. Thus, while 670,724 descriptions were returned delinquent in 1924, only about one-fourth of them (170,634) were advertised for sale 2 years and 4 months later.[52] Even so, there has been a pronounced increase in long-term delinquency since 1917. In that year the taxes, including interest and penalties, on descriptions advertised amounted to $889,234, and in 1927 they amounted to $4,794,005, an increase of 439 percent. The taxes, including interest and penalties, on descriptions sold (or redeemed prior to the sale) increased from $641,528 to $3,311,470, an increase of 416 percent (*73, Repts. 1917, 1927*).

MINNESOTA

The study of tax delinquency in Minnesota was chiefly concerned with the 16 counties in the northeastern part of the State and with Winona County in the extreme southeastern corner of the State. This block of 16 counties constitutes the chief seat of the forest problem in Minnesota and is typical of the great cut-over areas of the Lake States. Not so many years ago this region was covered with virgin timber. Today the original forests are mostly gone, and in their place are a few scattered farms, some second-growth forests, and vast areas of cut-over lands, including swamps and barren wastes. Winona County, an agricultural county with some forest land, was selected as a contrast.

In order to ascertain the effect of tax delinquency as indicated by the net loss in public revenues over a period of years, the difference between the levy each year and the actual collections, including back taxes, interest, and penalties, was obtained. The deficiency increased in the 16 northeastern counties from 0.5 percent in 1919 to 5.5 percent in 1927.[53] If St. Louis County, which contains the city of Duluth as well as rich iron deposits, is omitted, the increase was from 3.9 to 12.3 percent. The increase in a group of three counties—Beltrami, Koochiching, and Lake of the Woods—was from 9.9 percent in 1917 to 24.6 percent in 1927. While generally upward, there was some fluctuation from year to year. Winona, the agricultural county, showed a deficiency varying from 0.1 percent in 1926 to 0.6 percent in 1924, and the average for the whole State varied from 1.5 percent in 1925 to 3.2 percent in 1921. Complete figures were not obtained for the State as a whole prior to 1921 nor subsequent to 1925, nor for Winona County except for the years 1921 to 1926.

When back taxes, interest, and penalties are excluded and the delinquency is measured by that part of a year's levy not collected within the fiscal period—a true measure of short-term delinquency—the ratios are naturally much higher. The trend of delinquency in the 16 northeastern counties of Minnesota is shown in table 51. The portion of the tax levies and special assessments of each year reported delinquent in the year when due increased from 6.9 percent in 1921 to 23.1 percent in 1930. Excluding St. Louis County, the increase was from 13.9 percent in 1921 to 29.2 percent in 1930. The State as a whole shows a less steep upward trend, and in no year did the percentage of taxes delinquent approach that of the northeastern counties.

[52] Assuming 40 acres to a description.
[53] Computed from records in the county auditors' offices of the several counties.

TABLE 51.—*Percentage of tax levies and special assessments reported delinquent, 1918–30; selected counties, Minnesota* [1]

County	1918	1921	1924	1927	1930	County	1918	1921	1924	1927	1930
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*		*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Aitkin	14.2	16.4	26.4	37.3	55.6	Lake	-----	10.3	16.8	21.2	22.9
Beltrami	25.3	26.5	34.4	41.7	53.1	Lake of the Woods	-----	(2)	(2)	45.8	56.0	68.5
Carlton	4.8	6.9	12.5	10.6	12.2	Mille Lacs	4.4	8.0	13.9	11.5	18.3
Cass	-----	20.8	28.6	35.8	48.6	Pine	6.8	12.2	16.2	23.1	30.8
Clearwater	20.2	20.8	18.9	26.8	36.5	St. Louis	-----	3.6	4.4	3.6	4.5
Cook	26.5	16.1	19.4	24.4	38.6	Total, 16 counties	-----	6.9	9.4	9.6	23.1
Crow Wing	11.2	10.6	11.9	11.2	12.9	Total, 15 counties, excluding St. Louis	-----	13.9	19.6	22.0	29.2
Hubbard	13.0	15.0	21.6	27.2	39.3						
Itasca	6.0	3.5	6.2	7.8	10.0	State, excluding 16 counties	-----	4.7	5.4	-----	8.5
Kanabec	4.2	9.4	16.3	11.3	19.7						
Koochiching	25.7	38.4	43.9	31.2	45.0	State	-----	5.4	6.5	-----	9.5

[1] Sources of data: Columns 2–5 computed from records in the county auditors' offices of the several counties. Column 6 from Cunningham and Frank (*66, table 3*). Original data from the Minnesota State Tax Commission.
[2] Part of Beltrami County.

Current, or short-term, delinquency obviously creates a less serious problem than long-term delinquency. In the case of the cut-over counties of Minnesota, however, the large volume of current delinquency has proved the prelude to a large volume of long-term or absolute delinquency. In 15 northeastern counties,[54] 1,619,028 acres, or 13.9 percent of the area of taxable unplatted land, had been delinquent for 3 years or more at the time of the study.[55] The date of the observation differed in different counties and extended from September 15, 1926, to August 15, 1928. In four counties—Aitkin, Beltrami, Koochiching, and Lake of the Woods—more than 20 percent of the area had been delinquent for 3 years or more, the ratio in Beltrami County being 26.5 percent. In selected townships in four counties—Beltrami, Hubbard, Lake, and St. Louis—the delinquent areas in 1926 ranged from 1.6 to 49.7 percent of the respective total areas. There was almost seven times as much long-term delinquency as in 1913.[56] A later study (*66, p. 118, table 2*) indicates that by January 1931, the long-term delinquency in the same 15 counties as measured by the area delinquent for taxes levied in 1926 and before had risen to 3,569,520 acres.

WISCONSIN

A study of tax delinquency in 17 counties of northern Wisconsin, made by the Wisconsin Agricultural Experiment Station (*70*), disclosed a rapid increase in delinquency in the region studied, the problem having developed almost entirely since 1920. The investigation revealed that tax certificates on 1,082,232 acres were sold at the tax sale in 1921 and that at subsequent sales the delinquent area had increased steadily, until in 1927 certificates were sold against 2,593,163 acres, or nearly a quarter of the entire land area of these 17 counties. Only 73 percent of the land against which liens were sold in 1921 and only 57 percent of that against which liens were sold in the 4 years, 1921–24, inclusive, had been redeemed at the time of the investigation in 1927. This indicates that the delinquency which prevails in these counties is of the long-term character. Indeed

[54] St. Louis County, containing the city of Duluth, being excluded in this case.
[55] Compiled and computed from records in the county auditors' offices of the several counties.
[56] Computed from town assessment rolls, 1926.

there were 1,266,330 acres already subject to forfeiture at the time of the study.

A more intensive study of tax delinquency in selected areas was made in cooperation with the above-mentioned agency. In Lincoln County the area represented by tax sales increased from 14,680 acres in 1921 to 129,874 acres in 1927. The sales for 1920, 1923, and 1926 were compared in 9 selected townships outside of Lincoln County, and in all except 2 there was a progressive increase in the volume of sales. The ratio of area against which certificates were sold to total area is given in table 52 for each of the selected towns for each of the 3 years.

TABLE 52.—*Ratio of area sold for taxes to total area, 1920, 1923, and 1926; selected towns, Wisconsin* [1]

Town	1920	1923	1926	Town	1920	1923	1926
	Percent	*Percent*	*Percent*		*Percent*	*Percent*	*Percent*
Athelstane	6.5	38.7	43.5	Little Rice	17.9	50.0	52.3
Bartelme	1.3	.7	.5	Morse	10.2	20.2	24.6
Bayview	33.9	33.8	51.3	Murry	40.1	28.5	26.2
Henrietta	.4	.2	4.3	Three Lakes	5.3	16.4	18.7
Laona	.6	2.6	3.3				

[1] Source of data: Computed from assessment-tax rolls in each town.

The ratios given in table 52 represent relatively short-term delinquency, the tax sale being held in June, 5 months after the first penalty is imposed, and the owner having at least 3 years after the sale in which to redeem his property (*69*).

OREGON AND WASHINGTON

A study of the trend in tax delinquency over the period 1918 to 1928 was made in Clatsop and Tillamook Counties, Oreg., and in Grays Harbor and Lewis Counties, Wash. As far as possible the status of delinquency was obtained as of corresponding dates in 1918, 1923, and 1928. In the case of the Washington counties, however, the dates used in 1928 were several weeks earlier than those used in the other years, hence the 1928 figures should be discounted slightly. A condensed tabulation of the findings is given in table 53.

TABLE 53.—*Trend in delinquent area, 1918–28; selected counties, Oregon and Washington* [1]

State, county, and date	Delinquent for 1 levy only	Delinquent for more than 1 levy	Delinquent for 4 or more consecutive levies	State, county, and date	Delinquent for 1 levy only	Delinquent for more than 1 levy	Delinquent for 4 or more consecutive levies
Oregon:				Washington:			
Clatsop:	*Acres*	*Acres*	*Acres*	Grays Harbor	*Acres*	*Acres*	*Acres*
Sept. 1, 1918	4,868	13,755	3,816	Dec. 31, 1918	28,170	20,083	7,048
Sept. 1, 1923	12,968	36,233	4,746	Dec. 31, 1923	19,210	40,006	11,554
Sept. 1, 1928	17,412	55,474	34,589	Sept. 25, 1928	19,111	33,869	13,079
Tillamook:				Lewis:			
Sept. 1, 1918	24,541	10,303	2,502	Dec. 31, 1918	6,862	4,732	327
Sept. 1, 1923	33,742	29,343	7,834	Dec. 31, 1923	13,364	19,427	3,680
Sept. 1, 1928	36,409	69,412	46,217	Oct. 5, 1928	22,195	24,430	5,543

[1] Sources of data: From county tax rolls of 1916, 1921, and 1926 in Oregon, and 1917, 1922, and 1927 in Washington—acreage real estate only.

It will be observed that in Clatsop, Tillamook, and Lewis Counties there was a big increase in both short-term and long-term delinquency in the 10-year period. Grays Harbor shows a decrease in current delinquency, but an increase in long-term delinquency over 1918 in both 1923 and 1928, but less in 1928 than in 1923. When delinquency of four or more consecutive levies is considered, Grays Harbor shows a steady increase. The smaller increase in tax delinquency in Grays Harbor County is probably due in part to the relatively moderate taxes in that county. Another cause of the relatively moderate amount of delinquency there may be the fact that much of the land is owned by lumber companies, which may be holding land for certain strategic reasons in connection with the remaining uncut timber.

While tax delinquency was not nearly so serious in the Pacific Northwest as in the Lake States during the period covered by this study (1918–28), it had increased in the later years of that period, along with rising taxes and the removal of the virgin timber. A more recent study conducted by the Pacific Northwest Forest Experiment Station (73d Cong., 1st sess., S. Doc. 12, pp. 873–875) indicates that by 1932 there had been a further marked increase in short-term tax delinquency in both Oregon and Washington.

NORTH CAROLINA

No figures are available to show the trend in delinquency in North Carolina over a long period. However, the State tax commission assembled figures in 1928 showing the amount of delinquency in a 4-year period, 1924 to 1927, inclusive. The average amount of tax-sale certificates acquired by the reporting counties and the percent which this figure represents of the respective gross levy in those counties for each of these 4 years are given below (*80, pp. 437, 441, 445, 449*):

Year	Amount	Percent	Year	Amount	Percent
1924	$13,264	3.6	1926	$21,787	5.2
1925	15,284	4.2	1927	26,143	5.6

More counties reported in the later years than in the earlier years. If figures for all counties had been obtained each year, the averages might have been slightly different, but the trend would doubtless have been the same.

In only 1 of the 3 North Carolina counties in which an intensive study was made was it possible to obtain delinquency figures showing the trend over a considerable period. That was in Beaufort, an eastern tidewater county. That there is increasing delinquency in this county is evidenced by the increasing amount of taxes represented in tax-sale certificates issued to the county since 1922. The amount and percent of total county property tax levies for each year up to the time of the study are given below: [57]

Year	Amount	Percent	Year	Amount	Percent
1922	$19,818	5.4	1926	$76,187	14.3
1923	30,961	7.9	1927	53,749	12.1
1924	48,578	9.8	1928	67,348	14.4
1925	54,919	12.1	1929	93,501	21.5

[57] Obtained from county records.

This substantial increase in short-term delinquency is not encouraging. The fact that tax-sale certificates have in the past nearly always been redeemed is no proof that they will continue to be. Even if they are eventually redeemed, the delay and uncertainty is very disturbing to the financial operations of a county.

NEW HAMPSHIRE AND MAINE

In none of the three New Hampshire towns studied was there an appreciable amount of delinquency. That these towns were not exceptional is evidenced by the answers to a questionnaire sent out by the State tax commission at the request of the Governor to ascertain the status of collections as of September 1, 1931. At that time 162 towns, or 72 percent of the total, reported normal or better than normal collections. And at the end of the fiscal year, January 31, 1932, tax collections amounted to nearly 90 percent of the levy and were within 2 percent of the record for the previous year (*78, p. 3*).

It is reported that there is normally very little delinquency in Maine and that the few parcels of land that have been sold and not redeemed within a year have been later restored to the original owners by a special act of the legislature. The State does not own any land obtained through the channel of delinquency, and tax delinquency in unorganized territory is almost negligible.

VIRGINIA

Reports from numerous sources give incomplete but significant figures on delinquency prior to the depression in a few other States. Local tax delinquency in Virginia counties increased steadily from 4.87 percent of the levy in 1923 to 9.95 percent in 1929 (*83, pp. 96–97*).

FLORIDA

Less than 80 percent of the property taxes levied by the State of Florida in 1929 was collected without resort to sale. Land sold to the State (i. e., liens acquired by the State) amounted to 10.2 percent of the levy, errors and insolvencies to 8.8 percent, and discounts to 1.3 percent. In 9 of the 67 counties the so-called "land sales" exceeded 20 percent of the levy, and in 1 county the amount was 31.5 percent. The portion of the levy actually realized in these 9 counties ranged from 53.7 to 68.9 percent. This record was very similar to that of the previous year; the land (liens) sold to the State for 1928 taxes represented 9.4 percent of the levy, and actual collections amounted to exactly 80 percent. In only 2 counties, however, did land sales for 1928 exceed 20 percent of the levy, but in 1 of these (Okeechobee) they accounted for 51.1 percent, and errors and insolvencies brought actual collections down to 37 percent (*68, pp. 476–479*).

ALABAMA

A reputed absence of delinquency in Alabama was verified in 3 counties. A Washington County official stated that in that county there had been no sale of land for taxes in several years, and in Sumter County it was stated that only 5 or 6 parcels had been sold each year and that most of these were promptly redeemed. In Clarke County there were 64 descriptions advertised in 1930, but in 8 cases the taxes were paid before the sale, and 44 of the remainder were sold to private purchasers. The State acquired only 12 tax liens, involving taxes and

penalties aggregating $296, and 2 of these had been redeemed 9 months later. Alabama as a whole is reported to have very little delinquency, or at least very little that advances beyond the point of advertising. The explanation is probably to be found in a comparatively low rate of taxation and a prospect of mineral wealth underneath the soil.

OHIO

The delinquency certified by 35 Ohio counties increased from $2,822,103 in 1925 to $7,868,188 in 1929. Incidentally, Cuyahoga County (containing Cleveland) accounted for $3,709,772, or almost 74 percent of the increase in these 35 counties.[58]

KANSAS

The Kansas Tax Code Commission of 1929 presented information secured by the Kansas State Agricultural College which indicated that in 21 counties the increase in tax delinquency of farm real estate between 1917 and 1927 was 329 percent (*71, p. 95*).

COLORADO

A study made in Colorado under the auspices of the Denver Chamber of Commerce disclosed that, in 24 counties of the State, taxes for 1928 to the extent of $17,724,591 had been charged to the county treasurers for collection; $951,420, or 5.4 percent, was delinquent to the extent of being advertised for sale; and $456,856, or 2.6 percent, was paid thereon before the sale. While in a few counties the collection was almost 100 percent, in one county less than 70 percent had been collected before delinquency (*26, p. 324*).

RELATIVE DELINQUENCY OF FOREST AND OTHER REAL ESTATE

MICHIGAN

In States where the counties may be readily grouped by the class of real estate that is of primary economic importance, an indication of relative delinquency in the different real-estate classes may be obtained by comparing the situation in groups of counties so classified. In Michigan five such groups may be distinguished: Forest, mineral, farm, farm-urban, and urban.[59] The names indicate the characteristic type of real estate in each. Since the forest group is large and of particular interest, it may be subdivided by keeping the Upper and Lower Peninsulas separate.

The percentage of area and assessed value returned delinquent in each county group in 1928 is given in table 54 (*73, 1928; 74, 1927–28*).

TABLE 54.—*Tax delinquency in Michigan, 1928*

County group	Area	Assessed value
Forest:	*Percent*	*Percent*
Lower Peninsula	41	23
Upper Peninsula	38	21
Total	40	22
Mineral	20	8
Farm	11	8
Farm-urban	10	12
Urban	14	20
Average (entire State)	25	18

[58] NILSSON, A. E. See pp. 159–160 of reference cited in footnote 50.

[59] For a detailed description of these county groups refer to mimeographed Progress Report 13. See footnote 5 on p. 12.

It will be noticed that the relative area delinquent in the forest counties was two or three times as great as in the other groups. It will also be observed that in the forest and mineral counties the percentage of area delinquent is about double the percentage of assessed value delinquent. This indicates that it is the cheaper land within these county groups that goes delinquent. The same is true to a less extent in the farm group. In the counties classed as urban and farm-urban the percentage of area delinquent is less than the percentage of assessed value delinquent. This is because platted property is included in the value classification but not in the area classification.

These relationships are in respect to short-term delinquency. The unfavorable showing of the forest counties is even more pronounced in the case of long-term delinquency. Most of the land deeded to the State since 1910 has been in the forest counties. The number of acres of land and the number of platted lots that were deeded to the State because of delinquency between 1910 and 1928 in each of the county groups are given in table 55.

TABLE 55.—*Delinquent real estate deeded to the State, 1910–28; county groups, Michigan* [1]

County group	Unplatted		Platted in lots
	Area	Ratio to total	
Forest:	*Acres*	*Percent*	*Number*
Lower Peninsula	588, 513	5. 6	52, 737
Upper Peninsula	214, 322	3. 3	15, 153
Total	802, 835	4. 7	67, 890
Mineral	50, 151	1. 2	597
Farm	4, 156	. 1	1, 002
Farm-urban	19	(2)	22, 269
Urban	2, 720	. 1	5, 253
Total	859, 881	2. 3	97, 011

[1] Sources of data: From annual reports of the auditor general of Michigan (*73, Repts. 1910, 1915–28 inclusive*) and from U. S. Bureau of the Census, 1925.
[2] Less than 0.05 percent.

It will be observed that a relatively small amount of the delinquency in the more highly developed counties advances to the point where it reverts to the State, but that in the forest counties short-term delinquency is but a prelude to reversion. It is interesting to note that not only did 802,835 acres in the forest counties revert to the State during this period but also 67,890 platted lots. Many of these are in decadent lumber towns, and many others represent almost worthless properties acquired through lotteries and promotion swindles.

MINNESOTA

In order to discover to what extent delinquency in Minnesota can be attributed to adverse natural conditions, or in other words to what extent it is a land problem, the 16 northeastern counties were divided into five groups according to the extent of agricultural development, group 1 having the least and group 5 the greatest.[60] The relative delinquency of the several groups according to several different measures was ascertained.

[60] For a detailed description of these county groups refer to the mimeographed Progress Report [3]. See footnote 5, on p. 12.

St. Louis County, though far from typical, is predominant within the 16 northeastern counties, containing about one-fifth of the area, one-half of the population, and three-fourths of the assessed value. Therefore totals and averages were computed for the 15 counties exclusive of St. Louis, as well as for all 16. For comparative purposes, corresponding figures were obtained for Winona County, a wood-lot county in the southeastern part of the State, and for the State as a whole. Delinquency conditions of the several counties and groups of counties are shown in table 56. The figures in column 3 show the portion of each levy which was not paid on time and thus measure short-term delinquency. The figures in column 4 take into consideration receipts from back taxes, interest, and penalties, and indicate the net financial loss.

TABLE 56.—*Tax levy, delinquency, and deficiency in collection, 1927;*[1] *selected counties and county groups, Minnesota* [2]

Group and county	1927 levy	Delinquency	Deficiency in total collections
Group 1:	*1,000 dollars*	*Percent*	*Percent*
Cook	228	24.4	15.9
Lake	443	21.2	15.1
	671	22.3	15.4
Group 2:			
Itasca	2,593	7.8	3.8
St. Louis	23,269	3.6	2.1
	25,862	4.0	2.3
Group 3:			
Beltrami	1,080	41.7	23.4
Koochiching	980	31.2	21.9
Lake of the Woods	338	56.0	36.0
	2,398	39.4	24.6
Group 4:			
Aitkin	777	37.3	26.0
Carlton	929	10.6	5.9
Cass	693	35.8	19.3
Clearwater	264	26.8	13.5
Crow Wing	1,188	11.2	.9
Hubbard	355	27.2	10.1
	4,206	22.3	11.2
Group 5:			
Kanabec	275	11.3	2.0
Mille Lacs	433	11.5	1.6
Pine	761	23.1	15.3
	1,469	17.5	8.8
Total, 16 counties	34,606	9.6	5.5
Total, 15 counties (excluding St. Louis)	11,337	22.0	12.3
Winona [1]	1,252	1.0	[3].4
State total [1]	120,756	6.2	1.5

[1] Figures for Winona County and State total are for 1925.
[2] Source of data: Computed from records in the county auditors' offices of the several counties.
[3] Surplus.

For example, the levy in Cook County in 1927 was $228,000, and of this amount $56,000, or 24.4 percent, was reported delinquent. But during the fiscal period the collections from the current levy and prior levies, together with interest and penalties, amounted to $192,000, so the deficiency in revenue was only 15.9 percent, or about $36,000.

None of the northeastern counties except those with large iron ore values, St. Louis and Itasca, had a delinquency ratio in 1927 of less than 10 percent; the average, with St. Louis omitted, was 22 percent; and in one county, Lake of the Woods, the ratio was 56 percent.

The group with the greatest amount of delinquency is group 3. The three counties in this group, and particularly Lake of the Woods and Beltrami, contain a very large amount of open peat bogs. The old-growth timber is largely cut in the two counties just mentioned, but a quantity remains in the third, Koochiching. Much land in all three counties which is burdened with heavy special assessments for drainage has not been followed by agricultural use. The counties are liable for these special assessments in case of default on the part of the landowners.

Groups 1 and 4 have the next highest delinquency ratios. Cook and Lake Counties contain a large area of land which is nonagricultural because of the presence of granitic rock ledges. Although there is considerable iron ore, there is practically no mining development as yet. These counties are only partly cut over and still contain considerable old-growth timber.

The counties in group 4 constitute a typical cut-over area in which extensive efforts to develop agriculture have been accompanied by widespread speculation in land. The quality of the land is very uneven, because of stones, morainic topography, or sands and gravels.

The counties in group 5 comprise the oldest portion of the cut-over area from the standpoint of agricultural development. Approximately 50 percent of the land area is in farms. There is much good but rather stony land in all three counties, with considerable sand and peat in Pine County. Practically no taxable timber remains, nor is there any appreciable amount of land left in public ownership. There is slightly less delinquency in this group of counties than in groups 1, 3, and 4, but the increase has been even more pronounced than in some of the other groups.

When delinquency is expressed in terms of deficiency in collections, shown in column 4, the relative positions of the groups are not altered. The deficiencies are smaller in every instance, though not always smaller in the same proportion. Thus, while most of the counties show a revenue deficiency equal to about three-fifths of their current delinquency, Crow Wing County shows a delinquency of 11.2 percent but a revenue deficiency of only 0.9 percent. Since the collection of back taxes is likely to be spasmodic, total collections can conceivably be in excess of the current levy. In fact, that was the case in Kanabec County in both 1925 and 1926. In those years the deficiencies for Crow Wing were 5.9 percent and 8.2 percent respectively,[61] showing that the small deficiency in 1927 was abnormal.

Whichever measure is used, the greatest delinquency is found in group 3, which is intermediate in agricultural development. The explanation appears to be that there is the most delinquency of cut-over land where there is sufficient scattered settlement to increase governmental costs and not sufficient to increase materially the tax resources. Group 1, which has the least agricultural development, has more delinquency than group 5, which has the greatest agricultural development. In general, the delinquency of the cut-over regionf

[61] Computed from records in the county auditors' offices of the several counties.

exceeds that of the State as a whole and also that of Winona, a well-developed agricultural county.

So far the relative delinquency of the different counties and county groups in Minnesota has been discussed in terms of uncollected taxes; now it will be discussed in terms of land area and for long-term as well as short-term delinquency. In table 57 the counties are grouped as before, and the following facts are shown for each county and group of counties: (1) Area delinquent from 1 to 3 years; (2) the ratio of this area to the total taxable unplatted area; (3) area delinquent for more than 3 years; (4) the ratio of this area to the total taxable unplatted area.

TABLE 57.—*Area and ratio to total taxable area of short-term and long-term delinquency, unplatted real estate, 1926–28; selected counties and county groups, Minnesota* [1]

Group and county	Delinquent 1 to 3 years		Delinquent more than 3 years	
	Area	Ratio to total taxable area	Area	Ratio to total taxable area
	Acres	*Percent*	*Acres*	*Percent*
Group 1:				
Cook	23,835	4.8	50,243	10.0
Lake	149,315	17.5	79,454	9.3
	173,150	12.8	129,697	9.5
Group 2:				
Itasca	276,990	20.0	123,023	8.9
St. Louis	251,165	7.7	162,792	5.0
	528,155	11.4	285,815	6.1
Group 3:				
Beltrami	325,953	26.4	326,355	26.5
Koochiching	238,073	23.5	209,505	20.6
Lake of the Woods	218,219	31.1	178,509	25.5
	782,245	26.6	714,369	24.2
Group 4:				
Aitkin	124,520	11.0	261,675	23.0
Carlton	58,499	11.3	57,854	11.2
Cass	156,675	15.0	138,295	13.2
Clearwater	68,592	14.4	63,890	13.5
Crow Wing	76,389	12.1	47,320	7.5
Hubbard	144,927	25.4	33,320	5.8
	629,602	14.4	602,354	13.8
Group 5:				
Kanabec	15,468	4.6	4,110	1.2
Mille Lacs	34,417	9.6	15,164	4.2
Pine	182,974	20.4	30,311	3.4
	232,859	14.6	49,585	3.1
Total, 16 counties	2,346,011	15.7	1,781,820	12.0
Total, 15 counties (excl. St. Louis)	2,094,846	18.0	1,619,028	13.9

[1] Source of data: Computed from records in the county auditors' offices of the several counties.

Here again it will be noticed that it is the counties in group 3 that have the highest delinquency ratios. These counties have some agricultural development but nevertheless have large areas of open peat bog and inferior cut-over land. Likewise the counties in group 4 have a large amount of cut-over land. The fact that there was more deliquency in groups 3 and 4 than in groups 1 and 2 strengthens the conclusion that agricultural development on land that is not adapted

to agriculture is more responsible for delinquency than the poor quality of the land itself. Apparently the wild land can bear a certain amount of taxes without any serious amount of delinquency but cannot bear the heavy taxes that accompany a scattered agricultural development.

The extent of delinquency in this area, and particularly in certain counties of the area, is impressive. In 1926, when the figures were assembled, there were nearly 2 million acres in this block of 16 counties that had been delinquent more than 3 years and over 2 million acres more that had been delinquent for a shorter period. More than one-fourth of the taxable area of Beltrami and Lake of the Woods Counties had been delinquent more than 3 years; in 2 other counties over 20 percent was in this condition; and in 4 other counties from 10 to 20 percent. Of the total area of taxable land in the 15 counties, 31.9 percent was in some stage of delinquency, and 13.9 percent was nearly ready for deeding to the State.

While it was not possible to secure figures for the State corresponding to those given in the last table, it is known that these high delinquency ratios do not obtain throughout the State but are limited mainly to the cut-over region. Within this region there are wide variations, the counties with the highest delinquency appearing to be those in which a shrinking tax base is compelled to carry a relatively heavy tax burden because of an arrested agricultural development.

A study was made of the relative long-term delinquency of different classes of property in selected towns of the forest regions of Minnesota. The results are shown in tables 58 and 59.

TABLE 58.—*Portion of total area with long-term delinquency,*[1] *by property classes, 1926; selected counties and townships, Minnesota* [2]

County and township	Farm [3]	Cut-over	Resort	Mineral and timber
Beltrami:	*Percent*	*Percent*	*Percent*	*Percent*
Eckles	2.8	14.7	(4)	
Frohn	1.6	6.9	9.0	
Hagali	9.1	13.3	1.1	
T. 156 N., R. 31 W		50.5		(4)
Hubbard:				
Clay	.0	1.9	4.7	
Crow Wing Lake	3.9	1.3	.0	(4)
Lake Emma	1.1	2.5	2.6	(4)
Schoolcraft	8.5	8.4	5.4	5.9
Lake:				
T. 59 N., R. 8 W	3.9	14.0	(4)	.0
T. 58 N., R. 6 W	(4)	23.8		
T. 63 N., R. 11 W			4.2	12.3
T. 54 N., R. 10 W	2.6	1.4		
St. Louis:				
T. 62 N., R. 14 W			15.1	13.8
Embarrass	1.0	10.4		(4)
Toivola	4.3	2.1		
T. 54 and 55 N., R. 14 W	(4)	2.5	(4)	.0
T. 67 and 68 N., R. 20 W		.0		10.8

[1] By long-term delinquency is meant delinquency for 3 years and 7 months or more.
[2] Source of data: Computed from town assessment rolls, 1926, classified by field examination.
[3] Includes abandoned farms, which are important in Eckles and Crow Wing Lake.
[4] Less than 500 acres.

TABLE 59.—*Portion of total area with long-term delinquency,[1] by land classes, 1926; selected counties and townships, Minnesota [2]*

County and township	Level to moderately sloping loamy upland	Rough or sandy upland, or swamp	County and township	Level to moderately sloping loamy upland	Rough or sandy upland, or swamp
Beltrami:	*Percent*	*Percent*	Lake:	*Percent*	*Percent*
Eckles	0.0	9.9	T. 59 N., R. 8 W	3.6	2.1
Frohn	1.3	8.0	T. 58 N., R. 6 W	27.2	16.1
Hagali	4.1	8.6	T. 63 N., R. 11 W	[3]	8.5
T. 156 N., R. 31 W	[3]	49.5	T. 54 N., R. 10 W	1.7	1.1
Hubbard:			St. Louis:		
Clay	2.8	.8	T. 62 N., R. 14 W	13.0	13.6
Crow Wing Lake	.0	2.3	Embarrass	5.9	5.9
Lake Emma	3.9	.9	Toivola	3.8	1.3
Schoolcraft	16.4	6.1	T. 54 and 55 N., R. 14 W	1.6	2.4

[1] By long-term delinquency is meant deliquency for 3 years and 7 months or more.
[2] Source of data: From town assessment rolls, classified by field examination.
[3] Less than 500 acres.

These studies seem to indicate that while cut-over land tends to be somewhat more delinquent than farm land in the towns selected, the character of the cut-over land delinquent is quite as likely to be level or moderately sloping loamy upland as to be rough or sandy upland, or swamp. That is, if economic conditions are unfavorable and a diminishing tax base requires a higher and higher tax rate, all classes of cut-over property tend to be forced into delinquency.

WISCONSIN

The relation of long-term delinquency to land ownership and utilization is shown in table 60 for Lincoln County, outside of cities and villages, and for certain representative towns in the other forest counties of northern Wisconsin.

TABLE 60.—*Portion of total area with long-term delinquency,[1] by property classes, 1926–27; selected towns and Lincoln County, Wisconsin [2]*

Town or group of towns	Farm [3]	Forest	All other	Total	Abandoned farm
Town:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Athelstane	6.3	39.5	13.8	32.8	20.5
Bartelme	1.9	.0	----------	.4	[4]
Bayview	8.4	25.4	[4]	19.8	39.6
Laona	2.5	1.3	.0	1.4	[4]
Little Rice	6.1	39.5	15.1	36.5	7.3
Morse (nonmineral)	3.9	7.5	64.9	10.1	14.0
Murry	9.5	22.3	52.9	19.8	.0
Three Lakes	6.8	7.4	[5]	6.3	23.2
Lincoln County:					
Group 1	1.2	5.3	.0	4.5	2.2
Group 2	3.8	11.8	9.9	9.6	7.8
Group 3	2.2	1.0	[4]	1.0	.0
Group 4	2.6	11.5	7.8	7.4	6.7
Group 5	[5]	3.8	.0	2.0	2.3
Groups 6 and 7	1.2	1.6	.0	1.4	8.8
Total	1.7	5.6	3.8	4.2	5.5

[1] Long-term delinquency for the towns; 1923 tax certificates still outstanding in 1927; for Lincoln County, 1922 tax certificates still outstanding in 1926.
[2] Sources of data: Computed from tax rolls and tax certificate and tax deed sale books of the selected towns and Lincoln County, classified by field examination.
[3] Does not include abandoned farms. These are distributed among the other classes and are particularly important in Athelstane and Little Rice.
[4] Less than 500 acres.
[5] Less than 0.05 percent.

The land class designated as "farm" in this table includes all operated farm real estate, except such as is assessed to real-estate operators, timber operators, or power companies. It takes in not only the cleared farm land and the adjacent unimproved land on the same description, but also adjacent unimproved land descriptions belonging to the same owner when they are an integral part of the farm. The class also takes in potential resort real estate which is not yet being being used or held for resort purposes.

The forest category includes (1) all real estate assessed to lumber, pulp, or other wood-using industries; (2) timbered tracts owned by individual loggers; (3) all real estate assessed to land companies or to individuals who operate a land-selling office, no matter what the nature of the land; and (4) land of low value, chiefly cut over, which is held by speculators, nonresidents, and other inactive owners whose purpose of ownership is not evident. This category thus includes potential as well as actual forest land.

The third category, designated "all other", includes real estate held chiefly for resort or residential purposes, that held by other industries than wood-using industries, and all real estate assessed to power companies, no matter what the nature of the land, much of it being held only for purposes of overflow.

The abandoned-farm category is not mutually exclusive, but refers to those tracts in all categories on which the cleared land and usually the farmstead have been abandoned.

It will be observed that, except in those towns where there is very little delinquency in any category, there is much more in the forest class than in the farm class. In Athelstane and Little Rice, which have large areas with sandy or swampy soils, nearly 40 percent of the land in the forest category had been delinquent for 4 years. This is to be compared with 6 percent in the farm class. Similarly in Lincoln County, the forest-land class showed 3 or 4 times as much long-term delinquency as the farm class in most of the groups of townships.

In two of the selected townships—Morse and Murry—there was relatively more delinquency in the "all other" category than in either the farm or forest class, the ratios of delinquent to total area in this category being 64.9 and 52.9 percent respectively. The explanation for these high ratios seems to be that resort and power developments have not met with success in these townships as they have, for instance, in Laona and Three Lakes. The amount of delinquency on the part of abandoned farms varied from practically none in Bartelme to 39.6 percent in Bayview.

All in all, long-term delinquency in the selected Wisconsin towns quite accurately mirrors economic conditions. The ratios are high in the towns where economic possibilities are limited and low in the towns with greater and more varied resources.

A bulletin of the Wisconsin Agricultural Experiment Station (*70, p. 22*) sheds additional light on the character of the delinquent lands in the northern part of the State. In respect to one of the towns studied, it states:

> One of these towns has a total area of 41,644 acres. In 1920 only 7,400 acres of this was sold for taxes [62] but in 1926 nearly 22,000 acres, or more than half the total area, was sold. The bulk of this tax-delinquent area belonged to land companies and speculators, being divided about equally between these two classes

[62] The authors, in referring to land being sold for taxes, mean that only the tax liens were sold, the owner still having an opportunity to redeem from the lien holder.

of owners. Wood-using industries constituted the next most important class of owners who allowed tax payments to lapse.

Nearly a third of the delinquent land of this town is swamp land that is partly covered with a growth of small swamp timber. The remaining two-thirds is predominantly land of good topography, with soil that is quite sandy and covered with small nonmerchantable aspen (poplar) and jack pine. There are many variations in forest cover and soil types of land being dropped for taxes throughout the north but the situation in the town here alluded to is, in many respects, quite typical. While it is generally true that the tax-delinquent lands are the poorer lands, a large amount of delinquent land is just as good or better than much land that is not delinquent.

In respect to delinquency in Lincoln County, a later Wisconsin bulletin reports (*69, p. 10*):

Abandoned farms, large areas of idle or unused land, and the absence of resort possibilities or development are all found to be closely associated with tax delinquency. Light sandy soil, stony land, rough land, and swamp land are other conditions generally, but not always, found associated with tax delinquency. Operated farm land and land with merchantable timber are seldom delinquent. * * * Thus there is a very direct relationship between land use and tax delinquency.

OREGON AND WASHINGTON

There are three classes of unplatted real estate given on the Oregon and Washington assessment rolls. The first is called "tillable" in Oregon official reports and "improved" in Washington. With the exceptions of Baker and Grant Counties, Oreg., these terms cover the land called crop land or plowable pasture by the United States Census of Agriculture. In the case of Baker and Grant Counties, however, the area of "tillable" land reported by the assessors is much less than the figure given by the census. That is, in these and other grazing counties the term used by the census is more inclusive.

In both Oregon and Washington there is a class of land called "timber", meaning land containing merchantable timber. All other rural real estate is termed nontillable in Oregon and unimproved in Washington. In eastern Oregon the nontillable class is largely arid land, while in western Oregon and Washington the nontillable and unimproved classes are largely cut-over forest.

The relative delinquency in 1928 of tillable, nontillable, and timberland for certain counties which classified the land on the assessment roll is given in table 61.

TABLE 61.—*Portion of area delinquent, by character of land, 1928: selected counties, Oregon and Washington* [1]

State and county	Tillable or improved area delinquent		Nontillable or unimproved area delinquent		Timberland area delinquent	
	One year or more	Four or more consecutive years	One year or more	Four or more consecutive years	One year or more	Four or more consecutive years
Oregon:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Baker	9.4	1.3	7.7	2.0	[2]	[2]
Clatsop	10.0	5.8	21.0	10.3	9.1	3.9
Coos	25.8	3.0	24.6	3.7	[2]	[2]
Grant	8.7	1.1	8.2	1.4	3.5	0.7
Tillamook	6.4	2.1	18.9	8.9	17.6	7.3
Washington:						
Grays Harbor	8.8	.7	9.0	2.3	1.8	.4
Lewis	6.2	.3	6.7	.8	1.0	.3

[1] Source of data: Computed from the county tax rolls of 1926 and 1927; the Oregon State Tax Commission (*81, Bien. Rept. 9*); and the Minutes and Official Proceedings of the Washington State Board of Equalization (*84*).

[2] Combined with nontillable.

In Clatsop County, Oreg., there was in 1928 more than twice as much delinquency, and in Tillamook County nearly three times as much delinquency, in the case of nontillable land as in the case of tillable land. In none of the other counties was there any great amount of long-term delinquency. However, long-term delinquency was consistently greater in the nontillable or unimproved class than in the tillable or timber classes. Except in Tillamook and Clatsop Counties, there was no great amount of delinquency in the case of timberland. The timberland class in these two counties accounted for a substantial share of the delinquent area also in 1932 (73d Cong., 1st sess., S. Doc. 12, p. 874).

NORTH CAROLINA

Tax delinquency in North Carolina has, up to the present time, been generally confined to short-term delinquency not peculiar to any one type of land. There is, however, one region where delinquency is unusually high and where there is some disposition to forfeit the land. It is significant that this region is characterized by forest lands, with a minimum of other resources. It comprises 10 counties in the southeastern part of the State (southeast tidewater). This area was originally covered with magnificent longleaf pine. There is still some merchantable timber in the area, and there is natural reproduction. It cannot be considered a denuded area in the worst sense. It is, however, the region where the greatest damage has been done by fire and also where the closest cutting has been done. It is the region with the least industrial development, the poorest agricultural development, the sparsest population, and the highest tax rates. It is, therefore, not surprising that it should have the highest delinquency ratios.

The portion of the tax levy advertised for the delinquent tax sale in 1927 and the portion sold, by regions, are given in table 62 (*80, Rept. 1928, pp. 446–448, 467–470*):

TABLE 62.—*Portions of tax levy advertised and sold, by regions, North Carolina, 1927*

Region	Advertised	Sold	Region	Advertised	Sold
	Percent	*Percent*		*Percent*	*Percent*
Northeast tidewater	4.6	1.3	Piedmont	5.9	2.7
Southeast tidewater	19.1	13.3	Mountain	14.7	8.7
Coastal Plain	9.4	6.0			

In each of the three North Carolina counties in which an intensive study was made, the delinquency was analyzed by property classes. The results are summarized in table 63, in which three degrees of delinquency are shown: (1) Delinquent for 1927 taxes at the time of the observation (April or May 1930); (2) delinquent for 1928 at the same time; and (3) delinquent for both 1927 and 1928 at the same time. The figure given in each instance is the ratio of delinquent area to total area of each property class. As the reading was taken as of May 1, 1930 (in Macon County, Apr. 1), the 1928 tax would have been about 1 year delinquent and the 1927 tax about 2 years delinquent. Both could still be considered short-term delinquency.

TABLE 63.—*Portion of area of each property class delinquent in 1930 for taxes of 1927 or 1928 or both years; selected counties, North Carolina* [1]

Property class	Beaufort County			Chatham County			Macon County		
	1927	1928	Both years	1927	1928	Both years	1927	1928	Both years
Forest:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Corporation	7.0	22.9	6.7	3.1	9.4	3.1	0.0	1.8	0.0
Resident individual	10.8	13.2	9.5	1.6	8.6	1.2	12.8	39.9	11.9
Nonresident individual	4.8	4.4	4.2	2.3	11.3	2.1	22.5	28.5	20.0
Total	8.1	16.6	7.4	2.0	10.0	1.7	14.9	31.3	13.6
Transitional	5.1	8.9	4.8	2.3	4.7	2.3	2.1	20.2	2.1
Farm	4.8	10.8	3.3	1.3	4.3	.7	5.0	23.9	4.5
Residential	14.1	25.4	10.7	3.8	10.9	1.4	12.3	37.0	11.6
Business	6.3	11.7	6.3	.0	.0	.0	9.2	17.4	9.2
Unclassified	6.6	18.4	4.8	2.4	9.0	1.8	19.8	31.8	12.1
Total for county	6.3	13.9	5.1	1.5	5.3	.9	8.2	25.2	7.4

[1] Sources of data: Computed from county tax scrolls of 1928, and county tax receipt books, 1927–30. Classification by property classes made with the aid of county officials and others.

In these three North Carolina counties the forest and residential classes of land display a slightly greater propensity toward delinquency than the other classes of land. It should be explained that all tracts under 10 acres that could not be classified as farm or business properties were included in the residential class. This class thus contains some forest tracts of less than 10 acres. The forest tracts proper were divided into three classes according to ownership—those owned by corporations, those owned by resident individuals, and those owned by nonresident individuals—but one class appears to be no more subject to delinquency than another. The forests as a whole, however, show more delinquency than farms in all three counties and more delinquency than transitional properties in Beaufort and Macon Counties. Transitional properties are those which have some cleared land but are mainly forest. They are likely to be in a state of transition from forest to farm or from farm to forest. The unclassified group shows a relatively high ratio of delinquency. It probably contains many forest tracts, for the owners were mostly nonresident and the property unoccupied. All in all, the North Carolina study shows a slightly greater tendency toward delinquency in the case of forest land than in the case of other classes of land, but it should be noted that the figures relate only to short-term delinquency.

REVERSION OF DELINQUENT LANDS

DELINQUENT-LAND POLICIES

Except in a few States, there has in the past been no large amount of land so unattractive to private ownership that no one would pay taxes on it, and for that reason the States have not had a definite policy as to the handling of forfeited lands. In many States the law itself is obscure as to what can be done. Public sentiment and the courts have favored the original owner and have made it difficult for either an individual or the Government to acquire a clear title to land forfeited because of tax delinquency. There is no doubt that many owners have escaped the payment of a part of their taxes through the leniency of tax collectors or the laxity of the foreclosure proceedings. The increasing volume of delinquency in recent years and the increasing

difficulty of selling tax certificates to private buyers have emphasized the need for well-defined delinquent-land policies, including clear-cut and rigid procedure as to redemption or foreclosure, and proper disposition of tax-reverted lands. Several States have finally so revised their tax laws as to guarantee clear title to tax-reverted lands and have also made some provision for administering such lands in the public interest. Notable among such States are New York and Michigan. The discussion of reversion in these two States thus includes a fuller historical statement than is attempted for the other States mentioned in this section.

NEW YORK

Prior to 1885 large areas of forest land in the Adirondack and Catskill Mountain regions of New York became delinquent for taxes and were bid in by the State. In that year a policy was established of creating State forest reservations in those regions by purchase, using as a nucleus some 600,000 acres of State tax-title lands. The tax laws of the State, however, were so worded and so construed by the courts that the State found it practically impossible to retain title to these lands against any private claimant, no matter how flimsy the claim.

To remedy this situation, a law was passed in 1885 [63] by which, in forest-preserve counties, absolute title was guaranteed after tax-sale conveyances had been on record for 2 years, which would be 4 years after the sale of the land. By this law the conveyance, after the lapse of a period of 6 months from the passage of the act, was taken as conclusive evidence of regularity of all procedure. In 1897 the validity of the act was sustained by the United States Supreme Court [64] In 1890 a second law was passed, by which the right of redemption expired 5 years from date of sale. The constitutionality of this statute has also been sustained. Thus tax-title lands in the forest-preserve counties pass directly to the State and absolute title is assured. In other parts of the State delinquent lands go to the counties.

The Hewitt Reforestation Act of 1929 authorized the purchase and reforestation of idle and abandoned land outside the forest-preserve counties by the State wherever blocks of 500 acres or more can be acquired, and by the State in cooperation with the counties in which they lie in the case of smaller abandoned tracts. An initial appropriation of $100,000 was provided by the act to inaugurate the work, and in 1931 the voters of the State approved a bond issue of $19,000,000 to carry it forward. New York thus offers the owner of submarginal land an opportunity to sell it at a nominal price rather than have it confiscated through the process of delinquency.

MICHIGAN

The removal of timber values from many counties in north-central Michigan and the subsequent failure of agricultural colonization on land unsuited for farming precipitated a serious delinquency problem in that State as early as 1880–90. Unredeemed lands came back to the State in great quantities after 1896. A law of 1901 provided that these lands might be sold as well as homesteaded, as previously.[65] In

[63] New York Session Laws, 1885.
[64] *Turner* v. *New York*, 168 U. S. 90.
[65] Michigan, Public Acts, 1901, Act 141.

order to avoid litigation, it seemed desirable that the State's title be absolute. This led to the passage, in 1903, of a statute of limitations, which provided that—

> After the expiration of 6 months from and after the time when any deed made to the State under the provisions of * * * the general tax law * * * shall have been recorded in the office of the register of deeds for the county in which the land so deeded shall be situated, the title of the State in and to the same shall be deemed to be absolute and complete.[66]

In 1930 the State held title to about 1,600,000 acres of tax-reverted lands. Twenty-nine percent of the area had been dedicated as State forests, parks, and game refuges and public hunting grounds. The State pays $0.25 an acre for these lands when they are dedicated. One-fourth of this amount goes to the county, one-fourth to the township, and one-half to the school district. This payment is intended to quiet any tax interest which the local governments may have retained in spite of the statute of limitations. Of the remaining 71 percent of the area, which has not been dedicated, part is being held for classification, and the balance is being offered for sale from time to time. On the area not dedicated for conservation purposes the State pays a tax of $0.10 an acre annually to the local governmental units. In 1930 the current delinquency records in 21 counties showed an area probably subject to deeding to the State equal to over 37 percent of the State holdings in those counties, and it appeared certain that tax-reverted lands would soon amount to over 2 million acres (*67*).

MINNESOTA

The 16 northeastern counties of Minnesota contain somewhat over 19,000,000 acres of land, a large part of which is cut-over forest. In 1931 there were over 4,000,000 acres delinquent for taxes levied in 1926 and earlier years (*66, p. 118*). It may be presumed that little of this land has since been redeemed. Under the terms of an act passed in 1927 and amended in 1929,[67] land offered at a tax sale, if unredeemed within 5 years, was to be deeded to the State. It is estimated that at least 4,000,000 acres would now (1933) be subject to this provision had not the State Legislature in 1933 extended the redemption period from 5 to 7 years in the case of lands sold for taxes of 1926, 1927, and earlier years, thus postponing reversion of lands delinquent for taxes of 1926 and prior years from 1933 to 1935.[68] It appears to be the policy of the State to delay taking over the title to tax-delinquent land in the hope that some part of this land will be redeemed as soon as the economic situation improves.

Legislation has been enacted, however, through which the State may acquire tax-delinquent lands for inclusion in conservation areas.[69] A fund of $50,000 has been appropriated for the acquisition of lands delinquent 3 years or more. The owner selling the land must reimburse the local tax districts for back taxes, in whole or in part according to the agreement arrived at. The balance of the proceeds of the sale, if any, remain in the owner's possession. Negotiations are under way with the county boards of Aitkin, Mahnomen, Roseau, and Beltrami Counties to acquire such lands. The area involved is in the neighborhood of a million acres—in Aitkin County alone, 435,000 acres. Only where the State extinguishes the equity of the local tax

[66] Michigan, Revised Statutes, sec. 4161, act. 84, p. 110.
[67] Minnesota, Laws of 1927, ch. 119, 1929, ch. 415.
[68] Minnesota, Laws of 1933, ch. 414, sec. 2.
[69] Minnesota, Laws of 1931, 1933, ch. 402.

districts, either by assuming their bonded indebtedness, or by purchasing tax-delinquent lands from the owners, does it have absolute title and full control over the lands acquired.

In these same 16 northeastern counties there are 4,000,000 acres of land which are tax exempt except for certain contributions in lieu of taxes.[70] As far back as 1926, only 56.7 percent of the unplatted land of the 16 counties was taxpaying, and if, by excluding St. Louis, only 15 counties are considered, the taxpaying area represented only 52.8 percent. The figures for each of the counties and county groups are shown in table 64. A more recent investigation (*66, p. 119*) shows that in January 1931, only about 45 percent of the total area of the same 16 counties was taxpaying.

TABLE 64.—*Portions of unplatted land which are taxpaying, tax delinquent, and tax exempt, 1926; selected counties and county groups, Minnesota* [1]

County	Total area	Taxpaying		Tax delinquent		Tax exempt	
		Area	Ratio to total area	Area	Ratio to total area	Area [2]	Ratio to total area
	1,000 acres	*1,000 acres*	*Percent*	*1,000 acres*	*Percent*	*1,000 acres*	*Percent*
Group 1:							
Cook	923	428	46.4	74	8.0	421	45.6
Lake	1,358	626	46.1	229	16.9	503	37.0
	2,281	1,054	46.2	303	13.3	924	40.5
Group 2:							
Itasca	1,783	982	55.1	400	22.4	401	22.5
St. Louis	3,970	2,851	71.8	414	10.4	705	17.8
	5,753	3,833	66.6	814	14.2	1,106	19.2
Group 3:							
Beltrami	1,587	580	36.5	652	41.1	355	22.4
Koochiching	1,986	567	28.5	448	22.6	971	48.9
Lake of the Woods	829	304	36.7	397	47.9	128	15.4
	4,402	1,451	33.0	1,497	34.0	1,454	33.0
Group 4:							
Aitkin	1,215	751	61.8	386	31.8	78	6.4
Carlton	570	400	70.2	117	20.5	53	9.3
Cass	1,350	751	55.6	295	21.9	304	22.5
Clearwater	630	342	54.3	132	20.9	156	24.8
Crow Wing	635	507	79.8	123	19.4	5	.8
Hubbard	586	393	67.1	179	30.5	14	2.4
	4,986	3,144	63.1	1,232	24.7	610	12.2
Group 5:							
Kanabec	337	317	94.1	20	5.9	0	.0
Mille Lacs	361	311	86.1	49	13.6	1	.3
Pine	901	683	75.8	213	23.6	5	.6
	1,599	1,311	82.0	282	17.6	6	.4
Total, 16 counties	19,021	10,793	56.7	4,128	21.7	4,100	21.6
Total, 15 counties, excluding St. Louis	15,051	7,942	52.8	3,714	24.7	3,395	22.5

[1] Sources of data: Computed from records in the county auditors' offices of the several counties; the report of the State auditor to the Legislature, 1925 (*75*); unpublished map of the State Department of Conservation; biennial report of the State auditor, 1925–26 (*76*); pamphlet of the State auditor, August 1927 (*77*); correspondence with the State auditor; records of the Forest Service; records of the Indian Service at reservation offices at Cass Lake and Red Lake; and records of the U. S. Land Office at Cass Lake.

[2] Approximately one-quarter of the tax-exempt land shown in column 7 is included in national forests. In lieu of taxes, 25 percent of the gross receipts from the national forests are apportioned among the counties in which the forests are situated, for the benefit of public schools and roads. An additional 10 percent of the gross receipts are expended on roads and trails within the counties. For a number of years the general Federal appropriation for highways has included liberal amounts for forest highways and forest-road developments.

[70] These contributions in lieu of taxes are described in the footnote under table 64.

WISCONSIN

In Wisconsin lands that have been delinquent for 3 years are deedable to the county. Counties do not have to foreclose immediately after the expiration of 3 years, however, the law permitting a deed to be taken any time within 15 years from the date of the tax-sale certificate. The State tax commission reports that in many northern counties there have been few tax certificates sold to private buyers for a number of years and that at the 1931 sales the county took all the certificates in 14 counties. It reports that the counties differ in their practice in respect to taking tax deeds. Some counties have adopted the policy of acquiring a deed as soon as the redemption period of 3 years has elapsed. Others attempt to sell the certificates even at less than face value. Others seem to have no definite policy. The tendency appears to be in the direction of taking title to all lands which are deedable. Counties are encouraged to list suitable tax-reverted lands under the forest-crop law, and 853,000 acres of county lands had been so listed up to September 1, 1933.[71]

Wisconsin is seeking to stop the cycle of uneconomic development and subsequent reversion and to reduce governmental costs by application of a law which permits a county to zone its territory and to prohibit settlement in areas which have proved ill adapted to agriculture. The first county to take advantage of this zoning ordinance was Oneida, where a forest and recreation district with a gross area of approximately 300,000 acres was established. In this restricted district, land settlement involving year-long residence is forbidden. Existing cases of nonconforming uses will not be peremptorily stopped, though in isolated areas where it is extremely wasteful of public funds to maintain schools and roads the county has authority to condemn land for the common good and to make voluntary exchanges. County forests have been established in the restricted district from tax-reverted lands, and should eventually become a substantial source of public revenue. County officials intend to promote the development of better agricultural areas, so that future settlement will be concentrated where farming can prosper and governmental services can be provided with moderate taxation (*85*).

OREGON AND WASHINGTON

In Oregon the counties may foreclose and secure absolute title to lands that have been delinquent for 3 years. In Washington a county must wait 5 years before taking title, and this may be one reason why there has been less reversion in that State.

There is still much virgin timber in the Northwest, and there is no serious long-term delinquency involving old-growth, original stands. The situation as to reverted land is shown in table 65. No county studied had in 1928 more than 2.6 percent of its total taxable area foreclosed for taxes and still held in the county's hands. More recent figures of 1932 and 1933 show reverted lands reaching a maximum of 13.5 percent of the areas studied, these areas being mostly forest land.

[71] Reported by the Wisconsin conservation director.

TABLE 65.—*Area foreclosed for taxes and held by county, 1928 and 1932–33; selected counties, Oregon and Washington*

State and county	1928		1932–33		State and county	1928		1932–33	
	Area [1]	Ratio to total area of taxable real estate [2]	Area [3]	Ratio to area studied [4]		Area [1]	Ratio to total area of taxable real estate [2]	Area [3]	Ratio to area studied [4]
Oregon:	*Acres*	*Per cent*	*Acres*	*Per cent*	Oregon—Continued.	*Acres*	*Per cent*	*Acres*	*Per cent*
Baker	2,753	0.3			Tillamook	4,745	0.8	74,883	13.5
Benton [5]			5,493	1.7	Washington:				
Clatsop [5]	12,424	2.5	34,067	6.6	Clallam [5]	13,302	2.6	46,767	8.7
Columbia [5]			19,833	5.1	Grays Harbor	2,941	.4	9,797	1.2
Coos	10,209	1.5	17,774	2.5	Jefferson			29,100	10.3
Douglas			42,256	2.9	Lewis [5]	368	(6)	436	(6)
Grant	26,707	2.2			Mason [5]			9,535	2.5
Josephine			51,335	16.0	Snohomish			18,645	5.3
Klamath	19,544	1.4			Thurston [5]			5,306	1.7
Lane	21,812	1.8	25,572	2.4	Wahkiakum [5]			5,011	3.4
Lincoln			49,523	11.2					

[1] From county tax rolls.
[2] Computed from column 2 in connection with areas from official reports as follows: Oregon State Tax Commission, *81* (*Bien. Rept. 10, table 11*), and Washington State Board of Equalization (*84, 1928, Schedule B, p. 21*).
[3] Data furnished by the Pacific Northwest Forest Experiment Station, having been obtained from county records.
[4] Computed from column 4 and from areas furnished by the Pacific Northwest Experiment Station. The areas studied are the rural parts of the counties, excluding tax-exempt lands, resorts, known agricultural zones, and other districts not considered representative of general forest conditions.
[5] Data for 1932–33 preliminary, areas not checked.
[6] Less than 0.05 percent.

OTHER STATES

The only other States in which intensive studies were made are North Carolina and New Hampshire, and in neither of these States had there been at the time of the study any reversion of land to public ownership.

As to the extent of reversion in other States, information is limited to that obtained from scattered and frequently unverified reports from various sources. The statements usually refer to conditions which prevailed about 1930.

The tax-delinquency problem was not acute anywhere in New England, there having been practically no reversion of land in this region. There was considerable land reverting for delinquency in certain counties of Pennsylvania. In none of the South Atlantic States except Florida was any reversion reported, but the volume of delinquency was increasing and some reversion in this region seemed imminent.

In Florida it was officially reported that 5,892,358 acres had reverted to the State by 1928, and the Florida Land Owners' Association estimated on October 30, 1930, that over 7,000,000 acres, one-fifth of the land area of the State, had reverted for chronic nonpayment of taxes. More recently, the Southern Forest Experiment Station has estimated [72] that approximately 11,800,000 acres, of which 7,670,000 acres are forest land, have now (July 1, 1933) reverted to the State. These areas represent 34 percent of the total land area and 32 percent

[72] See the following: SOUTHERN FOREST EXPERIMENT STATION, ANNUAL REPORT 13: 32–33. 1933. [Mimeographed.]

of the forest area, respectively. However, in Florida the former owner has 2 years in which to redeem, and in any case the State's title is questionable, so that reversion, as the term is used in that State, means no more than long-term delinquency.

In certain other States the area of tax-reverted lands and the percentage of this area to total land area were estimated [73] as of July 1, 1933, by the Southern Forest Experiment Station as follows:

State	Acres	Percent
Arkansas	3,800,000	11.3
Louisiana	2,708,000	9.3
Mississippi	1,250,000	4.2
Oklahoma	600,000	12.6
Texas	920,000	5.3

In Oklahoma and Texas only the eastern portion of the State, within the limits of the pine type, was included. In Louisiana about one-half of the reverted area is forest land, in Arkansas and Mississippi about 60 percent, in Texas three-quarters, and in Oklahoma about 90 percent. Alabama appears to have little reverted land, and Georgia none. In both Louisiana and Mississippi the reverted area is largely concentrated in the longleaf pine belt and in the Delta.

Outside of the Lake States there was very little delinquency in the North Central States. Most of the forest land is in farm wood lots and is no more or less delinquent than the rest of the farm. Most of the delinquency in Illinois was in connection with coal lands, though in the southern third of the State some of the poorer farm land, as well as some woodland, was being forfeited.

CAUSES OF DELINQUENCY

IMMEDIATE AND REMOTE CAUSES

The prevalence of serious and widespread delinquency calls for an investigation of the causes. The causes, as will be shown, may not be the same for both short-term and long-term delinquency. Moreover, in enumerating the causes of delinquency, distinction should be made between immediate causes and those which are more remote though perhaps more fundamental. Short-term delinquency has been defined as that type of delinquency which exists when a tax has not been paid at the end of the legal collecting period and becomes subject to a penalty. Long-term delinquency has been defined as that type which exists when taxes are due for 2 or more years and the taxpayer is in danger of losing his property.

It is obvious that there will always be a certain amount of short-term delinquency. With some taxpayers it is the result of carelessness or procrastination. There are others who, because of improvidence or temporary misfortune, do not have the money at the time the taxes are due. Some are chronic offenders, rarely paying their taxes until they are several months overdue, yet usually managing somehow to raise the money eventually. Finally there are always some people who live so close to the margin of subsistence that they cannot always pay their taxes on time. The inevitable delinquency due to these causes accounts for a very small part of the total. There is

[73] SOUTHERN FOREST EXPERIMENT STATION. See footnote 72.

abundant evidence that in normal times most short-term delinquency is due to a faulty collecting procedure and practice.

Long-term delinquency also is fostered and encouraged by an inefficient collection system, but there are generally other and more fundamental causes. Among these other causes are overassessment and a heavy tax burden. These in turn may have more remote causes. Overassessment may be due to a sudden and extreme deflation in property values, whereas heavy taxes may be due to a wasteful government or insufficient wealth to support comfortably necessary public functions. Delinquency of the long-term variety is thus usually symptomatic of fundamental maladjustments—economic and political.

FAULTY COLLECTING PRACTICE

Sometimes too much time elapses between the date of assessment and the date when taxes are due. In this interval people move away, property changes hands, values disappear, all of which add to the difficulty of collecting and the certainty of a considerable shrinkage in the levy. Frequently the time of payment suits neither the convenience of the taxpayers nor the needs of the Government. In less than a third of the States payment may be made in installments. Many jurisdictions send the taxpayer no statement, thus making it difficult for him to pay promptly if he wants to. In some States several months elapse between the time when taxes become due and the time when the first penalty is imposed. Even the penalties for the first several months of delinquency are often too trifling to be much of a stimulus to prompt payment. Finally the usual long delay before final action can be taken on the tax lien and the tendency of the State legislatures to liberalize the terms of redemption are a constant invitation to delinquency.

The New York Tax Commission (*79, p. 9*) in its 1928 report says:

> Delinquency in New York results for the most part from the methods of collection rather than from inability of property owners to pay taxes. Yet delinquency, once started, tends to be cumulative.

It is logical that prebilling, installment paying, and a reasonably stiff penalty should discourage delinquency, and some evidence has been collected to substantiate this theory.[74] There is some question, however, whether severe penalties discourage delinquency. If they do, then it should follow, other things being equal, that the higher the penalty the less the amount of delinquency. Leonard,[75] in a study of delinquency, attempted to test this assumption. He compared the penalties of a group of 10 States with high delinquency ratios (ratio of taxes delinquent to taxes levied) with the penalties of 11 States with low delinquency ratios and reached the conclusion that high penalties do not make for low delinquency ratios. He points out that the high penalties may have been developed in the high-delinquency areas in the attempt to check the rise in delinquency. He suggests that possibly the severe penalties aggravate the situation rather than relieve it. The fact that the delinquency ratios differ widely within the same State, under the same law, suggests that the severity of the statutory penalty is not the most

[74] A study relating the delinquency of 24 large cities of the United States and Canada to their respective collection procedures was made by the Philadelphia Bureau of Municipal Research, and the results given in Citizens' Business, no. 747, Sept. 14, 1926. See (*64, p. 27*) for reprint.

[75] LEONARD, J. L. DELINQUENT TAXES. Unpublished doctorate dissertation, Yale Univ., 1929.

important factor. It is a question of the actual imposition of the penalty. Certainty of imposing a moderate penalty is probably a more effective deterrent to delinquency than mere severity of penalty. The possibility of having a penalty remitted, legally or otherwise, makes the amount of the penalty of no great moment to the taxpayer.

Carl H. Chatters, speaking before the National Conference on Government at Buffalo, N. Y., November 11, 1931, said:

> The reduction or elimination of penalties on past-due taxes has been a cause of concern to those who have been hoping for better things in tax administration. The 1931 legislature of the State of Michigan passed an act canceling all penalties on 1929 and 1930 taxes if paid before June 30, 1931. There were heavy collections in June 1931, of taxes for these years. Does this justify the law? Hardly. I have visited most parts of the State or talked with officials from the various communities. The story is universally heard that those who did pay on time were discriminated against and will hesitate to pay promptly in the future. Many others plan to delay paying 1931 and 1932 taxes until the legislature meets again in 1933 when they hope to have more tax penalties canceled or reduced.

In 1931 Minnesota, Texas, North Carolina, and several other States extended the time for paving taxes or reduced or waived the penalties for delinquency. The ultimate effects are almost certain to be disastrous.

Even those States which have a creditable collection procedure find it difficult to get the law enforced with the necessary diligence. In most taxing jurisdictions the collecting of taxes is a political job, that is, taxes are collected by a person who holds his office by popular election. It is well known that political officers are constantly importuned to grant favors or immunities and that many, desirous of reelection, cannot resist the pressure. When the favor takes the form of granting an extension in time for paying taxes, remitting a penalty, or withholding the taxpayer's name from the advertised list, the practice invites delinquency. There is plenty of evidence that these things are done repeatedly in many States.

After a comprehensive study of tax delinquency in Ohio, one investigator declares [76] that a significant—

> factor in the explanation of the failure of county officials to enforce the tax collection statutes more vigorously is the political nature of the county treasurer's office. Elective officers hold their positions at the pleasure of the taxpayers. From the point of view of vote-getting, it is not advisable to incur the displeasure of the electorate by invoking the aid of the law too energetically in collecting taxes.

The tax collector is not usually alone in his dereliction. Governing bodies often extend the collecting period, postpone the date of sale, or otherwise depart from the legal calendar. Likewise sheriffs and county attorneys fail to institute foreclosure proceedings on time and fail to prosecute them with vigor after they are instituted. Delay and irregularity in the enforcement of the delinquency laws naturally encourage delay and indifference on the part of the taxpayers. There are counties in North Carolina where it has become a tradition to collect the taxes with completeness and dispatch. There are other counties just as favorably situated economically where a large volume of delinquency is so usual that delinquency has lost its stigma.

The Chamber of Commerce of the United States in one of its reports (*63, p. 25*) states:

> Promptness in the administration of delinquent taxes does much to eliminate them; to reduce the cost of administering them; to minimize the rate of interest

[76] Nilsson, A. E. See p. 50 of citation given in footnote 50.

on money borrowed to make up the revenue represented by delinquent items, and, above all, to protect the interests of the individual taxpayer.

The Bond Buyer (*61*) in referring to the situation in Florida says:

> There are undoubtedly a few places in Florida that are absolutely unable to pay their debts. For the State as a whole, however, what is needed is a continuous and rigid enforcement of the tax collection machinery. Property owners should pay or forfeit their holdings. Acceptance of bonds for taxes and laws extending delinquent dates, removing penalties, or waiving interest on unpaid taxes, merely reduce the incentive to pay and prolong the period of bond default. This, of course, is exactly what the unwilling taxpayer wants.

Most of the State legislatures which were in session in 1933 have responded to depression conditions and depression psychology by liberalizing still more the terms of tax payment. Some of the legislation enacted probably merely validates an existing practice; some may be considered only a temporary expedient to meet an emergency; but, even so, much of it represents a complete reversal of established principles and appears to be wholly irrational and indefensible. Few of the session laws had been published at the time these paragraphs were written, and the following analysis is based upon information given in the current bulletins of the National Tax Association. These reports are admittedly based on newspaper accounts and other secondary sources and are therefore probably neither complete nor free from error. They do suggest, however, the nature and extent of this disruptive legislation.

Moratoria postponing sales for taxes were provided for in Arkansas, Idaho, Indiana, Iowa, Kansas, Michigan, Minnesota, South Dakota, Washington, and Wyoming. The period of redemption from tax sales was extended in Alabama, Arkansas, Idaho, Iowa, Kansas, Minnesota, Montana, North Dakota, Pennsylvania, South Dakota, and Wyoming. A lower interest rate for redemption was established in Maine and South Dakota. An extension in the time for paying current taxes has been granted in Iowa, California, Florida, Maryland, Minnesota, Missouri, Nebraska, New York, Oklahoma, South Carolina, Tennessee, Washington, and Wisconsin. Discounts for prompt payment are to be granted in Kansas, Maine, Oregon, and Utah; and partial or installment payments are to be allowed in Arizona, Delaware, Idaho, Iowa, Minnesota, Nebraska, Nevada, New York, North Dakota, Oklahoma, Oregon, Vermont, Washington, and West Virginia. The penalties and interest on taxes now delinquent have been waived or reduced in California, Kansas, Michigan, Minnesota, Missouri, Montana, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, and Washington; and the payment of back taxes by installments over a period of years is allowed in Arizona, Indiana, Minnesota, New Jersey, North Carolina, North Dakota, Ohio, Oregon, South Carolina, South Dakota, and Washington. Compromises may be effected under Nevada and Utah enactments. Lighter penalties or lower interest rates on future delinquencies are provided for in Arkansas, Colorado, Idaho, Kansas, Maine, Minnesota, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Utah, Washington, and Wyoming (*72*).

In waiving interest and penalties and even granting discounts on back taxes there seems to be no consideration for the taxpayers who have already paid their taxes and no thought as to the effect of these extensions on future collections. These continued extensions and this progressive easement of penalties can hardly fail to have a demoral-

izing effect on taxpayers generally. The practices are grossly unfair to those who pay their taxes promptly and without coercion and are of doubtful benefit to those they pretend to help.

The evidence is thus fairly conclusive that much short-term delinquency is due to a faulty collecting practice. Sometimes the fault is with the law, as where the penalties are too light or too severe, or the date of collection does not fit the income flow of the taxpayers. More often the fault is with failure to enforce the law. This failure in turn is often due to the fact that the collection of taxes and the enforcement of the delinquent-tax lien are intrusted to officers chosen by popular election. It is probable that with a tax calendar carefully designed to fit both the needs of the government and the convenience of the taxpayers, with penalties adequate to cover the full cost of delinquency, imposed without deviation, and with enforcement intrusted to men free from political obligations there would be very much less short-term delinquency.

Faulty laws and faulty administration also contribute to long-term delinquency, not only because a taxpayer who gets behind finds it hard to catch up, but because officials are even more derelict in collecting back taxes than in collecting current taxes. Sometimes the law is indefinite as to the foreclosure procedure or as to the disposition of land acquired through foreclosure, thus further encouraging the officials to adopt dilatory tactics. Nothing could be better designed to insure delinquency. However, in the case of long-term delinquency, leading in many instances to the loss of property, a faulty collecting practice is not the full explanation. There are usually other and more fundamental causes.

OVERASSESSMENT

The chief cause of long-term delinquency is overassessment. A property owner will rarely find it necessary to surrender title to his property unless the taxes threaten to absorb all or a major part of the expected future income therefrom. Since normally tax rates do not exceed 2 or 3 percent of actual value, the tax on a particular property is not likely to be confiscatory unless the property is assessed at more than its true value. It is quite possible that the current income from a property may be less than the annual tax levy, without overassessment. The basis for evaluating property for tax purposes is market value, and that depends on expected future income, which in some cases may be far greater than present income.

A property or a class of property may be assessed at no more than actual value and still be overassessed in proportion to other properties because other properties are assessed at less than actual value. This inequality in assessment results in some properties being overtaxed and others undertaxed. If the disparity is great, the tax on the property which is bearing the discrimination may exceed the total prospective income and lead the owner to let it go delinquent. Of course if the tax rate is moderate, slight inequalities in assessment may be borne without causing delinquency. It is when inequality in assessment is combined with a high tax rate that it constitutes an important cause of delinquency.

There are many instances in the Lake States where cut-over land is very much overassessed, but farm land only slightly overassessed, if at all. There appear to be several causes for the persistence of

this discrimination—the fact that much of the cut-over land is held by absentee owners, who find it inconvenient and costly to appear in protest, the fact that all cut-over land is overassessed and hence that there is no willful discrimination as between individuals, and the fact that the governing bodies are reluctant to reduce the assessment on cut-over land because it occupies such a large place in the tax base. They recognize that even a moderate reduction in the assessment of cut-over land would involve an appreciable increase in tax rate and hence an increased burden on the few scattered and not too prosperous farms. They are frankly trying to protect and preserve such settlement as exists. If these settlements, however, have no sound economic basis, this policy can hardly do more than postpone their collapse If the overassessed cut-over land is allowed to go delinquent, as is the case in increasing volume, it yields no tax at all, and carrying it on the assessment roll at a high valuation accomplishes nothing except to conceal the true financial weakness of the political unit. If expenditures are gaged to the levy, much of which will never be collected, the practice makes eventual bankruptcy all the more certain. The failure to adjust assessments to true values thus tends to conceal the true tax-paying ability of a political unit and stimulates overspreading at a time when retrenchment is needed. If all property were assessed as nearly as possible at actual value, no matter how high the tax rate might soar as a result, the true situation would be revealed. Then relief might be afforded through fundamental adjustments, such as political reorganization or a redistribution of governmental functions, and justice might be done to all.

In times of depression, many owners of vacant lots, cut-over land, and other nonincome-producing land do not have income from other sources sufficient to pay the taxes, and they are obliged to let their land go delinquent. Of course they would prefer to sell at a sacrifice rather than to lose their whole equity, but the market for such property is exceedingly dull in such times. However, it is probable that there is very little land that would not find a purchaser at some price if the purchaser could be assured that the land would not be assessed at more than he paid for it, or assessed at any time in the future at more than it could be resold for; but he has no such assurance. Thus overassessment or the prospect of overassessment is a basic cause of delinquency.

DECLINING VALUES

Declining values are an indirect cause of delinquency, since they frequently lead to overassessment. This is especially true if property is not revalued annually. In a time of falling prices, it is clear that undiminished need of revenue, reluctance to raise the tax rate, and hope that the decline in values may be only temporary, are strong influences operating against reduced assessments. The owner, on the other hand, may accept an insufficient reduction in assessment because he does not want to put too low an estimate on the value of property which he still has hope of selling. The continued overassessment, combined with the unfavorable economic outlook for that particular class of property, is a strong inducement to delinquency.

This explanation holds pretty largely for the increased delinquency in the cut-over areas of the Lake States in recent years. After the timber was cut from this land, it was either held by the lumber

companies or sold to land companies for subsequent agricultural development. The owners continued to pay taxes on it in the confident belief that it would later be sold to farmers at a profit. Since the World War it has become recognized that most of this land is submarginal for agriculture under prevailing conditions and has practically no marketability. Yet it continues to be assessed as potential agricultural land and far in excess of its actual market value.

Overassessment as a result of fallen values is often witnessed in the case of an unsuccessful real-estate development or after the collapse of a general land boom. To illustrate: Thousands of lots purchased at fabulous prices in Florida subdivisions have been allowed to go delinquent since the boom collapsed. As soon as the owners realized that the speculative values were gone, there was nothing to be gained by retaining title and continuing to pay taxes. Where extensive public improvements had been made on the basis of these exaggerated values, adding heavy special assessments to the general tax, the high aggregate tax made the retention of ownership even less alluring. It is apparent that each loss from the tax base adds to the burden of those properties which remain, thus tending to accelerate the drift to delinquency.

This cycle invariably follows the collapse of a boom. While Florida is the outstanding example, the same tragedy has been enacted on a smaller scale in many other places. The phenomenon is in evidence wherever there has been an abortive real estate development, or any other land promotion in which undue optimism has been followed by disillusionment. In other words, delinquency is an almost invariable byproduct of deflation, finding its most pronounced expression in lands which have mainly a speculative value.

A general decline of property values, such as attends the present depression, is also a direct cause of tax delinquency, even if assessments are reduced as promptly and as fully as the shrinkage in value. Even in that case, governmental expenditures will not generally be curtailed to as great an extent as the reduction in the value of property and the incomes of the taxpayers. In other words, the tax burden on property increases at a time when property owners are losing faith in their investments. Discouraged because of their loss of capital and resentful because taxes continue to be high, they are in a defiant mood. They express this defiance by delaying payment of their taxes as long as possible. If one owns nonincome-producing property he may calculate that the loss of the equity may be no greater than the taxes over a period of years. At least he is prompted to cease paying for a while and see what happens. If there should be a rise in values, he can redeem from the tax lien; if the deflation should continue, he can eventually surrender title and escape the intervening taxes. Incidentally the fact that his land is delinquent and threatened to be lost from the tax books may cause the tax authorities to reduce his assessment more than they would otherwise.

THE SHEER BURDEN OF PROPERTY TAXATION

It is to be expected that there should be more delinquency when taxes are heavy than when they are light, and such is obviously the case.

It cannot be denied that over a considerable period property taxes have absorbed a large and increasing share of the income from

property. This may be illustrated by the comparative trends in the index numbers of farm prices (30 items) and the index numbers of farm taxes from 1914 to 1930 in table 66.

TABLE 66.—*Comparative trends in the index numbers of farm price (30 items) and farm taxes, 1914–30* [1]

Year	Farm prices	Farm taxes	Year	Farm prices	Farm taxes	Year	Farm prices	Farm taxes
1914	101	100	1920	99	155	1926	87	253
1915	95	102	1921	75	217	1927	85	258
1916	95	104	1922	81	232	1928	90	263
1917	118	106	1923	88	246	1929	89	267
1918	112	118	1924	87	249	1930	80	266
1919	102	130	1925	92	250			

[1] Source of data: (*82, pp. 16, 18*).

Real estate rarely earns a high rate of return, and this is particularly true of farm property. Thus, if a farm income was 20 percent less in 1930 than in 1914 and farm taxes were 166 percent higher, and taxes took 20 percent of the income in 1914, they would be taking 66.5 percent in 1930. Since the basic value of property, particularly real estate, is its capitalized earning capacity, a tax that promises to absorb a large share of the income comes close to confiscation of the property. Land that, in the long run, offers no prospect of a substantial net income after taxes is not likely to remain long in private ownership. The sheer burden of property taxation unquestionably contributes to delinquency, and particularly so in the case of deferred-yield properties which, because of the uncertainty of future events, are subject to unusual risk.

BURDENSOME SPECIAL ASSESSMENTS

A great many city lots, particularly vacant lots, and many parcels of rural property have been driven into delinquency because of the burdens of special assessments. These special assessments, including the accumulation of interest, often approach or even exceed the value of the property. Where this condition exists, it has usually arisen because there has been no adequate preliminary investigation to determine the amount of existing assessments upon the lands and no adequate estimate of the amount of the proposed assessment. Without such information, neither the legislative body authorizing the improvement nor the property owners in the district can act intelligently.

In a few States legislation has been enacted to prevent the more serious abuses of this kind. For instance, in 1931, California enacted a law which, in brief, provides for (1) an adequate preliminary investigation and report upon the financial feasibility and soundness of a proposed project, (2) a hearing of property owners after the investigation and report has been made and when the facts therein are available to all landowners in the district, and (3) a twofold limitation upon the amount of special assessments that may be imposed. The assessment that may be imposed upon any one parcel of land may not exceed one-half the true value of such parcel after the improvement, as shown by the report, nor may all overlapping assessment indebtedness plus the proposed indebtedness for

the specific project exceed one-half the true value of all the land after improvement in the district.[77] This limitation may be exceeded only in extreme cases and by unanimous vote of the landowners.

The 1931 Legislature of Michigan also passed an amendment to its Bond Act, providing that in any 1 year cities could not sell special assessment bonds, the par value of which was more than 1 percent of the assessed valuation (sec. 2691), that the total special-assessment debt could not exceed 5 percent of the assessed valuation, and that no bonds could be sold if the tax delinquency exceeded 25 percent (sec. 2698).[78]

Much of the delinquency in any city, but particularly in those which have suffered from the collapse of a boom, will be found to be in subdivisions which are unduly burdened with special assessments. Indeed, the chief cause of delinquency in the case of city property is perhaps the lack of rigid control of subdivisions and definite limitations to the amount of special assessments that may be imposed.

The special assessments that involve forest land and become a factor in forest taxation are mainly those imposed to defray the cost of drainage projects. In the Lake States, and to some extent in the South, ambitious drainage projects have been undertaken in cut-over areas to encourage agricultural development. Had the expected development taken place the land might have been able to carry the burden of these assessments, but the hoped for development has not come. The cost of the drainage projects, together with the over-assessment which they have tended to encourage, has contributed to the delinquency of cut-over land.

EFFECTS OF DELINQUENCY

The discussion of delinquency up to this point has necessarily suggested some of the effects. For instance, one of the effects of delinquency is more delinquency. This is true both of short-term and long-term delinquency. If one taxpayer is permitted to pay his taxes late, others demand the same privilege. If the volume of taxes paid late is considerable, the Government must borrow money to meet its current obligations, and the interest cost, unless added to the tax bill of the delinquents, necessitates a heavier levy on those who pay on time. Chronic delinquency also destroys such pride as might be derived from a clean record and breaks down the morale of the taxpayers generally. On the whole, leniency in tax collecting is no kindness to the taxpayers but only aggravates the difficulties of final collection.

Even if the bulk of the levy is eventually paid, with sufficient interest and penalties added to take care of the added cost of collection and interest on borrowed money, the delay and uncertainty is an embarrassment to the Government in formulating and executing its program. In fact it puts the Government at the mercy of the money lenders. A writer from Florida[79] said in 1928:

> Many cities in the United States could not function if there were not investors in tax liens who would invest at the tax sales. I know of several cities which could not have opened their schools this fall if the tax liens had not been sold during the summer.

[77] California, General Laws, 1931, Act 8490.
[78] Michigan, Public Acts of 1931, no. 142.
[79] From the following: FULTON, F. D., TAX DELINQUENCY. Prepared for use in the State of Florida, unpublished memorandum.

On the other hand, the purchasers of tax-sales certificates are not everywhere considered public benefactors. In some States, where the law permits disinterested persons to purchase tax liens, it has been common for certain individuals, particularly lawyers and real estate men, to make a business of purchasing the "cream" of the certificates, leaving the county with those which are the least likely to be redeemed. For this reason some States—Oregon and Wisconsin, for example—have passed laws permitting a county to dispense with the tax sale and take all of the certificates itself.

Where there is a large and increasing deficiency in current collections and uncertainty as to whether the delinquent taxes will ever be paid, the Government is placed in a very difficult position. It cannot gage its expenditures by current collections, for the year's commitments are made before collections begin. If it limits its expenditures on the basis of the previous year's collections, it may seriously and unnecessarily impair its established services. On the other hand, if the Government permits expenditures to exceed collections, it aggravates its difficulties in subsequent years.

In some of the northeastern counties of Minnesota in 1926 there were deficits in collections ranging from 15 to 45 percent. Even though the trend in delinquency is upward, and the officials recognize the danger of spending in excess of the revenue, it may be impossible to scale down expenditures immediately in such proportions. The fact is the county authorities in this region usually levy a greater tax than is required by the expenditures proposed in their budget, with the expectation that some part will not be collected but that the net collections will cover the expenditures. The result is, of course, that the burden of supporting schools, roads, and other governmental functions is made heavier for those who pay taxes than if conditions permitted the collection in full of a levy equal to the actual budget.

A similar report comes from Wisconsin. One of the bulletins of the agricultural experiment station previously referred to (*70, pp. 23–24*) contains this statement:

> Tax delinquency has already caused some of the northern counties considerable difficulty in balancing their budgets. One procedure that is being adopted is to make the tax levy much larger than is actually needed in order to insure an adequate cash collection. This practice is causing a heavier tax burden to pile up on land not delinquent. There is an instance of a large tract of land bought recently for $1 per acre on which the annual tax is as much as 25 cents per acre. How long will the owner pay this tax? Will the county have to raise the tax rate even higher when such land becomes delinquent? Such questions are confronting those counties in which the bulk of the revenue is derived from unplatted cut-over lands.
>
> * * * Some counties are beginning to cut expenditures in order to adjust themselves to the situation. The effect of tax delinquency upon the financial affairs of smaller governmental units (towns and school districts) in many instances presents a more serious problem.

Communities faced with a shrinking tax base must reduce expenditures, consolidate into larger units, be subsidized by the State, or fall into ultimate bankruptcy. Frequently minimum standards of Government already prevail, or the community has debt commitments which cannot be avoided, and no appreciable reduction in expenditures is possible. Decadent communities have generally been able to command more and more State aid, particularly for schools, but it is questionable how far the State should go in perpetuating a community which lacks a sound economic basis. Community disinte-

gration is bound to involve hardships under the best of circumstances. A speedy collapse may work no greater hardships than a slow death, and an orderly readjustment certainly less than a state of demoralization.

The ultimate effect of continued delinquency is of course forfeiture of title and, to an increasing extent because of the absence of private buyers, reversion of land to the public domain. The need for definite State policies for handling such lands has already been pointed out. Wholesale reversion introduces difficult problems of administration and necessitates important political readjustments. It is evident that, if a tax roll is reduced by 10 or 20 percent through delinquency, the remaining 80 or 90 percent must thereafter bear all of the taxes. If the land which reverts could be consolidated into large tracts, there could be some reduction in governmental costs, but if it is in scattered holdings there are no compensatory savings. Moreover there is the added cost of administering the public land, which becomes a considerable item if the tracts are small and scattered. There is little prospect of realizing a substantial income in the immediate future from the type of land that is usually abandoned by private owners. A large amount of reversion thus almost compels a reorganization of the political unit, a broadening of the tax base, or a State or Federal subsidy. Without some such relief the burden must become more severe, resulting in increased delinquency and a final inevitable collapse of the political unit. Perhaps the only solution for areas with a sparse population and an acute delinquency problem is their reduction to an unorganized status and, where natural conditions are extremely unfavorable, complete depopulation.

CONCLUSIONS

It has been shown that in general tax-collection procedure under the property tax is dilatory and inefficient. This is due partly to weakness in the statutory provisions and partly to lax administration. Sometimes political favoritism is involved; sometimes general inertia and leniency on the part of tax officials is to be blamed. There is general reluctance on the part of State and county governments to take over title to land that cannot be sold for taxes, partly because it is hoped that economic conditions will improve so that these lands may again be added to the tax rolls, and partly because in most States there is no provision for making any profitable use of reverted lands.

Prior to the current industrial depression, delinquency was not widespread but was confined for the most part to regions with large areas of cut-over forest lands not wanted for agriculture. In those regions the trend in delinquency from about 1920 to 1928 was decidedly upward. The fundamental cause of this upward trend was the agricultural depression beginning in 1921, which gradually destroyed the hope of prospective agricultural use for these cut-over forest lands and for other lands of inferior productive capacity.

The current industrial depression has resulted in a very sharp increase in short-term delinquency between 1930 and 1933, which has not been confined to forest lands but has involved agricultural and urban real estate as well. During this period there has also been a marked increase in the area of reverted lands in States where delinquency had already been prevalent and where the process of reversion

has not been postponed by legislative enactment. With economic recovery it may be expected that short-term delinquency will fall off to normal proportions and that a substantial part of the reverted lands will be transferred back to private ownership in one way or another.

Forests lands, particularly cut-over lands of low value, have been found to be generally more subject to tax delinquency than other classes of real estate. The relatively unfavorable position of forest lands in this respect is especially pronounced in the Lake States and in the South, but is noted also to a less marked degree in the Pacific Northwest. Prior to 1930 merchantable timber has not been subject to delinquency except in a few exceptional situations.

As indicated before, the reversion of tax-delinquent lands to public ownership has been greatly accelerated by the current depression. There are millions of acres of essentially forest land that are being held in private ownership by a tenuous thread. Perhaps much of this land would have reverted to public ownership had it not been for the failure of local officials to carry out the provisions of the tax laws and the loose construction of the laws themselves. In other cases taxes have been paid to protect mineral rights, or to preserve title in view of the possibility of selling the land to the Federal or State Government, or in the hope that forestry may become more profitable by reason of better prices for forest products or lower taxes. The situation has invited, and the tax laws have permitted, an uncertain tenure.

As a result of the slowing up in growth of population and changes in the demand for agricultural products, much formerly prospective agricultural land must now be valued only as forest land. The low price of lumber has likewise reduced the attractiveness of forest land. This means that cut-over land whose prospective yield is small and remote has little market value. In many cases, however, the assessed value of such property has not been reduced to its present value. Were assessments reduced to actual market values, it is probable that much of the land which is now being forfeited would be retained in private ownership. On the other hand, as previously mentioned, there is much land that is subject to forfeiture to which the State has not taken title. It may well be that if the delinquency laws were more definite and were enforced rigidly there would be a great deal more reversion. It is not certain, however, that such would be the result. It may be that if the delinquency procedure were fixed and regular and were adhered to without deviation there would be less delinquency in the first instance. In any event, a reasonable procedure regularly enforced, combined with an honest assessment, would put delinquency on a more reasonable basis. Reversion would generally be confined to lands whose expected income was too small and uncertain to justify the nuisance and expense of holding.

The fact that most of the land being forfeited through tax delinquency is low-grade forest land, mainly cut-over land in a poor state of reproduction, is simply evidence that such lands have become submarginal for either agriculture or forestry under prevailing taxes and price levels. The expected future income does not appear to be sufficient to cover the probable costs including taxes. When this land had a greater speculative value for agricultural use, its earning capacity as forest land was not the sole determinant of value, and few owners were disposed to surrender it. The loss of its agricultural

prospect, combined with the prevailing low price of timber and the relatively heavy taxes, now make much of it definitely submarginal. Lower taxes would undoubtedly lift much land out of this category, and in many instances lower taxes would prevail if the land were not overassessed.

There are those who believe that the poorest land would better be in public ownership and who therefore incline to regard with complacency the reversion of such land through tax delinquency. They may even go to the extent of deprecating the effort to assess the poorest land at its true value, suggesting rather that no land be assessed below a certain minimum value, with the expectation that lands which cannot bear the taxes on such minimum value will be forced into delinquency and eventually revert to the State or county. This program involves obviously confiscation of private property through overassessment. Whatever may be the opinion as to the relative public advantages of private or public ownership of the less productive land, there would appear to be no justification for deliberate confiscation of private property by means of an illegal assessment.

Tax delinquency which advances to the point where titles are surrendered on a large scale is prima facie evidence of serious economic or political maladjustments, and there can be no adequate solution of the problem apart from important—perhaps drastic—changes in the organization and financing of local government.

PART 6. FORESTS IN THE PROPERTY TAX BASE

CONTENTS

INTRODUCTION

The preceding two parts have presented a picture of the manner in which the machinery of the property tax operates in the United States. The logical next step is to investigate the tax base. The property-tax base of any governmental unit may be defined as the aggregate of all properties taxable under the property tax expressed in terms of assessed value. It is the assessed value of a property to which the tax rate is applied in determining the taxes. It will be recalled (p. 119) that the assessed value is rarely the same as actual value, although it is legally defined as such in most States. In a few States, such as Minnesota, the law requires that the assessed value be some fraction of the actual value.

In a study of forest taxation it is not only important to know the amount of the total tax base, but also the portion of this total tax base which consists of forests. A forest may be defined as a combination of land and trees in which the trees more or less densely cover the land and are regarded as groups or stands rather than as individuals. For the purposes of this study, forests of noncommercial tree species are excluded. However, the forest may include land which is temporarily denuded of trees by logging, fire, or other causes. The term has no reference to the intentions of the owner in regard to the use of the land or its suitability for such use from the economic or silvicultural standpoint. A study of this definition of a forest should convince the reader that any attempted segregation, for purposes of this investigation, of the assessed value of forests from that of the other elements in the existing tax base must be approximate only. The reason is that real estate is usually assessed by parcels or properties and is not generally divided into its component parts (except in a relatively few cases where the assessment procedure provides for a separation of land and buildings, or of land and timber). Various methods were used in this study to arrive at the best possible approximation to the assessed value of forests in the whole United States, in each State, and in a number of selected local governmental units.

The purpose of this part, therefore, is to determine for various political units the assessed value of forests, the total tax base of the political unit in question, and the ratio of the assessed value of forests to the total tax base. Since forests are almost invariably a part of

rural real estate (they are not personal property and they are rarely found in cities), it was considered of especial interest to determine, where possible, the relation of the assessed value of forests to the assessed value of rural real estate. For this purpose an effort was made to eliminate from the total tax base as much property as possible which was not strictly of the nature of rural real estate. In some cases a fairly complete segregation could be made, with the aid of the reports of the various State tax commissions, but in other cases it was possible to eliminate only the assessed value of property in the large cities. Thus, it must be kept in mind that the term "rural real estate" as used in this section sometimes includes more or less urban and suburban property.

ALL STATES OF THE UNITED STATES

The importance of forests in the tax base of all States and of the United States as a whole is given in table 67. The assessed value of forests was determined by estimating roughly the value of forests and reducing this estimated value to assessed value by means of ratios of assessed value to full value. The assessed values of all property and of rural real estate were derived from the Statistical Abstract of the United States and from Bureau of the Census data. The method in detail is as follows:

The basic estimates for approximating the assessed value of forests as given in table 67 are contained in table 68. The second column of table 68 is an estimate of the area of privately owned forest land. The term "forest land", in connection with this estimate, refers to the so-called commercial forest land, meaning land bearing present timber stands that could be economically utilized and also other forest land on which present or future timber stands can be utilized under reasonably conceivable future conditions. Column 3 is the estimated average unit land value of the area in column 2, including value of young growth, if any, but excluding saw timber and cordwood. Columns 4 to 6 are estimates of the quantity of saw timber and cordwood, including pulpwood, standing on this land. The unit stumpage values in columns 7 to 9 of this table are averages of prices received in all classes of sales during the years 1923 to 1928 with adjustments in some cases to harmonize apparent inconsistencies due to the small number of sales. These years were used as more representative of normal conditions than the later years. For the most part these sales involved timber which was available at the time of the sale for immediate or early conversion. Only a small part of all the timber existing in 1929 was so available. These unit values could not properly be applied to estimates representing all of the standing timber in order to obtain the value of that timber unless it were assumed that the carrying charges on timber which would not be utilized for many years would be counterbalanced by increases due to growth and higher stumpage prices. It is more in keeping with the practice of buyers and sellers, as evidenced by the unit prices realized in the occasional sales of very large tracts, to reduce the average stumpage prices of table 68 in order to estimate the present worth of standing timber in 1929. The selection of the reduction factor is a matter of judgment, and, in view of the many uncertainties, any attempt at refined adjustment in these ratios between the different States would be pointless. In all of the Eastern and Central States except Maine 25 percent was used. In Maine and in the Rocky Mountain and Pacific Coast States 40 percent was used with two exceptions, namely, Oregon 50 percent and New Mexico 60 percent. The estimated value of forests, column 2, table 67, was obtained by applying these reduction factors to the gross value of stumpage computed from columns 4 to 9 of table 68 and adding to the resulting timber value the land value computed from columns 2 and 3 of table 68. The estimated value per acre of forests, column 3, table 67, computed from column 2 of table 67 and column 2 of table 68, is given to facilitate comparison between the States.

TABLE 67.—*Estimated value of commercial privately owned forests and their importance in the tax base, 1929; all States, by regions* [1]

Region and State	Estimated value of forests		Ratio of assessed to estimated value	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Total	Per acre		Forests	Rural real estate	All property		
	Million dollars	*Dollars*	*Percent*	*Million dollars*	*Million dollars*	*Million dollars*	*Percent*	*Percent*
New England:								
Maine	182	12.90	52.0	95	481	[2] 744	20	13
New Hampshire	53	13.50	76.2	41	445	673	9	6
Vermont	60	18.90	55.0	33	230	327	14	10
Massachusetts	26	8.80	77.5	20	1,887	7,124	1	[3]
Connecticut	15	10.00	63.2	9	1,291	2,803	1	[3]
Rhode Island	2	6.60	80.0	1	345	1,394	[3]	[3]
Total	338	13.00		199	4,679	13,065	4	2
Middle Atlantic:								
New York	155	16.20	84.8	131	2,972	25,333	4	1
Pennsylvania	107	9.60	57.8	62	5,085	13,623	1	[3]
New Jersey	14	7.40	63.2	9	2,600	6,682	[3]	[3]
Delaware	4	12.30	77.5	3	140	275	2	1
Maryland	22	10.50	64.0	14	745	2,689	2	1
Total	302	12.10		219	11,542	48,602	2	[3]
Lake:								
Michigan	151	9.00	96.3	146	2,632	8,634	6	2
Wisconsin	110	7.30	96.6	106	3,647	6,559	3	2
Minnesota	67	3.90	39.2	26	1,218	2,359	2	1
North Dakota	[3]			[3]	718	991	[3]	[3]
Total	328	6.70		278	8,215	18,543	3	1
Central:								
Ohio	49	10.80	70.2	35	4,926	13,678	1	[3]
Indiana	31	9.00	80.2	25	2,474	5,167	1	[3]
Illinois	31	9.70	24.1	7	2,991	8,666	[3]	[3]
Iowa	16	6.90	12.7	2	698	1,493	[3]	[3]
Nebraska					2,066	3,292		
Kansas					2,155	3,737		
Missouri	73	4.50	70.9	52	1,948	4,679	3	1
Tennessee	110	8.00	69.4	76	787	1,837	10	4
Kentucky	73	7.10	85.2	62	1,142	3,219	5	2
West Virginia	72	7.60	48.0	35	942	2,076	4	2
Total	455	7.20		294	20,129	47,844	1	1
South:								
Virginia	124	8.70	48.8	60	1,324	2,342	5	3
North Carolina	188	9.50	83.7	157	1,741	2,971	9	5
South Carolina	122	9.90	24.4	30	195	426	15	7
Georgia	192	8.50	45.5	88	433	1,311	20	7
Florida	147	6.40	24.0	35	349	657	10	5
Alabama	145	6.80	57.2	83	520	1,241	16	7
Mississippi	158	8.70	53.4	84	493	775	17	11
Louisiana	176	9.90	82.7	146	558	1,757	26	8
Arkansas	191	9.10	27.1	52	370	605	14	9
Oklahoma	24	5.80	62.3	15	913	1,791	2	1
Texas	124	9.80	48.2	60	2,117	4,219	3	1
Total	1,591	8.50		810	9,013	18,095	9	4
North Rocky Mountain:								
Montana	27	8.40	34.4	9	242	428	4	2
Idaho	71	16.90	60.0	42	341	487	12	9
Total	98	13.30		51	583	915	9	6
South Rocky Mountain:								
South Dakota	1	3.30	82.6	1	1,358	1,755	[3]	[3]
Wyoming	4	6.60	72.4	3	239	448	1	1
Colorado	9	3.60	73.6	7	666	1,577	1	[3]
New Mexico	6	5.10	43.0	2	134	312	2	1
Arizona	[3]			[3]	614	685	[3]	[3]
Utah	1	3.00	61.4	1	215	701	1	[3]
Nevada	1	5.70	50.0	1	173	217	1	[3]
Total	22	4.30		15	3,399	5,695	[3]	[3]
Pacific coast:								
Washington	333	31.67	35.1	117	641	1,246	18	9
Oregon	322	23.50	63.3	204	564	1,123	36	18
California	283	32.10	55.9	158	3,012	8,555	5	2
Total	938	28.40		479	4,217	10,924	11	4
Total	4,072	10.30		2,345	61,777	163,683	4	1

[1] Sources of data are given in the text.
[2] Does not include personal property in wild lands territory.
[3] Negligible.

TABLE 68.—*Estimated area of commercial privately owned forests, quantity of standing timber, and unit values of land and timber, 1929, all States, by regions* [1]

Region and State	Privately owned forest land	Land value per acre	Standing timber			Unit stumpage value		
			Saw timber		Cordwood	Saw timber (per thousand feet board measure)		Cordwood (per cord)
			Softwoods	Hardwoods		Softwoods	Hardwoods	
	Thousand acres	*Dollars*	*Million ft. b. m.*	*Million ft. b. m.*	*Thousand cords*	*Dollars*	*Dollars*	*Dollars*
New England:								
Maine	14,060	2.00	24,120	14,537	12,692	7.70	4.00	1.00
New Hampshire	3,948	3.00	3,822	2,009	8,576	9.00	6.20	1.00
Vermont	3,188	3.00	2,079	6,138	12,240	7.50	6.50	1.00
Massachusetts	3,020	3.00	1,368	530	9,498	7.70	5.90	1.00
Connecticut	1,495	3.00	75	627	9,841	6.70	5.90	1.00
Rhode Island	267	3.00	59	29	603	7.50	8.00	1.00
Total	25,978	3.00	31,523	23,870	53,450			
Middle Atlantic:								
New York	9,526	3.00	6,501	11,455	35,858	8.00	7.00	1.00
Pennsylvania	11,070	3.00	1,106	4,585	57,341	7.80	7.00	1.00
New Jersey	1,877	3.00	426	397	6,037	6.00	6.00	1.00
Delaware	320	3.00	36	71	3,197	6.00	8.00	1.00
Maryland	2,138	3.00	204	1,050	13,696	6.50	6.00	1.00
Total	24,931	3.00	8,273	17,558	116,129			
Lake:								
Michigan	16,707	2.00	3,428	12,917	47,657	5.50	7.00	1.00
Wisconsin	14,962	2.00	1,836	8,007	40,376	5.60	7.00	1.00
Minnesota	16,924	2.00	1,969	4,523	26,572	5.00	1.60	1.00
North Dakota	480	2.00	[2]	53	870	[2]	[2]	[2]
Total	49,073	2.00	7,233	25,500	115,475			
Central: [3]								
Ohio	4,580	4.00	50	4,085	8,459	5.00	8.00	1.00
Indiana	3,425	4.00	17	2,164	3,183	5.00	9.00	1.00
Illinois	3,192	4.00	13	3,111	2,430	5.00	7.00	1.00
Iowa	2,358	4.00	[2]	1,107	1,347	[2]	7.00	1.00
Missouri	16,454	2.00	289	3,394	35,874	4.00	5.00	1.00
Tennessee	13,713	3.00	1,024	8,266	46,781	3.50	5.00	1.00
Kentucky	10,277	3.00	732	4,830	22,252	5.80	6.20	1.00
West Virginia	9,478	3.00	621	4,363	34,916	4.00	4.80	1.00
Total	63,477	3.00	2,746	31,320	155,242			
South:								
Virginia	14,210	3.00	4,535	5,735	53,920	5.30	5.30	1.00
North Carolina	19,816	3.00	10,675	8,070	83,195	4.80	4.50	1.00
South Carolina	12,372	3.00	9,034	9,325	40,621	5.00	3.00	1.00
Georgia	22,603	3.00	16,326	4,146	77,884	4.50	3.50	1.00
Florida	23,005	3.00	13,012	2,129	34,993	5.00	2.00	1.00
Alabama	21,313	3.00	16,484	4,182	23,281	4.00	4.50	1.00
Mississippi	18,271	3.00	12,951	7,515	16,079	6.80	4.50	1.00
Louisiana	17,850	3.00	12,874	15,705	15,464	6.00	4.50	1.00
Arkansas	20,982	3.00	16,366	12,362	49,140	5.80	5.00	1.00
Oklahoma	4,224	3.00	2,459	1,083	5,096	3.00	3.00	1.00
Texas	12,618	3.00	11,745	4,404	23,940	6.00	4.70	1.00
Total	187,264	3.00	120,461	74,656	423,613			
North Rocky Mountain:								
Montana	3,151	2.00	13,711	[2]	12,620	2.00	[2]	.50
Idaho	4,187	2.00	28,020	[2]	6,430	3.60	[2]	.50
Total	7,338	2.00	41,731	[2]	19,050			
South Rocky Mountain:								
South Dakota	310	2.00	228	[2]	443	2.00	[2]	.50
Wyoming	588	2.00	1,744	[2]	1,975	2.00	[2]	.50
Colorado	2,579	2.00	2,415	[2]	3,793	2.00	[2]	.50

[1] Sources of data are given in the text.
[2] Negligible.
[3] Nebraska and Kansas are omitted, as no values were determined for these 2 States.

TABLE 68.—*Estimated area of commercial privately owned forests, quantity of standing timber, and unit values of land and timber, 1929, all States, by regions*—Continued

Region and State	Privately owned forest land	Land value per acre	Standing timber			Unit stumpage value		
			Saw timber		Cordwood	Saw timber (per thousand feet board measure)		Cordwood (per cord)
			Softwoods	Hardwoods		Softwoods	Hardwoods	
South Rocky Mountain—Continued.	*Thousand acres*	*Dollars*	*Million ft. b. m.*	*Million ft. b. m.*	*Thousand cords*	*Dollars*	*Dollars*	*Dollars*
New Mexico	1,092	2.00	4,296	(1)	(1)	2.00	(1)	(1)
Arizona	42	2.00	120	(1)	(1)	2.00	(1)	(1)
Utah	353	2.00	265	(1)	165	2.00	(1)	.50
Nevada	177	2.00	448	(1)	373	2.00	(1)	.50
Total	5,141	2.00	9,516	(1)	6,749			
Pacific coast:								
Washington	10,502	2.00	182,885	365	19,075	2.80	1.50	.35
Oregon	13,721	2.00	232,341	1,260	17,869	2.50	1.50	.35
California	8,814	2.00	177,051	(1)	67	2.50	(1)	.35
Total	33,037	2.00	592,277	1,625	37,011			
Total	396,239		813,760	174,529	926,719			

[1] Negligible.

Since assessed value in all States differs from actual value, it was necessary to determine the ratio of assessed value to actual value in order to calculate the assessed value from the estimated actual value. These ratios are given in column 4, table 67. The ratios for New Hampshire, Wisconsin, North Carolina, Washington, and Oregon were based on sales or appraisals of forest property. The ratios for the other States were based on Bureau of the Census figures for 1922 (*51, p. 5*). The census figures, however, are for all real estate and they are for the year 1922. Since forest property is ordinarily assessed at a higher ratio to true value than is other real estate, and since there has been a tendency for the ratio of assessed to full value to increase, it seemed proper to make certain adjustments in the census figures. In Michigan and Minnesota the adjustment was made on the basis of assessment ratios of forest property in Wisconsin, as determined from sales, since the assessment practice with respect to forests in Michigan and Minnesota was found to be similar to that in Wisconsin. The census ratios of assessed to true value of real estate in Michigan and Minnesota, respectively, were multiplied by the ratio of the assessment ratio of forest property in Wisconsin to the assessment ratio of Wisconsin real estate in general as reported by the census. In most of the Southern and South Central States and in a few States in other regions, the census ratios were increased by 20 percent, which is the average percent by which the ratios of assessed to full value of forest properties in North Carolina, Washington, Oregon, and Wisconsin, as determined by this study, exceed the Bureau of Census figures for the ratios of assessed to full value of real estate in these same States. In the remaining States, where the assessment ratio reported in 1922 was fairly high and where there was no reason to believe that the ratio had been substantially increased, the 1922 ratio was used without adjustment.

Column 5 of table 67 gives the resulting assessed values of forests. These were computed from columns 2 and 4. Column 6, the assessed value of rural real estate, was computed from official records (*95, table 23, column 2*; *96, table 214, column 2*). The assessed value of real estate subject to taxation by cities in the respective States (from the former publication) was deducted from the total assessed value of real estate in the corresponding State (from the latter publication). Column 7 gives the assessed values of all property (*96, table 214, column 1*).

Column 8 shows the ratios of assessed value of forests to assessed value of rural real estate. These were computed from columns 5 and 6. Column 9 shows the ratios of assessed value of forests to the total tax base. These were computed from columns 5 and 7.

An examination of table 67 reveals that forests constituted 4 percent of the rural real estate and 1 percent of the total property tax base of the United States in 1929. On a regional basis the ratios of forests to rural real estate and to the total tax base are given in table 69.

TABLE 69.—*Ratios of assessed value of forests to assessed value of rural real estate and to total tax base, by regions*

Region	Rural real estate	Total tax base
	Percent	*Percent*
Pacific coast	11	4
South	9	4
North Rocky Mountain	9	6
New England	4	2
Lake	3	1
Middle Atlantic	2	(1)
Central	1	1
South Rocky Mountain	(1)	(1)

[1] Less than 0.5 percent.

Forests are thus a comparatively important part of the tax base in three regions, the Pacific coast, South, and North Rocky Mountain. In the other regions forests occupy a relatively less important place in the tax base.

These results for large regions do not tell the whole story of the importance of forests in the tax bases of the separate States. The ratios in the States in which forests represent 5 percent or more of the rural real estate (about 40 percent of all States) are given in table 70.

TABLE 70.—*Ratios of assessed value of forests to assessed value of rural real estate and to total tax base in the more important forest States*

State	Rural real estate	Total tax base
	Percent	*Percent*
Oregon	36	18
Louisiana	26	8
Maine	20	13
Georgia	20	7
Washington	18	9
Mississippi	17	11
Alabama	16	7
South Carolina	15	7
Vermont	14	10
Arkansas	14	9
Idaho	12	9
Florida	10	5
Tennessee	10	4
New Hampshire	9	6
North Carolina	9	5
Michigan	6	2
Virginia	5	3
Kentucky	5	2
California	5	2

FOREST COMMUNITIES AND STATES

Obviously the percentage position of forests in the tax base of an entire State or region gives no adequate picture of the important part which the forests may constitute of the tax base of a given small tax unit in a forest community. Therefore attention is directed to studies in representative political units in the forest regions which indicate the importance of forests in the local tax base in such regions.

The methods used to determine the approximate assessed value of forests in these local units were generally different from those used for the States and the United States as a whole. They were usually uniform within a given State and each method is indicated in the sources of data given in connection with each table.

The most intensive studies were made in 3 towns of New Hampshire, 3 counties of North Carolina, 13 townships of Minnesota, 8 towns and 1 county of Wisconsin, 6 townships of Michigan, and 1 county of Washington. In these selected local units, detailed field studies were made and the assessed value of forests was determined from assessment rolls and field examinations. Even in these areas a precise determination of forest assessed value was impossible because of the practice, as noted at the beginning of this part, of assessing land by properties or parcels rather than by land types. In the Michigan townships only properties which were predominantly forest in character could be segregated, but in the other local units various methods were devised which probably give the assessed value of forests with a fair degree of accuracy.

In the other States studied the reports of the various State tax commissions were relied upon. In Maine this information was supplemented by a brief field study, which made possible a fairly good estimate of forest assessed value in two broad divisions of the State. In Louisiana the tax commission data for each county were supplemented by information gathered by the Forest Service, and the classification in this State is probably quite accurate. In Wisconsin the tax commission classifications of "timber" and "cut-over, marsh, and waste" taken together are roughly comparable to forests, but these categories include some elements which are not strictly forest. In Mississippi the classification is fairly good, but the sum of "timber and timbered lands" and "uncultivatable lands" probably includes considerable land which is not forest. In Colorado the tax commission's category "timberlands" is very incomplete. In Idaho there is a rather complete classification. Montana's category "timberlands" is incomplete, though it probably includes most of the forests in that State. In Oregon and Washington the forest category includes some other elements, principally grazing lands.

In order to prevent confusion the various terms employed by the tax commissions are not used in the tables. The term "forests" is used in all cases and explanation is made in notes as to how this category is constituted in each study.

The place of forests in the tax base for the forest communities studied in Maine, New Hampshire, and North Carolina is given in table 71. The sources of data for this table are as follows:

Columns 5, 6, and 7 were obtained by computation.
Other columns:

Maine

WILD LANDS (UNORGANIZED TERRITORY AND SECOND-CLASS PLANTATIONS)

Column 2: The area and assessed value of forest property were estimated from a report of the board of State assessors (*89*). This was accomplished by segregating those properties which were predominantly of a forest character. From this compilation it was determined that 9,308,000 acres of forest property were assessed at $68,104,000. This amount, of course, includes some minor elements other than forests, but, since it also excludes those forests which are held in conjunction with other uses, it probably represents a fairly good approximation to the assessed value of forests.

Columns 3 and 4 (*89, p. 279; 90, p. xii*): The property in this territory, as its name clearly indicates, is with few exceptions rural property; consequently, all of the real estate was assumed to be rural in character.

ORGANIZED TERRITORY (ORGANIZED CITIES, TOWNS, AND FIRST-CLASS PLANTATIONS)

Column 2 was obtained by subtracting the assessed value of forests in the wildlands territory from the total assessed value of forests in the State (table 67).

Columns 3 and 4 were obtained from table 67 and from the authorities cited above (*89, 90*).

New Hampshire

Column 2 was obtained in the following manner: The assessed value of the commercial forest and farm forest tracts (exclusively forest in character) was obtained from the town assessment rolls for 1928. In order to determine roughly the assessed value of the forests held in conjunction with other uses, the average assessment ratio for resident-owned farm forest tracts in each town was applied to the difference between the total appraised value of forests and the appraised value of commercial and farm forests. This assessment ratio was computed by dividing the assessed value of resident-owned farm forest tracts (from the town assessment rolls of 1928) by the appraised value of these same tracts (determined by experienced appraisers in the case of Fremont and Richmond and by comparison with appraisals and sales by means of a valuation formula in Loudon). The resident-owned farm forest tracts are considered to be closer in character to the forests held in conjunction with other uses than is any other category. The sum of the assessed value of forests held in conjunction with other uses, so computed, and the assessed value of commercial and farm forests gives the approximate assessed value of forests.

Column 3 was obtained from the assessment rolls for 1928.

Column 4 was obtained from State records (*93, table 13, pp. 42, 62, 78*). The assessed value in the town of Richmond was corrected for a duplication of $13,500.

North Carolina

Columns 2, 3, and 4 were obtained from the county assessment rolls and from field examinations.

TABLE 71.—*Forests in the tax base of Maine and of representative forest communities in New Hampshire and North Carolina, 1928* [1]

State and local subdivision	Assessed value			Ratio of forests to rural real estate	Ratio to total tax base	
	Forests	Rural real estate	All property		Forests	Rural real estate
Maine:	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*	*Percent*
Wild lands	68,104	73,013	74,433	93	91	98
Organized territory	26,600	408,000	670,652	7	4	61
New Hampshire:						
Town of Fremont	199	391	599	51	33	65
Town of Loudon	264	566	665	47	40	85
Town of Richmond	313	386	429	81	73	90
North Carolina:						
Beaufort County	4,522	12,821	29,261	35	15	44
Chatham County	3,371	8,096	18,229	42	18	44
Macon County	1,886	4,288	7,243	44	26	59

[1] Sources of data are given in the text.

Maine

A brief study of timberland taxation in Maine was made in connection with a study of forest-tax laws in that State. Since the wild lands in the northern part of the State (unorganized territory and second-class plantations)[80] and the organized territory are quite distinct in their general character, separate estimates of the extent to which forests occur in the tax base were made for each (table 71). These estimates were necessarily rough, as no intensive studies were made in this State. They are sufficiently accurate, however, to show the wide differences in the importance of forests between the two regions. In the wild-lands territory forests comprised 91 percent of the total tax base and 93 percent of the rural real estate, while in the organized territory only 4 percent of the total tax base and 7 percent of the rural real estate were represented by forests.

New Hampshire

The State selected for intensive study in New England was New Hampshire, and, since the town is the most important unit of local government in that State, sample towns were selected for study. These towns are Fremont, Rockingham County; Loudon, Merrimack County; and Richmond, Cheshire County. Forests in these three towns comprised from 33 to 73 percent of the total tax base and from 47 to 81 percent of the rural real estate (table 71).

North Carolina

Three typical counties of North Carolina were selected for intensive study—Beaufort (to represent the Coastal Plain), Chatham (Piedmont), and Macon (Mountain). The ratios of forests to the total tax base of these three counties ranged from 15 to 26 percent and the ratios of forests to rural real estate from 35 to 44 percent (table 71).

Minnesota

In Minnesota 13 townships in the northern forest region were selected for intensive examination. The importance of forests in the tax base of these townships is shown in table 72. The ratios of assessed value of forests to assessed value of rural real estate (column 8) range from 64 percent in Crow Wing Lake Township to 100 percent in 5 townships (T. 156 N., R. 31 W.; T. 59 N., R. 8 W.; T. 58 N., R. 6 W.; T. 54 and 55 N., R. 14 W.; and T. 67 and 68 N., R. 20 W.). Only 2 other townships besides Crow Wing Lake, namely, Frohn and Lake Emma, exhibit ratios of less than 80 percent.

[80] For definitions of wild lands and organized territory, see p. 294.

TABLE 72.—*Forests in the tax base of representative townships in northern Minnesota, 1926* [1]

County and township	Area		Assessor's "full-and true" value of forest descriptions		Assessed value		Ratio of forests to rural real estate
	Total privately owned forest land [2]	Descriptions predominantly forest [2]	Total	Per acre	Forests	Rural real estate	
	1,000 acres	*1,000 acres*	*1,000 dollars*	*Dollars*	*1,000 dollars*	*1,000 dollars*	*Percent*
Beltrami:							
Eckles	18	15	147	9.75	58	69	85
Frohn	16	12	201	16.39	89	130	68
T. 156 N., R. 31 W.	23	23	102	4.50	[3] 34	34	100
Hubbard:							
Clay	21	18	273	14.86	102	106	96
Crow Wing Lake	16	8	131	15.99	84	132	64
Lake Emma	15	10	144	14.80	76	105	72
Schoolcraft	18	16	217	13.66	84	88	95
Lake:							
T. 59 N., R. 8 W. (part of Beaver Bay)	17	16	163	9.99	56	56	100
T. 58 N., R. 6 W. (part of Cramer)	21	21	144	6.97	49	49	100
T. 54 N., R. 10 W. (part of Silver Creek)	22	17	147	8.47	62	68	91
St. Louis:							
Tolvola	39	35	298	8.42	110	124	89
T. 54 and 55 N., R. 14 W.	42	34	211	6.19	[3] 87	87	100
T. 67 and 68 N., R. 20 W.	34	34	72	2.13	[3] 24	24	100

[1] Sources of data: Column 2, by field estimates based on surveys and information from owners; columns 3, 4, and 7, from assessment rolls of 1926—selection of predominantly forest descriptions by field examination; columns 5 and 8, by computation; column 6, computed by multiplying the areas in column 2 by the corresponding "full-and-true" values per acre in column 5 and dividing the product by 3, since the Minnesota law requires that the assessed value of this kind of real estate be one-third of the "full-and-true" value.

[2] May include some open swamp land.

[3] Includes a negligible amount of other elements which is obscured in the process of rounding.

WISCONSIN

Table 73 shows the importance of forests in the tax base of the selected towns in Wisconsin. The ratios of forests to the total tax base range from 23 percent in Three Lakes to 86 percent in Little Rice, both Oneida County towns. The distribution of towns in ratio groups is as follows:

10–29 percent	1
30–49 percent	2
50–79 percent	4
80–100 percent	1

The ratios of forests to rural real estate range from 28 percent in Three Lakes to 89 percent in Little Rice. The distribution of towns in ratio groups appears thus:

10–29 percent	1
50–79 percent	4
80–100 percent	3

TABLE 73.—*Forests in the tax base of representative townships in northern Wisconsin, 1926* [1]

Town and county	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Athelstane, Marinette County	374	441	494	85	76
Bartelme, Shawano County	347	453	500	77	69
Bayview, Bayfield County	193	373	469	52	41
Laona, Forest County	573	746	1,169	77	49
Little Rice, Oneida County	201	225	232	89	86
Morse, Ashland County	[2] 798	[2] 998	1,453	80	55
Murry, Rusk County	554	750	803	74	69
Three Lakes, Oneida County	329	1,196	1,424	28	23

[1] Sources of data: Column 2 by computation from the area determined by field examination and the assessed value per acre of predominantly forest descriptions as classified in the field; column 3 from the tax rolls; column 4 from the annual report of the assessors of income for the county boards for the several counties; columns 5 and 6 by computation.

[2] These values are for the nonmineral part of the town only.

Table 74 gives for all counties of Wisconsin the ratios of forests to the rural real estate and to the total tax base. These figures, except in Lincoln County where a somewhat detailed study was made, are based on a classification made by the various assessors of incomes. This classification includes the categories "timber" and "cut over, marsh, and waste" which, taken together, are roughly comparable to forests. The assessed values of forests are believed to be somewhat high in some cases, however, since they probably include considerable value not strictly forest, as resort and power value.

The ratios of forests to the total tax base range from less than 0.5 percent in Milwaukee County to 67 percent in Sawyer County (table 74). The distribution of counties in ratio groups follows:

0–9 percent	30
10–29 percent	31
30–49 percent	8
50–79 percent	2

The ratios of forests to rural real estate range from 2 percent in Lafayette County to 82 percent in Sawyer County. The distribution of counties in ratio groups is as follows:

0–9 percent	19
10–29 percent	29
30–49 percent	8
50–79 percent	13
80–100 percent	2

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TABLE 74.—*Forests in the tax base of the counties in Wisconsin, 1926* [1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Adams	2,435	6,891	9,146	35	27
Ashland	6,125	9,877	24,528	62	25
Barron	7,912	27,609	43,073	29	18
Bayfield	9,886	16,453	22,027	60	45
Brown	2,815	31,676	95,728	9	3
Buffalo	2,847	17,096	24,877	17	11
Burnett	5,048	8,574	10,937	59	46
Calumet	2,026	23,277	34,714	9	6
Chippewa	7,306	26,799	46,163	27	16
Clark	8,929	31,730	45,314	28	20
Columbia	3,565	28,047	50,841	13	7
Crawford	3,721	14,534	23,658	26	16
Dane	7,116	90,714	261,327	8	3
Dodge	6,476	62,817	100,824	10	6
Door	2,096	16,952	24,080	12	9
Douglas	8,008	11,593	62,742	69	13
Dunn	4,978	24,765	38,604	20	13
Eau Claire	2,756	16,180	45,603	17	6
Florence	2,092	3,269	4,479	64	47
Fond du Lac	3,701	50,741	106,146	7	3
Forest	5,691	7,754	10,290	73	55
Grant	3,287	48,873	77,412	7	4
Green	2,386	36,605	58,084	7	4
Green Lake	2,370	16,561	27,874	14	9
Iowa	2,361	35,020	50,858	7	5
Iron	5,729	7,034	17,094	81	34
Jackson	3,044	13,639	19,753	22	15
Jefferson	3,918	35,018	72,099	11	5
Juneau	3,703	13,221	21,066	28	18
Kenosha	1,578	20,113	90,131	8	2
Kewaunee	1,506	18,183	26,351	8	6
La Crosse	2,064	14,493	67,627	14	3
Lafayette	922	38,536	51,360	2	2
Langlade	6,303	12,121	24,013	52	26
Lincoln [3]	7,395	11,750	25,209	63	29
Manitowoc	3,327	39,601	99,610	8	3
Marathon	13,536	39,859	82,832	34	16
Marinette	6,657	11,838	32,238	56	21
Marquette	2,028	6,851	10,105	30	20
Milwaukee	1,912	57,501	1,073,508	3	(4)
Monroe	5,142	23,189	37,564	22	14
Oconto	5,051	16,343	26,588	31	19
Oneida	4,472	9,083	18,918	49	24
Outagamie	3,738	29,626	86,857	13	4
Ozaukee	1,331	16,945	28,958	8	5
Pepin	1,329	6,057	9,234	22	14
Pierce	3,890	19,474	29,130	20	13
Polk	7,371	20,796	31,901	35	23
Portage	4,248	18,327	34,623	23	12
Price	7,140	10,064	18,466	71	39
Racine	2,069	27,762	137,282	7	2
Richland	4,300	22,105	32,449	19	13
Rock	3,966	42,443	122,557	9	3
Rusk	8,352	12,382	19,200	67	44
St. Croix	2,982	22,186	34,991	13	9
Sauk	6,175	36,095	63,593	17	10
Sawyer	7,600	9,241	11,307	82	67
Shawano	5,287	22,533	35,807	23	15
Sheboygan	2,865	40,023	112,287	7	3
Taylor	7,515	14,520	20,701	52	36
Trempealeau	3,541	21,751	32,070	16	11
Vernon	6,468	29,478	42,349	22	15
Vilas	3,118	7,741	10,722	40	29
Walworth	2,893	43,568	74,057	7	4
Washburn	5,316	8,470	11,955	63	44
Washington	3,178	29,355	48,175	11	7
Waukesha	1,990	42,131	76,111	5	3
Waupaca	4,414	25,859	47,211	17	9
Waushara	2,570	15,199	20,521	17	13
Winnebago	1,933	30,365	108,605	6	2
Wood	6,090	18,575	54,983	33	11

[1] Sources of data: Columns 2–4: All counties, except Lincoln (*98, tables 19, 23*). Lincoln County—Column 2 by applying to the area of forests the assessed value per acre of forests on selected descriptions; column 3 from county records; column 4 (*98, table 22*); columns 5 and 6 by computation.

[2] Includes "timber" and "cut over, marsh, and waste" as designated by the tax commission.

[3] Lincoln County data are as of 1925.

[4] Less than 0.5 percent.

Michigan

In this State a field study was made in six selected townships. These townships were selected as representative of counties which had been covered by the Michigan Land Economic Survey. Properties were classified on the basis of predominant use, and the assessed value of forests was segregated from that of the rest of the rural real estate. Forests, therefore, may include some value not strictly forest in character, and may not include all of the forests, such as those owned in conjunction with farm and other uses.

The ratios range from 13 percent in Edwards Township to 97 percent in Hulbert Township (table 75). The distribution of townships in ratio groups is as follows:

10–29 percent	2
30–49 percent	1
50–79 percent	2
80–100 percent	1

Table 75.—*Forests in the tax base of representative townships in northern Michigan, 1923–26* [1]

Township, county, and year	Assessed value		Ratio of forests to rural real estate
	Forests [2]	Rural real estate	
	1,000 dollars	*1,000 dollars*	*Percent*
Custer, Antrim County, 1923	119	349	34
Hulbert, Chippewa County, 1926	448	463	97
Lake (part), Menominee County, 1925	127	173	73
Edwards, Ogemaw County, 1923	55	429	13
Foster, Ogemaw County, 1923	91	[3] 144	63
Hill, Ogemaw County, 1923	81	294	28

[1] Sources of data: Columns 2 and 3 from the township assessment rolls for the years indicated, based on a classification made with the aid of maps of the Michigan Land Economic Survey; column 4 by computation.

[2] May include some value not strictly forest in character, but may not include all of the forest property, such as that owned in conjunction with farms and other uses.

[3] An urban value of $3,700 was deducted.

Louisiana

A very detailed classification of the elements of the tax base is made by the State tax commission in Louisiana in its reports; consequently forests may readily be segregated from the other elements of the tax base. Since the classification made by the tax commission is based on predominant use, the forest class includes some minor elements besides forests; but it also excludes some forests held in conjunction with other uses, so that probably its assessed value fairly represents the pure forest category. The ratios of forests to the total tax base range from 0 in Caddo Parish to 49 percent in St. Helena Parish (table 76). The parishes are distributed among the ratio groups as follows:

0–9 percent	27
10–29 percent	25
30–49 percent	12

When assessed value of forests is related to rural real estate the ratios range from 0 in Caddo Parish to 95 percent in La Salle Parish. The distribution of parishes in the ratio groups is as follows:

0–9 percent	9
10–29 percent	16
30–49 percent	15
50–79 percent	17
80–100 percent	7

TABLE 76.—*Forests in the tax base of the parishes in Louisiana, 1930* [1]

Parish	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Acadia	868	11,395	24,764	8	4
Allen	1,979	2,792	7,345	71	27
Ascension	503	2,309	7,626	22	7
Assumption	365	2,308	5,909	16	6
Avoyelles	1,648	5,865	13,203	28	12
Beauregard	3,662	4,027	10,780	91	34
Bienville	2,860	4,289	9,950	67	29
Bossier	2,449	5,661	19,000	43	13
Caddo	0	8,963	160,432	0	0
Calcasieu	1,913	6,452	32,006	30	6
Caldwell	2,314	3,494	6,567	66	35
Cameron	1,562	3,973	5,234	39	30
Catahoula	3,118	3,985	6,830	78	46
Claiborne	2,015	3,837	20,144	53	10
Concordia	2,285	3,478	8,638	66	26
De Soto	3,330	5,707	17,685	58	19
East Baton Rouge	414	6,036	118,281	7	[3]
East Carroll	1,349	3,548	8,410	38	16
East Feliciana	645	2,247	5,915	29	11
Evangeline	1,788	5,741	9,706	31	18
Franklin	3,609	8,264	15,044	44	24
Grant	1,944	2,441	7,479	80	26
Iberia	376	3,991	15,916	9	2
Iberville	707	3,011	11,539	23	6
Jackson	1,768	2,393	6,595	74	27
Jefferson	553	4,666	42,017	12	1
Jefferson Davis	574	7,614	15,210	8	4
Lafayette	168	4,979	18,089	3	1
Lafourche	1,101	4,662	12,396	24	9
La Salle	2,566	2,710	7,041	95	36
Lincoln	814	2,134	9,423	38	9
Livingston	2,372	3,565	5,798	67	41
Madison	3,875	5,860	11,530	66	34
Morehouse	1,871	4,401	22,890	43	8
Natchitoches	4,294	7,706	18,171	56	24
Orleans	739	1,025	626,478	72	[3]
Ouachita	1,625	3,605	64,368	45	3
Plaquemines	130	2,703	6,092	5	2
Pointe Coupee	1,091	3,868	9,172	28	12
Rapides	2,811	6,169	34,537	46	8
Red River	1,503	3,162	7,030	48	21
Richland	2,455	5,644	16,186	44	15
Sabine	3,359	4,133	9,370	81	36
St. Bernard	209	2,594	15,619	8	1
St. Charles	741	2,560	18,060	29	4
St. Helena	1,175	1,595	2,378	74	49
St. James	235	2,179	8,975	11	3
St. John the Baptist	224	1,563	7,801	14	3
St. Landry	1,944	9,609	25,272	20	8
St. Martin	817	3,048	6,329	27	13
St. Mary	500	4,163	18,182	12	3
St. Tammany	4,384	4,671	14,820	94	30
Tangipahoa	4,417	5,985	20,730	74	21
Tensas	2,177	4,596	8,626	47	25
Terrebonne	1,151	4,923	11,303	23	10
Union	2,812	3,652	9,824	77	29
Vermilion	587	7,345	13,273	8	4
Vernon	5,231	5,539	11,324	94	46
Washington	2,548	3,735	16,696	68	15
Webster	1,729	3,729	21,134	46	8
West Baton Rouge	415	1,668	8,245	25	5
West Carroll	1,420	2,408	5,579	59	25
West Feliciana	934	2,044	4,434	46	21
Winn	3,055	3,389	7,452	90	41

[1] Sources of data: Column 2 compiled (*30, pp. 131–148, tab. nos. 5, 7–12, 15, 16, 19, and 20, col. 6*); column 3 compiled (*30, pp. 125–48, tab. nos. 1–5 and 7–20, col. 6*); column 4 from (30, pp. 262–263, col. 1); columns 5 and 6 by computation from this table.

[2] Includes all of the fresh water marsh, the area of which, according to correspondence with the Southern Forest Experiment Station, is 85 percent forest land, but does not include any of the salt-water marsh, 10 percent of which is actually forest land.

[3] Less than —0.5 percent.

Mississippi

In Mississippi the official State classification for taxing purposes includes the catagories "timber and timbered lands", which is practically all forest, and "uncultivatable lands", much of which is cut-over and second-growth forest. This classification will serve as a rough estimate, although it is not quite so good as the one for Louisiana, since "uncultivatable land" probably includes a good deal of land that is not forest. Thus estimated, the ratios of forests to rural real estate and to the total tax base are shown in table 77. The ratios of forests to the total tax base range from 3 percent in Lauderdale County to 59 percent in Greene and Perry Counties. The distribution of counties in the ratio groups follows:

0–9 percent	15
10–29 percent	43
30–49 percent	17
50–79 percent	7

The ratios of forests to rural real estate range from 7 percent in De Soto County to 94 percent in Pearl River County. The distribution of counties in the ratio groups on this basis is as follows:

0–9 percent	2
10–29 percent	14
30–49 percent	23
50–79 percent	35
80–100 percent	8

TABLE 77.—*Forests in the tax base of the counties in Mississippi, 1928–29*[1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests[2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Adams	1,300	3,099	13,079	42	10
Alcorn	627	1,923	8,434	33	7
Amite	2,036	3,308	5,312	62	38
Attala	1,288	2,244	5,612	57	23
Benton	854	1,909	3,189	45	27
Bolivar	2,143	18,174	28,867	12	7
Calhoun	1,667	2,483	3,769	67	44
Carroll	1,074	2,319	4,274	46	25
Chickasaw	1,563	3,190	6,735	49	23
Choctaw	774	1,330	2,900	58	27
Claiborne	1,130	2,177	5,092	52	22
Clarke	2,012	2,974	7,361	68	27
Clay	886	3,241	7,092	27	12
Coahoma	1,765	12,352	25,109	14	7
Copiah	2,199	3,952	10,579	56	21
Covington	950	1,804	3,673	53	26
De Soto	350	5,058	8,792	7	4
Forrest	2,111	3,164	19,081	67	11
Franklin	1,503	1,893	4,215	79	36
George	1,934	2,319	3,371	83	57
Greene	3,606	4,088	6,097	88	59
Grenada	772	1,922	6,478	40	12
Hancock	926	1,241	6,840	75	14
Harrison	2,417	2,940	28,665	82	8
Hinds	2,400	6,796	49,978	35	5
Holmes	1,470	4,480	12,695	33	12
Humphreys	1,359	6,138	9,631	22	14
Issaquena	1,444	2,853	3,480	51	41
Itawamba	964	1,578	2,486	61	39
Jackson	2,035	3,062	10,107	66	20
Jasper	2,039	2,860	5,183	71	39
Jefferson	1,186	2,321	4,662	51	25
Jefferson Davis	1,086	2,201	3,476	49	31
Jones	2,218	3,892	18,759	57	12
Kemper	1,786	2,632	5,284	68	34
Lafayette	1,184	1,901	4,721	62	25
Lamar	2,524	2,996	6,643	84	38
Lauderdale	987	3,631	29,699	27	3
Lawrence	1,041	1,732	3,656	60	28
Leake	3,608	4,690	6,276	77	57
Lee	1,044	3,986	12,101	26	9

TABLE 77.—*Forests in the tax base of the counties in Mississippi, 1928–29*—Con

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Leflore	1,740	10,574	20,800	16	8
Lincoln	1,469	2,803	9,827	52	15
Lowndes	1,006	4,533	12,579	22	8
Madison	440	5,623	11,907	8	4
Marion	1,450	2,278	5,484	64	26
Marshall	1,419	3,236	7,715	44	18
Monroe	1,818	5,664	12,833	32	14
Montgomery	678	1,505	4,698	45	14
Neshoba	1,630	2,575	5,536	63	29
Newton	1,262	2,519	6,819	50	19
Noxubee	3,349	6,311	10,158	53	33
Oktibbeha	1,307	2,799	6,259	47	21
Penola	1,295	4,190	9,490	31	14
Pearl River	6,493	6,943	12,427	94	52
Perry	2,660	3,096	4,472	86	59
Pike	958	2,186	10,622	44	9
Pontotoc	1,265	2,647	4,630	48	27
Prentiss	982	2,590	5,209	38	19
Quitman	1,519	6,858	10,077	22	15
Rankin	2,076	3,427	6,734	61	31
Scott	1,707	2,256	5,880	76	29
Sharkey	1,506	3,343	5,657	45	27
Simpson	2,473	3,489	6,678	71	37
Smith	2,944	3,662	5,042	80	58
Stone	1,626	1,973	3,230	82	50
Sunflower	1,507	15,770	23,690	10	6
Tallahatchie	1,879	6,618	12,055	28	16
Tate	687	2,948	5,891	23	12
Tippah	871	1,993	3,874	44	22
Tishomingo	819	1,450	4,316	57	19
Tunica	1,487	7,989	10,989	19	14
Union	1,036	2,880	6,330	36	16
Walthall	1,126	1,999	3,312	56	34
Warren	1,330	3,005	22,885	44	6
Washington	2,008	10,645	23,120	19	9
Wayne	3,244	4,199	7,020	77	46
Webster	963	1,604	3,118	60	31
Wilkinson	2,604	3,532	5,929	74	44
Winston	2,137	3,053	5,688	70	38
Yalobusha	716	1,520	5,765	47	12
Yazoo	2,164	5,709	13,816	38	16

[1] Sources of data: Columns 2–4 (*91, pp. 9–12*); columns 5 and 6 by computation from this table.
[2] Includes "timber and timbered lands" and "uncultivatable lands."

COLORADO

The forest lands of Colorado are for the most part in public ownership and, therefore, have but a very small part in the tax base. The area of privately owned forest land in Colorado, as given in table 68, is 2,579,000 acres, whereas the total area of the State is 66,341,000 acres (*94, pt. 3, p. 205*). This situation is typical of all of the States in the South Rocky Mountain region.

The Colorado Tax Commission (*87, p. 90*) in 1928 reported only 597,881 acres of "timberlands", which obviously does not include cut-over forest lands. This area has an assessed value of $1,280,000. Data are not available as to the assessed value of the remaining 2,000,000 acres of privately owned forest. But the assessed value of the timberlands category, which probably contains most of the valuable forest land and which also contains some other elements besides timber, will serve to give an approximate idea of the assessed value of forests. Table 78 shows, for the 16 counties of Colorado which reported taxable timberlands, the ratio of forests (timberlands) to rural real estate and to the total tax base. It is evident that forests occupy

a small place in the tax base of these counties which contain most of the privately owned forests of Colorado. In only 6 of the 16 counties which report forests do forests make up more than 0.5 percent of the total tax base, and in only 9 counties do forests constitute more than 0.5 percent of the rural real estate.

TABLE 78.—*Forests in the tax base of Colorado Counties reporting taxable forests, 1928* [1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Archuleta	[3] 89	1,650	4,652	5	2
Costilla	[4] 398	3,395	5,337	12	7
Dolores	16	1,107	1,888	1	1
Grand	244	2,804	5,580	9	4
Jackson	8	1,902	3,559	(5)	(5)
Kiowa	[6] 7	9,201	13,481	(5)	(5)
La Plata	31	5,609	15,507	1	(5)
Las Animas	300	16,136	40,824	2	1
Montezuma	19	3,311	6,542	1	(5)
Ouray	7	1,999	4,034	(5)	(5)
Rio Blanco	(7)	3,526	6,125	(5)	(5)
Routt	134	8,428	15,241	2	1
San Juan	2	1,964	3,376	(5)	(5)
San Miguel	6	2,733	6,016	(5)	(5)
Summit	[8] 2	1,935	4,545	(5)	(5)
Teller	17	2,804	5,336	1	(5)

[1] Sources of data: Columns 2–4 compiled (*87, pp. 46–47, 40–55, 88–91*), respectively. Columns 5 and 6 by computation from this table.
[2] Includes timberlands only, except as specified.
[3] Includes improvements.
[4] Includes arid land.
[5] Less than 0.5 percent.
[6] Includes oil land and improvements.
[7] Less than $500.
[8] Includes stone.

IDAHO

In Idaho a rather complete classification of the various kinds of property is required for assessment purposes. Of the various categories of real estate, the three designated as "timberland", "cut-over and burnt timberland", and "standing timber owned separate from land" constitute practically all of the forests. Out of the 44 counties in the State, 14 report forests for taxing purposes.

In these 14 counties the ratios of forests to the total tax base range from 1 percent in Elmore, Idaho, and Nez Perce Counties to 56 percent in Clearwater County (table 79). The counties are distributed in ratio groups as follows:

0–9 percent	6
10–29 percent	7
50–79 percent	1

The ratios of forests to rural real estate range from 2 percent in Idaho and Nez Perce Counties to 81 percent in Clearwater County. The distribution of counties in ratio groups is as follows:

0–9 percent	4
10–29 percent	1
30–49 percent	4
50–79 percent	4
80–100 percent	1

TABLE 79.—*Forests in the tax base of Idaho Counties reporting taxable forests 1929* [1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Adams	1,352	3,700	4,803	37	28
Benewah	2,650	3,596	9,423	74	28
Boise	778	2,016	3,491	39	22
Bonner	3,372	5,067	15,807	67	21
Boundary	1,063	1,876	5,623	57	19
Clearwater	5,695	7,038	10,190	81	56
Elmore	118	2,036	9,601	6	1
Idaho	150	9,902	14,091	2	1
Kootenai	2,164	5,079	18,213	43	12
Latah	1,658	11,346	17,807	15	9
Lewis	415	5,872	7,934	7	5
Nez Perce	174	7,986	19,545	2	1
Shoshone	2,006	2,586	24,966	78	8
Valley	1,396	3,246	5,377	43	26

[1] Sources of data: Columns 2–4 compiled from (*88, pp. 72–73, 78; pp. 72–79, 85, 124; p. 178*); columns 5 and 6 by computation from this table.
[2] Includes timberland, cut-over and burnt timberland, and standing timber owned separate from land.

MONTANA

"Timberlands", a category which includes most of the forests in Montana, are segregated for tax purposes. Out of the 56 counties of the State, 12 report this type of property to the State board of equalization. The ratios of forests to the total tax base range from less than 0.5 percent in Carbon County and in Lewis and Clark County to 21 percent in Lincoln County (table 80). Eight counties are in a group whose ratios are less than 10 percent, and four counties fall into the 10-to-21-percent ratio group. The ratios of forests to rural real estate range from less than 0.5 percent in Carbon County to 62 percent in Lincoln County. The distribution of counties in ratio groups is as follows:

0–9 percent	4
10–29 percent	3
30–49 percent	4
50–79 percent	1

TABLE 80.—*Forests in the tax base of Montana counties reporting taxable forests, 1928* [1]

County	Assessed value [2]			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [3]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Carbon	7	3,073	7,649	(4)	(4)
Flathead	1,812	5,078	12,735	36	14
Granite	93	1,079	3,687	9	3
Lake	342	1,859	3,524	18	10
Lewis and Clark	49	2,660	16,050	2	(4)
Lincoln	1,283	2,076	6,191	62	21
Mineral	135	434	3,646	31	4
Missoula	966	3,154	15,131	31	6
Park	50	3,851	9,548	1	1
Powell	250	2,317	6,396	11	4
Ravalli	427	3,242	5,788	13	7
Sanders	780	1,791	7,174	44	11

[1] Sources of data: Column 2 (*92, p. 55*) (value of timberlands multiplied by 0.3); column 3 (*92, pp. 55, 57, 59*) (all agricultural lands and improvements, timberlands, waste lands, and improvements on mining claims, multiplied by 0.3, plus the value of mining claims, and mineral reservations); column 4 (*92, pp. 106–107*) (total taxable value of the counties); columns 5 and 6 by computation from this table.
[2] Termed taxable value in Montana.
[3] Includes timberlands only.
[4] Less than 0.5 percent.

Oregon and Washington

In the two States studied in the Pacific coast region, Oregon and Washington, it was not generally practicable to separate grazing lands from the forests. The value of forests in tables 81 and 82, therefore, includes the value of grazing lands. In the west-side counties of both States, however, grazing value is a negligible quantity and the figures for forests in these counties are quite accurate. The best data are probably those for Grays Harbor County, Wash., where a rather detailed study was made. In the other counties of both States the forest category includes a miscellaneous assortment of other elements; but, as in the case of other States, there is a compensating factor due to the fact that forests held in conjunction with other uses are excluded from the forest category.

The ratios of forests to the total tax base range from less than 0.5 percent in Multnomah County to 71 percent in Tillamook County (table 81). The counties are distributed by ratio groups as follows:

0–9 percent	5
10–29 percent	14
30–49 percent	9
50–79 percent	8

The ratios of forests to the rural real estate range from 2 percent in Multnomah and Umatilla Counties to 91 percent in Clatsop County (table 81). The distribution of counties by ratio groups is as follows:

0–9 percent	4
10–29 percent	7
30–49 percent	8
50–79 percent	14
80–100 percent	3

In the case of Washington the ratios of forests to the total tax base range from 2 percent in Spokane County to 67 percent in Jefferson County (table 82). The counties are distributed by ratio groups as follows:

0–9 percent	12
10–29 percent	14
30–49 percent	8
50–79 percent	5

The ratios of forests to rural real estate range from 5 percent in Whitman County to 90 percent in Clallam and Jefferson Counties. The county distribution, by ratio groups, follows:

0–9 percent	6
10–29 percent	7
30–49 percent	9
50–79 percent	10
80–100 percent	7

TABLE 81.—*Forests in the tax base of the counties in Oregon, 1928* [1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Baker	4,326	11,554	19,677	37	22
Benton	1,300	7,185	12,839	18	10
Clackamas	7,191	16,608	28,477	43	25
Clatsop	14,942	16,497	28,023	91	53
Columbia	6,351	11,550	16,101	55	39
Coos	10,012	14,859	25,845	67	39
Crook	2,853	4,448	5,593	64	51
Curry	3,097	4,862	5,868	64	53
Deschutes	2,733	4,992	8,780	55	31
Douglas	9,765	18,094	26,461	54	37
Gilliam	1,244	7,594	10,149	16	12
Grant	5,029	6,578	8,225	76	61
Harney	2,830	6,862	9,296	41	30
Hood River	979	5,238	7,687	19	13
Jackson	7,344	15,507	27,944	47	26
Jefferson	2,633	4,507	5,347	58	49
Josephine	1,903	3,613	6,438	53	30
Klamath	11,030	17,625	28,349	63	39
Lake	7,701	10,667	13,650	72	56
Lane	10,170	19,766	39,537	51	26
Lincoln	7,386	8,514	10,937	87	68
Linn	10,426	19,402	25,986	54	40
Malheur	1,795	6,039	9,062	30	20
Marion	2,500	22,631	41,839	11	6
Morrow	400	7,979	10,724	5	4
Multnomah	613	29,115	326,330	2	[3]
Polk	3,260	9,124	12,544	36	26
Sherman	546	9,035	10,648	6	5
Tillamook	18,473	21,700	26,067	85	71
Umatilla	800	32,055	43,416	2	2
Union	2,589	10,827	18,647	24	14
Wallowa	2,483	6,914	10,607	36	23
Wasco	2,518	9,005	15,382	28	16
Washington	7,003	19,267	24,027	36	29
Wheeler	3,361	4,539	6,231	74	54
Yamhill	3,382	14,220	19,897	24	17

[1] Sources of data: Column 2 (*81, 10th rept. table 11, cols. 5, 8*) where figures are available, otherwise from the Oregon Voter (*86, col. 6*); column 3 (*81, 10th rept. table 11, cols. 2, 5, 8, 10*); column 4 (*81, 10th rept. table 11, col. 40*), columns 5 and 6 by computation from this table.
[2] Includes grazing lands.
[3] Less than 0.5 percent.

TABLE 82.—*Forests in the tax base of the counties in Washington, 1926* [1]

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [2]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Adams	728	8,475	20,542	9	4
Asotin	527	3,824	5,593	14	9
Benton	3,359	6,206	15,342	54	22
Chelan	1,139	10,589	24,577	11	5
Clallan	9,534	10,558	15,976	90	60
Clark	3,103	8,350	19,339	37	16
Columbia	469	5,958	9,472	8	5
Cowlitz	10,035	12,269	23,893	82	42
Douglas	921	8,554	11,992	11	8
Ferry	896	1,490	3,138	60	29
Franklin	1,215	3,230	11,724	38	10
Garfield	642	4,068	6,061	16	11
Grant	1,714	4,861	12,786	35	13
Grays Harbor	12,767	16,343	37,108	78	34

[1] Sources of data: All counties except Grays Harbor—Column 2 (*84, Proc. 1926, p. 23, cols. 2 and 4*); column 3 (*84, Proc. 1926, cols. 2, 4, 6, on p. 23, and col. 2 on p. 24*); column 4 (*97, pp. 48–49, col. 1*); columns 5 and 6 by computation from this table. Grays Harbor County—Columns 2 and 3 from acreage tax books for 1926; column 4 (*97, p. 48, col. 1*); columns 5 and 6 by computation from this table.
[2] Including grazing lands.

TABLE 82.—*Forests in the tax base of the counties in Washington, 1926*—Contd.

County	Assessed value			Ratio of forests to rural real estate	Ratio of forests to total tax base
	Forests [1]	Rural real estate	All property		
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*
Island	1,091	2,098	2,747	52	40
Jefferson	4,622	5,145	6,902	90	67
King	16,297	34,249	335,738	48	5
Kitsap	3,811	5,508	12,341	69	31
Kittitas	2,988	7,716	20,867	39	14
Klickitat	3,168	7,084	14,504	45	22
Lewis	11,866	15,339	27,514	77	43
Lincoln	1,164	16,287	26,674	7	4
Mason	4,156	4,730	6,487	88	64
Okanogan	936	4,935	10,043	19	9
Pacific	8,545	9,578	15,666	89	55
Pend Oreille	2,993	4,082	7,797	73	38
Pierce	9,851	19,578	100,034	50	10
San Juan	221	1,057	1,527	21	14
Skagit	5,848	11,841	24,867	49	24
Skamania	2,131	2,510	4,692	85	45
Snohomish	9,742	14,640	46,554	67	21
Spokane	2,391	14,332	120,004	17	2
Stevens	3,452	7,776	12,928	44	27
Thurston	6,221	7,711	17,715	81	35
Wahkiakum	1,260	1,655	2,260	76	56
Walla Walla	1,057	16,544	38,370	6	3
Whatcom	4,991	10,123	32,745	49	15
Whitman	1,414	26,859	46,698	5	3
Yakima	1,713	25,437	51,760	7	3

[1] Including grazing lands.

EFFECT OF FULL-VALUE ASSESSMENT

In some of the areas studied an effort was made to determine the actual value of property in order to portray a full-value assessment. The term "full value" is used to mean an assessment based on actual value, or the best available approximation to actual value, termed here "estimated value."

Actual values, or the best available approximations thereto, were obtained by comparison with sales or appraisals of sample properties, or by direct appraisals of all properties; the methods were fully described in the section on the assessment of forest property (p. 105).

Table 83 shows, for certain political units where assessment ratios were obtained, the ratio of forests to rural real estate on the basis of the present assessment and also on the basis of a full-value assessment.

TABLE 83.—*Forests in the tax base of the present assessment and of a full-value assessment, selected political units* [1]

Political unit and year	Assessed [2] value of rural real estate			Estimated value of rural real estate			Assessment ratio		Ratio of forests to rural real estate	
	Forests	Other	Total	Forests	Other	Total	Forests	Other rural real estate	Assessed value	Estimated value
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*	*Percent*	*Percent*
New Hampshire, 1928:										
Town of Fremont, Rockingham County	199	192	391	313	301	614	64	64	51	51
Town of Loudon, Merrimack County	264	302	566	249	484	733	106	62	47	34
Town of Richmond, Cheshire County	313	73	386	425	100	525	74	73	81	81
North Carolina, 1928:										
Beaufort County	4,522	8,299	12,821	4,720	9,720	14,440	96	85	35	33
Chatham County	3,371	4,726	8,097	4,532	6,092	10,624	74	78	42	43
Macon County	1,886	2,402	4,288	2,327	3,140	5,467	81	77	44	43
Minnesota, 1926:										
Crow Wing Lake Township, Hubbard County	253	144	397	99	203	302	255	71	64	33
Eckles township, Beltrami County	175	32	207	132	92	224	133	35	85	59
Frohn township, Beltrami County	266	123	389	169	218	387	158	56	68	44
Lake Emma township, Hubbard County	227	88	315	116	156	272	195	57	72	43
Toivola township, St. Louis County	330	42	372	236	137	373	140	31	89	63
T. 54 N., R. 10 W., Lake County	187	18	205	148	56	204	126	32	91	73
Wisconsin, 1926:										
Ashland County	6,125	3,752	9,877	5,756	4,062	9,818	106	92	62	59
Town of Morse (nonmineral part)	798	200	998	865	271	1,136	92	74	80	76
Bayfield County	9,886	6,567	16,453	7,771	8,067	15,838	127	81	60	49
Town of Bayview	193	180	373	162	323	485	119	56	52	33
Burnett County	5,048	3,526	8,574	5,115	5,535	10,650	99	64	59	48
Douglas County [3]	8,008	3,585	11,593	7,386	4,970	12,356	108	72	69	60
Florence County [3]	2,092	1,177	3,269	2,837	2,199	5,036	74	54	64	56
Forest County	5,691	2,063	7,754	10,334	3,774	14,108	55	55	73	73
Town of Laona	573	173	746	2,218	255	2,473	26	68	77	90
Iron County	5,729	1,305	7,034	6,269	2,479	8,748	91	53	81	72
Langlade County [3]	6,303	5,818	12,121	6,950	8,268	15,218	91	70	52	46
Lincoln County [4]	7,395	4,355	11,750	9,509	7,780	17,289	78	56	63	55
Marinette County	6,657	5,181	11,838	6,821	8,037	14,858	98	64	56	46
Town of Athelstane	374	67	441	390	379	769	96	18	85	51
Oneida County	4,472	4,611	9,083	4,646	7,012	11,658	96	66	49	40
Town of Little Rice	201	24	225	261	50	311	77	49	89	84
Town of Three Lakes	329	866	1,195	488	785	1,273	67	110	28	38
Price County	7,140	2,924	10,064	6,626	3,781	10,407	108	77	71	64
Richland County	4,300	17,805	22,105	5,080	22,693	27,773	85	78	19	18
Rusk County	8,352	4,030	12,382	7,754	6,312	14,066	108	64	67	55
Town of Murry	554	196	750	344	333	677	161	59	74	51
Sawyer County	7,600	1,641	9,241	8,626	2,360	10,986	88	70	82	79

Shawano County	5,287	17,246	22,533	5,745	20,983	26,728	92	82	23	21
Town of Bartelme	347	106	453	456	182	638	76	58	77	72
Taylor County	7,515	7,005	14,520	6,788	8,028	14,816	111	87	52	46
Vilas County [3]	3,118	4,623	7,741	2,735	6,985	9,720	114	66	40	28
Washburn County [3]	5,316	3,154	8,470	4,951	5,325	10,276	107	59	63	48
Oregon, 1928:										
Baker County	4,326	7,228	11,554	5,244	11,635	16,879	82	62	37	31
Grant County	5,029	1,549	6,578	6,352	3,193	9,545	79	49	76	67
Klamath County	11,029	6,596	17,625	22,762	21,731	44,493	48	30	63	51
Lane County	10,170	9,596	19,766	23,547	29,457	53,004	43	33	51	44
Washington, 1928:										
Clallam County	19,067	2,049	21,116	25,841	3,644	29,485	74	56	90	88
Grays Harbor County	25,533	7,152	32,685	38,358	25,021	63,379	67	29	78	61

[1] Sources of data: Columns 3, 7, 10, and 11 by computation from this table. New Hampshire—Column 2, see text, p. 206; column 4 from town assessment rolls—distribution into forests and other property was made from information furnished by the property owners and by field examination; columns 5 and 6 from appraisals by experts temporarily attached to the Forest Service through the cooperation of the New Hampshire State Tax Commission—properties in Fremont and Richmond were appraised individually in the field, those in Loudon in the office by comparison with sample individual appraisals and sales; columns 8 and 9 by computation from assessed values from town assessment rolls, and appraised values. North Carolina—Columns 2 and 4 from county tax scrolls of 1928, as adjusted by a field check; columns 5 and 6 computed by applying assessment ratios to assessed values; columns 8 and 9 by computation from verified sales where the assessment ratio of each property class was weighted by the total assessed value of that property class. Minnesota—Columns 2 and 4 from table 72, columns 6 and 7 respectively, multiplied by 3; columns 5 and 6 computed by applying assessment ratios to assessed values; columns 8 and 9 by computation from assessments and appraisals; assessments from county records, appraisals by field examination. (See pt. 4, p. 108.) Wisconsin—Columns 2 and 4 from tables 73 and 74; columns 5 and 6 computed by applying assessment ratios to assessed values; columns 8 and 9 for counties, by computation from unpublished records of the Wisconsin Tax Commission—the assessment ratio for each property class was weighted by the total assessed value of that property class; for towns, by computation from assessments and appraisals; assessments from county records, appraisals by field examination. Oregon and Washington—Columns 2 and 4 for Oregon from table 81, columns 2 and 3 respectively; for Washington from table 82, columns 2 and 3 respectively, multiplied by 2; columns 5 and 6 computed by applying assessment ratios to assessed values; columns 8 and 9 by computation from records of sales where the assessment ratio of each property class was weighted by the total assessed value of that property class.

[2] In Minnesota, the assessor's full and true value; in Washington, twice the assessed value.

[3] Appraised values are for the year 1927.

[4] 1925 values.

The ratio of forest to rural real-estate value on the basis of estimated value is less, in all except six cases, than the corresponding ratios on the basis of assessed value. This is due to the higher average assessment ratio for forests than for other rural real estate. In three of the exceptional cases (towns of Fremont and Richmond, N. H., and Forest County, Wis.) the ratios are the same, on account of the same or nearly the same average assessment ratio for forests as for other rural real estate. In 1 of the remaining 3 exceptions (Chatham County, N. C.) the difference between the ratios is only 1 percent; in the other 2 (the towns of Three Lakes and Laona, Wis.) the differences between the ratios are 10 and 13 percent, respectively.

The individual differences between these ratios in the different political units, excluding the six exceptional cases just noted, are distributed as follows:

1–2 percent	5
3–5 percent	5
6–9 percent	11
10–19 percent	11
20–29 percent	5
30–39 percent	2

These differences between the ratio of forest to rural real-estate value on the basis of estimated value and the ratio on the basis of assessed value are quite insignificant (1 to 2 percent) in five cases; namely, Beaufort and Macon Counties, N. C.; Richland and Shawano Counties, Wis.; and Clallam County, Wash. But in the great majority of cases, 34 out of 45, the higher average assessment ratio for forests than for other rural real estate increases substantially the importance of forests in the tax base.

CONCLUSIONS

Table 84 is a summary table which is supplemental to table 67, It gives, for each State where more or less detailed studies were made the ratio of forests to the tax base (columns 2 and 3); also the minimum and maximum ratios of forests to the tax base for counties, county groups, or parishes (columns 4 and 5), or for towns, township groups, or townships (columns 6 and 7).

TABLE 84.—*Forests by States and extreme localities* [1]

Region and State	Ratio of forests to tax base of the State		Minimum and maximum ratios of forests to tax base			
			Counties, county groups [2], or parishes		Town, township groups, or townships	
	Rural real estate	Total tax base	Rural real estate	Total tax base	Rural real estate	Total tax base
New England:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
New Hampshire	9	6			41–82	32–74
Maine	20	13	7–93	4–91		
Lake:						
Minnesota	2	1			64–100	
Wisconsin	3	2	2–82	[3] —67	28–89	23–86
Michigan	6	2			13–97	
Southeastern:						
North Carolina	9	5	35–44	15–26		
Louisiana	27	8	0–95	0–49		
Mississippi	17	11	7–94	3–59		
Rocky Mountain:						
Colorado	1	[4]	[3] —12	[3] —7		
Idaho	12	9	2–81	1–56		
Montana	4	2	[3] —62	[3] —21		
Pacific:						
Oregon	36	18	2–91	[3] —71		
Washington	18	9	5–90	2–67		

[1] Sources of data: Based on tables 67 to 82.
[2] The area in Maine was divided into 2 groups as follows: Wild-lands territory and organized territory.
[3] Less than 0.5 percent.

Tables 85 and 86 show distributions of the States and local political units by ratios of forests to the tax base. Since the counties in certain States and the smaller subdivisions in all States were selected primarily as representative of forest conditions, these distributions cannot be regarded as typical of the country in general.

TABLE 85.—*Distribution of States by ratios of forests to the tax base* [1]

Ratio of forests to tax base	States	
	Rural real estate tax base	Total tax base
Less than 1 percent	[2] 13	[2] 22
1–4 percent	16	12
5–9 percent	6	10
10–19 percent	9	4
20 percent and over	4	0
Total	48	48

[1] Based on table 67.
[2] Includes Kansas and Nebraska, where the ratios were not determined.

TABLE 86.—*Distribution of local political units studied by ratios of forests to the tax base* [1]

Ratio of forests to tax base	Counties, county groups,[2] or parishes		Towns, township groups, or townships	
	Rural real estate tax base	Total tax base	Rural real estate tax base	Total tax base
0–9 percent	64	119	0	0
10–29 percent	78	142	3	1
30–49 percent	74	54	2	4
50–79 percent	94	23	10	5
80–100 percent	29	1	15	1
Total	339	339	30	[3] 11

[1] Based on tables 67 to 82.
[2] The area in Maine was divided into 2 groups as follows: Wild-lands territory and organized territory.
[3] In 19 towns the value of all property was not obtained.

In 22 States, according to table 85, forests constitute less than 1 percent of the total tax base. In these States a change in method of taxing forest property would have little effect on State revenues or the aggregate of local revenues. Of the remaining 26 States, 12 show a ratio of forests to total tax base of 1 to 4 percent, and 14 a ratio of 5 to 19 percent. The seriousness of the effect upon revenues caused by a revision of the method of taxing forests would, of course, vary with the method. The situation would be acute if forest taxes were greatly reduced without providing other revenues in some of the States where forests constitute a large part of the total tax base.

In the selected areas studied (table 86), forests make up a large part of the tax base of many county or parish governments and an even greater part of the tax base of many town or township governments, being practically the sole element in some towns and townships. The universal application of any new method of forest taxation which would deprive the local governments of a part of their revenues, even though only temporarily, would mean a serious dislocation of finances, which would have to be compensated in some way. If the various States should assume and make up this loss of revenue, permanently or during a period of transition, they could probably carry the load. Those States, however, which depend to any great extent upon the property tax would themselves lose revenue if forest property were removed from the property tax base, and might encounter some difficulty in raising funds with which to reimburse their subdivisions for losses caused by a change in the method of taxing forests.

If a full-value assessment of all property could be obtained in those political units where forests are an important part of the tax base, forest property would generally benefit in comparison with other real estate taken as a whole. This is indicated by the fact that in 39 out of 45 political units studied the effect of a full-value assessment would be to decrease the importance of forests in the tax base.

PART 7. THE PROPERTY TAX BURDEN AND ITS EFFECTS ON FOREST MANAGEMENT

CONTENTS

INTRODUCTION

The preceding part dealt with the property tax base and indicated the place occupied by forests in this tax base. It is now in order to investigate the property-tax burden on forests and its effects on forest management.

THE PROPERTY-TAX BURDEN ON FORESTS

ESSENTIAL DATA

In a study of forest-tax burden the following data are essential: (1) The amount of taxes on forests; (2) the relation of these taxes to assessed value (this, expressed in percentage, is obviously the property-tax rate); (3) the relation of taxes to the actual value of the forests or to the best possible estimate of actual value (this, expressed in percentage, will hereafter be termed the ratio of taxes to estimated value); (4) the relation between forest taxes and forest income (this, expressed in percentage, is the tax ratio as defined in pt. 3); (5) past trends in forest taxes as a possible means of predicting future trends; and (6) data similar to the above for other types of property for the purpose of comparing the tax burden on forests with that on other kinds of property.

The reader will of course appreciate that here also, as with the segregation of forests from the tax base, the determination of taxes on all forests in a given political unit may be made only approximately, because of the practice of levying taxes by parcels or properties rather than by types of land. The procedure followed in the determination of the taxes on all forests in the selected political units was, in general, to calculate the tax rate for sample properties and to apply that rate to the assessed value of forests given in part 6. The estimates of actual value, used for the purpose of relating the taxes to actual value, are the same as those used in part 6 and are therefore subject to the same limitations. The most complete and perhaps most accurate data are those derived from a special study of timber properties in Washington and Oregon.

AMOUNT OF TAXES AND RELATION TO VALUE

FORESTS AND OTHER RURAL REAL ESTATE IN GENERAL

The amount of taxes on forests and the relation of these taxes to assessed value and to estimated value for the selected areas studied are given in table 87. Similar data are also given in this table for other rural real estate for purposes of comparison.

The sources of data for table 87 are as follows:

Columns 9, 11, 12, 13, 14, and 15 were computed from this table.

Columns 4, 5, 6, and 7 were obtained from table 83, part 6, for all States except Maine.

Columns 4 and 6 for Maine are from table 71, part 6.

The sources for the other columns vary by States as follows:

New Hampshire

Columns 2 and 3 were determined in the field. Column 8 was obtained by applying to column 4 the average tax rate for commercial and farm forest property in each town as computed from a compilation of the assessed values and taxes from the tax rolls of 1928. Column 10 was obtained by applying to column 6 the average tax rate for rural real estate (*93, pp. 42, 63, 78, column 7*).

Maine

(1) Wild-lands territory, a combination of unorganized territory and second-class plantations:

Columns 2 and 3 were compiled from Maine State Valuation, 1928 (*89*). From this publication those properties which were predominantly of a forest character were segregated from the other properties. Column 5 was determined by multiplying $4 (estimated average stumpage price for 1928) by 28,000,000 (thousand board feet of standing merchantable spruce and fir in the wild-lands territory in 1928, estimated with advice of well-informed experts). From this was deducted 40 percent to obtain the present worth, as of 1928, of the timber, and to this present worth was added the product of $3 (the estimated value of forest land stocked with young trees) and 9,308,000 (column 2 of table 87). Columns 8 and 10 were computed in the following manner: The sum of the State, county, and forest district tax rates (from State treasurer's office) was multiplied by the assessed value of rural real estate in each county in the unorganized territory (*89*). To this was added an estimated road tax (10 mills on one-half of the assessed value of the unorganized territory). Then the tax rates for each second-class plantation (*104, pp. 6–13*) were multiplied by the assessed value of each second-class plantation (*89*) and the sum of the products added to the taxes for the unorganized territory, computed as indicated above. From these taxes and the total value of rural real estate in the wild-lands territory an average rate was computed and applied to columns 4 and 6 respectively.

(2) Organized territory, including first-class plantations: Column 2 was computed by subtracting the area of wild-lands territory (9,308,000 acres, as given above) from the total forest area of the State (table 67). Column 3 was computed by subtracting column 2 plus wild-lands territory from the total area of the State (*94, part 1, p. 81*). It should be noted that this figure includes the area of platted land, which it was impossible to separate. This area, however, is relatively insignificant. Column 8 was obtained by applying to column 4 the average tax rate for sample properties. Column 10 was computed by subtracting the taxes of the wild-lands territory, computed as above, from the total taxes of the State (*90, p. 137, column 3*).

North Carolina

Columns 2 and 3 were determined from the tax rolls of 1928 and from field examinations. Columns 8 and 10 were computed by applying individual district tax rates to columns 4 and 6 respectively.

Minnesota

Columns 2 and 3 were determined by field examinations. Column 8 was computed in the following manner: Taxes on cut-over and timber properties were obtained from the assessment rolls of 1926. To this amount was added an estimate of the taxes on the remaining forest area. This was computed by multiplying the average tax per acre on cut-over property by the difference between the total forest area (column 2) and the area classified as cut-over and timber on the assessment rolls of 1926. Column 10 was computed by subtracting column 8 from the total taxes levied on rural real estate, compiled from the township tax rolls and county records of 1926.

Wisconsin

Columns 2 and 3 for the towns were determined by field examinations. For Lincoln County, column 2 was computed by deducting from the total area of unplatted land, obtained from the assessment rolls of 1925, the area of crop land and plowable pasture land (*94, pt. 1, p. 665*) which is given in column 3. Columns 8 and 10 were obtained by applying to columns 4 and 6 respectively the tax rates obtained from the tax rolls of 1926 (Lincoln County, 1925).

Oregon

Column 2 is from the Oregon Voter (*86, p. 4*). Column 3 was computed by subtracting column 2 from the area of privately owned unplatted land (*81, Bien. Rept. 10, table 9, sum of columns 1, 4, and 7*). Columns 8 and 10 were computed by applying to columns 4 and 6 respectively the tax rate computed by dividing the taxes levied (*81, Bien. Rept. 10, table 14, column 16*) (excluding taxes for fire patrol, special cities and towns, and irrigation and drainage) by the assessed value of all property (table 81).

Washington

Column 2 for Clallam County was computed in the following manner: From the total area of unplatted land (*84, 1928 rept., p. 21*) was subtracted the area of crop land and pasture land, except woodland pasture land (*108, p. 5*). For Grays Harbor this column was compiled from the acreage tax books for 1926. Column 3 was computed by subtracting column 2 from the total area of unplatted land (*84, 1928 rept., p. 21*). Column 8 for Clallam and Grays Harbor Counties and column 10 for Clallam County were computed by applying to columns 4 and 6 respectively the tax rate computed by dividing the taxes levied (*97, pp. 72, 81, column 8*) (excluding city and forest fire patrol taxes) by the assessed value of all property (from pt. 6, table 82). Column 10 for Grays Harbor County was computed from a recapitulation of the acreage tax books of 1926.

TABLE 87.—*Taxes on forest and other rural real estate, and ratio of taxes on forests and on other rural real estate to assessed value and to estimated value, selected political units* [1]

Political unit and date	Privately owned unplatted land		Value of rural real estate				Taxes levied on rural real estate				Ratio of taxes—			
			Forests		Other		Forests		Other		On forests		On other rural real estate	
	Forest	Other	Assessed	Estimated	Assessed	Estimated	Total	Per acre	Total	Per acre	To assessed value	To estimated value	To assessed value	To estimated value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	1,000 acres	*1,000 acres*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Dollars*	*1,000 dollars*	*Dollars*	*Percent*	*Percent*	*Percent*	*Percent*
New Hampsire, 1928:														
Town of Fremont, Rockingham County	9	2	199	313	192	301	5	0.61	5	2.16	2.6	1.7	2.6	1.7
Town of Loudon, Merrimack County	19	9	264	249	302	484	9	.48	11	1.24	3.5	3.8	3.5	2.2
Town of Richmond, Cheshire County	22	3	313	425	72	100	10	.44	2	.81	3.1	2.2	3.0	2.2
Maine, 1928:														
Wild-lands territory	9,308	134	68,104	95,124	4,910	--------	1,265	.14	91	.68	1.9	1.3	1.9	----------
Organized territory	4,752	[2] 4,939	26,600	--------	381,000	--------	1,307	.28	[3] 24,572	4.98	4.9	----------	----------	----------
North Carolina, 1928:														
Beaufort County	387	101	4,522	4,720	8,299	9,720	76	.20	171	1.70	1.7	1.6	2.1	1.8
Chatham County	307	124	3,371	4,532	4,726	6,092	56	.18	71	.57	1.6	1.2	1.5	1.2
Macon County	161	60	1,886	2,327	2,402	3,140	40	.25	52	.86	2.1	1.7	2.1	1.6
Minnesota, 1926:														
Clay Township, Hubbard County	21	[4] 0	102	108	4	22	5	.26	[4] 0	.53	5.2	4.9	5.1	1.0
Crow Wing Lake Township, Hubbard County	16	4	84	99	48	203	4	.25	2	.63	4.7	3.8	4.7	1.1
Eckles Township, Beltrami County	18	3	58	132	11	92	6	.35	1	.40	10.8	4.8	10.4	1.2
Frohn Township, Beltrami County	16	4	89	169	41	218	8	.52	[5] 2	.60	9.5	5.0	5.6	1.1
Lake Emma Township, Hubbard County	15	2	76	116	30	[6] 156	4	.26	1	.73	5.2	3.4	4.6	.9
Schoolcraft Township, Hubbard County	18	1	84	82	4	16	6	.31	[4] 0	.41	6.7	6.9	5.1	1.4
Toivola Township, St. Louis County	39	2	110	236	14	137	13	.33	2	.73	11.9	5.5	11.6	1.2
T. 54 N., R. 10 W. (part of Silver Creek), Lake County	22	1	62	148	6	56	7	.31	1	.78	10.9	4.6	11.8	1.2
T. 54 and 55 N., R. 14 W., St. Louis County	42	[4] 0	87	--------	[4] 0	--------	8	.19	[4] 0	1.17	9.1	----------	(7)	----------
T. 59 N., R. 8 W. (part of Beaver Bay), Lake County	17	[4] 0	56	173	[4] 0	(7)	7	.38	[4] 0	.27	11.6	3.8	(7)	(7)
T. 67 and 68 N., R. 20 W., St. Louis County	34	0	24	--------	0	--------	2	.06	0	--------	9.1	----------	----------	----------
T. 156 N., R. 31 W., Beltrami County	23	0	34	--------	0	--------	4	.16	0	--------	10.5	----------	----------	----------
Wisconsin, 1926:														
Town of Athelstane, Marinette County	64	4	374	390	67	379	12	.19	2	.50	3.3	3.1	3.1	.6
Town of Bartelme, Shawano County	21	2	347	456	106	182	7	.32	2	1.19	1.9	1.5	2.1	1.2
Town of Bayview, Bayfield County	22	2	193	162	180	323	6	.25	5	2.15	2.9	3.4	2.9	1.6
Town of Laona, Forest County	63	3	573	2,218	173	[8] 255	30	.48	[9] 3	1.05	5.3	1.4	1.6	1.1

Town of Little Rice, Oneida County	41	1	201	261	24	50	10	.25	1	1.53	5.1	3.9	5.3	2.6
Town of Morse, Ashland County [10]	59	3	798	865	200	271	19	.33	5	1.88	2.4	2.2	2.6	1.9
Town of Murry, Rusk County	37	3	554	344	196	333	10	.28	4	1.24	1.9	3.0	2.0	1.2
Town of Three Lakes, Oneida County	39	4	329	488	866	[11] 785	16	.41	[12] 29	6.91	4.9	3.3	3.4	3.7
Lincoln County, 1925	499	54	7,395	9,509	4,355	7,780	252	.50	120	2.20	3.4	2.6	2.8	1.5
Oregon, 1928:														
Baker County	185	812	4,326	5,244	7,228	11,635	147	.79	245	.30	3.4	2.8	3.4	2.1
Grant County	367	850	5,029	6,352	1,549	3,193	158	.43	49	.06	3.1	2.5	3.1	1.5
Klamath County	720	627	11,030	22,762	6,595	21,731	394	.55	236	.38	3.6	1.7	3.6	1.1
Lane County	645	626	10,170	23,547	9,596	29,457	447	.69	422	.67	4.4	1.9	4.4	1.4
Washington, 1926:														
Clallam County	495	24	9,534	25,841	1,024	3,644	535	1.08	57	2.37	5.6	2.1	5.6	1.6
Grays Harbor County	792	34	12,767	38,358	3,576	25,021	817	1.03	188	5.58	6.4	2.1	5.2	.7

[1] Sources of data are given in the text.
[2] Includes platted land.
[3] Includes personal property and urban real estate.
[4] A negligible amount of other rural real estate is obscured in the process of rounding.
[5] Excludes a tax of $1,578 on property which was not appraised.
[6] Excludes an appraised value of $2,550 for property which was not assessed.
[7] Figures not significant because of small values involved.
[8] Excludes an appraised value of $3,880 for improvements which were not assessed.
[9] Excludes a tax of$6,308 on property which was not appraised.
[10] Nonmineral part of town only.
[11] Excludes an appraised value of $790 on property which was not assessed.
[12] Excludes a tax of $12,463 on property which was not appraised.

In the areas studied, the average taxes per acre on forests range from $0.06 to $1.08, while the average taxes on other rural real estate range from $0.06 to $6.91 per acre (table 87). In each of the units studied, except 1 township of Minnesota and 4 counties of Oregon, the taxes per acre on forests are less than those on other rural real estate. This is to be expected, since ordinarily forests are less valuable than most other rural real estate. The exceptions mentioned above merely prove the rule; the merchantable timber present in these areas places the forests among the most valuable classes of the rural real estate. Of course, the amount of the average tax per acre gives no adequate picture of the tax burden, because of the differences in actual average value of different property classes.

Within a given political unit forests may be subject to higher or lower tax rates (ratios of taxes to assessed value) than is other rural real estate. This is due to the superimposition on a common political unit of minor taxing districts, such as school, road, or drainage districts, which may exclude most of the forests and include most of the other rural real estate, or vice versa. These differences are not generally present except in certain regions where forests are segregated into relatively large and compact zones. Where forests are more or less scattered among other types of rural real estate, there would be no material difference in tax rates. A comparison of tax rates between forests and other rural real estate in the same political unit points out these unequal distributions of minor taxing districts.

While tax rates are useful to indicate differences in costs of government, they are not a good measure of tax burden, because of the almost universal departure of assessed value from actual value. The best measure of tax burden is the ratio of taxes to estimated value. A comparison of this ratio between forests and other rural real estate shows the different treatment that these categories receive in the assessment. The ratios of taxes to estimated value also show the differences in tax burden between the various political units.

For the purpose of comparing tax burdens it was necessary to determine an average ratio of taxes to estimated value for the political units studied. It was found that this ratio averages 2 percent for forests and 1.5 percent for other rural real estate. In the following comparisons these ratios are used as standards.

These averages were derived in the following manner:

The taxes and estimated values of the forests and of other rural real estate in the selected areas (table 87) were added, respectively, for each State represented. The ratio of taxes to estimated value so derived for each State is thus a weighted average.

Unweighted averages of these ratios are 2.4 percent for forests and 1.4 percent for other rural real estate. In computing a more representative average, however, the Minnesota data were eliminated. The tax conditions in the areas studied in that State, especially as regards forest taxes, are exceptional and probably not permanent. With Minnesota eliminated the ratio of taxes to estimated value is 2 percent for forests and 1.5 percent for other rural real estate.

FORESTS AND OTHER RURAL REAL ESTATE IN SELECTED LOCALITIES

Maine

Comparisons of the tax burden on forests and on other rural real estate will now be made among the various political subdivisions studied. The data for these comparisons will all be found in the last four columns of table 87. The average ratio of taxes to estimated

value of 2 percent given above will be taken as the standard of comparison for the normal tax burden on forests.

In the case of Maine, data are not available for an estimate of other rural real estate value in the wild-lands territory nor for estimates of forest and of other rural real estate value in the organized territory. But the great difference between the tax rate on assessed value of forest property in the wild-lands territory (1.9 percent) and that in the organized territory (4.9 percent) gives some indication of the beneficial results to the taxpayers of an unorganized status. For further discussion of this matter see part 8. The ratio of taxes to estimated value of forests in the wild-lands territory (1.3 percent) is one of the lowest ratios for forests encountered in this study.

New Hampshire

In New Hampshire the data show the ratio of taxes to estimated value of forests to be distinctly high in Loudon, 3.8 percent, quite high in Richmond, 2.2 percent, and moderate in Fremont, 1.7 percent, as compared with the average for the areas studied of 2 percent. The ratio of taxes to estimated value of other rural real estate is the same as for forests in Fremont and Richmond, indicating the same level of assessment, but it is considerably lower in Loudon (2.2 as compared with 3.8 percent), indicating a higher level of assessment for forests. There is little or no difference in tax rates (ratio of taxes to assessed value) as between forests and other rural real estate.

North Carolina

The data for North Carolina show moderate to low ratios of forest taxes to estimated forest value. They are highest in Macon (1.7 percent), slightly lower in Beaufort (1.6 percent), and lowest in Chatham (1.2 percent). There is practically no evidence in these counties of inequality in the level of assessment as between forests and other rural real estate. Forests in Beaufort County are subject to a lower tax rate than is other rural real estate, 1.7 percent in contrast to 2.1 percent. In the other two counties the tax rates are about the same for forests as for other rural real estate.

Minnesota

The last 4 Minnesota townships listed in table 87 consist almost entirely of forests; therefore, a comparison of forests with other rural real estate would be either impossible, as in the case of the last 2 townships, where there is no other rural real estate; or the comparison would be unreliable, as in the case of the other two, where the amount of other rural real estate is so small that the ratios would not be significant.

In the other townships the ratios of taxes to estimated value of forests range from 3.4 percent in Lake Emma Township to 6.9 percent in Schoolcraft—extremely high ratios as compared with the average for the other areas studied. The ratios of taxes to estimated value of other rural real estate are much more moderate, ranging from 0.9 percent in Lake Emma to 1.4 percent in Schoolcraft. This is due to the much higher assessment of forests than of other rural real estate. In six townships (Clay, Eckles, Frohn, Lake Emma, Schoolcraft, and

Toivola) forests are subject to higher tax rates than is the other rural real estate. The situation is reversed in one township (T. 54 N., R. 10 W.). In the other township in which a comparison can be made (Crow Wing Lake) forests and other rural real estate are subject to the same tax rate.

Wisconsin

The ratios of taxes to estimated value of forests in the selected areas of Wisconsin range from 1.4 percent in Laona (a town with considerable merchantable timber) to 3.9 percent in Little Rice—not nearly so high as in Minnesota, yet very high in most of the towns. The ratios of taxes to estimated value of other rural real estate are in every case, except Three Lakes, lower than the corresponding ratios for forests, indicating a higher assessment level for forests than for other rural real estate. In the towns of Athelstane, Laona, and Three Lakes, and in Lincoln County, forests are subject to higher tax rates than is the other rural real estate, the tax rate on forests in Laona being particularly high (5.3 as against 1.6 percent for other rural real estate). In the other towns there is little or no difference in tax rates as between forests and other rural real estate.

Oregon

The data for Oregon indicate that the forest tax burden is moderate in Klamath and Lane Counties, but high in Baker and Grant Counties, as indicated by the respective ratios of taxes to estimated value of 1.7 percent, 1.9 percent, 2.8 percent, and 2.5 percent. The ratios of taxes to estimated values of other rural real estate are lower than those for forest property on account of the relatively higher assessment of forests than of other rural real estate. The tax rates are the same for forests as for other rural real estate. But this is probably due rather to the method of computation, where the same tax rate was used to compute the taxes for both categories (see explanation of table 87), than to an actual equal distribution of minor taxing districts as the figures would seem to indicate.

Washington

The ratios of taxes to estimated value of forests are the same for both counties studied in Washington and are only slightly higher than the average ratio of 2 percent for all of the areas studied. The ratios of taxes to estimated value of other rural real estate are less than the corresponding ratios for forests, on account of the higher assessment level for forests than for other rural real estate. The ratios of taxes to assessed value (tax rates) in Clallam County are the same for forests and for other rural real estate. Here also, as in Oregon, the apparent equality may be due to the method of computation. In Grays Harbor County, where a more detailed study was made than in Clallam, forests are subject to a higher tax rate than is other rural real estate.

TIMBER PROPERTIES

It will be recalled that forests, as defined in part 6, include both timberland and cut-over land. It will also be remembered from part 4 that cut-over properties are usually assessed at higher average assessment ratios than are timbered properties. It would, therefore,

be expected that the ratio of taxes to value would be less in the case of timber properties than in the case of forests which contain cut-over land. The present analysis of taxes on timber properties demonstrates that these ratios actually are considerably less for most timber properties than for forests in the aggregate. Timber properties are those which consist principally of merchantable timber. They may include a small amount of other real estate, among which there may be some cut-over land. The analysis of the selected timber properties is given in table 88.

TABLE 88.—*Taxes on timber properties, and ratio of such taxes to assessed and estimated value, in selected political units* [1]

Political subdivision and date	Area	Value		Taxes		Ratio of taxes to—	
		Assessed	Estimated	Amount	Per acre	Assessed value	Estimated value
Minnesota, 1926:	*1,000 acres*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Dollars*	*Percent*	*Percent*
T. 59 N., R. 8 W. (part of Beaver Bay), Lake County	11	38	133	4	0.40	11.7	3.3
Wisconsin, 1926:							
Town of Bartelme, Shawano County	3	107	173	2	.66	1.9	1.2
Town of Laona, Forest County	25	367	1,573	19	.78	5.3	1.2
Town of Morse, Ashland County	6	134	161	3	.49	2.0	1.7
Town of Three Lakes, Oneida County	3	58	91	3	.85	4.8	3.1
Lincoln County [2]	102	2,525	4,621	82	.80	3.2	1.8
Oregon, 1926:							
West side counties: [3]							
Clatsop County	78	7,182	15,246	292	3.74	4.1	1.9
Coos County	138	2,472	10,711	110	.79	4.4	1.0
Douglas County	99	1,677	5,155	58	.59	3.5	1.1
Lane County	146	3,529	12,111	101	.70	2.9	.8
Linn County	64	1,187	5,034	46	.72	3.9	.9
Marion County	25	523	4,261	18	.73	3.5	.4
Tillamook County	110	6,503	15,373	236	2.14	3.6	1.5
Washington County	22	1,198	2,379	49	2.22	4.1	2.0
Total	682	24,271	70,270	910	1.33	3.7	1.3
East side counties: [3]							
Deschutes County	136	1,356	5,873	59	.43	4.3	1.0
Grant County	31	218	660	6	.18	2.6	.9
Klamath County	198	3,232	10,312	85	.43	2.6	.8
Lake County	149	1,854	7,534	41	.28	2.2	.5
Union County	106	645	1,904	15	.14	2.3	.8
Wheeler County	56	676	1,932	15	.26	2.2	.8
Total	676	7,981	28,215	221	.33	2.8	.8
Washington, 1926:							
West side counties: [3]							
Clallam County	82	3,287	6,378	88	1.07	2.7	1.4
Cowlitz County	138	8,401	18,637	240	1.74	2.9	1.3
Grays Harbor County	97	8,365	11,579	269	2.77	3.2	2.3
Jefferson County	34	1,257	2,396	30	.89	2.4	1.3
King County	63	4,812	8,361	151	2.40	3.1	1.8
Lewis County	201	8,141	25,352	238	1.18	2.9	.9
Mason County	34	2,036	3,066	59	1.71	2.9	1.9
Pacific County	94	5,576	9,783	147	1.56	2.6	1.5
Pierce County	67	4,238	6,991	98	1.47	2.3	1.4
Thurston County	41	3,532	3,500	117	2.84	3.3	3.3
Whatcom County	28	1,019	1,998	32	1.15	3.2	1.6
Total	879	50,664	98,041	1,469	1.67	2.9	1.5

[1] Sources of data: Columns 6, 7, and 8 were computed from this table. The sources for the other columns vary by States as follows—Minnesota: Columns 2, 3, and 5 are from the township assessment rolls of 1926; column 4 is from field appraisals. Wisconsin: Towns—Columns 2, 3, and 5 are from town assessment rolls of 1926; column 4 is from field appraisals; Lincoln County—Columns 2, 3, and 5 are from the town assessment rolls of 1925; column 4 was computed by applying to column 3 the assessment ratio for merchantable timber, obtained from unpublished records of the Wisconsin Tax Commission. Oregon and Washington: Columns 2, 3, 4, and 5 were compiled from reports of owners.

[2] 1925.

[3] Data for sample properties only.

The ratios of taxes to estimated value of these selected timber areas range from the very low ratio of 0.4 percent in Marion County, Oreg., to 3.3 percent in T. 59 N., R. 8 W., Minn., and Thurston County, Wash. The weighted average ratio is 1.3 percent, in contrast to 2 percent for forests as a whole. A comparison of the individual ratios in those political units in which comparable data are available is given in table 89.

TABLE 89.—*Comparison of tax burden between representative timber properties and all forests, in selected political units* [1]

Political unit	Ratio of forests to estimated value	
	Timber properties	All forests
	Percent	*Percent*
Minnesota:		
T. 59 N., R. 8 W. (part of Beaver Bay), Lake County	3.3	3.8
Wisconsin:		
Town of Bartelme, Shawano County	1.2	1.5
Town of Laona, Forest County	1.2	1.4
Town of Morse, Ashland County	1.7	2.2
Town of Three Lakes, Oneida County	3.1	3.3
Lincoln County	1.8	2.6
Oregon:		
Grant County	.9	2.5
Klamath County	.8	1.7
Lane County	.8	1.9
Washington:		
Clallam County	1.4	2.1
Grays Harbor County	2.3	2.1

[1] Sources of data: Column 2 from table 88, column 8; column 3 from table 87, column 15.

In only one of the units is the ratio higher for timber properties than for all forests.

CERTAIN OTHER CLASSES OF PROPERTY

Besides the comparison, as made above, between ratios of taxes to value for forests and for other rural real estate on sample properties, a comparison may also be made between the forest-tax burden and the tax burden on a number of other types of property. The United States Bureau of Internal Revenue publishes statistics compiled from corporation income-tax returns showing the ratio of taxes to the total value of the assets of corporations. Since the present study is concerned with the property tax, the most significant figure is that which excludes the Federal income tax. It would be desirable also to exclude State income taxes, fees, and licenses but the Bureau of Internal Revenue makes no such separation. Table 90 shows, for all corporations, the total assets, all taxes except the Federal income tax, and the ratio of these taxes to the total assets. It should be noted that some of the corporations included in this table own extensive areas of forests. These corporations are found principally in the "manufacturing" and the "agriculture and related industries" categories.

TABLE 90.—*Relation of taxes to value of total assets for all corporations by major industrial groups, 1926–29* [1]

Industrial group	Total assets	All taxes except Federal income tax	
		Amount	Ratio to total assets
	Million dollars	*Million dollars*	*Percent*
Agriculture and related industries	8,421	107	1.3
Mining and quarrying	46,368	364	.8
Manufacturing	267,651	2,301	.9
Construction	10,882	56	.5
Transportation and other public utilities	272,976	2,501	.9
Trade	82,546	778	.9
Service—professional, amusements, hotels, etc	24,169	273	1.1
Finance—banking, insurance, and related business	478,785	1,934	.4
Nature of business not given	919	4	.4
Total (excluding finance)	713,932	6,384	.9

[1] Sources of data: Columns 2 and 3 from (*109, 1926–29*); column 4 by computation from this table.

The average ratio of taxes to total assets of corporations is 0.9 percent. It will be recalled that the average ratio of taxes to estimated value of forests as determined from sample areas is 2 percent and that the average ratio for timber properties is 1.3 percent. That class of corporations which is most likely to contain areas of cut-over land, "agriculture and related industries", has the highest ratio of taxes to total assets, 1.3 percent. The ratio of taxes to actual value for agriculture given in the Census of Agriculture for 1930 is also 1.3 percent *(108)*.

The reason for the lower ratios of taxes to value in the case of industries other than agriculture, indicated in table 90, is that the assets of these industries include many items which are normally taxed at a lower rate than real estate either because a lower rate is prescribed by law or follows from relatively inadequate assessment, or because the nature of the business permits a more frequent turnover of capital than takes place where the capital is in real estate.

RELATION OF TAXES TO INCOME

FOREST PROPERTIES

Thus far in the investigation of the tax burden on forests, facts showing the amount of taxes have been assembled, and attention has been especially directed to the relation of taxes to the value of forest properties, with comparative data from other rural real estate and certain other classes of property. It is now in order to make similar inquiry into the relation of taxes to forest income, with corresponding reference to the relation of taxes to the incomes of certain other types of enterprises. This relationship is the tax ratio (i. e., the fraction of the net income before taxes which is taken by taxes), which has been frequently described and employed in other parts of this report. The investigation of this topic is made difficult by the absence of detailed income and expense accounts of going forest enterprises in North America. The Yale Demonstration and Research Forest at Keene, N. H., furnishes practically the only such experience in form appropriate to the purpose of this analysis. For

the rest, it has been necessary to build up theoretically, from yield tables and other data, income and cost factors for constructive forest enterprises in selected regions of the United States. Attention will first be given to the experience of the Keene forest.

The Yale Forest at Keene

The Yale Demonstration and Research Forest near Keene, N. H., was started in 1913, with a small acreage. Additional tracts were purchased until, December 31, 1930, the forest comprised 1,149 acres. A careful record of all receipts and expenditures was kept by the director of the forest, the late J. W. Toumey. These receipts and expenditures have been analyzed and are now available in published form (*106*). This analysis is used, together with miscellaneous forest data, to find the value of the forest, to estimate the profitableness of the undertaking, and to discover the influence that taxation has had on this profitableness *(106, pp. 61–70)*. The important data may be summarized as follows:

Value as of Dec. 31, 1930	$51, 088
Total purchase price, dates between 1913 and 1930	$39, 420
Value increment, 1913–30	$11, 668
Net income before taxes, 1913–30	$1, 896
Taxes, 1913–30	$6, 973
Net income after taxes, 1913–30 (deficit)	−$5, 077
Net income after taxes plus value increment, 1913–30	$6, 591
Annual rate of net income plus value increment, 1913–30:	
Before taxes, percent	3. 0
After taxes, do	1. 5
Estimated future annual rate of net income, beginning with 1931	
Before taxes, percent	4. 8
After taxes, do	3. 0
Estimated future tax ratio, beginning with 1931, do	37
Current taxes, 1930	$924
True value tax rate, 1930, percent	1. 8
Assessed value, 1930	$26, 900
Assessment ratio, 1930, percent	53

All of the above data, except the last two items, are obtained or may be computed from the reference cited. The assessed value item has been furnished separately by the Yale University School of Forestry. The assessment ratio item is computed from the assessed value and the true value items.

The truly tremendous effect of taxes on rate of return is obvious from the data given. Were the forest entirely tax exempt, it would earn 4.8 percent on its present value; while under the present system it earns only 3 percent. Taxes absorb 37 percent of all prospective net income before taxes. The tax ratio would have been still higher were it not for the fact that the forest starts out, not from bare land, but from a going forestry business yielding current income. The Yale forest is thus transitional between the extreme deferred-yield (bare land) and the annual sustained-yield forest.

CONSTRUCTIVE INCOME AND COST FACTORS

In the absence of going forest enterprises with detailed records available for analysis from the taxation viewpoint, it is necessary to turn to theoretical examples. In dealing with such cases it is necessary in order to show the effect of taxation over a complete income cycle to assume that the value of the growing stock at any time equals the cost

of production by either artificial or natural regeneration, with interest. This assumption gives these examples an appearance of unreality, as it is usually possible in the forested regions of the United States to buy forest lands stocked with stands of trees at less than the cost of growing such stands. When this may be done, it is clearly more profitable to start a forestry enterprise by buying such lands, and the establishment of forests by planting or by natural regeneration on clear-cut lands will be a minor factor in private forest management. Where the forestry enterprise can thus be started with a partially or fully stocked forest, the financial results will be quite different from those indicated by the examples which follow. Also, when the initial stocking is such that there need be little or no deferment of income, the burden of the property tax should be little or no different than in the case of other enterprises where the principal investment is in real estate. Therefore, the following theoretical examples should be regarded as showing the effect of the property tax under the conditions as stated rather than under typical conditions. One of the objects of this report is to suggest means of correcting any excess burden of the property tax, and therefore it is proper to consider the cases where this excess burden is found at its maximum.

The gross income assumed in these theoretical examples is based on evidence afforded by yield tables from sample forests throughout the country, combined with prices of the several products. Since it is impossible to predict what future prices will be, the calculations are based on recent prices.

Since the ordinary yield tables are based on fully stocked stands, it must be recognized that the results to be obtained in actual practice will rarely if ever be up to the yields thus shown. It is estimated that the majority of stands under good management in the future will probably not be more than 80 percent stocked. This reduction factor has therefore been applied to the yields as shown by the yield tables.

It must be also borne in mind that a certain amount of loss is to be expected from fire and other causes such as fungi, insects, wind, etc. As a means of estimating the proper allowance for loss, resort has been had to the experience of the national forests. The fire damage on the national forests amounts annually to $2,076,516 (*105, p. 32*). This figure represents a 5-year average for the period 1926–30. A conservative estimate of the damage caused by other agencies than fire is about $2,000,000. Since the area of the national forests is 160,787,687 acres (*105, p. 22*), the total loss (about $4,000,000) amounts to $0.025 per acre.

The reader will appreciate that an estimate of future losses to forests must in any case be only a guess, since the appraisals of past losses, the only data on which to base an estimate of future losses, are themselves merely rough estimates. It may be assumed for the purposes of this theoretical analysis that the same hazards are apt to be found in privately owned forests as in the national forests, and that conditions as to species and age classes are the same for both types of forests. In arriving at the per acre damage figure the area of forest land in the national forests might have been used rather than the total area, because of the large amount of nonforest land in the national forests. This would have given a somewhat larger damage figure. The smaller figure is used because it is reasonable to expect

that there will be more efficient protection in the future, resulting in less damage. Although the risk of loss undoubtedly varies by regions, it may fairly be assumed that the relatively higher physical fire hazard in the West would be offset by higher unit values in the East so that there may not be an important difference in the money loss on an acreage basis. In any case, an attempt to appraise the exact loss separately by regions on the basis of the existing inadequate data would not be justified in view of the fact that a rough average figure will serve the purposes of this analysis.

The national-forest enterprise also furnishes the data for the cost of administration and protection. These costs for 1931 were as follows (*105, pp. 80–81*):

Fire prevention and detection	$2, 363, 000
Fire suppression	2, 057, 000
Protection against insects and tree diseases	463, 000
Emergency construction of roads and trails	3, 053, 000
Forest development roads and trails	3, 118, 000
Administration	3, 052, 000
Construction and maintenance of improvements other than roads, trails, and camp-ground improvements	2, 606, 000
Camp-ground improvements	100, 000
Total	16, 812, 000

This amount divided by the area of the national forests gives $0.10 as the miscellaneous annual expenses per acre. This rough average expense figure is used throughout this analysis. It represents fairly effective protection and administration and will probably be the minimum necessary for these items on the average well managed forestry enterprise.

The tax data are taken from the studies of the selected areas discussed in an earlier section of this part. The formulas used are those developed in part 3.

Using such data as have been thus described, it is possible to reach a rough approximation of the ratio of taxes to forest income which may fairly be expected in different sections of the United States. In this analysis the reader should not be misled by the presentation of exact figures. The data used are actually very rough. They merely represent estimates, based on present conditions projected into the future, of the costs of growing timber and the yields to be finally realized. The conclusions reached are correspondingly rough. In particular, their validity rests on the probability of prices remaining at their recent level.

White Pine in New England

The growth normally to be expected from fully stocked white pine in New England is given in table 91 for three site qualities—good, medium, and poor. To the yields given are applied average stumpage prices current in 1928 in selected New Hampshire towns—Fremont, Richmond, and Loudon—where intensive studies were made.

TABLE 91.—*Anticipated yield from 1 acre of fully stocked white pine in New Hampshire* [1]

Age (years)	Volume			Stumpage price per thousand feet board measure	Stumpage value		
	Good site	Medium site	Poor site		Good site	Medium site	Poor site
	M ft. b. m.	*M ft. b. m.*	*M ft. b. m.*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
30	13.9	9.6	5.3	4.00	56	38	21
40	32.8	23.5	14.2	5.00	164	117	71
50	49.1	36.6	24.1	6.00	295	220	145
60	60.2	46.9	33.6	6.50	391	305	218
70	69.9	56.1	42.3	7.00	489	393	296
80	77.8	64.0	50.1	7.50	583	480	376
90	84.8	70.9	57.0	8.00	678	567	456

[1] Sources of data: Columns 2, 3, and 4 from (*100, p. 72*); column 5 from field data for the selected towns, Fremont, Richmond, and Loudon; columns 6, 7, and 8 by computation.

These figures were reduced by 20 percent for the subnormal stocking that would presumably be found in the average forest, as has been explained above. They were also reduced by the assumed allowance for loss of $0.025 multiplied by the number of years in the rotation (table 91). With these reductions, the yields at 10-year intervals are given in table 92. Yields for intermediate ages may be obtained by interpolation.

TABLE 92.—*Assumed money yields, white pine in New Hampshire* [1]

Age	Stumpage value per acre			Age	Stumpage value per acre		
	Good site	Medium site	Poor site		Good site	Medium site	Poor site
	Dollars	*Dollars*	*Dollars*		*Dollars*	*Dollars*	*Dollars*
30 years	43	30	16	70 years	389	312	235
40 years	130	93	56	80 years	465	382	299
50 years	235	175	115	90 years	541	452	363
60 years	311	242	173				

[1] Basis for these assumed money yields is given in table 91 and the text.

The cost of establishing a fully stocked stand of white pine by planting has been estimated to average $15 an acre. If natural regeneration can be secured, however, the cost will be reduced to that necessary to free the young reproduction from hardwood seedlings and sprouts. This work can be accomplished by one or two "weedings", at an estimated average cost of $8 per acre and occurring at an average age of 8 years *(100)*. This weeding cost would be equivalent at the beginning of the rotation to $\frac{\$8}{(1.03)^8}=\$6.32$ per acre.

Miscellaneous annual expenses other than taxes, based on the national-forest experience as described above, are assumed to be $0.10 per acre a year.

In order to show the effect of the tax rate on the tax ratio, 1 percent is taken as a low rate and 3 percent as a high rate. Besides these, a typical tax rate for the particular locality being studied is used. For

New Hampshire this tax rate is assumed to be 2.4 percent, the average ratio of taxes to estimated value as given above for the three selected towns of this State.

The interest rate, as elsewhere in this report, is assumed to be 3 percent.

On the basis of the above prospective yields and costs the highest possible initial forest value for each case was determined by means of the formula given in part 3, page 60. The rotation corresponding to this highest initial forest value would evidently be the most profitable, or financial rotation. These financial rotations and initial forest values are given in table 93.

TABLE 93.—*Financial rotation, initial forest value, and tax ratio under the property tax for white pine in New Hampshire*[1]

Tax rate	Planting			Weeding		
	Financial rotation	Initial forest value per acre	Tax ratio	Financial rotation	Initial forest value per acre	Tax ratio
	Years	*Dollars*	*Percent*	*Years*	*Dollars*	*Percent*
GOOD SITE						
1.0 percent	50	33.50	46	50	34.90	46
2.4 percent	46	15.50	73	45	16.40	73
3.0 percent	45	11.50	80	44	12.20	79
MEDIUM SITE						
1.0 percent	50	23.70	46	50	25.10	46
2.4 percent	48	10.70	75	47	11.40	74
3.0 percent	46	7.70	81	45	8.30	80
POOR SITE						
1.0 percent	55	14.40	49	54	15.50	49
2.4 percent	50	5.90	77	50	6.60	77
3.0 percent	49	4.10	84	48	4.60	83

[1] Assumptions and method of computation are described in the text. Interest rate used, 3 percent.

The term "initial forest value" as used here and elsewhere in this report is not necessarily the same as the value in the economic sense. It is the discounted prospective income less the discounted future expenses under a given set of conditions. It corresponds to value in the economic sense only when it is zero or positive and the conditions given represent the most profitable use of the forest in question.

A comparison of the initial forest values in table 93 with the assumed costs of regeneration shows that with a tax rate of 2.4 percent and with the above assumptions as to yields and expenses, the planting of white pine on good sites in New Hampshire would return 3 percent on the investment only if such sites could be purchased for not more than $0.50 per acre. This is because, when the assumed investment in planting, $15, is subtracted from the initial forest value, $15.50, the soil expectation value is only $0.50. The planting of white pine at $15 per acre on medium and poor sites would not, under these assumptions, yield a 3-percent return even if such sites could be

obtained for nothing. Here, as elsewhere in this report, interest or return on the investment is compounded annually until realized.

The growing of naturally regenerated white pine with an initial investment of $6.32 per acre for weeding would return 3 percent under the assumed conditions if good and medium sites could be bought for not more than $10 and $5, respectively. Poor sites under these conditions would not yield 3 percent unless they could be purchased for as little as $0.30 per acre.

Table 93 also shows the tax ratios.[81] These were computed by means of formulas developed in part 3, pages 56 to 59. The marked influence of changes in the tax rate on the tax ratio is clearly shown in this table. A 1-percent tax rate results in tax ratios of 46 to 49 percent, while a 3-percent rate gives tax ratios of 79 to 84 percent. At the average tax rate for the three selected New Hampshire towns of 2.4 percent, the tax ratios for the growing of natural stands are 73, 74, and 77 percent, respectively.

Pine in North Carolina

The yields of fully stocked loblolly pine (*107, table 53*) supplied the basis for the assumed money yields of loblolly pine in North Carolina. The yields given in the publication referred to were first converted from the International ⅛-inch to ¼-inch rule (converting factor 0.905). The yields were then multiplied by the following stumpage prices.[82]

20 years	$4. 75
30 years	5. 00
40 years	5. 25
50 years	5. 50
60 years	6. 00
70 years	6. 50
80 years	7. 00

The stumpage values so derived were then reduced by 20 percent to allow for understocked stands and also by $0.025 per acre per year for losses. The assumed money yields are given in table 94.

Table 94.—*Assumed money yields, loblolly pine in North Carolina* [1]

Age	Stumpage value per acre			Age	Stumpage value per acre		
	Good site	Medium site	Poor site		Good site	Medium site	Poor site
	Dollars	*Dollars*	*Dollars*		*Dollars*	*Dollars*	*Dollars*
20 years	25	9	0	60 years	226	148	81
30 years	79	44	15	70 years	266	177	101
40 years	134	83	37	80 years	305	204	120
50 years	180	116	59				

[1] Basis for these assumed money yields is given in the text.

Loblolly pine may be planted at an average cost of about $6 per acre (*102, p. 102*). It may also be regenerated by various silvicultural systems, such as leaving of seed trees or selective logging, the only costs

[81] The tax ratio has been defined (pt. 3) as the ratio of taxes to net income before taxes, both compounded or discounted as the case may be, to the same point in time, and both covering the same income cycle.

[82] Interpolated from stumpage prices as of 1929 given in an unpublished manuscript of the Southern Forest Experiment Station on the forest industries of Beaufort County, N. C.

of which are efficient administration and protection. Since these costs are taken care of in the item for miscellaneous expenses, which are assumed to be $0.10 per acre as previously explained, the cost of regeneration under these systems may be considered as zero. The maximum and minimum tax rates are assumed to be the same as for the New Hampshire example. The typical tax rate used is 1.5 percent. This is the average ratio of taxes to actual value as given above for the three selected counties of North Carolina.

The financial rotations, initial forest values, and tax ratios are shown in table 95. This table indicates that under the present assumptions as to yields and costs, and under the existing tax system at a typical rate, the growing of loblolly pine inNorth Carolina under natural regeneration would yield 3 percent on the investment if good, medium, and poor sites could be purchased for not more than $27, $15, and $6, respectively. Planting at $6 per acre would yield 3 percent on good and medium sites if the land could be bought for not over $19 and $8, respectively. On account of the lower typical tax rate and the shorter rotations, the tax ratios in North Carolina are lower than in New Hampshire. The tax ratios for naturally regenerated stands in North Carolina are 51 percent for good sites, 53 percent for medium sites, and 59 percent for poor sites. For planted stands the tax ratios are the same or slightly greater.

TABLE 95.—*Financial rotation, initial forest value, and tax ratio under the property tax for loblolly pine in North Carolina* [1]

Tax rate	Planting			Natural regeneration		
	Financial rotation	Initial forest value per acre	Tax ratio	Financial rotation	Initial forest value per acre	Tax ratio
	Years	*Dollars*	*Percent*	*Years*	*Dollars*	*Percent*
GOOD SITE						
1 percent	36	31.70	40	35	33.70	39
1.5 percent	34	25.20	51	33	26.90	51
3 percent	31	13.80	72	29	15.00	71
MEDIUM SITE						
1 percent	40	17.80	42	39	19.40	42
1.5 percent	39	13.80	55	37	15.20	53
3 percent	35	6.90	76	33	7.90	74
POOR SITE						
1 percent	47	6.20	48	44	7.40	46
1.5 percent	46	4.50	62	42	5.50	59
3 percent	42	1.70	85	39	2.30	82

[1] Assumptions and method of computation are described in the text. Interest rate used, 3 percent.

A further analysis was made in North Carolina. Sample properties were selected in Beaufort, Chatham, and Macon Counties, and the necessary data were obtained to make a prediction as to the growth during the succeeding 20 years. Probable taxes were also computed by means of curves showing trends in assessed value as the volume of timber per acre increases. The present tax rate was applied to these

assessed values and the resulting taxes were compounded at 3 percent to the end of the 20-year period. A stumpage value of $5 per 1,000 board feet was applied to the growth during the same period.

The taxes with interest amount to $9.36, $12.79, and $6.47 per acre in Beaufort, Chatham, and Macon Counties, respectively. The average growth in the same counties is worth $30, $45, and $16.30 per acre, respectively. Since practically no expenses other than taxes are incurred by private individuals in these counties in connection with growing timber, the ratios of taxes to the value increment for the 20-year period are 31, 28, and 40 percent, respectively. These ratios would correspond to the tax ratio if the income cycle were 20 years.

Jack Pine in the Lake States

Jack pine in the Lake States produces earlier returns than most other species in that region. It will probably be grown in the future on a short pulpwood rotation. The unit price of jack pine pulpwood in recent years has been around $1 per cord. When this value is applied to prospective yields from an eight-tenths stocked stand,[83] and these yields are reduced by $0.025 per year for losses, the values given in table 96 are derived.

Table 96.—*Assumed money yields, jack pine in the Lake States* [1]

Age	Stumpage value per acre			Age	Stumpage value per acre		
	Good site	Medium site	Poor site		Good site	Medium site	Poor site
	Dollars	*Dollars*	*Dollars*		*Dollars*	*Dollars*	*Dollars*
20 years	7	3	0	50 years	33	25	17
30 years	20	13	5	60 years	35	27	18
40 years	29	21	12				

[1] Basis for these assumed money yields is given in the text.

Jack pine may be planted for as little as $4 per acre (*103, table 10*). The species may in some places be reproduced naturally at no expense other than costs of protection and administration. The miscellaneous expenses are here as elsewhere assumed to be $0.10 per acre. The tax rate on actual value in the cut-over region of the Lake States, particularly in Minnesota, is very high; the average in selected townships of Minnesota and towns of Wisconsin is 2.6 percent.

Table 97 gives the financial rotations, initial forest values, and tax ratios under the above assumptions as to costs, yields, and interest rate. It will be noted that the initial forest values for the poor sites are usually negative. As previously explained, no reference to value in the economic sense is intended. A negative initial forest value merely means that the particular site is worthless for the growing of timber under the assumed conditions.

[83] Computed (*103, table 9*).

TABLE 97.—*Financial rotation, initial forest value, and tax ratio under the property tax for jack pine in the Lake States* [1]

Tax rate	Planting			Natural regeneration		
	Financial rotation	Initial forest value per acre	Tax ratio	Financial rotation	Initial forest value per acre	Tax ratio
	Years	*Dollars*	*Percent*	*Years*	*Dollars*	*Percent*
GOOD SITE						
1.0 percent	30	4.60	41	30	6.40	40
2.6 percent	30	2.10	73	29	3.10	71
3.0 percent	30	1.70	78	28	2.60	75
MEDIUM SITE						
1.0 percent	39	2.00	52	32	3.30	44
2.6 percent	34	.50	87	30	1.40	76
3.0 percent	34	.30	92	30	1.10	81
POOR SITE						
1.0 percent	45	(2)	175	40	0.70	67
2.6 percent	40	(2)	476	39	(2)	113
3.0 percent	40	(2)	496	38	(2)	121

[1] Assumptions and method of computation are described in the text. Interest rate used, 3 percent.
[2] Negative.

At the average prevailing tax rates and with the other assumed expenses and yields the planting of jack pine at $4 per acre would not return 3 percent, even if forest land could be obtained without charge. The growing of natural stands on good and medium sites would yield a 3-percent return under the assumed conditions if such sites could be bought for not more than $3 and $1, respectively. This comparatively poor showing is of course partially due to the very low stumpage price and to the fact that the same price was used for all age classes rather than one increasing with age, as in New Hampshire and North Carolina. With better prices for jack pine wood, either because of exceptional accessibility or improvement in the market for this species, substantially larger yields than the above might be obtained. Under all of the different assumptions illustrated the tax ratios are very high.

CERTAIN OTHER CLASSES OF PROPERTY

A comparison between the ratios of taxes to income of forests, as developed above, and those for other classes of property will give some idea of the relative burden of taxes on forests where long-deferred yield is necessary.

In the United States as a whole the average ratio of taxes to national income for the period 1926 to 1930 has been estimated at 12 percent (*3, p. 85*).

Table 98 shows by industrial groups the net income, excluding tax-exempt interest but including taxes and interest paid; all taxes except the Federal income tax; and the ratio of taxes to net income or tax ratio. These tax ratios are somewhat larger than they would have been if it had been possible to include only property taxes.

TABLE 98.—*Relation of taxes to net income for all corporations by major industrial groups, 1923–29, excluding 1925* [1]

Industrial group	Net income [2]	All taxes except Federal income tax	
		Amount	Ratio to income
	Million dollars	*Million dollars*	*Percent*
Agriculture and related industries	499	127	25
Mining and quarrying	2,169	481	22
Manufacturing	31,070	2,808	9
Construction	930	67	7
Transportation and other public utilities	22,614	2,963	13
Trade	7,961	941	12
Service—professional, amusements, hotels, etc	1,909	318	17
Finance—banking, insurance, and related business	21,049	2,272	11
Nature of business not given	125	10	8
Total	88,326	9,987	11

[1] Sources of data: Columns 2 and 3 from (*109, 1923, 1924, 1926–29*); column 4 by computation from this table.
[2] Excluding tax-exempt interest but including taxes and interest paid.

The average tax ratio of corporations in the United States is 11 percent. The ratios range from 7 to 25 percent, the highest being that for agriculture, where a large part of the investment is in real estate. The reason that the tax ratios for many industrial groups appear low in comparison with agriculture and forestry is that the income reported in table 98 is derived from capital much of which is normally taxed at a lower rate than real estate for reasons explained in connection with table 90. It should be emphasized that inequalities in tax ratios do not necessarily indicate injustice in taxation among different investors, since these inequalities are normally, through the process known as tax capitalization, taken into account in the initial value of the capital for the different types of investment. Tax ratios are, however, a rough indication of the importance of taxation in an enterprise besides being a useful measure of tax burden as it affects land use, as more fully explained in an earlier part of this report (p. 45).

According to studies made by the United States Bureau of Agricultural Economics (*99, pp. 30–31*), taxes averaged 58 percent of the net rent before taxes of rented farms in Michigan and 51 percent in New Jersey (the only tax ratios encountered which approach those for forest property). Five States (Ohio, Indiana, Colorado, North Carolina, and North Dakota) are in a group in which farm taxes absorb from 30 to 40 percent of net rent, and four more (Washington, Iowa, Pennsylvania, and South Dakota) are in the 25 to 30 percent group. In Virginia an average of 20 percent is taken by taxes, and in the two remaining States studied (Missouri and Arkansas) taxes take between 18 and 20 percent. Assuming that the States examined are typical of general conditions throughout the United States, it may be estimated that during the period 1922 to 1927 taxes took about 30 percent of the net income from rented farms.

A comparison has also been made (*99, fig. 7*) between urban and farm property in certain States. In five States (Arkansas, Colorado, Indiana, Pennsylvania, and Virginia), it took a greater percentage of net rent to pay taxes on farms than to pay taxes on urban property;

in the four other States studied (Iowa, North Carolina, South Dakota, and Washington) the situation was reversed. The lowest ratio of taxes to net rent before taxes on urban property was in Virginia, 16 percent, and the highest in Washington, 32 percent.

The ratios of taxes to net income before taxes for various kinds of property in North Carolina for 1929 (rented city property and rented farms, 1927) are as follows (*80*):

	Percent
Rented city property	30
Rented farms	29
Railroads	25
State banks	24
Telephone companies	23
National banks	22
Manufacturing companies	21
Owner-operated farms	20
Fire insurance companies	20
Electric light and power companies	15

Tax ratios for various groups of enterprises in Pennsylvania for 1924 and 1925 are as follows (*56, p. 8*):

	Percent
Farms	38
Mining corporations	38
Fire insurance companies	27
Steam railroads	22
Telephone and telegraph companies	19
Life insurance companies	19
Light, heat, and power companies	18
Newspaper and publishing corporations	15
Manufacturing corporations	14
Foundries	13
Building and loan associations	13

Statistics similar to the foregoing could be given for a number of other States, but a sufficient number has been presented to show that deferred-yield forests generally require a larger proportion of their incomes for taxes than do most other enterprises.

TRENDS

While it is not safe to predict the future of taxation on the assumption that past trends will be continued without modification, such trends may serve to throw light on the present situation and to point out prevailing tendencies. The study of timber taxation in Oregon and Washington included a study of trends in taxes. It was impossible to determine the ratio of taxes to value for each year; therefore use was made of the next best measure, taxes per thousand board feet of timber. This measure is a better indication of tax burden than is the tax per acre, since it takes into account the cutting and growth of timber. Table 99 shows the taxes per thousand board feet of timber as paid (columns 2–5) and as converted to 1926 dollars (columns 6–9) by the use of index numbers of wholesale prices of all commodities furnished by the United States Bureau of Labor Statistics. Since the taxes are paid in the year following the assessment and levy in Oregon, Washington, and Maine, the index numbers used in the succeeding tables for these States are for the year following the date of the assessment and levy.

TABLE 99.—*Taxes per thousand board feet of timber based on properties reported, 1914–26;*[1] *county groups, Oregon and Washington*

State and county group	Actual amount				Converted to 1926 dollars			
	1914	1919	1924	1926	1914	1919	1924	1926
Oregon:								
West-side counties	$0.008	$0.012	$0.020	$0.023	$0.012	$0.008	$0.019	$0.024
East-side counties	.009	.012	.018	.021	.013	.008	.017	.022
Total	.008	.012	.020	.022	.012	.008	.019	.023
Washington: West-side counties	.014	.018	.027	.034	.020	.012	.026	.036
Total	.010	.014	.023	.027	.014	.009	.022	.028

[1] Sources of data: Computed from reports of owners, and index numbers of wholesale prices as computed by the U. S. Bureau of Labor Statistics. The year is that of the assessment and levy, the taxes being paid 1 year later. The index numbers used in computing columns 6–9 are those of the following year, since taxes are paid in the year following the assessment.

It was possible to obtain the tax history as far back as 1899 of a few timber properties located in Oregon, west of the Cascades (table 100).

TABLE 100.—*Taxes per 1,000 board feet for certain timber properties in Oregon*

Year	Dollars	1926 dollars	Year	Dollars	1926 dollars
1899	0.0007	0.0012	1919	0.0151	0.0098
1904	.0019	.0032	1924	.0216	.0209
1909	.0057	.0081	1926	.0264	.0277
1914	.0089	.0128			

A questionnaire sent out by the National Lumber Manufacturers Association for the Timber Conservation Board produced some trend figures. Thirty-two representative timber corporations owning timber in 15 States are represented in the answers to this questionnaire. The average tax per 1,000 board feet of timber owned by these companies is as follows for 3 different years:[84] 1909—$0.019 (1926 dollars, $0.028); 1919—$0.061 (1926 dollars, $0.044); 1929—$0.091 (1926 dollars, $0.095).

The following figures are tax rates, going back as far as 1830, on the lands of a large timber owner in the wild-lands territory of Maine:

	Percent		*Percent*
1830	0.5	1890	0.7
1840	1.9	1900	.6
1850	1.3	1910	.9
1860	.7	1920	1.2
1870	2.0	1923	1.3
1880	1.9	1928	1.1

Tax rates by themselves do not accurately show the trends, since it is not known how far assessed values departed from actual values during the various periods. If it is assumed that assessments have been at a uniform percentage of value since 1830 in this territory, the above figures show a tendency of the tax rates to fluctuate in cycles. The high points appeared in 1840, 1870, and 1923. If assessments during this period were not at a uniform percentage of value (and they probably were not), these tax rates merely indicate

[84] Unpublished report of the National Lumber Manufacturers Association to the Timber Conservation Board, 1931.

the great uncertainty of taxes which a long-time enterprise such as forestry must face.

While taxes per acre are not a particularly good measure of tax burden, they are available in greater number than any other measure and they may be used as a rough measure to indicate trends in taxes. The average taxes per acre paid by a lumber company (called here corporation F) on 342,154 acres in 10 different counties of Washington, which have been owned continuously since 1900, are given in table 101 (67th Cong., 4th sess., hearing pursuant to S. Res. 398, p. 876).

TABLE 101.—*Taxes per acre paid by a lumber company on lands in Washington State, 1900–1922*

Year	Dollars	1926 dollars	Year	Dollars	1926 dollars
1900	0.07	0.13	1912	0.69	0.99
1901	.08	.14	1913	.86	1.26
1902	.11	.18	1914	.82	1.18
1903	.12	.20	1915	.85	.99
1904	.13	.22	1916	.81	.69
1905	.15	.24	1917	.91	.69
1906	.19	.29	1918	.93	.67
1907	.28	.45	1919	1.10	.71
1908	.43	.64	1920	1.54	1.58
1909	.51	.72	1921	1.54	1.59
1910	.53	.82	1922	1.71	1.70
1911	.56	.81			

Data furnished by a timber-operating company (corporation E) show taxes per acre for the wild-lands territory of Maine as given in table 102.

TABLE 102.—*Taxes per acre paid by a lumber company on lands in Maine, 1851–1926*

Year	Dollars	1926 dollars	Year	Dollars	1926 dollars
1851	0.002	0.003	1901	0.012	0.020
1861	.001	.001	1911	.046	.067
1871	.006	.007	1921	.074	.077
1881	.007	.011	1926	.089	.093
1891	.010	.019			

Table 103 shows the trend in taxes per acre on forest land for selected pulp and lumber corporations in Maine, New Hampshire, New York, and Vermont.

TABLE 103.—*Trend in taxes per acre on forest land, selected corporations in Maine New Hampshire, New York, and Vermont* [1]

Corporation and State	Actual amount						Converted to 1926 dollars					
	1898	1902	1904	1910	1920	1930	1898	1902	1904	1910	1920	1930
Corporation A, Maine	------	$0.013	------	$0.041	$0.093	$0.155	------	$0.022	------	$0.058	$0.060	$0.179
Corporation B, Maine	$0.016	------	------	.062	.104	.270	$0.033	------	------	.088	.067	.312
Corporation C, Maine	.001	------	------	.057	.128	.233	.002	------	------	.081	.083	.270
Corporation D, New Hampshire	------	------	$0.116	.111	.297	.397	------	------	$0.194	.158	.192	.459
Corporation B, New York	.045	------	------	.117	.188	.294	.093	------	------	.166	.122	.340
Corporation B, Vermont	.028	------	------	.062	.200	.241	.058	------	------	.088	.130	.279
Corporation D, Vermont	------	------	.036	.109	.263	.270	------	------	.060	.155	.170	.312

[1] Sources of data: Columns 2–7 furnished by the various corporations; columns 8–13 by applying to columns 2–7 index numbers of the wholesale prices of all commodities furnished by the U. S. Bureau of Labor Statistics. In the case of Maine, the index numbers used in computing columns 8–13 are those of the year following the assessment, since the taxes are paid in that year.

Table 104 gives a rough basis for a comparison between tax trends for forests and for other types of property. The counties of Michigan were classified on the basis of most important use, and on this basis the trend in taxes per acre is given in table 104.

TABLE 104.—*Trend in taxes per acre on all real estate, 1900–1925* [1], *county groups, Michigan* [2]

County group	Actual amount						Converted to 1926 dollars					
	1900	1905	1910	1915	1920	1925	1900	1905	1910	1915	1920	1925
Forest:												
Lower Peninsula	$0.27	$0.33	$0.40	$0.58	$1.01	$1.06	$0.48	$0.55	$0.57	$0.83	$0.65	$1.02
Upper Peninsula	.21	.24	.28	.47	.89	.95	.37	.40	.40	.68	.58	.92
Average	.24	.30	.35	.54	.96	1.02	.43	.50	.50	.78	.62	.99
Mineral	.46	.60	.83	1.26	2.25	2.30	.82	1.00	1.18	1.81	1.46	2.22
Farm	.49	.62	.71	1.09	2.25	2.26	.87	1.03	1.01	1.57	1.46	2.18
Farm-urban	.85	1.03	1.18	1.87	4.08	5.46	1.52	1.71	1.68	2.69	2.64	5.28
Urban	2.34	2.79	3.99	7.41	19.45	28.72	4.17	4.64	5.67	10.70	12.60	27.75
Average	.64	.79	1.02	1.74	4.03	5.51	1.14	1.31	1.45	2.50	2.61	5.32

[1] In computing the taxes per acre from 1900 to 1920 the area assessed in 1921 was used, as figures for earlier years were not available.

[2] Sources of data: Columns 2–7 by computation. Total areas assessed *(74, Rept. 1927–28, pp. 33–116).* Total taxes levied for column 2 from original tabulation in offices of the Michigan Tax Department, Lansing, for columns 3–7 from Report of State Tax Commission listed respectively: 1905–6, pp. 78–225; 1911–12, pp. 52–55; 1915–16, pp. 70–81; 1921–22, pp. 64–75; 1925–26, pp. 114–135. Columns 8–13 by applying the index numbers of wholesale prices as computed by the U. S. Bureau of Labor Statistics to columns 2–7.

A study of farm tax trends is being made by the United States Bureau of Agricultural Economics. A preliminary report of this project shows the following average trend in farm taxes per acre for 26 States[85] (table 105).

TABLE 105.—*Average trend in farm taxes per acre, 26 States, 1913–30*

Year	Dollars	1926 dollars	Year	Dollars	1926 dollars
1913	0.27	0.39	1922	0.62	0.64
1914	.27	.40	1923	.63	.63
1915	.30	.43	1924	.63	.64
1916	.32	.37	1925	.64	.62
1917	.36	.31	1926	.64	.64
1918	.37	.28	1927	.65	.68
1919	.48	.35	1928	.66	.68
1920	.58	.38	1929	.67	.70
1921	.62	.64	1930	.66	.76

Data showing the trend for selected years since 1890 of State and local tax collections in the United States in millions of dollars (*3, p. 77*) are given in table 106.

TABLE 106.—*Trend of State and local tax collections in the United States between 1890 and 1930*

Year	Million dollars	(1926) Million dollars	Year	Million dollars	(1926) Million dollars
1890	501	890	1924	4,619	4,710
1903	861	1,440	1925	4,918	4,750
1913	1,519	2,180	1926	5,398	5,398
1919	2,965	2,140	1927	5,722	6,000
1921	3,933	4,030	1928	6,148	6,360
1922	4,015	4,150	1929	6,431	6,750
1923	4,202	4,180	1930	6,798	7,870

[85] ALLIN, B. W.; JACKSON, D.; and WESTON, J. L. FARM REAL ESTATE TAXES, 1913-30. U. S. Dept. Agr. Bur. Agr. Econ., Rept. January 1933. [Mimeographed.]

The trend data are all brought together in figures 7, 8, and 9. These graphs serve to give an eye picture of the tax trends in the selected areas as enumerated above. Figure 7 gives the trend in forest taxes per thousand board feet of timber, figure 8 gives the trend in forest taxes per acre, and figure 9 the trend in taxes per acre in the Michigan counties classified according to predominant use. It will be noted that in each figure the trend is given also of the total State and local tax collections in the United States. This has been taken as the index of general tax trend with which to com-

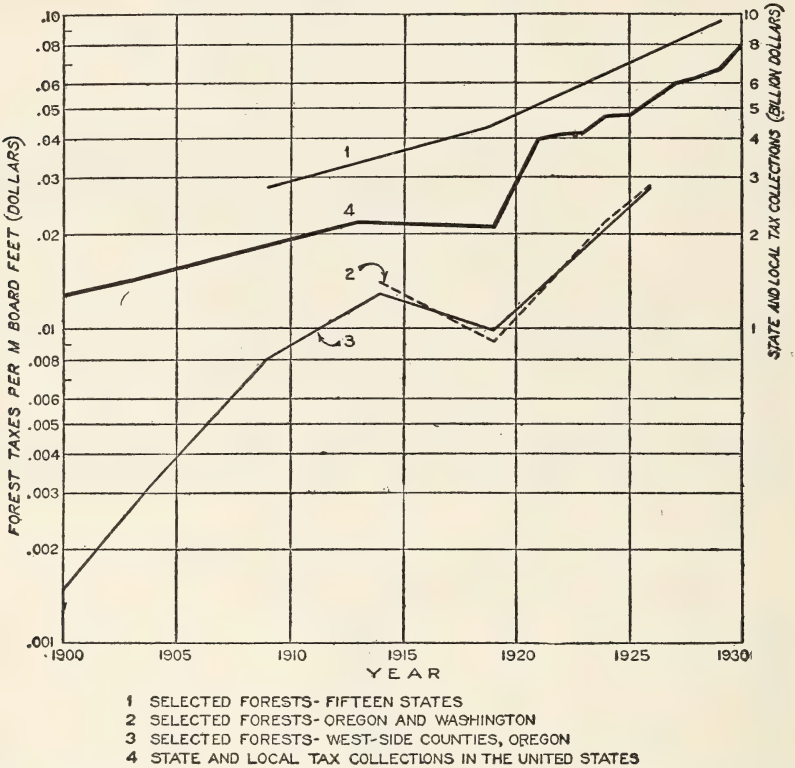

FIGURE 7.—Trend in forest taxes per thousand board feet as compared with the trend in State and local tax collections in the United States. (All taxes based on 1926 purchasing power; sources of data: Tables 99, 100, 105, and 106.)

pare the trend in forest taxes. It is represented by the heaviest line in each of the graphs in order that it may be easily discerned for the purpose of comparison with any of the other trends. Since the State and local tax collections are absolute figures rather than per acre or per thousand board feet, comparisons should not be made of the absolute positions in the graphs. The only comparisons possible are those of trends. Since the figures are constructed on a logarithmic scale, direct comparisons may be made of percentage changes from year to year. Minute examinations of these graphs are not necessary to show that the tendency of all taxes studied has been decidedly upward.

A comparison of forests with other classes of property as to the rate of increase in taxes is given in table 107. Columns 2 to 7 of

this table give the ratios of taxes at the end of a certain period to the taxes at the beginning of the same period. The periods chosen for this comparison are of 5 years' duration, except for the last period, which covers only 4 years, since data beyond 1929 are lack-

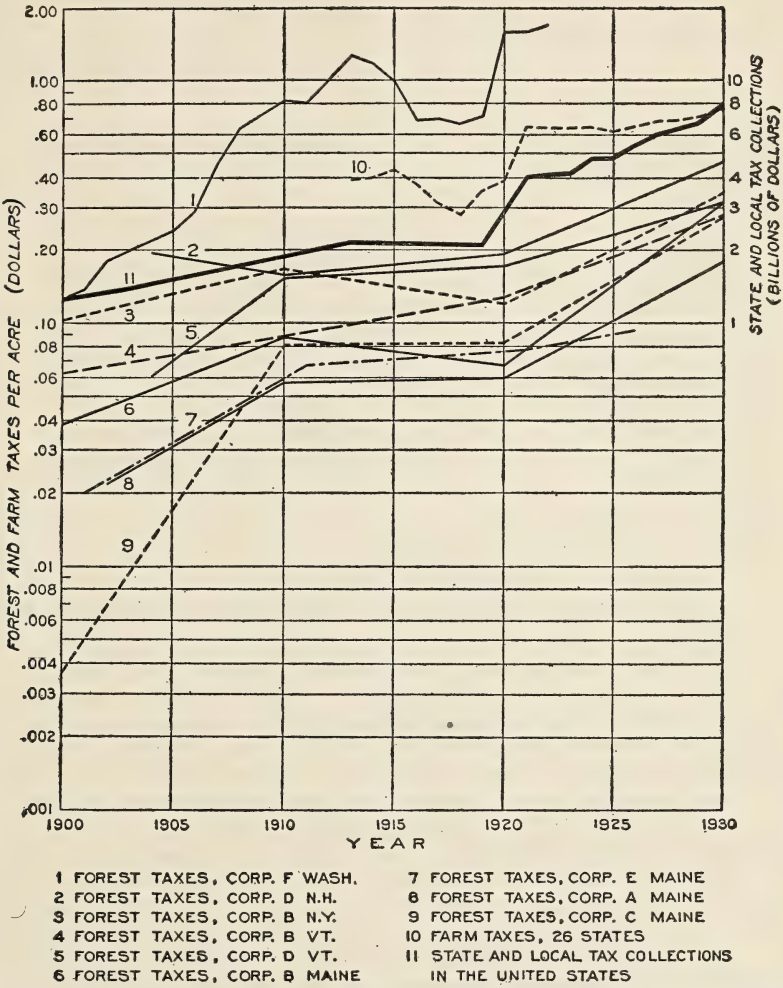

FIGURE 8.—Trend in forest taxes per acre as compared with the trend in State and local tax collections in the United States and with the average trend in farm taxes per acre for 26 States. (All taxes based on 1926 purchasing power; sources of data: Tables 101, 102, 103, 105, and 106.)

ing in some cases. It will be noted that the foregoing trend figures are not available for every year and that they are not all for the same years. In order to obtain comparable data, therefore, it was necessary to interpolate from the known data the data for the missing years. This was accomplished by reading the data from the graphs in figures 7, 8, and 9.

TABLE 107.—*Trend in taxes, 1900–1929; forest taxes on selected areas compared with State and local tax collections in the United States, and with certain other taxes* [1]

Type of taxes and location of selected properties	Ratio of taxes at end of period to those at beginning						Rate of increase relative to total State and local tax collections
	1900–1905	1905–10	1910–15	1915–20	1920–25	1925–29	
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	
Forest taxes per thousand board feet:							
Oregon, west-side counties	260	230	140	90	210	------	1.3
Oregon and Washington	------	------	------	80	230	------	.9
Average for 15 States	------	------	120	130	150	140	1.0
Forest taxes per acre:							
Maine:							
Corporation A	------	190	100	100	170	150	1.1
Corporation B	150	150	90	90	220	180	1.1
Corporation C	470	450	100	100	180	160	1.5
Corporation E	160	190	120	110	120	------	1.1
New Hampshire: Corporation D	------	80	110	110	150	140	.9
New York: Corporation B	130	120	80	90	170	150	.9
Vermont:							
Corporation B	120	120	120	120	150	140	1.0
Corporation D	------	220	100	100	140	130	1.0
Washington: Corporation F	180	340	120	160	------	------	1.6
All taxes per acre, Michigan:							
Lower Peninsula forest counties	120	100	160	80	160	------	.9
Upper Peninsula forest counties	130	100	150	80	160	------	.9
All forest counties	120	100	140	90	160	------	.9
Mineral counties	120	100	100	100	200	------	.9
Farm counties	120	100	100	100	200	------	.9
Farm-urban counties	100	100	200	100	250	------	1.1
Urban counties	100	120	200	100	200	------	1.1
All counties	100	100	200	100	250	------	1.1
Farm taxes per acre, average for 26 States	------	------	------	90	160	110	.8
Total State and local tax collections in the United States	120	120	110	140	160	140	1.0

[1] Sources of data: Values read from figures 7, 8, and 9, and ratios computed. All taxes based on 1926 purchasing power.

In order to make a rough comparison between tax trends, the last column of table 107 was computed. This column represents the rate of increase, for comparable periods, of the average ratios for the category in question relative to the average ratios for the State and local tax collections. For example, to compare the trend in forest taxes per thousand board feet in the west-side counties of Oregon (first item in table 107) for the period 1900–1925 with the trend in State and local tax collections in the United States (last item in table 107) during the same period, the ratios of each category were averaged separately. The average (geometric) of 260, 230, 140, 90, and 210 is 170. The average (geometric) of 120, 120, 110, 140, and 160 is 130. The ratio of 170 to 130 is 1.3. Thus, a rate in the last column greater than 1 indicates that taxes for the category in question have increased faster than the State and local tax collections.

Compared with the increase in total State and local tax collections in the United States, taxes per acre in the forest, mineral, and farm counties of Michigan have increased at a slower rate. In the farm-urban and urban counties and in the aggregate of all counties the taxes have increased at a faster rate. The upward trend of taxes in the forest counties has probably been somewhat retarded by the shrinkage of the tax base due to the cutting of timber.

Farm taxes per acre averaged for 26 States have increased at a slower rate than total State and local tax collections in the United States.

Table 107 shows that forest taxes per thousand board feet of timber in the west-side counties of Oregon have increased faster than the State and local tax collections in the United States, while in Oregon and Washington combined the rate of increase has been slightly less. The average taxes per thousand board feet for selected areas in 15 States have increased at the same rate as State and local tax collec-

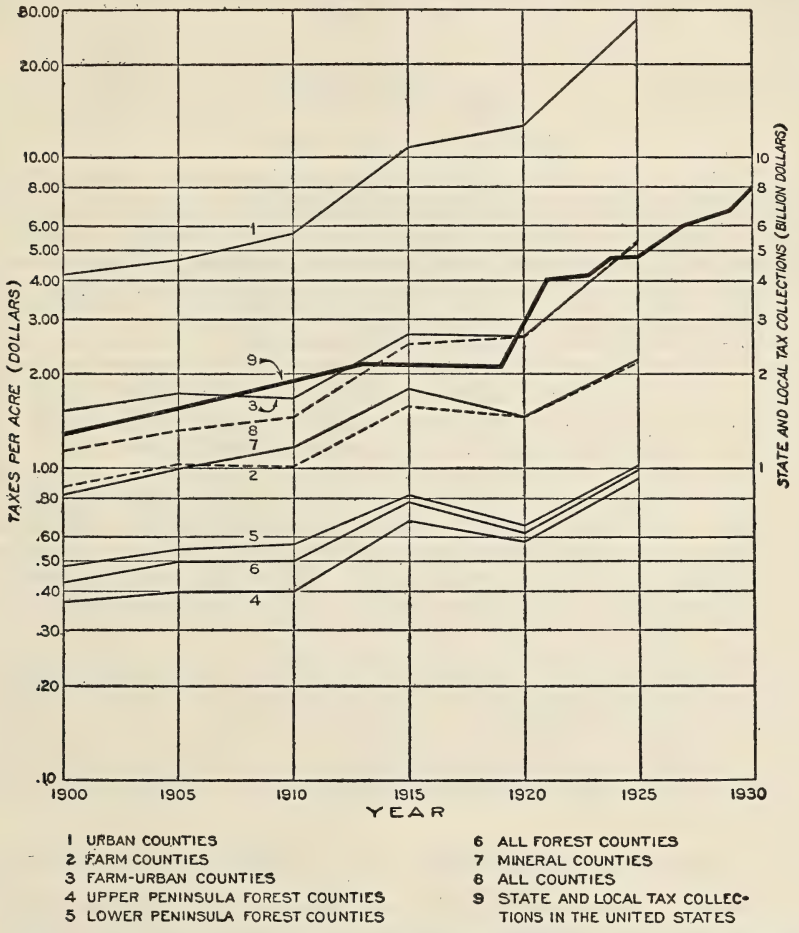

FIGURE 9.—Trend in taxes per acre in Michigan counties classified according to predominant use as compared with the trend in the State and local tax collections in the United States. (All taxes based on 1926 purchasing power; sources of data: Tables 104, 105, and 106.)

tions. It should be noted that in the west-side counties of Oregon the greatest increases took place during the first decade of the present century, during which time there was an extremely rapid rise in timber prices. In view of this rapid rise in timber prices it would be expected that property taxes would also increase at a fast rate.

Forest taxes per acre in 3 of the cases studied have increased at about the same rate as the total State and local tax collections; in 5 of the cases they have increased faster, and in 3 they have increased more slowly. As in the case of the west-side counties in Oregon, the

rapid average tax increases of corporation C in Maine and corporation F in Washington are due for the most part to the extremely rapid rise during the period from 1900 to 1910, when timber prices were experiencing their most spectacular increases.

This study of tax trends leads to the conclusion that recent trends in forest taxes are definitely upward, but for the most part the increase is at no greater rate than the increase in the total burden of State and local taxes in the United States.

EFFECTS OF THE PROPERTY TAX ON FOREST MANAGEMENT

NATURE OF THE EVIDENCE

It has been claimed by many forest landowners and conservationists that the prevailing method of taxing forest property has been a cause—in many cases the most important cause—of the American methods of handling forest property, which involve, generally, destructive and premature cutting of timber, failure to reforest cut-over lands, and an almost utter lack of forest management of any kind. It will be recognized at the outset that the importance of taxation, as compared with other causes in producing any of the above effects, will vary according to circumstances and the mental attitude of individual owners. The weight given by an individual owner to the various conditions which determine the management policy of his property is dependent upon the workings of the human mind, and no general statistical record of such mental reactions is of course available. Obviously the best evidence bearing on this question is to be found in statements by owners and operators of the considerations which controlled their own operations. Further light may be thrown on the question by expressions of opinion on the part of well-informed persons. Finally it is possible by means of theoretical analysis and pertinent facts to appraise the influence of those major forces at work in the economic world which must in the long run control the actions of the great majority of forest owners and operators. One of these forces is taxation. The present section of this report seeks to investigate the effects of taxation on the use and disposition of forest properties on the basis of general principles and the available evidence and opinion.

EFFECT ON THE HOLDING OF OLD-GROWTH TIMBER

Conservationists have long tried to insure the United States against a timber shortage. Forest conservation in this country is now established as necessary to the public welfare, and any condition which tends toward a timber shortage is to be considered inimical to the public welfare. It has been shown that timber is being cut faster than it is growing (73d Cong., 1st sess., S. Doc. 12, pp. 220–244). Any cause which tends to accelerate cutting or makes it impossible to curtail operations—even in the face of a chronic state of overproduction in the lumber industry accentuated by the general business depression—brings a deficiency in timber closer to hand. It has been claimed that the property tax has been such a cause, especially in recent years; that the timber owners must liquidate their timber as

rapidly as possible, in order to avoid confiscation by heavy taxation or in order to have money with which to pay the taxes.

THE TESTIMONY OF THE OWNERS

The results of the earliest investigation of this subject are contained in a monograph by Fairchild (*101*). This study presented some important facts as to the influence of taxation upon the handling of mature timber. Quoting from the report (*101, p. 607*):

> In the general run of cases there is little evidence to show that forests have been affected seriously by taxation. Indeed there is much positive evidence to the contrary. Among other sources, we have letters from nearly 500 of the leading lumbermen of all parts of the country, written in reply to a schedule of inquiry sent out by the Forest Service.

One of the questions asked in this inquiry was, "In what way, if any, have your lumbering operations been influenced by the rate of taxation applied to your holdings?" The answers to this question—

> give some valuable testimony as to the effects of taxation on the forests of the country. Incidentally they throw some light on the actual burden of taxation on timberlands. In some cases the replies are not very clear, and it has required the exercise of some judgment to tabulate them. The doubtful cases, however, are not numerous enough to affect the conclusions to be drawn from the answers.
>
> The answers to the questions may be classified as follows:

Number of letters received	484
No information on this question	117
No influence, or very little	234
Probable future influence	8
Some influence	125
Character not specified	1
Hastens cutting	117
Leads to abandoning land	8

> The cases in which taxation is said to have exercised some influence include a number of rather vague replies. Probably the number that clearly testify to some real influence would not be over 100. These replies are significant as showing how little influence taxation has really had upon the management of forest properties.

The United States Timber Conservation Board, attempted a study of the situation in 1931, preparing a somewhat elaborate questionnaire, consisting of 14 questions and numerous subdivisions and dealing with existing conditions in the lumber industry. This questionnaire was submitted to regional associations of the lumber industry, from whom replies were received as follows:

American Veneer Package Association	18
California Pine Manufacturers Association	1
California Redwood Association	1
Hardwood Manufacturers Institute	14
National Hardwood Lumber Association	8
Northern Hemlock & Hardwood Manufacturers Association	12
Southern Cypress Manfacturers Association	1
Southern Pine Association	35
West Coast Lumbermen's Association	13
Western Pine Manufacturers Association	6
Nonmembers of associations	15
Total number of returned questionnaires	124

One of the questions asked had reference to the topic under present discussion, being "What are the principal causes of overproduction?" The replies to this question, as tabulated by the subcommittee on

taxation of the advisory committee of the Timber Conservation Board, were as follows:

Number of returns	124
This question not answered	31
Taxation not mentioned in answer	76
Taxation mentioned	17
As only cause	2
First among various causes	9
Following other causes	6

Since those who responded to this question may be presumed to have answered chiefly with reference to their own operations, these replies may be regarded as presenting definite facts as to the influence of taxation upon cutting policy.

The subcommittee on taxation cited these replies, along with the replies to the earlier Forest Service questionnaire, as evidence of the relatively minor role of taxation as a cause of overproduction of lumber and arrived at the following general conclusion:

> Since the date of the foregoing statement [from the Report of the National Conservation Commission quoted above], the weight of taxation in the United States has increased materially, upon forest lands and timber as well as upon all other classes of property. The blighting influence of taxation upon reforestation [of which mention will be made later in this section] is even more evident than before, whereas it is still true that the idea that up to the present taxation has by and large had any widespread substantial effect upon the time and rate of cutting of the American forests or in hastening overproduction of lumber is not supported by the evidence, although it may well be that in individual cases taxes have actually furnished the controlling motive to cutting.

Two of the six members of this subcommittee were not in accord with the above statement, and a rather spirited controversy ensued, which resulted in the various lumber associations searching for further evidence to support the contention that taxation has been a cause of overproduction in the lumber industry. A subsequent questionnaire, sent to various timberland owners throughout the country in January 1932, by the National Lumber Manufacturers Association for the Timber Conservation Board, contained the leading question, "Do you think taxation is in any *important* degree the cause of hastening timber cutting undesirably from an industrial or community viewpoint?" This produced a definite "yes" in 70 out of 76 cases. Following are some quotations from replies to this questionnaire:

> Our experience over a period of years taught us quite definitely that the present methods of taxation do cause timber owners to force their product on the market when they would otherwise be keeping it on the stumps. [H. P. Brady of the Colby Lumber Co., Colby, Wash.]
>
> For the past few years, we have been cutting out at the rate of 30 million feet of timber per year, selling off the greater portion of our cut-over lands at $1.50 per acre to the Government, and a small part of the better located and more suitable land to actual settlers at from $2.50 to $5 per acre, making but a few small purchases of additional timber, and still our taxes amount to as much, or more each year as the previous year. This enormous burden, together with the dangerous hazard of wind and fire damage, the deterioration of timber through maturity and the interest on the capital invested, makes it almost impossible to carry a large tract of timber over a period of years at a profit. [M. J. Fox of the Von Platen-Fox Co., Iron Mountain, Mich. This statement contains a slight correction made by Mr. Fox subsequent to his original reply to the Timber Conservation Board.]
>
> Our timber was held in towns where there was just enough settlers so that they wanted good roads and good schools and our taxes ran probably higher than with some other people but the cold hard fact is that we had to cut our timber because of the excessive burden in the way of taxation. In truth and in fact the tax gatherer confiscated our property and ruined the chance that we had to make

some money if taxes had been reasonable. [A. L. Osborn, a lumberman of Oshkosh, Wis.]

Taxes have been a factor, but in few cases in my judgment have they been anything but an average factor, not a major one, so to avoid the charge of propaganda I feel no large issue should be made of taxes as in compelling overproduction. [R. W. Vinnedge of the North Bend Timber Co., North Bend, Wash. Mr. Vinnedge made the following amplification of this statement in later correspondence:] I think, however, that this statement should be qualified to except the cases of very large timber holders who have suffered a great deal by reason of excessive carrying charges. Such companies, which represent the "few cases" mentioned in my statement have had a pyramiding of all sorts of taxes during the number of years they have held their stumpage and I am inclined to believe liquidation of their holdings has been hastened by reason of the tax charge added to other carrying charges.

Further expressions of opinion on this point were obtained by the Timber Conservation Board in 1931. A few representative opinions of timberland owners, selected from this testimony, are here presented:

Timber taxes have been a very material consideration in the management of mature forests and an important cause of overproduction.

To refer to our own experience, I can recall at this time at least three cases wherein we had to decide whether to continue operations over a period of years at a normal rate or speed up the cutting and materially shorten the life of the plants. The tax situation in each case was the decisive factor that caused us to increase production and cut out as rapidly as we could. In another case we were influenced finally to sell a choice tract of timber because of mounting taxes and the sale necessarily entailed immediate operation.

At the present time our operations here in the Northwest are on a basis of 37.5 percent of our former running time and we are not selling our production and have twice the stock on hand that is necessary to successfully conduct our business. A more radical reduction in our output is urgently needed, but this does not seem possible of accomplishment because of the pressing need of funds to meet certain obligations, of which the payment of taxes is one of the most important. We are, therefore, continuing to sacrifice our capital assets for it is common knowledge that we and all other owners of timber in the Pacific Northwest and probably throughout the entire country are not nearly realizing through conversion the cost of our timber properties. [J. D. Tennant of the Long-Bell Lumber Sales Corporation, Longview, Wash.]

Our opinion is best supported by calling * * * attention to the situation which confronts us today in Clatsop County, Oreg. We have in that county a logging operation and sawmill supported by 800,000,000 feet of timber, which at our normal rate of production would last us from 8 to 10 years. With the exception of one company which owns considerable pulp timber, the owners of the other larger tracts of timber in the county will under normal conditions cut out in about the same period. The port of Astoria, which includes all of the county, has a bonded indebtedness of about $4,000,000, and, with the exception of a small amount of agricultural land, timber is the only property of real value in the county. The port is now so hard pressed for funds that it will have to default on January 1 on its bond interest and the bondholders will be faced with the necessity of negotiating with the taxpayers for a reduction of the indebtedness to a point where it may be possible for the port to pay out. Under these conditions could anyone say that the tax burden is not a compelling force in the cutting of timber? It is perfectly obvious that no owner of timber who is faced with a certain and rapid increase in tax rate will sit idly by and permit other owners to liquidate their timber if there is any possible chance for him to do so himself. Every owner in that county is going to cash in as rapidly as possible * * *.

The tax burden is undoubtedly an important and controlling factor forcing timber onto the market at too rapid a rate. [A. R. Watzek of the Crossett Western Co., Portland, Oreg.]

At the time of the investigation of the Select Committee on Reforestation of the United States Senate in 1923, those representatives of the various forest industries who mentioned taxation in connection with its effect on the rate of cutting mature timber numbered 16. Of these, 13 stated that taxation hastened cutting of mature timber, the other

3 stating that it had little or no effect. Some of these statements follow (67th Cong., 4th sess., hearing pursuant to S. Res. 398):

W. S. F. Tatum of the Tatum Lumber Co., Hattiesburg, Miss., told the committee (p. 136):

> I am frank to say that if the board of supervisors continue to increase and levy taxes on the small timber like they have for the last few years we will be forced to get out from under that burden.

Landon C. Bell, representing the Hardwood Manufacturers' Institute of Columbus, Ohio, told the committee (p. 186):

> Timber should not be taxed annually as forest properties are taxed, because that has a tendency to make a man who otherwise might endeavor to keep and conserve his timber operate it, even to a lower diameter limit than otherwise, in order to get what he can out of it and be relieved from this burden of taxation.

It is necessary, according to W. R. Sattersfield of the Chicago Mill & Lumber Co., Memphis, Tenn. (p. 536), to cut all trees down to 8 inches in the hardwood bottom lands, on account of the taxes.

George D. Oliver, a lumberman of San Francisco, stated (p. 657) that his company had no complaint to make against the existing State laws with respect to taxation.

C. S. Chapman, then of the Western Forestry and Conservation Association, stated (p. 1335):

> There should be a modification of the present system of taxing privately owned land held for a second crop of timber to encourage reforestation by landowners. This should not, however, be in any way confused with taxation as applied to timber at present merchantable.

W. B. Greeley, then Chief of the United States Forest Service, in criticizing a proposed optional immature tree value exemption plan of forest taxation for Oregon and outlining a compulsory bare-land tax and yield-tax law, stated (p. 505):

> Undoubtedly the present merchantable timber in a State like Oregon should continue to pay an ad valorem property tax until it is cut. A general tax plan such as that outlined should be applied to cut-over lands or lands containing scattered merchantable timber or immature forest growth. The law might specify that the special tax plan should apply to all acres containing less than some specified footage per acre so as to automatically exclude stands of high merchantable value.

The yield tax has been generally advocated as the method of taxing forests which would best remove the urge to liquidate prematurely. Some further light on the question of the effect of taxation upon cutting policy is shed by the answers to an inquiry sent by the National Lumber Manufacturers Association for the Timber Conservation Board in 1931 to a select list of 41 timber owners. The purpose of this inquiry was to secure comments on:

1. The probable effects on timber ownership and lumber production in the States in which they are interested of the substitution of an optional yield tax for the annual property tax on mature timber, i. e., a choice between continuing on the annual property-tax basis and a yield tax, and

2. The character and extent of financial assistance probably necessary in these States to enable the State and local governments to meet current fiscal needs in case the yield tax was substituted wholly or in part for the annual property tax on mature standing timber.

The yield tax was found to be by no means in universal favor. Of the 19 replies received, which discussed the first point, 10 preferred the yield tax and 9 either preferred the property tax to the yield tax

or believed that the yield tax was impractical in their particular locality. Of the latter, 6 were from the Southern States. Following are some interesting comments from these replies:

I do not believe that the substitution of an optional yield tax for an annual property tax on mature timber would have any great effect in the States of Louisiana and Mississippi where we are interested. There are very few owners of any large blocks of land in these States and, generally speaking, I feel that those owners will cut their timber as fast as the market will take it. However, such effect as this would have would certainly be in the direction of allowing more orderly marketing of lumber. [A. C. Goodyear of the Great Southern Lumber Co., Bogalusa, La.]

I find it a little difficult to set down in definite form an opinion as to the probable effect on timber ownership and lumber production of the substitution of an optional yield tax for the annual property tax. It is my own belief that if a clean-cut change of this sort could be brought about and if timber owners could be assured that the yield tax rate would not be subject to unfair and unreasonable increases by successive legislatures, the effect would be to conserve our remaining timber supply and to encourage the use of lands, not suitable for agriculture, for timber growing. [J. H. Eddy of the Kaul Lumber Co., Birmingham, Ala.]

We have in Wisconsin a yield-tax law, as you know. That is, we can put timber under the forest-crop law or we can continue to pay annual taxes as heretofore. It does not pay to put the timber under the forest-crop law if it is going to be cut within a few years. Of course it is not possible to tell exactly how long because one does not know what the taxes are going to be, but probably if the timber was to be cut within 10 years one would be just as far ahead to pay the annual taxes. On a long-time proposition it would pay better to put the timber under the forest-crop law. [W. A. Holt of the Holt Lumber Co., Oconto, Wis.]

The present methods of taxing our timberlands has resulted in a very serious burden to private timber holders and has created an urgent desire on the part of most of these timber owners to sell, or cut, or dispose of in any manner the timber that is costing so much in carrying charges, and I think if the owners had any opportunity at all to adopt an optional yield tax instead of the annual property tax on mature timber, their choice would be very obviously in favor of the annual yield-tax policy and, if this could be brought about, timber ownership would probably be more popular and the urge to cut and market in an uneconomical manner would be very much lessened. [W. C. Lubrecht of the Anaconda Copper Mining Co., Bonner, Mont.]

If the yield tax per thousand feet is high, operators like ourselves, who are cutting 100,000,000 feet a year and expect to go as high as 150,000,000, would be at a great disadvantage as compared with the operator who has the same amount of stumpage that we have but is only cutting 25,000,000 or 30,000,000 feet a year. [A. B. Hammond of the Hammond Lumber Co., San Francisco, Calif.]

Will state in reply to point no. 1, that in my opinion a substitute of an optional yield tax for the annual property tax on matured timber would have no effect on cypress, because of the small remaining stand and the limited life of present operations. As an owner of fir and redwood stumpage on the Pacific coast, will state that I believe a yield tax would be a great deterrent to the chronic overproduction in this region. [C. R. MacPherson of the Wilson Cypress Co., Palatka, Fla.]

ECONOMIC ANALYSIS

Old-growth forests present to their owners the choice of three principal management policies. (1) The forest may be cut beginning immediately without any effort to secure regeneration or to maintain a forest-growing enterprise; that is, it may be operated destructively. (2) The forest may be cut in such a way as to insure its continued productiveness, with or without a definite plan of conversion to sustained yield, either annual or periodic. (3) The forest may be held intact for future sale or cutting. It is essential to the purposes of this investigation to analyze the influence of taxation among the factors which determine an owner's decision regarding the management of his forest.

The second policy of management for continuous production would be affected by a well-administered property tax only to the extent

that deferment of income might be involved, as explained later in discussing the effect of the property tax on the growing of timber. At this point, the discussion is confined to the choice between destructive cutting and holding.

It will be assumed that the timber owner will generally be guided by the desire to make the maximum profit or suffer the minimum loss. Under this assumption, decision whether to cut now or at some future time will depend on whether the value to be obtained at the future time is expected to be greater or less than the sum of the present realizable yield plus all carrying charges to the future date. Obviously, if the future yield is greater than the present realizable value plus carrying charges, the owner will find it advantageous to hold the forest for future cutting. If, on the other hand, it appears probable that the value to be obtained at the future date will not be so great as the present realizable value plus carrying charges, it will be advantageous to cut now. The principal carrying charges are interest, taxes, and protection costs, the first two being generally much greater than the third. For the purposes of this discussion, interest is the interest which might be earned on the present realizable value, regardless of whether the invested capital was owned or borrowed.

It may be helpful to give the general principle stated above the precise form of mathematical terminology.

An owner of old-growth timber, in deciding upon his cutting policy, must take into consideration the following factors: Present realizable value of stumpage (or realization through conversion into products), V_0, and realizable value of stumpage 1 year hence V_1.

It is assumed, as in other examples in this report, that interest at p rate, taxes at r rate, and other carrying charges, e, are due at the end of the year.

$$\text{If}—V_1=V_0(1+p+r)+e, \text{ or if } \frac{V_1-V_0}{V_0}=p+r+\frac{e}{V_0},$$

it is immaterial whether the timber be cut now or allowed to remain. This is the case of a marginal owner of timber. A change in any of the factors will definitely decide for him whether to hold his timber or cut it.

$$\text{If}—V_1>V_0(1+p+r)+e, \text{ or if } \frac{V_1-V_0}{V_0}>p+r+\frac{e}{V_0},$$

it is profitable to hold the timber, and the owner will find it to his advantage to refrain from cutting under such conditions. This is the case of the speculative timber holder.

$$\text{If}—V_1<V_0(1+p+r)+e, \text{ or if } \frac{V_1-V_0}{V_0}<p+r+\frac{e}{V_0},$$

it is advantageous to cut the timber. This is the case of the active operator of old-growth timber.

To take an example, assume:

Present value	$100.00
Interest	3.00
Taxes	1.50
Other carrying charges	.50
	105.00

Then, if V_1 is just equal to \$105, the owner is a marginal holder of timber, and it is immaterial to him whether he holds it or cuts it. But, if V_1 is more than \$105 (say, \$108), it will pay the owner to withhold his timber from cutting. On the other hand, if V_1 is less than \$105 (for example, \$102), it will pay the owner to cut his timber. Thus if the owner has reason to believe that the increase in value of stumpage will not keep pace with the carrying charges, he will naturally be influenced to cut the timber and get what he can out of it. In this example, interest constitutes 60 percent of the total carrying charges, taxes 30 percent, and other carrying charges 10 percent.

The effect of a change in taxes may now be examined. Let it be assumed, first, that the tax rate is increased from 1.5 to 2.0 percent, the other factors remaining the same. Then, the marginal owner with V_1 equal to \$105 will become an operator, because now $V_0\ (1+p+r)+e=\$105.50$. The status of each of the other owners remains the same, since \$108 is greater than \$105.50 and \$102 is less than \$105.50, but the timber holder is drawn closer to the margin, and the operator is still more strongly induced to cut his timber. In this example, interest constitutes 54.5 percent of the total carrying charges, taxes 36.4 percent, and other carrying charges 9.1 percent.

On the other hand, assume that the tax rate is decreased to 1 percent. The marginal owner now becomes definitely a holder, since $V_0\ (1+p+r)+e=\$104.50$. The holder is now even more determined to allow his timber to stand, and the operator continues to operate, though with less to gain thereby than before. In this example, interest constitutes 66.7 percent of the total carrying charges, taxes 22.2 percent, and other carrying charges 11.1 percent.

The preceding theoretical analysis, in order to simplify the mathematics involved, covered a period of only 1 year. Under normal conditions, where large tracts of timber are involved, the period for comparison of present realizable value and future realizable value would be much longer than 1 year, and the removal of the timber in 1 year would be impracticable. In such cases the realizable value at any time would be the present worth based on an orderly removal of the timber beginning at that time and covering the shortest period of years consistent with maximum operating returns. The principles developed are obviously the same, however, whether the period for comparison of present and future realizable value is a single year or any number of years.

As a general proposition all carrying charges are alike in their effect upon the policy of the timber owner. It is the total of all carrying charges which, in relation to the present realizable value and the value to be realized at some future time, determines whether timber should be cut now or later. In this total the several items are of relative importance merely in proportion to their respective amounts. As thus rated, interest ordinarily stands first among the carrying charges. Taxation comes next. Other items, such as protection and administration, are generally of far less importance. It should be clearly understood that interest, as a carrying charge affecting cutting policy, is not merely the interest which must be paid on borrowed capital. Neither is it the interest on the investment which the owner has made on the property. It is the total interest which might be earned on the present realizable value.

Practical evidence bearing upon the relation of taxation to the holding of timber investments and to the operation of large logging and lumbering enterprises was obtained from owners of timber properties in Oregon and Washington. This region was selected because of its leadership in the extent of virgin timber in private ownership and in current lumber production. Detailed reports were called for, using two form statements, one for owners of blocks of timber which had been held as a reserve supply or for investment, and one, which is of most interest in the present analysis, for active operators. These form statements, which were prepared with the advice of representatives of the lumber industry, were sent to 353 corporations and individuals. Eighty-one of these returned answers, in 70 of which the data were usable. Several did not cover all of the timber blocks owned by the party making the report, and in such cases there was no check on the manner of selection. Otherwise these replies apparently afford a random sample of the industry and may therefore be considered representative.

Practically all of the data on which this study is based were collected in 1928, and they therefore do not go beyond the last full year for which figures were then available, or 1927. While certain changes in the economic and tax situations in the Pacific Northwest have taken place since that time, it is believed that the material is still useful.[86]

The data collected in this way include the amount of the net investment in timber and timberland owned by the reporting operators at the end of 1922 and of 1927, calculated by deducting from the original cost of the tracts owned the total charges for timber depletion on a cost basis up to the close of the year in question. These figures were averaged in order to get an approximation of the average investment in timber and timberland for the period 1923 to 1927. The average investment thus obtained in round figures is $96,000,000. Since the appreciation in value over the original cost doubtless outweighs the small part of the investment which may fairly be allocated to land value, this average investment may be taken as a very conservative estimate of the average value of the timber owned during the period. Thus $96,000,000 may be considered as corresponding to V_0 in the above formula. The average annual taxes on these same properties for the same years are $1,410,000, which figure is V_0r in the formula. It was impractical to determine the other carrying charges on timber and land for the operated properties, because they are included with the charges of the logging and manufacturing business. It was found, however, that 1,554,000 acres of nonoperated timber paid $261,500, or 17 cents per acre, for fire protection and administration. This, multiplied by the area in acres of the operated properties, 1,151,000, gives $196,000, which may be considered e in the formula. A 3-percent interest rate (the tax-free, risk-free rate used in other parts of this report) may be used, making interest $2,880,000 ($V_0p$ in the formula). The carrying charges, therefore, are as follows:

	Dollars	*Percent*
Interest (V_0p)	2, 880, 000	64
Taxes (V_0r)	1, 410, 000	32
Others (e)	196, 000	4
Total	4, 486, 000	100

[86] For a more detailed presentation of this material, refer to Progress Report 14. (See footnote 9 on p. 14.)

These facts are instructive as bearing upon the relative importance of interest, taxes, and other carrying charges.

While interest is generally a much more important carrying charge than taxes, there are cases here and there where taxes may exceed interest. It has been shown in an earlier part of this section (table 87) that in 9 Minnesota townships, in 4 Wisconsin towns, and in 1 town of New Hampshire, taxes are more than 3 percent of the estimated value of forests. In these cases taxes actually surpass interest at 3 percent. But these are all exceptional cases, and the forests located therein are principally cut over. Taxes probably are the most important factor leading to the cutting of those few remaining remnants of old-growth timber in these localities, but the amount of timber so affected by taxes is undoubtedly a very small percentage of the total stand of old-growth timber in the United States. The conclusions drawn above from the Oregon and Washington data may be taken as fairly typical of the situation in the regions where old-growth timber is still important. Interest based on a very conservatively estimated value appears to be relatively about twice as important as taxes as a charge for carrying merchantable timber. Also it should be noted that only pure interest is considered in this calculation. Where part of the capital is borrowed, there is an additional carrying charge, also termed "interest" in ordinary business usage, which consists of the difference between pure interest at 3 percent and the actual payment on the borrowed capital at the usual rate of 6 to 8 percent.

It should be perfectly clear from the foregoing analysis that the factors which should govern the owner's decision as to the time of cutting are all in the present and future, not in the past. Past costs, whether original purchase price, interest on the investment, taxes already paid, or any other costs, have nothing to do with the question. The owner should base his decision on present realizable value, future yield, and future interest, taxes, and other carrying charges. It cannot be too strongly emphasized that the decision to cut or to hold should not be at all affected by the amount of the original investment or by costs already incurred. Determination of the factors upon which the owner's decision should be based requires the exercise of judgement. The present realizable value of the forest is a matter of appraisal. The realizable value at some future date and the intervening carrying charges are in the future. Their values must be estimated by judgment of the future; that is, by prophecy or speculative judgment in the broadest sense of that term. Above everything else the owner's judgment will rest upon his prophecy as to future values of forest products. Next in importance comes estimation of the future carrying charges, among which interest generally occupies the predominant place with taxation ordinarily in second place.

There can be no question of the validity of the principles thus developed. It is true nevertheless that there may in particular instances arise counteracting influences that will prevent the owner arriving at the decision that would normally be to his best interest.

Taxation may sometimes force cutting which the owner would not otherwise find advisable, as the only possible source of money with which to pay the annual taxes. Of course, if the owner has no other resource, he must realize on part of his timber to pay his taxes, whether heavy or light, unless he is to be excused from annual taxes alto-

gether. Cases such as this would rarely occur at a time when general conditions were favorable to the holding of merchantable timber. Ordinarily, if timber values are expected to increase at a rate faster than the sum of interest, taxes, and other carrying charges, most owners would find some means of raising the annual carrying charges rather than to lose money by premature cutting. On the other hand, if timber values fail to promise an increase at a rate greater than interest and other carrying charges (not including taxes) then it would be profitable to cut even though there were no taxes at all, and in that case it should be recognized that, even though owners may appear to be cutting to get money for payment of taxes, the real reason for cutting is the unfavorable prospect of future values and not the burden of taxation.

In the second place, there doubtless is a psychological difference between interest which must be paid to creditors and interest which is merely calculated upon the value of the owner's capital. The timber owner, seeing an unfavorable future, and pressed by his creditors for payment of interest on his debts, may easily be led by the pressing nature of such demands to give less weight to interest on his own capital than its true economic importance would require. In like manner, taxes which are a present obligation, carrying threat of loss of his property, may carry an importance in the owner's eyes out of proportion to their true importance as compared with interest on his own capital. In this way the effect of interest on borrowed capital may have a disproportionate psychological importance and, especially in times of economic depression, taxation may attain to an importance in the eyes of certain owners beyond what its relative position would ordinarily justify.

In the third place, there is a psychological resistance to realizing a loss which sometimes causes an investor to retain a property against his own best interest. Thus the amount of the original investment and subsequent cost may in practice sometimes be a factor that is considered in deciding whether to cut or hold timber.

It should also be noted that where an owner has timber in two or more taxing jurisdictions with different tax rates, he will frequently choose, if other things are equal, to cut first in that district with the highest tax rate. This was brought out in the testimony of R. R. Chaffee, of the Wheeler & Dusenbury Lumber Co., Endeavor, Pa., who stated to the Senate Reforestation Committee in 1923 (67th Cong., 4th sess., hearing pursuant to S. Res. 398, p. 136):

> Our taxes have in a measure regulated our cutting policy to the extent of withdrawing operations in one county or township and increasing them in another as the fluctuations of the assessors increased taxes here and maybe decreased them there.

Taxation thus becomes a real influence in hastening cutting in a particular district, although this is only the result of choice between districts and without effect upon the total cutting in the State or region.

The present situation in the lumber industry is in conformity with the foregoing facts and principles. The key lies chiefly in the judgment as to the future of stumpage values. In the past lumbermen have generally assumed that the increase in stumpage values would at least keep pace with carrying charges. This assumption, in recent years (1923–33), they have found was not being fulfilled. The follow-

ing statements in support of this point of view are quoted from answers to questionnaires prepared for the Timber Conservation Board in December 1931:

We can say that in connection with the Douglas fir region, with which we are more or less familiar, the annual bill for taxes has for many years been a considerable factor in cutting of timber. One of the main reasons is that the price of stumpage has not increased sufficiently to cover carrying charges, and any timber owner that has had an opportunity to market his holdings, or a part of them, has been eager to do so, in order that the tax bill could be cared for from the product of the property. Taxes have been so heavy for the last 10 to 15 years, and without any reward in sight for taking money from other income to carry timber, that nearly all private owners are intensely interested in operating available stumpage [George L. McPherson of the George L. & J. A. McPherson Corporation, Portland, Oreg.].

The average lumber operator has had his trouble climaxed in the last few years. He has been unprogressive and has lacked foresight. He has been a good citizen, acknowledged his debt to society and has accepted the idea he should pay taxes and has done so without complaint. He has been optimistic, in a blind way, and expected the recurrence of periods of prosperity he had enjoyed, which would permit him to carry on [C. Arthur Bruce of the E. L. Bruce Co., Memphis, Tenn.].

In recent correspondence, Mr. Bruce has pointed out that his present opinion is that since the time of the observation quoted the lumber operator has received a great deal in the way of education and has developed the ability of analysis and much greater foresight.

Present prevailing conditions in the industry have tended to develop, in the minds of a good many operators, a loss of confidence in future values of timber and the opinion is quite prevalent that the remedy is several years hence. Under such conditions, we can expect many operators to liquidate their stumpage and get what they can out of it, rather than to carry the tax burden for an indefinite number of years in the hope that increase in possible conversion returns at some future date will more than offset the carrying charge incurred meanwhile [J. L. Bridge of the Sound Timber Co., Seattle, Wash.].

The past history has shown that log prices are not mounting fast enough to take care of the investment [C. S. Polson of the Polson Lumber & Shingle Co., Hoquiam, Wash.].

W. R. Morley of the Saginaw Timber Co., Aberdeen, Wash., in an address delivered before the annual forest management conference of the Western Forestry and Conservation Association in February 1932, and subsequently published in the West Coast Lumberman of May 1932 (p. 19), stated:

In the past the annual timber tax was largely offset by an enhanced value of the timber itself. Stumpage values, however, ceased to grow 6 or 7 years ago, they became stationary and recently have tended steadily downward. The average opinion in this region seems to be that future increases in timber value will not be enough to cover the steadily accumulating carrying charges, the largest by far being property taxes. . . .

The failure of stumpage prices to increase as rapidly as expected is undoubtedly the underlying cause of overproduction in the lumber industry. The property tax plays its part as one of many items in the total carrying charges. But it is not the most important of the carrying charges, and carrying charges altogether are often less important than future stumpage prices in influencing cutting.

Those who have expressed exaggerated opinions as to the effect of taxation upon overproduction of timber have been inclined to forget the greater importance of interest—on the realizable value of forest properties—and have sometimes failed to realize that, if forest values do not give promise of an increase at a rate at least equal to the interest rate, taxation cannot be the cause of cutting, since under such

circumstances the most advantageous course would be to cut even though forests were entirely exempt from taxation.

In short, the disposition of merchantable timber is governed in the long run by the judgment of its owners as to what will be for them the most profitable course. The principal factors that determine such judgment are the present and expected future realizable values of forest properties and the charges which must be incurred in the holding of timber for future disposition. Taxes are one of the important carrying charges, though generally of considerably less importance than interest. In certain border-line situations and in certain cases where individual owners are peculiarly situated, taxation might be the predominant factor in causing the cutting of old-growth timber. By and large, however, it is clear, on the basis of the evidence and the general economic principles involved, that taxation has not, up to the present time, been generally a controlling influence upon the time and rate of cutting of the American forests or upon the overproduction of lumber.

It is now (1933) contemplated that, pursuant to the National Industrial Recovery Act, overproduction will be prevented under the lumber and timber products codes by restrictions having the force of law. To the extent that this policy is continued, taxation will of course have no power to cause overproduction of lumber and other timber products.

EFFECT ON THE GROWING OF TIMBER

THE TESTIMONY OF THE OWNERS

The 1909 investigation, to which reference has already been made, yields some important evidence regarding the effect of taxes on forest growing (*101, pp. 608–610*). An inquiry was addressed to forest owners containing three questions bearing on this subject. The first was: "*Would a reduced tax lead you to adopt different methods so as to preserve young growth or to leave seed trees in order to provide for a future crop, and for the protection of cut-over land from fire?*" The answers received were as follows:

Number of letters received	484
No information on this question	100
No, or doubtful	166
Yes, or probably, or in some cases	218

The second question was: "*Would it lead you to plant such of your holdings as have been cut over when planting is necessary?*" The answers to this question follow:

Number of letters received	484
No information on this question	173
No, or doubtful	182
Yes, or possibly, or would consider it	129

The third question was: "*Would it influence you not to abandon cut-over lands?*" The answers are as follows:

Number of letters received	484
No information on this question	184
No	123
Yes	177

The answers to the questionnaire sent by the Timber Conservation Board in 1931 contain additional evidence. One of the questions was:

"When reforestation is not being undertaken, what are the principal reasons?" The answers may be tabulated as follows:

Number of returns	124
This question not answered	41
Reforestation is being undertaken	11
Taxation not mentioned in answer	37
Taxation mentioned	35
As only cause mentioned	16
First among various causes	13
Following other causes	6

Replies to the question: *"What are the principal obstacles to commercial reforestation?"* may be thus tabulated:

Number of returns	124
This question not answered	33
Reforestation is being undertaken	8
Taxation not mentioned in answer	26
Taxation mentioned	57
As only cause mentioned	20
First among various causes	22
Following other causes	15

As compared with the significantly slight recognition of the property tax as a cause of excessive timber liquidation, the indictment of the property tax as an obstacle to the growing of timber is distinctly stronger. The chief reason why it is not even stronger in the case of growing timber is evidently because many landowners would not be interested in forest-growing even if taxes were reduced or removed entirely. This fact is brought out in much of the testimony, where many of the owners mention other factors than taxes as obstacles to timber-growing. In addition, the very silence of the many owners who refrained from answering all of the questions in the foregoing questionnaires would seem to indicate quite clearly that they are not interested in timber-growing.

Timberland owners have repeatedly testified to the belief that taxation is a discouragement to commercial reforestation in this country. Taxation, however, is not generally given as the sole reason and not always as the most important one. Out of 64 owners testifying before the Senate Reforestation Committee in 1923 who mentioned taxation in connection with reforestation, 53 stated that taxation was an important obstacle in the way of commercial reforestation. Most of the 11 operators who stated that taxation had a negligible effect on the practice of forestry believed that commercial reforestation would be impractical, even with an adjustment in taxation, because of the length of time it takes to grow timber and because of the risks involved. A few extracts selected from the testimony given at these hearings are presented here (67th Cong., 4th sess., hearing pursuant to S. Res. 398):

Wilson Compton, secretary and manager of the National Lumber Manufacturers Association, Washington, D. C., told the committee (p. 58):

> The extent of practicable functioning of private enterprise in the production of saw timber has been declared by the lumber manufacturers and timberland owners to be dependent in large part upon: (1) The efficiency and universality of organized protection against fire, and (2) the extent to which lands bearing growing forests are relieved from the burden of annual taxation.

V. M. Scanlan of the Hattiesburg Lumber Co., Hattiesburg, Miss., stated (p. 137):

> Those who undertake to grow and preserve timber should be immune from this high taxation. These small trees should not be taxed in the same proportion as the other timber is taxed. The fact that the small trees are taxed like the other timber discourages husbandry, and no man can afford to undertake it.

Rasmus Hanson, a lumber manufacturer of Grayling, Mich., believes (p. 437) that even with assured adequate fire protection and an adjustment of the tax burden it would be impracticable for lumbermen to practice forestry in this country. He believes it is a job for the National Government.

C. R. Johnson of the Union Lumber Co., San Francisco, Calif. (pp. 642–643), told the committee that he believed it to be a good commercial investment to reforest in the redwood region of California, in spite of taxes. However, he commented further:

> I think that the question of taxation, probably, deters more people from adopting a policy of reforestation than any other thing. Taxation is something that a tree has to face for 50 years under the present system. It has to walk up, as it were, to the tax collector's office 50 or 60 times, in some regions longer than that, to pay taxes. And it is not only the taxes at the present rate, but it is the unknown factor of what the taxes will be in 10 years, 20 years, 30 years, 40 years from now. Our company went into reforestation and we are taking our chances on that. We believe that something will be done, and when it is done it will naturally apply to everybody.

A. C. Dixon of the Booth-Kelly Lumber Co., Eugene, Oreg., stated (p. 724) that with respect to cut-over lands, ". . . the taxation and carrying charges would prevent any private concern from successfully reforesting . . ."

L. T. Murray, West Fork Timber Co., Tacoma, Wash., stated (p. 831):

> . . . In my own particular case and in my own particular location I think I can see possibilities in reforestation, with an adjustment of our taxation situation.

H. G. Miller of the Kalispell Lumber Co., Kalispell, Mont., gave the following testimony (p. 951): "I don't think that in Montana, considering the long period required for reproduction, reforestation will ever be economically and commercially practicable."

In view of the present tax situation, the Anaconda Copper Mining Co. cannot afford to hold land for reforestation, but has no way of disposing of it, according to Roscoe Haines of Bonner, Mont., representing that company (pp. 966–967).

George W. Sisson of the Racquette River Paper Co., Potsdam, N. Y., stated, in effect, that his company is practicing forestry in spite of taxes, but that a change in the methods of taxation would help. He stated further that it is possible to practice forestry for pulpwood, but not for saw timber (p. 1021).

THEORETICAL ANALYSIS

Introductory

In order to determine the approximate effect of taxes on the growing of timber it is necessary to resort to a highly theoretical analysis. Such procedure is necessitated by the fact that actual timber-growing enterprises in the United States are at present not sufficiently numerous to furnish a good sample of cost and income data; furthermore, detailed financial accounts of such enterprises are not available.

As in the analysis of the relation of taxes to forest income in an earlier part of this section, the results of forest research and the experience of the national forests are here used as indications of conditions likely to be found on privately owned forests in the future. In fact the same data are used in the present analysis as in the previous one. The reader should be warned again that, while exact figures are presented, they are actually only rough estimates of prospective incomes and expenses. Furthermore, this analysis is based on the premise that the forests would be grown from bare land—a practice which would only occasionally be necessary under actual conditions. It is not intended to show whether forest planting, or any other silvicultural measure, is likely to be profitable for the species and region discussed. The assumptions do not include the very common case where forest planting may be profitably used as a means of supplementing natural regeneration. But in spite of the nature of these assumptions, the analysis is none the less suited to its purpose, which is merely to show roughly the place of taxes among the carrying charges necessary to the growing of timber under conditions of maximum income deferment where such taxes tend to be most burdensome.

White Pine in New Hampshire

The effect of property taxes in the case of white pine in New Hampshire is illustrated by table 108, which is based on the same assumptions as to yields and costs as table 93, in an earlier section of this part. The financial rotations and initial forest values are shown, assuming (1), no taxes at all, and (2), a property tax at a typical rate for this region. The great difference between the initial forest values with and without taxes shows the importance of taxation in determining the possibility of profitable investment in forestry under the assumed conditions. However it should be noted that even with the imposition of this tax, growing white pine on good sites would pay a return of more than 3 percent if the investment in land and regeneration, whether artificial or natural, could be held under $15 an acre, other assumptions remaining the same.

Table 108.—*Financial rotation and initial forest value, with and without taxes, for white pine in New Hampshire, on different sites, and with and without planting* [1]

Tax rate	Planting		Natural regeneration	
	Financial rotation	Initial forest value per acre	Financial rotation	Initial forest value per acre
	Years	*Dollars*	*Years*	*Dollars*
GOOD SITE				
0 percent	50	61.70	50	64.20
2.4 percent	46	15.50	45	16.40
MEDIUM SITE				
0 percent	53	44.20	51	46.60
2.4 percent	48	10.70	47	11.40
POOR SITE				
0 percent	63	29.10	61	30.80
2.4 percent	50	5.90	50	6.60

[1] Assumptions and method of computation are the same as described in connection with table 93. Interest rate used, 3 percent.

Table 109 shows the place of taxes among the carrying charges necessary to the growing of forests under the conditions assumed in these examples. Carrying charges in this and similar tables (112 and 115) consist of taxes with interest, interest on the permanent investment in land and regeneration, and miscellaneous annual expenses with interest, all accumulated through one rotation. These tables indicate that for the same site the item of interest on land and regeneration tends to be higher with natural regeneration than with planting. This follows from the fact that the initial forest value is higher where natural regeneration is assumed. This higher initial forest value reflects a net income at the end of the rotation which is higher with natural regeneration because of the lower regeneration cost to be deducted from the yield, assumed to be the same for the same rotation regardless of the method of regeneration. Also, the initial forest value affects the taxes, although it is not controlling because the taxes apply to subsequent increments of timber value, and the result is that only in certain cases the item of taxes with interest becomes higher with natural regeneration than with planting. It would appear from table 109 that taxes are generally the most important carrying charge in growing white pine under the assumed conditions, and they still would be the most important even if the item of annual expenses were considerably higher on account of increased cost of insect and disease control.

TABLE 109.—*Carrying charges for growing white pine in New Hampshire through one rotation, on different sites, with and without planting* [1]

Type of regeneration	Taxes with interest		Interest on land and regeneration		Miscellaneous annual expenses with interest	
	Dollars	*Percent*	*Dollars*	*Percent*	*Dollars*	*Percent*
GOOD SITE						
Planting	123	69	45	25	10	6
Natural	121	69	46	26	9	5
MEDIUM SITE						
Planting	100	69	34	24	10	7
Natural	100	69	34	24	10	7
POOR SITE						
Planting	69	69	20	20	11	11
Natural	75	70	22	20	11	10

[1] Interest rate used, 3 percent.

For financial rotations used, see table 108. Sources of data: Columns 2, 4, and 6 refer to text describing this table and table 93; columns 3, 5, and 7 by computation.

Table 110 is a self-explanatory comparison between the gross incomes and expenses under the given conditions. In this and similar tables (113 and 116) the permanent investment in land and growing stock, represented by the land value plus the cost of regeneration incurred at the beginning of the first rotation, is treated as the interest-bearing capital. Expenses include taxes with interest accumulated through one rotation, miscellaneous annual expenses with interest also accumulated through one rotation, and the cost of regeneration which is a charge against the yield at the end of the rotation.

TABLE 110.—*Gross income compared with expense with and without taxes, for white pine in New Hampshire through one rotation, on different sites, with and without planting* [1]

WITH TAXES

Type of regeneration	Good site		Medium site		Poor site	
	Gross income	Expense	Gross income	Expense	Gross income	Expense
Planting	$193	$148	$159	$125	$115	$95
Natural	182	136	150	116	115	92
WITHOUT TAXES						
Planting	235	26	195	28	192	33
Natural	235	17	182	18	179	23

[1] Interest rate used, 3 percent.

For financial rotations used, see table 108. Sources of data: Columns 2, 4, and 6 from table 92, interpolating when necessary to determine money yields or gross incomes for the financial rotations; columns 3, 5, and 7 by computation as explained in the text.

LOBLOLLY PINE IN NORTH CAROLINA

Table 111 shows the financial rotations and the initial forest values for loblolly pine on assumed sites in North Carolina, both with and without taxes. The effect of the typical property tax is evident in the much higher initial forest values in the cases where it is assumed that no taxes are imposed. It should be noted, however, that even with the property tax there is a return of 3 percent on the growing of loblolly pine under the assumed conditions and with land at moderate prices in all cases except planting on poor sites.

TABLE 111.—*Financial rotation and initial forest value, with and without taxes, for loblolly pine in North Carolina, on different sites, with and without planting* [1]

GOOD SITE

Tax rate	Planting		Natural regeneration	
	Financial rotation	Initial forest value per acre	Financial rotation	Initial forest value per acre
Percent	*Years*	*Dollars*	*Years*	*Dollars*
0.0	40	53.30	39	56.00
1.5	34	25.20	33	26.90
MEDIUM SITE				
0.0	40	30.70	40	33.40
1.5	39	13.80	37	15.20
POOR SITE				
0.0	53	12.40	49	14.10
1.5	46	4.50	42	5.50

[1] Assumptions and method of computation are the same as described in connection with table 97. Interest rate used, 3 percent.

Table 112 shows the place of taxes among the carrying charges for growing loblolly pine in North Carolina. In every case taxes are one of the heaviest of the carrying charges.

TABLE 112.—*Carrying charges for growing loblolly pine in North Carolina, through one rotation, on different sites, with and without planting* [1]

Type of regeneration	Taxes with interest		Interest on land and regeneration		Miscellaneous annual expenses with interest	
	Dollars	*Percent*	*Dollars*	*Percent*	*Dollars*	*Percent*
GOOD SITE						
Planting	45	48	44	46	6	6
Natural	45	47	45	47	6	6
MEDIUM SITE						
Planting	36	49	30	41	7	10
Natural	34	48	30	42	7	10
POOR SITE						
Planting	21	48	13	29	10	23
Natural	20	48	14	33	8	19

[1] Interest rate used, 3 percent. For financial rotations used, see table 111. Sources of data: Columns 2, 4, and 6 refer to text describing tables 95 and 109; columns 3, 5, and 7 by computation.

The comparison of gross incomes with expenses under the assumed conditions is given in table 113.

TABLE 113.—*Gross income compared with expense with and without taxes, for loblolly pine in North Carolina, through one rotation, on different sites, with and without planting* [1]

Type of regeneration	Good site		Medium site		Poor site	
	Gross income	Expense	Gross income	Expense	Gross income	Expense
WITH TAXES						
Planting	$101	$57	$79	$49	$50	$37
Natural	96	51	71	41	41	28
WITHOUT TAXES						
Planting	134	14	83	14	66	19
Natural	128	7	83	14	57	11

[1] Interest rate used, 3 percent. For financial rotations used, see table 111. Sources of data: Columns 2, 4, and 6 from table 94, interpolating when necessary to determine money yields or gross incomes for the financial rotations; columns 3, 5, and 7 by computation as explained in the test.

JACK PINE IN THE LAKE STATES

Table 114 shows the financial rotations and the initital forest values for jack pine on assumed sites in the Lake States, both with and without taxes. These results indicate that if it were not for taxes, the growing of this species would yield a return of better than 3 percent on all sites with natural regeneration and on good sites with planting as well, provided the land were obtainable at

moderate prices. Under the assumed conditions, taxes are thus in general a limiting factor in the growing of this species.

TABLE 114.—*Financial rotation and initial forest value, with and without taxes, for jack pine in the Lake States, on different sites, with and without planting* [1]

GOOD SITE

Tax rate	Planting		Natural regeneration	
	Financial rotation	Initial forest value per acre	Financial rotation	Initial forest value per acre
Percent	*Years*	*Dollars*	*Years*	*Dollars*
0.0	33	8.00	30	10.70
2.6	30	2.10	29	3.10
MEDIUM SITE				
0.0	40	4.20	36	6.00
2.6	34	.50	30	1.40
POOR SITE				
0.0	50	.50	40	2.00
2.6	40	Negative	39	Negative

[1] Assumptions and method of computation are the same as described in connection with table 95. Interest rate used, 3 percent.

Table 115 shows that taxes are not so outstanding among the carrying charges as they were in New Hampshire. This follows from the fact that the assumed yields are low relative to the annual expenses other than taxes, and hence the values on which the taxes depend are relatively low. On poor sites taxes constitute a minor element as compared with other carrying charges. But on such sites the growing of jack pine is unprofitable under the present assumptions. Where the growing of this species is profitable, one of the major carrying charges is taxes.

TABLE 115.—*Carrying charges for growing jack pine in the Lake States, through one rotation, on different sites, with and without planting* [1]

GOOD SITE

Type of regeneration	Taxes with interest		Interest on land and regeneration		Miscellaneous annual expenses with interest	
	Dollars	*Percent*	*Dollars*	*Percent*	*Dollars*	*Percent*
Planting	8	50	3	19	5	31
Natural	10	53	4	21	5	26
MEDIUM SITE						
Planting	5	42	1	8	6	50
Natural	6	46	2	15	5	39
POOR SITE						
Planting	2	20	0	0	8	80
Natural	5	42	0	0	7	58

[1] Interest rate used, 3 percent. For financial rotations used, see table 114. Sources of data: Columns 2, 4, and 6, refer to text describing tables 97 and 109; columns 3, 5, and 7 by computation.

The comparison between gross incomes and expenses, given in table 116, clearly shows the low yields relative to the carrying charges incurred in growing this species under the assumed conditions. It will be recalled that the poor showing of jack pine in the Lake States is partially due to the very low stumpage price, as well as to the fact that the same price was used for all age classes, rather than one increasing with age as in the New Hampshire and North Carolina studies. It should also be remembered that these examples are based on average conditions, and that where the situation is more favorable than the average, jack pine will make a much better showing.

TABLE 116.—*Gross income compared with expense with and without taxes, for jack pine in the Lake States through one rotation, on different sites, with and without planting* [1]

WITH TAXES

Type of regeneration	Good site		Medium site		Poor site	
	Gross income	Expense	Gross income	Expense	Gross income	Expense
Planting	$20	$17	$16	$15	$12	$14
Natural	19	15	13	11	11	12
WITHOUT TAXES						
Planting	23	10	21	12	17	15
Natural	20	5	18	6	12	8

[1] Interest rate used, 3 percent. For financial rotations used, see table 114. Sources of data: Columns 2, 4, and 6 from table 96, interpolating when necessary to determine money yields or gross incomes for the financial rotations; columns 3, 5, and 7 by computation as explained in the text.

OTHER METHODS OF TIMBER GROWING

It has been claimed that the property tax encourages destructive cutting of timber and discourages selective logging and the leaving of seed trees where such methods would be desirable to insure continuous timber production. The term "selective logging" has come into general use among lumbermen and foresters to mean any method of partial cutting by which a portion of the standing timber that would be cut in an ordinary destructive logging operation is reserved for cutting at a later time. In logging practice this term often includes the leaving of seed trees, although the latter is a very different system in silvicultural practice. Seed trees are scattered trees left for the purpose of seeding in a cut-over area. After seedlings have been established, the seed trees are usually cut. Obviously the two methods grade into one another, and the terms are often used interchangeably. Both selective logging and the leaving of seed trees, as well as all modifications of either, are merely methods of providing a stand of timber for future harvest. A comprehensive plan for growing timber (plan of management) might involve selective logging or leaving of seed trees on some areas, and clear cutting with provision for natural reforestation or artificial reforestation on other areas. Taxation will affect any of these phases of forest management, in every case where deferment of income is involved, in the same manner as it will affect the growing of timber from bare land, but to a less degree. Selective logging especially would appear to be affected in

less degree than any of the other methods, since the period of waiting for the realization of income is usually less, the possibility of sustained yield much closer, and the costs usually much less. Where the property contains sufficient virgin or old second-growth timber to permit the realization of a regular annual income from the start, a properly administered property tax would offer no special obstacle to forestry as against other land uses.

The farm wood-lot forests in this country partake of the nature of a selectively logged forest, many of them now approaching sustained yield. They are consequently affected by taxation in the same manner as are selective-logging enterprises.

NATURE OF THE ENTERPRISE AND RESULTS OF TAXATION

What makes forest taxation under the property tax a special problem is the peculiar nature of the timber-growing enterprise. Most forms of wealth yield income more or less regularly by the year; the ordinary cycle of revenues and expenditures is normally completed within each year. The annual demand for tax payment is thus in harmony with the annual receipt of income. If all American forests were established upon the basis of a regular annual sustained yield, the practical problem of the property tax would not be so serious, since there would then be an annual income from which to pay the annual taxes. As a matter of fact, the cycle of forest revenues and expenditures is not generally a regular annual one at present. Income may be extremely irregular, large in some years, small or entirely lacking in other years; the years in which there is no income are apt to be far more numerous than those in which income appears; capital may be tied up in land, trees, and expenses for many years before any income appears. The requirement of annual tax payments is not in harmony with such irregular or long deferred income. Even a perfectly drawn and perfectly administered annual property tax would work injustice upon forest wealth yielding such irregular or deferred income. This fact has been demonstrated in the discussion of the theory of the property tax as applied to forests (part 3). As has also been demonstrated in the same discussion, the overburdening of a deferred-yield forest as compared with an annual sustained-yield forest is greater the longer the period of deferment and the higher the taxes. This discrimination against deferred-yield forests is measured by a comparison of tax ratios.

The property tax exerts a direct influence on the decisions of owners as to whether or not to practice forestry, by determining what areas are or are not supermarginal for a deferred-yield use. An illustration used in a previous discussion (pt. 3) will bear repeating here. If the value of a certain bare-land property, before taxes, is $5 per acre for a deferred yield (like forestry) and $4 for some use (like grazing) which will yield an annual return, the former use will be chosen in preference to the latter. But if a property tax is imposed, the tax ratio in the case of the deferred-yield use may be twice as great (say 40 percent; a very common tax ratio among forests) as in the other case (say 20 percent). The value for the deferred-yield use is, under these circumstances, reduced to $3; and for the annual-yield use, to $3.20. The annual-yield use now has an advantage over the deferred yield and will be chosen in preference to the latter. Taxes have here so shifted the margin for deferred yield that certain

areas, economically suited for forestry if the property tax could be abolished, are no longer suitable. From its very nature the property tax favors a use which yields an early income.

The property tax, when it involves overassessment of cut-over land, encourages speculation in, or abandonment of, such land at the expense of forest growing. This effect may be illustrated as follows: Assume a wild, unimproved property which will yield $100 an acre in merchantable timber at the end of 50 years. Assume also that in addition to a minimum fire-protection cost of 2 cents per year, the owner must pay an average of 3 cents per year for cultural operations and additional fire protection to insure the realization of this yield. Assume furthermore that there is 1 chance in 10 that the owner will be able to sell the property for a higher use than forestry within the next 20 years, and that he will get $100 an acre if he does so sell it. For simplicity in calculation, assume that this possibility will be realized, if at all, at the end of the tenth year. If the property is assessed at the average level of assessment, it might have to pay over the 50-year period an average annual tax of $0.10 an acre. The owner makes something like the following mental calculation:

> One hundred dollars at the end of 50 years means $8.72 now, discounting at 5 percent, while taxes and other expenses cut off $2.74 from this amount, leaving $5.98 net. The speculative alternative, on the other hand, is the equivalent of a 1 to 10 chance for $100, or $10 at the end of 10 years. The discount of this chance is $6.14 gross or $5.37 net after deducting the tax cost of $0.77. The forestry alternative seems to be slightly more profitable for me than does the alternative of speculating on a higher use. I will try forestry.

But suppose that wild, unimproved land is so overassessed in relation to other property that the annual tax burden is $0.30 rather than $0.10 an acre. The owner then makes his mental calculation as follows:

> For a term of 50 years, $0.35 annually is worth $6.39 now, while for a term of 10 years, $0.30 annually is worth $2.32 now. The forestry use is therefore worth only $2.33 net with this $0.30 tax, while the speculative use is worth $3.82. The speculation on a higher use than forestry is, under these tax conditions, more profitable to me than is forestry.

In practice, very few owners go through any such mathematical calculation as that outlined above, but their common sense comes to much the same result. Common sense demands that the more expensive an investment is to carry, the quicker ought a return to be expected from it. Hence overassessment of cut-over land frequently turns the scales against forestry and in favor of some possible shorter term use.

If overassessment were so pronounced in the example under discussion that the annual tax burden would be $0.80 an acre, all value—even for the gambling use—would disappear from the land, and abandonment through tax delinquency would remain the only economic outlook for the owner.

CONCLUSIONS

In the areas studied, the average taxes on forests as a class were found to range from $0.06 to $1.08 per acre. In these same areas, the average taxes on all other rural real estate taken together ranged from $0.06 to $6.91 per acre. These differences reflect in large part differences in average value.

Not all of the differences in taxes per acre, however, are caused by variations in the actual value of the properties. A study of tax rates and of ratios of taxes to estimated value has brought to light significant differences in tax burden due to the manner in which the tax system operates. A comparison of tax rates (ratios of taxes to assessed value) shows that forests are subject to about the same tax rate as other rural real estate. Among the units studied there were five exceptions to this statement—Frohn Township, Minn., the towns of Laona and Three Lakes, Wis., Baker County, Oreg., and Grays Harbor County, Wash. Here, forests were subject to a higher tax rate on assessed value than other rural real estate.

The ratios of taxes to estimated values, considering forest property alone, ranged from 1.2 to 6.9 percent and averaged about 2 percent. Thus, while in the wild-lands territory of Maine only 1.3 percent of the value of forests was appropriated for the use of the State and local governments, in a number of Minnesota townships over 4 percent of the value of forests was so appropriated. While the extremely high ratios found in Minnesota are due to a combination of circumstances which are generally not likely to be encountered, the evidence is clear that there is great variation in tax burden among different political units. An owner of forest land in one district may enjoy a much lower tax rate than one in another. Such discrepancies are not confined to forest property but affect other kinds of property as well. The tax burden on forests was found to be generally greater than the tax burden on other classes of property.

A comparison of the ratios of taxes to estimated value between forests and other rural real estate shows about the same level of assessment in only 5 out of the 29 political units studied, the difference in these ratios being 0.2 percent or less. Of the 24 units where the differences in the ratios were greater than 0.2 percent, 23 showed higher ratios for forests than for other rural real estate. The average ratio of taxes to estimated value was 1.5 percent for other rural real estate as against 2 percent for forests. Farms alone were taxed at 1.3 percent, and the assets of all corporations at 0.9 percent.

The tax burden on merchantable timber properties is generally more moderate than on forests in the aggregate. In the areas studied the ratios of taxes to estimated value of timber properties ranged from 0.4 percent to 3.3 percent and averaged about 1.3 percent. The average ratio for forests as a whole, it will be remembered, was 2 percent.

If the tax burden is measured by ratio of taxes to realized income instead of to capital value, there is even greater discrimination against forestry where deferment of income is necessary. Deferred-yield forests have higher tax ratios than most other types of property. The only types that closely approach such forests in this respect are farms and mining properties. While the tax ratios of forestry enterprises that must start with cut-over forests, when calculated on the basis of conditions which were considered normal prior to the current depression, amount usually to 50 percent or more, the average tax ratio for all corporations in the United States for a recent period of 5 years (1923–29, excluding 1925) was found to be 11 percent. It will be recalled that the tax ratio for corporations is only roughly comparable with the tax ratios of forestry enterprises.

Past trends in forest taxes have been definitely upward, even on the basis of a standard monetary value, but the average rate of increase is generally no greater than the rate of increase in all State and local taxes in the United States. The pressure is very strong at present (1933–34) for governments to decrease expenditures; on the other hand, there is an almost universal tendency for governmental activities, and therefore taxes, to increase. The periods of retrenchment have generally been relatively short as compared with the periods of expansion, and the amount of the savings involved in the former periods have been much less than the increased expenditures in the later periods. In any case, the uncertainty as to the future burden of taxation, because of the relatively long time it takes to grow timber and the implications of the past upward tax trend, is particularly unfavorable to the forest enterprise.

In short, it has been shown that under the present tax system individuals contemplating entrance into the business of growing timber must usually face a heavier tax burden than those in other enterprises. This discrimination is reduced as the forest approaches financial maturity and as the income cycle is shortened. Owners of partially grown stands of timber or of stands which have been so organized as to return incomes at short periods do not face such great tax hazards as do the owners of bare or recently cut-over lands. Thus, where a choice remains, there is a substantial tax advantage in beginning the practice of forestry before the growing stock is depleted below that required to produce a regular annual income.

In spite of the heavy burden of the property tax on forests, taxation is not the most important cause of excessive liquidation of old-growth timber. It is a contributing factor, however, since the property tax favors old-growth timber properties operated as a "mine" and tends to accelerate the cutting of timber on such properties. But the item of interest on invested capital, in general, greatly overshadows taxes as a carrying charge, and it is the fear that the forest investment will not earn this interest in the future that is the principal factor leading to excessive cutting. A timber owner who is not prevented from promoting his own best interest by financial or psychological pressure will cut his timber when, and only when, he has become convinced that the increase in its value will no longer keep pace with the carrying charges. Taxes constitute only a part of these carrying charges.

In the case of old-growth forests under conversion to sustained-yield management, the property tax offers no inherent obstacle provided deferment of income is not required. In the case of second growth and of situations suitable for forest planting, where deferment of income is involved, it may operate to discourage the use of land for the growing of timber. In any case, the property tax is a major item of cost. Nevertheless, there are other costs and risks which would frequently prohibit the growing of timber even with an appropriate tax system. Where there is no prospect of realizing an income sufficient to pay charges other than taxes, including a reasonable return on the investment, a complete remission of taxes would not bring about the practice of forestry.

Even if deferred-yield forests were given an appropriate tax system, therefore, it does not follow that forestry would be universally practiced. In this connection it is necessary to sound a note of

warning against extravagant demands for forest-tax relief and extravagant hopes of the benefits to flow therefrom. It is sometimes stated that the ideal system of forest taxation should be such as will make possible the employment in forest growing of all idle lands not more valuable for agriculture or some other use. And there appear to be those who believe that such will be the result of the solution of the forest-tax problem. Obviously there is no magic in taxation to make a profitable industry arise where profit is impossible. The effect of tax reform is negative only. Release of the brakes will remove one obstacle to the progress of an automobile, but it will not start a balky engine. In like manner tax reform may remove an obstacle that has thus far prevented development of forestry where other conditions were favorable, but it cannot make forestry flourish where other conditions are not favorable. False hopes of the results of forest-tax reform should not be set up. The utmost that can be achieved is the elimination of one serious obstacle to the development of private forestry in the United States. But that alone will be a worth-while achievement.

In spite of the gloomy picture which has been drawn of the property tax in relation to forests—the inherent defects pointed out in part 3, the administrative weaknesses reviewed in parts 4 and 5, and the heavy and uncertain burden indicated here—the situation is far from hopeless. Methods of improving the operation of the property tax have been developed by various agencies, and have been successfully tried out in a limited way. At a later point in this report (pt. 12), such methods as seem applicable to forest regions will be proposed. There will be detailed suggestions for improving assessment practice, assessment organization and personnel, and for more effective tax collection procedure. Also, plans will be recommended for so modifying the property tax that its inherent defects in respect to forest property may be overcome. Sound methods in the administration of the property tax combined with elimination of the excess burden which this form of tax places on deferred-yield forests would solve the forest-tax problem so far as it concerns the distribution of the total tax burden. The absolute burden of taxation as controlled by governmental organization and functioning will be discussed in part 8.

PART 8. THE ABSOLUTE BURDEN OF TAXATION AS CONTROLLED BY GOVERNMENTAL ORGANIZATION AND FUNCTIONING

CONTENTS

INTRODUCTION

The preceding part has presented statistical and theoretical evidence to show that in general deferred-yield forests are subject to a greater burden under the property tax than are most other classes of property. The effect of this burden in hindering the use of land for forestry has been pointed out. In an earlier discussion (pt. 3) the inherent defect of the property tax in respect to deferred-yield forests was demonstrated. Other causes of the heavy taxes on forests, such as faulty assessment and collection procedure under the property tax, have been treated in parts 4 and 5. Even though these inherent and administrative defects of the property tax were cured, the absolute or general tax burden, which is especially heavy in sparsely settled regions where cut-over forests predominate, would still remain. This burden affects all other classes of property as well as forests The causes of this absolute burden lie in the existing forms of political organization and in the functioning of government, particularly local government. These matters are the subject of the present part.

SIZE AND CHARACTER OF LOCAL GOVERNMENTAL UNITS

MULTIPLICITY OF SMALL LOCAL UNITS

THE SITUATION IN GENERAL

Rural America is being served by essentially the same machinery of local government as was set up to meet frontier conditions. Commenting on the situation in New York, the special joint committee on taxation and retrenchment calls attention to the fact that "some aspects of present institutions have not been altered since the English

established the provincial government of New York after driving out the Dutch in 1664", that "the main features of county government have not been changed in the 146 years [in 1933, 156 years] since New York became a State", and that "where changes have been made they are of a patchwork character" (*147, pp. 11–13*). Such statements apply with almost equal force to every other State, for though many States are younger than New York, each has a form of government copied from one of the original patterns.

Failure to reorganize local political units not only results in a needless multiplicity of governments but perpetuates a political structure that is no longer in harmony with the present economic organization. There are many units that lack the size and wealth to operate with efficiency and economy, and at the same time there is a needless duplication and overlapping of functions. Moreover, there are too many officials and too many spending agencies. This condition is particularly aggravated in the States where county and township governments both prevail. To illustrate: Indiana has 92 counties and about 275 county commissioners, nearly 650 county councilmen, and more than 1,000 township trustees. In addition there are more than 3,000 members of various county advisory boards and more than 1,000 elected county administrative officials. In Pennsylvania there are 67 counties with more than 1,500 administrative officials. In Georgia there are 159 counties with a host of county officers, and in Texas 254 counties.

When the smaller units of government are considered, the situation is even more complex. In Michigan, according to the President's Conference on Home Building and Home Ownership (*154*), there are about 6,800 school districts, with more than 27,000 directing officers, and more than 1,200 townships, with more than 15,000 officers. Illinois has about 12,000 school districts, more than 1,400 road districts, and more than 1,500 townships. All told, there are about 16,000 local governments in Illinois. In Ohio there are a total of more than 10,000 officers for 1,300 townships. Pennsylvania has 1,500 townships with more than 13,000 officers and more than 2,500 school districts with nearly 13,500 officials. New York has 932 towns, 520 villages, 2,000 special districts, and nearly 10,000 school districts. Even the little State of New Jersey has 21 counties, 51 cities 252 boroughs, 23 towns, 233 townships, 1 village, and 2 village townships—a total of 583 units of government, exclusive of school districts.

In Michigan in 1928 there were 83 counties, 1,269 townships, and 6,873 school districts, or a total of 8,225 units, not including cities and villages. "These units elected 43,902 officers—a vast army of tax wasters and a veritable battalion of death in resisting local government reform" (Reed (*155*)).

One authority estimates that there are at least 250,000 governmental agencies in the United States (*133, p. 95*). He says on a later page:

> The number of officials required to run these petty governments is enormous. . . . Their support constitutes a permanent charge against taxpayers before any services for the benefit of citizens are performed. In New York, for example, over 36 percent of the expenditures of counties and over 20 percent of the expenditures of towns from 1918 to 1921 went for the support of general government, constituting practically an overhead cost antecedent to the performance of governmental functions.

William Anderson of the University of Minnesota is attempting to get a complete enumeration of the political units in the United States. He includes only those that have a continuing board and the power to levy and expend taxes. With an incomplete list of special districts his count is approximately 147,000.[87]

An eminent British administrator (*116*) says of American local government:

> The chief trouble in administration arises from the fact that in the same area of local government there are many separate boards, commissions, townships, counties, and other taxing bodies working independently of each other. The country which shows the world the finest examples of concentrated management of industry and business—the United States—is the country which seems to suffer most from this elaboration and overlapping in city or county government. . . . Practically every other country is moving in the right direction toward "one town, one governing body," and more study might be given this problem in the United States.

This English observer is profoundly right. Most American taxpayers are living and struggling under 4, 5, 6, and more of what President Roosevelt calls "layers of government." Some of these layers are needless.

TOWNSHIPS

The fact that 25 Southern and Western States have never felt the need of the township indicates that this unit is not indispensable in the States where it exists and that it is a "layer" that might be removed.

The township was first established in New England, as a village with its surrounding territory, and it was well adapted to pioneer conditions. It was carried westward by emigrants from New England to the newer States, but it never became such an important unit in these States as it had been in New England, (1) because conditions had changed, and (2) because it had to divide honors with the county. Thus, outside of New England, the town, or township, has generally been an artificial unit without a center and without any strong elements of cohesion. Nevertheless, in earlier days when travel was difficult, there was some justification for having road supervisors, overseers of the poor, and justices of the peace every few miles. That need no longer exists, and there is a growing demand that the township be abolished everywhere outside of New England. (*117, pp. 178 ff.; 133; 134, p. 7; 149, pp. 10–11; 151, p. 249; 165, pp. 54–55.*)

The New England town is excepted, (1) because the New England county is of so little importance, and (2) because the New England towns were built up around village centers, and many of them have continued to have a strong community consciousness. Moreover, most of the New England towns, except in Vermont, have no separate government for the villages, and both the rural and the semiurban portions of a town come under the control of the town government. Generally, when a village reaches the proportions of a city, the city government absorbs the town government, but in Connecticut the town organization is separately maintained even in the case of the largest cities. While many New England towns are densely populated, the vast majority are predominantly rural, there being about 1,400 with less than 5,000 population.

[87] ANDERSON, W. EXPLORATORY RESEARCH CONFERENCE ON THE REORGANIZATION OF THE AREA AND FUNCTIONS OF LOCAL GOVERNMENT. Résumé of proceedings of conference held at the University of Chicago, May 7–8. 1932, 75 pp. (mimeographed).

While the New England town usually performs the functions of both township and village government, the tendency even here is toward larger areas of local administration and State supervision of the local authorities. This movement is noticeable in school management, public charities, sanitary affairs, and most recently in road building. Thus several towns are often united into a school supervisory district, and the towns are aided by the county and State in the construction and maintenance of highways. There are numerous instances now where shifts in population have destroyed the old equilibrium, and a consolidation of towns or a recasting of boundaries would probably be desirable. However, after a recent comprehensive survey of government in New Hampshire (*123, pp. 11, 632–633*) it was concluded that consolidation of towns would be neither a sound nor an effective method of reducing local expenditures, but that certain major functions should be transferred from the town to the county, and that there was need of improvement in town financial administration.

The township has been quite generally used as a unit of road administration, and it served very well in horse-and-buggy days and when roads were maintained in large part with free labor. But the average township cannot afford the machinery and engineering required to build roads suitable for automobile traffic. President Roosevelt, when discussing this subject as Governor of New York, said:

> I know of no business reason, and can think of none, why the town as a unit of administration of highway expenditure should longer exist (*156, p. 324*).

An Oregon commission (*153*) created for the purpose of seeking means of bringing about property-tax relief, points out that the roads of that State are built by about 650 local road districts, distributed among the 36 counties, and urges centralization.

Centralization of road administration is in line with the general movement over the Nation to eliminate township road districts as they were originally organized. The present multitude of local road districts results in inefficiency, extravagance, and duplication of expense and effort. Roads no longer serve only the neighborhood through which they run. They serve an intercommunity and interstate purpose and should be administered and supported by a larger jurisdiction than the township.

The town or township is the unit of school administration today in all of the New England States, in Pennsylvania, New Jersey, Indiana, and in parts of Michigan, Iowa, and South Dakota (*119, p. 332*).

As the consolidation of schools has progressed, the township has often been seized upon as a convenient goal, and hence in many instances now constitutes a school district in other States than those mentioned above. Both school authorities and tax authorities are agreed, however, that the township is an unsatisfactory school unit. Both favor the county as a unit of administration and, to some extent at least, as the unit of taxation. The abolition of the township would either not affect the schools at all or would make it easier to establish the county-unit plan.

In certain States the administration of poor relief remains partially a town function, but the tendency is to transfer the work in this field to the county and the State. The county is recognized as a

better unit for the administration of public health. The township has been used as an election district, as a magisterial district, and as a convenient area for recording vital statistics, but there is no need to retain the township for any of these purposes.

In fully a third of the States the assessment of property is delegated to township officers. Experience has amply demonstrated that this is a thoroughly bad arrangement. Rarely do township assessors possess the qualifications to perform this important work with scientific precision. At best the system invites inequalities, since local assessors use different standards of value and are influenced more or less by local sympathies and prejudices. This necessitates elaborate schemes of equalization and review, with all their difficulties and dangers. It is pointed out in another section of this report that tax authorities are practically unanimous in their condemnation of township assessment. They favor either a county assessment under close State supervision or an outright State assessment. The abolition of townships in the States where they still exist would remove an obstacle in the way of the attainment of one or the other of these methods.

In several States, county and State, as well as township taxes, are collected by township collectors. The fact that in other States taxes are collected by a county official, frequently the county treasurer, indicates that townships and township offices do not need to be retained for this purpose. In fact such studies as have been made indicate that the county is a more economical and efficient unit of collection than the township (*126*).

Students of government are quite generally agreed that the perpetuation of township government anywhere outside of New England is unnecessary and undesirable. After an extensive study of rural tax problems, the Ohio joint legislative committee on economy and taxation recommended (*151, p. 254*) "the immediate abolition of the township and the transfer of its remaining functions to the county", and Compton (*117, p. 24*), after an investigation of conditions in New York, is just as emphatic in urging its abolition.

The Wisconsin Tax Commission, in its 1924 report (*58*) says:

> The cost of maintaining a town with its roads and schools is often out of proportion to its assessed valuation, $30,000 being not uncommon. When this tax has to be raised from a valuation of $500,000 it means a 6 percent rate. The hardship of this State situation cannot be relieved so long as the practice continues of creating new towns and villages of small area and poor territory without reference to their resources for maintaining a separate government.

SCHOOL DISTRICTS

The typical unit of public-school administration and support in the United States is the neighborhood tributary to and served by a single school. Thus a school district served by a 1-room school is commonly an area of only 6 or 8 square miles. Some States have literally thousands of these small districts. There are, for instance, about 10,000 in New York, 10,000 in Illinois, 7,700 in Missouri, and 6,900 in Michigan. These districts not only have considerable autonomy in school affairs, but have been, and to a very large extent still remain, the unit of taxation for school support. Of every $100 raised for public schools in the United States in 1926, $15.90 came from the State, $10.90 from the county, and $73.20 from local district funds (*158, p. 96*). In some States the primary taxing unit is the town or township; in a few it is

the county; but in the great majority of the States it is the school district. These districts vary so greatly in wealth and taxpaying ability that the grossest inequalities exist, both in tax burden and school facilities.

Examples of the inequalities and deficiencies created by the district system are abundant. A study in 1922 of the school districts of 10 counties in Oklahoma showed assessed valuations varying from $1,000 to $82,000 per child in average daily attendance. Within this same group of districts the average annual expenditure per child varied from $21 to $437, and among the districts constituting the richest county in the State the variation was from $51 to $395 per child. In 1921 there were 5,014 village and rural white districts in the State, and the school terms ranged from 3 to 10 months (*158, p. 98*).

In Larimer County, Colo. (*130, p. 30*), school district levies in 1928 ranged from 1.4 to 18.2 mills. The discrepancies are nearly as great when expressed in terms of cost per pupil. Thus in the third-class districts of this same Colorado county, the total receipts per pupil in average daily attendance ranged from $34.94 to $416.18, and the receipts from a local district tax, from nothing to $243.20.

The need for larger school units is well recognized in Wisconsin. Ashland County (*171, pp. 11, 13*) in 1929 had 31 school districts and 48 schools. Thirty-eight of the schools were one-teacher schools. In 7 years the enrollment in the rural schools had decreased from 1,008 to 809. The enrollment of the village schools had increased from 806 to 969.

High pupil cost was associated with schools having a small enrollment. Eight schools located in the more isolated sections of the county had an enrollment of from 2 to 10 pupils. The 2 schools having 5 or fewer pupils had an average cost per pupil of $386. Six schools with from 6 to 10 pupils had an average cost of $159 per pupil. In comparison with this, there were 11 schools in the county with from 21 to 30 pupils having a per pupil cost of $56, and 1 school with more than 50 children having a per pupil cost of less than $30. A poorer quality of work was observed in the schools with very small enrollments. The best type of school work was done in schools that had an enrollment of from 20 to 35 pupils. In 1928-29 the county received $72,674 of State aid for schools. State aid to districts ranged from $250 to $6,320.

Forest County, Wis. (*174, pp. 13, 15*), in 1930 had 17 school districts and 36 schools. In 10 of the 14 civil towns 1 school district covered the entire town. School costs were $214,701, of which $73,987 was received from the State. Of the balance, $22,000 were derived from a county-wide tax and $118,714 from local district taxes. District tax rates ranged from 1.1 to 4.7 percent and the assessed valuations from $81,000 to $2,400,000. A county-unit school organization would equalize both the tax burden and the quality of the schools.

In Marinette County, Wis. (*170, p. 8*), rural school enrollment decreased from 2,916 in 1921–22 to 2,427 in 1927–28. More than one-half of the rural schools have an enrollment of 20 pupils or less, and 3 have under 5 each. In 1927–28 there were 4 schools with an average cost of over $300 per pupil; 4, between $200 and $300; 20, between $100 and $200; 17, between $75 and $100; and 25, with a cost between

$50 and $75 per pupil. The average cost for the county was $92.35, while the average for the State was $67.31.

In Taylor County, Wis. (*172, p. 25*), a 1931 report showed 89 separate school districts with from 1 to 5 schools per district. This meant an average for the county of 1 school board member to every 7 pupils and 1 teacher to every 12 pupils.

The district system of taxation for schools generally results in wide discrepancies in educational quality as well as in tax burden. It is possible to equalize the burden through a system of equalization, though perhaps at a greater aggregate cost than necessary. It is not possible to equalize the quality of education, for the size of a school itself has much to do with the quality of instruction and experience which the child receives. The district system is thus likely to be unfair both to the taxpayers and to the children. School authorities and tax authorities in all parts of the country are urging the adoption of the county as the unit of school taxation and administration.

If the definition of the county unit given by the United States Bureau of Education (*161, p. 19*) is accepted, the term is applied to—

> systems in which the schools in the county (city schools usually excepted) are organized as a single system under one board of education and supported largely by county funds.

In 1930 there were 11 States which might be called county-unit States, located, with one exception, south of the Mason and Dixon line. These 11 States are: Alabama, Louisiana, Utah, Kentucky, Maryland, New Mexico, Tennessee, Florida, Virginia, North Carolina, and Georgia. A number of other States have passed laws by which individual counties may vote to establish the county as the unit. These are Montana, Nebraska, Arkansas, Oregon, Texas, and Minnesota.

In three States—Louisiana, Maryland, and Utah—most of the city schools are within the county system.

> In Maryland only the city of Baltimore is independent, while in Utah only five cities, with a population of over 5,000, are independent. . . . In Louisiana no cities are independent, but special powers and forms of control are set up in parishes containing large cities (*132, p. 37*).

In the other eight States most of the larger cities are independent, as well as varying numbers and kinds of independent districts.

Elwood P. Cubberly (*152, pp. 46–47*), of Stanford University, says:

> The county unit provides a means for making the best that is in education today available for all. It offers the only possible solution for the so-called "rural school problem." The educational resources of a whole county need to be organized as a unit to enable the people to obtain effective educational service. The plan is economical of funds, and even after providing for a better school and a longer term the costs are not usually any more.

The Mississippi Tax Commission (*144, p. 191*) says:

> We believe that it would be wiser to prevent the further organization of small school districts and provide for the consolidation of existing districts into one county-wide district with uniform tax levies. We know of no other way to equalize the burden of taxation and also equalize the benefits derived from taxation.

The adoption of the county-unit plan would not entirely equalize school taxes. Counties themselves differ greatly in taxable wealth and hence in tax rates. Thus, in Minnesota, the township school tax rate in 1925 averaged less than 10 mills in 21 counties and exceeded 40 mills in 7 counties. These 7 counties with very high rates,

are all in the cut-over region. If there were to be equality of tax burden for the support of the minimum standard, the State would have to become the unit of taxation or provide for equalization among counties.

Neither the county-unit plan nor State equalization insures full equality of educational opportunity. That is an unattainable ideal. Children living in remote places cannot be provided school facilities equal to those enjoyed by children living in the cities. All, however, should be guaranteed a reasonable educational opportunity, and this cannot be until the weak schools are eliminated. While the consolidation movement has been pronounced, there are still many one-room schools. In the 10 years from 1917–18 to 1927–28, the total number of consolidated schools reported to the Federal Office of Education increased from 5,349 to 17,004, and the number of 1-room schools decreased from 195,397 to 153,006. The office estimated that by 1938 there would be fewer than 110,000 one-room schools (*110, p. 171.*)

It is probable that there will always be need for a few one-teacher schools to serve isolated communities. But such schools need not be poor schools. School authorities concede that, if these small schools are supplied capable teachers and attendance is restricted as far as possible to children under 12 years of age, they can be very good schools. A well-arranged and well-equipped school building, in which a well-trained teacher is giving instruction to a small group of young children, can be a model school, for it permits individual instruction. One of the schools which Columbia University holds up as a model is such a school. But schools of this kind are bound to be costly when cost is reckoned on a per pupil basis.

Consolidation of rural schools necessarily involves the transportation of many of the pupils. A recent study (*150*) shows that on January 1, 1931, there were in the United States 1,478,699 children being transported to school by bus. There were 48,775 busses in operation serving 16,547 schools. North Carolina led all other States in both the number of children carried and the number of schools served, 181,141 children being transported to 1,293 schools. Indiana was next, transporting 145,715 children to 905 schools. The average cost of transportation is $23.02 per child, and the range is from $10.65 in North Carolina to $49.41 in Wyoming. The cost in Indiana is $27.32.

The benefits of consolidation have been more in the direction of longer terms and better schools than in reduced expenditures. The adoption of the county as the unit of taxation has the effect, however, of equalizing taxes within a county and thus of giving relief to those districts which have a limited tax base. To the extent that the State shares in school support, the inequalities would be further mitigated. The adoption of the county-unit plan might not always reduce county taxes, but it would be very likely to give relief to forest communities located in counties containing varied resources. Regardless of its effect on forest communities, it can be commended as inherently just and in keeping with the needs of a modern rural civilization.

COUNTIES

It is now recognized that there are even too many counties, particularly in the South. Many of the counties are so small in area, so thinly populated, and so weak in taxable resources that they cannot

supply the minimum public services demanded by the citizens without imposing an intolerable tax burden. In recent years, county consolidation has attracted very wide interest. In 1932, county consolidation was being considered in no less than 32 States (*125*). The status of the movement at that time is fully described in an article by Manning (*141*).

Since the need for consolidation of counties appears to be greatest in the South, it is not surprising that the lead in this direction has been taken in the South. In 1919, James County, Tenn., was merged with Hamilton County, of which Chattanooga is the county seat. The result has been most gratifying, according to Manning (*140, pp. 512–513*):

> The people who live in what was once James County now pay about one-half the tax they paid before the absorption. Prior to 1919, James County had less than 2 miles of paved highway; now it has between 40 and 50 miles. Schools which previously operated between 3 and 4 months in the year are now in session 8 and 9 months, and the one-time James County courthouse is being used as a public-school building. Before the consolidation James County had practically no hope of securing manufacturing plants; but now several plants have been established because of lower taxation.

This experiment proved so successful that a citizens' tax committee, appointed at a State-wide conference to consider Tennessee's tax problems, recommended the consolidation of other counties so as to reduce the number from 95 to not more than 60. A. L. Childress, superintendent of taxation, proposed that much larger units be created and that the present 95 counties be combined into 11, with the principal towns of the State serving as county seats thereof. Both plans of wholesale consolidation met with much local opposition, partly sentimental but chiefly on the part of officeholders and property owners in the existing county seats, and no further consolidations have been consummated.

Another consolidation recently effected is in Georgia, where in January 1932, Campbell and Milton Counties were merged with Fulton, which contains the city of Atlanta.

Judge Orville Park, of Macon, Ga., said: [88]

> This tripartite consolidation is too recent for its results to be accurately measured, but as the tax rate in the two merged counties was materially higher than that in Fulton, it may confidently be expected that the rate in these counties will be reduced. It is said that Fulton has not been obliged to increase appreciably her official personnel in order to care for the business of Campbell and Milton, and the taxes from these counties, even from a reduced rate, since the counties are relieved of their officeholders, the expense of their courts, and the maintenance of courthouses, jails, poor farms, and convict camps, will enable Fulton to give the territory better roads and schools, to supply hospital and public health service, welfare workers, agricultural and home demonstration agents, county police, and other advantages which they could not supply for themselves. The good work has already begun, and the citizens of old Campbell and old Milton are said to be greatly pleased with their new status.

The Virginia Commission on County Government (*164, pp. 8–9*) says:

> Attention has already been directed to the large number of counties in Virginia, which for the reason of size and economic conditions are unable to function economically or to provide the service which the modern community requires. It is known, for example, that an area occupied by 60,000 people affords the minimum economical unit for the administration of public health, provided the means of communication are satisfactory and the area to be covered is not excessive.

[88] In an address delivered before the Institute of Public Affairs, University of Virginia, July 8, 1932.

A similar unit is desirable in the administration of public welfare. The administration of roads and schools can be made more effective when applied to a unit of considerable size. Many of the Virginia counties are too small to obtain the best results.

The commission submitted with its report, and the legislature later enacted into law, (1) a bill whereby two or more counties may jointly support certain functions or officers, and (2) a bill to permit two or more adjoining counties to consolidate, when approved by a majority of the voters in each of the counties concerned.[89]

A comprehensive survey of State and local government in Mississippi recently completed by the Brookings Institution recommends consolidations which would reduce the number of counties from 82 to 40.

In 1930 the Brookings Institution (*122, pp. 21–26*) studied State and local government in North Carolina. In its report it enumerated 11 county consolidations which it believed should be immediately effected and indicated that it might be desirable to effect others later. In all except 1 of the 11 cases specified, it was proposed to unite 2 adjacent counties; in 1 case the merging of 3 counties was proposed. If its recommendations were followed the number of counties would be reduced from 100 to 82.

While the need for county consolidation may be greatest in the South, the agitation is not limited to the South. Alfred E. Smith (*157*), when Governor of New York, advocated the consolidation of counties in that State in the interest of economy, claiming that:

> The cost of supporting these units of government is increasing from $8,000,000 to $10,000,000 yearly, and the burden of that tax is the one which people in the rural communities find so heavy.

The movement made no headway because of the opposition of the legislature, each county now being entitled to at least one representative in the lower house. In fact, this is one of the chief obstacles in the way of consolidation in every State, but particularly where the rural population is now overrepresented in the legislature and is afraid to yield its advantage.

County consolidation is also being agitated in a number of other States—among them Wisconsin, Michigan, Kansas, Montana, and Nevada. Reed (*155*), in discussing the need for county consolidation in Michigan, says:

> The maintenance of even a rudimentary county government has become well-nigh impossible in certain sections of the State. . . . The same difficulties confront Wisconsin and Minnesota, without the compensating advantage of vast industrial development. They confront a large part of rural Indiana and Illinois, and even more menacingly Kentucky, Missouri, North Carolina, Georgia, and other Southern States. In North Carolina 25 percent of the counties have less than $10,000,000 of assessed valuation, the minimum necessary to maintain the simplest county government. In Michigan the percentage is 31, in Minnesota 37, and in Tennessee 61. These figures are just run of the mine. . . . The smaller the counties, the less they are able without State aid to perform the duties which law and custom impose on them.

The consolidation of two or more contiguous counties is usually considered the easiest method of forming a larger administrative unit. This avoids the necessity of disturbing boundaries except to obliterate the dividing lines. Paul W. Wager, of the University of North Carolina, believes that this is not always the wisest plan, however. He believes

[89] Virginia, Acts of Assembly, 1932, ch. 367, 304.

that if a new unit of government is to be constructed, an attempt should be made to make it a vital unit. In speaking before the American Country Life Conference at Cornell University (*165, pp. 56–57*), he said:

> Mere consolidation will not insure the creation of balanced, conscious, vital political units. . . . Any recasting of political boundaries in North Carolina, or any other State, should be preceded by a state-wide survey covering the distribution of population and wealth, population trends, topography, highways, trade areas, and particularly the character and vitality of the trade centers.

In some instances, he says, the consolidation of two or more contiguous counties would produce such a unit. In other instances, some territory would need to be shifted from one county to another.

After analyzing the possible savings through the consolidation of Burnett, Washburn, and Sawyer Counties in Wisconsin, Wehrwein and Allin (*168, p. 13*) state:

> The combined operation and maintenance cost of the three counties might be reduced by approximately $20,000 if they should consolidate. This represents about 5.6 percent of their 1929 tax levies. Of the total possible saving Washburn County would benefit to the extend of about $9,000, or a little more than 7 percent of its 1929 county tax levy.
>
> These savings could better be realized, however, by county enlargement rather than by county consolidation. The merging of these three counties with their existing boundaries would not be as desirable as would be the obliteration of present boundaries and the creation of a new county based upon the natural conditions and the trade areas of the region. . . . It would seem that the ideal way to enlarge counties is largely to ignore existing boundaries. Almost any consolidation of existing counties will aggravate some already absurd situations. Many present boundaries have little relation to trade areas.

There are some who think that counties could be abolished altogether, and their functions transferred to the State in rural territory, and divided between the State and the cities in urban territory. It has also been suggested (*142*) that villages and the territory within their respective trade areas be incorporated into "rural municipalities", and that in this way rural territory which desired services in addition to those provided by the State could obtain them. It is questionable, however, if anything would be gained by such an arrangement. It would complicate rather than simplify the structure of government in rural territory, and it would tend to multiply rather than reduce the number of units. Moreover it would leave many rural residents outside any local unit of government, a condition which would hardly be conducive to the perpetuation of democratic institutions. There will continue to be need for a unit of local government in rural territory, except possibly in the very smallest States or in wilderness areas.

Quoting Reed (*155*) again:

> The county is the liveliest of our units of rural local government. If it can be reformed and enlarged, it can be saved. If it cannot, there will be an end of local government except for cities. . . . To accept State centralization is to condemn democracy to death. The congestion of business at the State capitol is already alarming. . . . The real remedy is to stop giving artificial respiration to rural units smaller than the county; to re-order county boundaries to correspond with the real communities which modern means of transportation have bound together; and to reform county government along the lines which have given some decency and efficacy to municipal government.

The counties, enlarged and reduced in number by consolidation or reconstruction, would seem to be able to fill all the needs of rural local government. It would, therefore, seem more practical to utilize them

as units of local government and as far as possible as units of State administration than to try to substitute something new. In fact the counties are so firmly entrenched politically that it would be idle to attempt to abolish them. It will be difficult enough even to reduce their number.

Where needed consolidations cannot be effected immediately because of local sentiment or political opposition, it may often be possible for adjoining counties to undertake the joint support of certain services. Thus two or more counties may use the same jail or the same home for the indigent, or they may combine to build a nospital or to support a health unit. The same welfare officer may serve 2 or 3 counties, or the same engineer several counties. By combining in this way for particular purposes, the economy of joint support will become evident, and eventually the absurdity of retaining 2 seats of government and 2 full sets of officers and records will be manifest. Consolidation will thus be effected with a minimum of upheaval and a minimum of opposition. This slow process will not be necessary in every instance—some counties are ready for immediate amalgamation—but where there is vigorous opposition to a complete merger the immediate effort should be for the adoption of a program of joint support.

Again it should be pointed out that these recommendations in respect to counties are not pertinent to New England, where the county occupies a relatively unimportant position in the scheme of local government.

OVERLAPPING SPECIAL DISTRICTS

Superimposed on the counties and towns, there are likely to be numerous special districts of one kind or another—road districts, school districts, drainage districts, sewer districts, and similar subdivisions. These districts are often overlapping, and the same property is subject to taxation by 4 or 5 taxing jurisdictions. While these special taxing districts have often been created for the benefit of a limited number of property owners who wanted a special service and were willing to pay for it, they have quite as often been created to circumvent tax-rate or debt-limit laws. This multiplicity of taxing units courts extravagance and waste by duplicating effort and scattering responsibility.

In metropolitan areas the multiplicity and overlapping of governmental units are particularly aggravated. The classic example is Cook County, Ill., in which outside of the limits of Chicago, there are 9 cities, 76 villages, 30 townships, 192 school districts, 30 park districts, over 40 road and bridge districts, 2 sanitary districts, and enough additional subdivisions of government to aggregate 415 separate independent units, each having power to levy taxes and borrow money (*133, p. 101*). The situation is similar in the New York metropolitan area.

A commission appointed to investigate county and municipal taxation and expenditures in New Jersey says (*146, pp. 7, 37*) in one of its reports:

> * * * It is fully recognized that certain problems have reached the regional stage, and that there is great need, particularly in the metropolitan areas, for establishing administrative jurisdictions that are broad enough to cope with these problems in a satisfactory manner. * * * Ideally, there should be but one comprehensive local budgeting and tax-levying authority for a given territory,

which would determine the estimates for all local services and establish a single tax levy for supplying the funds.

While the overlapping of taxing districts is more aggravated in metropolitan areas, it exists also in agricultural and forest areas. In Oregon and Washington, for example, forest lands are sometimes subject to two or three special district taxes in addition to the State, county, and school district taxes. There are port districts, dike districts, fire-protection districts, road districts, and various other kinds of special districts.

Granting that the creation of special tax districts is sometimes the only means of distributing equitably the costs of a service benefitting a limited constituency, it is also true that the ease with which they have been created and the freedom which they have enjoyed in handling their funds have invited very great abuses and have contributed materially to heavy taxation in many rural areas.

ECONOMICAL ORGANIZATION FOR SPARSELY SETTLED REGIONS

THE SITUATION IN GENERAL

It has been shown that the prevailing system of rural local government in the United States is needlessly decentralized and overmanned in the agricultural regions and even more in the forest and cut-over regions of sparse population. Instead of varying the size and character of local governmental units to fit different types of economic development and different population densities, the same pattern has generally been applied to an entire State. At least, when a political organization has once been set up, it has remained unchanged regardless of subsequent economic changes. Thus county and township governments have been perpetuated even after these jurisdictions have become completely covered by a city. On the other hand, they have been perpetuated in areas which have become almost completely depopulated. Naturally it is their survival under this latter condition which chiefly affects the taxation of forest land and deserves consideration at this point.

In the Lake States, and to a less extent in other States, there are school districts, townships, and even whole counties which consist largely of cut-over land. They contain only scattered farms, many of which have been abandoned, with scattered villages, declining in population, trade, and wealth. Because of a limited and shrinking tax base, the tax rate is extremely burdensome. The burden does not rest on forest land alone, but on all property within the taxing districts where these adverse economic conditions prevail.

The laissez-faire policy which has pretty generally prevailed until recently has been to let the tax rate increase as the tax base decreases, driving one taxpayer after another into delinquency. This system compels the solvent to carry the burden of the insolvent, even though the solvent taxpayers may be paying their taxes out of capital assets or out of income earned outside the district.

Even though progressive delinquency and abandonment lead to a reduction in population, the reduction in governmental expenditures is not usually so rapid as the decline in the tax base. It costs practically as much to operate a school with 10 pupils as it does to operate one with 25 pupils. It may not be possible to close a single road, even though half of the farms are abandoned. The overhead costs of

government are not progressively reduced in a decadent community, and some costs, such as poor relief, may actually increase. Moreover, there are often debt obligations, incurred in more flourishing times, which must be met.

The problem is not limited to the cut-over regions. There are decadent agricultural regions in New England, in New York, in the Appalachian Highlands, and in other parts of the country where the prevailing type of political organization is too complex and too costly to fit either the requirements or the resources of a sparse and dwindling population. The perpetuation of governmental machinery designed to serve a denser and more flourishing population imposes a needlessly heavy burden on the surviving taxpayers. There are towns in New England where there are not enough qualified voters to hold the public offices, and not infrequently half or more of the resident taxpayers of a town are on the public pay roll. The superabundance of offices means that they involve very little work, carry no dignity, attract only mediocre men, and usually degenerate into vehicles of political patronage or, at best, gratuities to be dispensed in rotation.

It is obvious that under these conditions the temptation is strong to take advantage of the nonresident landowners. If they are not deliberately discriminated against, they at least are victims of a needlessly costly and grossly inefficient local government.

The logical remedy for the conditions just described is the disorganization of some of the smaller units of government in such areas and the administration of the few necessary governmental services directly by the State, or at least by the county. Fortunately, a long and thorough-going demonstration has been made of the benefits to be realized and the economies to be effected by such an arrangement. This demonstration is provided in the experience of the unorganized territory of Maine. While the fortunate situation which obtains in this area is perhaps more attributable to the accidents of history than to political foresight, this fact does not lessen its value as a demonstration. It is an arrangement which, if it could not be duplicated, could at least be approximated in less extended areas and it therefore deserves a full description.

AN EXAMPLE FROM THE UNORGANIZED TERRITORY OF MAINE

The unorganized territory of Maine occupies nearly one-half of the area of the State and, with a few exceptions, consists of a consolidated, though somewhat irregular, area. While there is some unorganized territory in 11 of the 16 counties, the large contiguous block in the northern part of the State lies in 6 counties, and most of it in 4. Since the county is in Maine a relatively unimportant unit, this vast area is virtually under no local political organization. In most respects the 366 townships, 162 islands, and 20 miscellaneous survey divisions embraced within the area are administered directly by the State government. Property is assessed by the board of State assessors, and taxes are levied by the State legislature and collected by the State treasurer. The State provides forest-fire protection and all necessary school facilities. The county provides only police protection and courts and some supervision over roads and bridges. Towns and plantations once organized may be disorganized by legislative action, though generally the approval of the county delegation is obtained. Disorganization is infrequent, only 5 plantations and 1

town having been disorganized to date. However, the county treasurer of Penobscot County expressed the opinion, which he said was shared by other local officials, that disorganization will be more common in the future, especially in the marginal agricultural towns where farm abandonment has reduced the population to a point where it is difficult to carry the local government organization. In 1 plantation, with only 45 inhabitants, there are 9 officers holding 20 plantation offices (*131*).

Most of the unorganized territory and 19 adjoining towns and first-class plantations have been incorporated as the Maine forestry district. Property within this area is taxed 2¼ mills on each dollar of valuation, as determined by the board of State assessors, for the prevention, control, and suppression of forest fires. The administration of the district, so far as concerns forest-protection matters, is under the State forest commissioner. The district owns and operates 1,600 miles of telephone line, and has fire tools sufficient for the employment of 10,000 men. Fire-protection costs average about 2 cents per acre annually (*139*).

The county exists primarily as an agency of the State. Its chief expenditures are for police protection, for the support of the superior court, the supreme judicial court, the court of probate and insolvency, and the various municipal courts, the support of jails and other correctional institutions, the registration of deeds and other legal instruments, and the partial support of roads in unorganized townships. The chief officers are three county commissioners, clerk of courts, register of deeds, county treasurer, and sheriff.

The county budget is prepared by the county commissioners biennially but must be approved by the State legislature. This approval is not perfunctory, but is often given only after drastic amendments are made. Since the county valuation is fixed by the board of State assessors and the county budget by the State legislature, the county tax rate is virtually fixed by the State. Property in the unorganized territory is subject to a State tax of 7½ mills, 3⅛ of which goes into the State school fund, 1 mill to the State highway commission for the construction of second- and third-class roads, and 3⅛ mills for general administration and protection.

The schools in the unorganized territory are under the direct control and supervision of the State commissioner of education and are administered by his general agent for unorganized territory. The school revenues from unorganized territory consist of the proceeds from the tax of 3⅛ mills levied by the State, a poll tax of $3 on every male resident 21 years of age and over, interest on funds derived from the sale of school lands, and tuition fees. The total amount of school revenues in 1929 was $261,886, whereas expenditures were only $54,533.

The inhabitants of the unorganized territory have no voice whatever in regard to their school affairs. The general agent for unorganized territory locates the school buildings, determines which schools shall be maintained, which pupils shall be transported, which pupils shall be boarded and the rate of board, what teachers shall be hired and their salaries, and even such minor matters as the amount and price of fuel wood to be purchased. A local school agent chosen by the general agent executes the latter's orders and is paid a sum ranging from $10 to $50 annually, according to the amount of work done.

The minimum school term in Maine is 32 weeks, but some of the schools in unorganized territory are in session for as long as 36 weeks. No secondary or high schools are maintained in unorganized territory, but qualified pupils are boarded and their tuition paid in towns having such schools. Whenever it is more economical for the State to board children near a school the parents are required to contribute at least $1 per week per pupil to eliminate the incentive to move to remote places in order to be relieved of the support of children.

The State commissioner of education (*136, p. 24*) says:

> The majority of the unorganized territory schools will compare very favorably with the better class of rural schools of the State. In fact, some of the best schools set the standard in certain sections for model rural schools, and there is evidence of their direct influence in the improvement of the schools in nearby towns and plantations.

In fact the quality of the school facilities is actually becoming a deterrent to plantation organization, as such adequate school facilities could not be furnished through local taxation and the apportionment of the State school fund without resort to a very high tax rate.

Land in unorganized territory contributes nothing toward the cost of first-class roads, that is, State highways. Second-class or State-aid roads are built partly at local expense, but in 1930 only 46 of the 366 townships in unorganized territory contributed to the cost of such roads. The rest of the roads in unorganized territory are ordinarily built and maintained entirely with local funds. Quite a number are private roads built by the large landowners and timber operators. If, however, local road taxes become unreasonably burdensome on the landowners of a township in unorganized territory, the county commissioners are required to assess an equitable sum on the county and the balance only on the township to be crossed. In no case may the local road tax exceed 20 mills. The supreme judicial court is the final authority as to what constitutes an unreasonably burdensome tax (*135, pp. 65–67*).

The total tax rate in unorganized territory ranged in 1930 from 10.8 mills on the dollar of assessed value to 33¼ mills. The weighted average tax rate, however, was only 12.1 mills. The average tax rate in the organized towns was 50.4 mills and in the organized plantations, 42.1 mills (*138*).

Although property in unorganized territory enjoys a very much lower tax rate than property in other parts of the State, the unorganized territory is more than self-supporting. In 1930 the unorganized territory paid approximately $812,000 in property taxes alone, and expenditures, exclusive of the cost of constructing and repairing first- and second-class roads, were only $385,000. Low governmental costs are due to the efficiency of State administration and the relatively meager demand for roads and schools because of a small and reasonably concentrated population. Of the 366 townships, 278 reported no population at all in 1930 (*160, pp. 6–11*). Only 47 townships have any farms and only 3 have as much as 1,000 acres in farms (*137, pp. 34–53*).

The great bulk of the land in unorganized territory is in large ownerships and is held for successive crops of timber. Conifers constitute the principal part of the merchantable stand and, together with a large quantity of aspen, are consumed almost entirely by the paper mills of Maine. The merchantable species of next importance

is birch which, together with some poplar, is manufactured locally into such articles as spools, toothpicks, excelsior, and soda pulp. With the maintenance of free hunting and fishing by law and established custom, the recreational use of large areas of wild land has offered no prospect of financial return in competition with timber growing.

The segregation of two-thirds of Maine's forest land into a territory with a minimum of local political organization has kept necessary governmental expense sufficiently low to prevent the appearance of any serious forest-tax problem.

There is probably no other forest area in the United States, with conditions similar to those in northern Maine, which compares in size with this unorganized territory. But there are many smaller areas which are similar and which could profitably be reduced to unorganized status. It is true that there are unorganized townships in the Lake States, but the property located within them is subject to county and school-district taxes, which frequently amount to 60, 80, or even 100 mills. In some cases there are quite extensive forest areas which do not contain a single child of school age and only a very scattered adult population, and yet the property is subject to very heavy school taxes. In the interest both of economy and of justice, it would seem desirable to block out certain areas in the Lake States as unorganized territory, in which only a minimum of governmental services would be provided, all of which should be administered and supported by the State.

Such areas could be blocked out in other States. In fact New York is considering the establishment of a State reserve of this character (*124, p. 15*).

> In the Adirondack region, Hamilton County, and parts of several other counties on the Adirondack's fringe are almost wholly wild lands, with here and there a small village or unincorporated community. Much of this area is already subject to limited control by the State as parts of the forest reserve. We recommend the blocking out of the forest reserve, with such additions as may be necessary, as a special district under the exclusive administration and control of the State. Such services as the people may need would be supplied and financed directly by the State * * *.
>
> The adoption of this proposal by the State will at once eliminate one county and a large number of weak towns and village governments, and so reduce the areas and populations of several other counties that their remainders can be consolidated to advantage—thus further reducing the number of weak counties.

Broadly speaking, a forest or sparsely populated region should be self-supporting, as is the unorganized territory of Maine. This would generally appear to be possible, if the services of government were limited and efficiently administered—at least if the population were not too scattered. The attainment of this latter condition would probably require some public control over future land settlement.

PUBLIC CONTROL OF LAND SETTLEMENT

General Statement

The heavy burden of taxation which rests on forest land in many regions is due almost entirely to the presence of a scattered and unprofitable agricultural development. In regions like northern Maine, where the absence of agricultural settlement and the reasonable concentration of woods workers have kept governmental costs low, the forest land is easily self-supporting. But wherever there is

an abortive agricultural development or a decadent agriculture interspersed with a forest area there are usually tax difficulties for both forest and farm owners. In these regions the problem is not a product solely or mainly of a faulty political organization but rather of unwise land utilization.

The traditional policy of government, both Federal and State, has been to get as much of the land as possible into private ownership. This policy has succeeded in a dispersion of the population and the building up of all parts of the country. It has, however, resulted in a rapid and wasteful exploitation of natural resources and an overexpansion of the agricultural industry. The latter effect has been intensified by the coincidence of the rapid disposal of public land for agricultural purposes with an equally rapid advance in the technic of agricultural production. Moreover, this rapid agricultural development has been characterized by no discriminate selection of land, and much of that brought into cultivation is of poor quality. The Nation's agricultural area therefore contains millions of acres of land of low productivity, yielding little or no profit to the owners.

Serious social and governmental problems have arisen out of this condition. As previously indicated, a scattered population necessitates high governmental costs, and the poor quality of the soil produces small incomes with which to meet these costs. Many taxpayers default, and the loss in revenue necessitates a still higher tax rate. This, in turn, narrows the margin of solvency, causing further land abandonment and an accumulating volume of delinquency. In the Lake States millions of acres either have already reverted to the State or await only the final steps in foreclosure. The subject of delinquency has been elaborated in another part of this report (pt. 5) and need not be treated further at this point.

The social aspects of the problem are no less distressing. Families anchored to marginal land are consigned to unremitting toil, a low standard of living, and blasted hopes. Their children are denied the opportunity to develop their faculties and thus may suffer the same handicaps and disappointments. The isolation of these scattered farms intensifies their barrenness. The limited population and the absence of inspiring leadership restrict and paralyze community institutions and activities. One of the costs in the development of the land resources of the United States has been the dwarfed and wasted lives on the fringes of settlement. This sacrifice is no longer necessary. There is so much good land in this country that is not being used that it is unnecessary for farm families to be living at a subsistence level on marginal land. It is deplorable enough to witness one family struggling futilely year after year to wrest a living from a reluctant soil. It is inexcusable to permit a second family to try it after the first one has failed. There are areas that should never have been opened to settlement. However, since a mistaken land policy permitted or even encouraged their occupancy, the least that can now be done is to close them to further settlement. It even appears justifiable for the Government to hasten the depopulation of certain areas by aiding the few survivors to become reestablished in more favorable environments.

There have been some studies of land utilization as a basis for directing future settlement. In the succeeding paragraphs the scope and object of some of these studies will be presented.

Michigan

No other State has gone as far in surveying its land resources as Michigan. There are in the northern part of this State vast areas of cut-over land. Many of the owners of this land have been holding it for as much as 40 years in the hope that it could eventually be sold for agricultural purposes, but they have finally despaired of this and are refusing to pay taxes on it any longer. In Michigan land is deeded back to the State after 5 years of delinquency, and nearly 2 million acres have so reverted. With 40 counties less than self-supporting, i. e., contributing less in State taxes than receiving in State aids, and delinquency increasing steadily, the more wealthy southern part of the State became interested. Therefore, since 1922 the Michigan Land Economic Survey has been engaged in an inventory of the northern counties, particularly those in which idle land and tax delinquency are common. About 6 million acres had been surveyed up to 1930.

A detailed soil survey is made according to the standards of the United States Bureau of Chemistry and Soils. On the soil map is an overprint showing the "lay of the land" in five classes: level, gently sloping, moderately sloping, strongly sloping, and hilly. A forest-and-farm-land survey is made, showing on the map the exact location of the different timber types, the degree of stocking, and the prevailing diameter of the trees. The crop land, cleared land, stump pasture, and idle or abandoned land are also shown. Then there is also made a water-power and geological survey of each county and an economic survey.

The economic survey attempts to collect all facts pertinent to the development and utilization of the county resources not covered by the physical inventory of the natural resources. (1) It inquires into the nature of land ownership, who owns the land, and the intended use; (2) the assessed value of each piece of land is recorded; (3) the tax rate in each local district is ascertained and correlated with other economic and physical factors; and (4) a study is made of the county's products, industries, and market facilities.

The survey does not attempt a land classification. It avoids the terms agricultural and nonagricultural. It does not dedicate the land to any particular use. It presents facts only, but it presents them in such a way that a person having a certain land use in mind can select the conditions best suited to his need. The survey has resulted in the formulation of programs of utilization for particular counties, which have been presented to the officials and citizens of these counties.

In other ways the survey has been justified. Its maps have been used extensively. They have been of much service to the State highway department in locating new roads; they have been of use to the department of conservation in selecting sites for forest preserves and game refuges. They have been of use to the land division of the department of conservation in approving or rejecting applications to homestead. They have been used by paper manufacturers looking for lands to purchase for pulpwood, by rod and gun clubs seeking camp sites, by persons seeking lands peculiarly adapted to some particular purpose as, for instance, the raising of muskrats or the growing of huckleberries.

The immediate effects have not been spectacular, but many individuals have been aided in finding what they sought or dissuaded

from ventures doomed to certain failure. The fact that the work is being continued year after year with increasing care as to detail indicates that Michigan is satisfied as to its usefulness.

Minnesota

Minnesota also has a vast cut-over region which, because of its sparse population and deficiency in income, is a liability to the rest of the State. With the exception of St. Louis County, all of the counties in this northeastern cut-over region receive more State aid than they contribute in taxes (*66*, p. 116). However a policy of controlling land settlement in this region has been recently adopted.

A classification of State lands to determine their use for forestry or agricultural purposes was started in 1928. In 1930 the classification was extended to private lands under the Minnesota Land Economic Survey, but in 1932 this work was temporarily halted for lack of funds. The legislature of 1933 created a State land use committee to cooperate with land classification committees of each county, which were also provided for by the law. These committees were charged with making a temporary land classification of all public and private lands in the State to determine their best uses.[90] The State committee is to report the results of the classification to the legislature, and presumably a more detailed survey will eventually be made.

Another policy of the State which is aimed at restricting settlement in the cut-over region is that of setting aside its own lands into State forests, thus withdrawing them from settlement. A total of over 1,000,000 acres of State-owned land has already been included in State forests, and the ultimate area of such State forests is to be about 4,000,000 acres (73d Cong., 1st sess., S. Doc. 12, p. 825). In order to facilitate this policy of reservation the 1933 legislature passed a law providing for the payment of 50 percent of the gross receipts from State forests to the counties within which such forests are situated.[91]

Several other measures were enacted in 1933, which set up the machinery for a broad program of reduction in the costs of government whenever the tax-delinquent lands are allowed to revert to the State. One of the most important of these is the authorization of the establishment by the counties of "conservation zones" and "agricultural zones" and the provision for the exchange of State lands within the agricultural zones for private lands in the conservation zones. The purpose of this act is to consolidate the holdings of State lands in the conservation zones and at the same time to reduce the costs of local government by moving settlers from these zones to the agricultural zones.[92] Other laws passed in 1933 aiming at a decrease in costs of government are those authorizing disorganization of townships and school districts and the consolidation of two or more counties.[93]

Wisconsin

Zoning ordinances, limiting and regulating the use to which urban land may be put, are very common, but, so far as is known, the counties of Wisconsin are the first to attempt to restrict the use of rural land through zoning. The counties in that State have had to face

[90] Minnesota, Session Laws, 1933, ch. 436.
[91] Minnesota, Session Laws, 1933, ch. 313.
[92] Minnesota, Session Laws, 1933, ch. 418.
[93] Minnesota, Session Laws, 1933, chs. 240, 313, 377.

the problem of land utilization because of the fact that their delinquent-tax lands revert to the county rather than to the State. When certain counties found themselves the possessors of an increasing area of forfeited lands and at the same time began to feel the pinch of a diminishing tax base, they were compelled to give their attention to the problem of land utilization.

In 1925 a law was passed providing for a division of rural planning in the State department of agriculture. Since that time the agricultural college, in cooperation with the United States Department of Agriculture, has taken over the direction of the work, which so far is entirely in the hands of county officials.

During the summer and fall of 1928 several counties decided to adopt land-utilization programs and requested the United States Bureau of Agricultural Economics to advise them how to proceed. William A. Hartman of the Bureau prepared for this purpose a plan for zoning the lands of a county. The plan outlined a method for making a complete inventory of the county and its land resources. When this was done the county board was to zone the land and attempt to guide the owners in its future use.

In 1929 the Wisconsin Legislature passed a law which permits the county board of any county to regulate, restrict, and determine the areas within which agriculture, forestry, and recreation may be conducted. This restriction is to be accomplished by an ordinance similar to an urban zoning ordinance. Such an ordinance was first put into effect by Oneida County in 1933 (*169*).

At about the same time that this zoning law was being passed, a series of land use surveys was conducted under the auspices of the College of Agriculture of the University of Wisconsin, in cooperation with the Wisconsin Conservation Department and other State agencies (*169*). Marinette County was the first county to make a survey of its lands and formulate a program of action (*170*). The survey was made by a local committee appointed by the chairman of the county board, together with certain staff members of the State College of Agriculture. A few facts gleaned from this survey throw light on the nature of the problem.

In 1925, according to the United States census, 563,700 acres, or 62.3 percent of the area of the county, represented cut-over, second-growth, and swamp lands. In the sparsely settled townships many farms were abandoned, a majority of the 521 abandoned farms being in 4 of the 18 townships. Likewise 58 percent of the tax-delinquent land of the county was in 5 townships.

In a district embracing one-sixth of the entire county, scattered settlement and low attendance per school resulted in a rural school cost of $177.69 per pupil for the school year 1927–28. The average cost for the whole county was $92.35 per pupil, and for the State at large, $67.31. One school with only 2 pupils had a cost of $583 per pupil, and another with 3 pupils, incidentally all of one family, had a cost of $333.46 per pupil. On the other hand, one school in the town of Goodman, where there is concentrated settlement, had an average cost of $29.29 per pupil.

Some townships were successfully evading their proportionate part of the road taxes. In 1928, $45,000 was levied for county highway purposes, divided equally among the towns, but 6 of the 18 failed to pay any part of their assessment. However, the entire $45,000 was

spent from the general funds, the taxpaying part of the county bearing the entire county road-building costs.

It was estimated that in 1929 the county would pay into the State treasury $35,111 and receive from the State $187,319.

In the light of these facts the survey concluded that continued expansion of settlement in those marginal areas where experience has shown farming to be unprofitable should be discouraged. Moreover, it suggested that some of the mistakes already made could be corrected by voluntary exchange of holdings of scattered settlers for lands in regions where roads and schools already exist.

The town of Goodman was cited in this study as an example of agricultural development carried on within a forest area. Of the 104 farms in this town, only 9 had been abandoned, most of these being in the outlying districts and on land that was originally obtained through the homestead act. Practically all settlement is in one area, close enough to the village of Goodman so that employment can be had in the mills when work is slack on farms or when additional income is needed. Good roads and school facilities are possible at reasonable cost through this more compact grouping of farms. By exchange of lands a settler in this town was moved from an isolated homestead to the farming community.

Five counties, in addition to Marinette, have completed and published preliminary surveys describing their land resources and suggesting a program of utilization. These five counties are Ashland, Taylor, Oneida, Forest, and Washburn. The publications based on these studies present graphic pictures of the economic and financial position of the county concerned and suggest needed improvements (*171*, *172*, *173*, *174*, *175*). The program advanced for Forest County, as summarized below, is typical:

1. Maintain agricultural development in established farm communities. The establishment and maintenance of connected farm-to-market highways in such regions is important so that cream routes, mail routes, and school-bus lines can operate effectively.

2. The county should take deed to all delinquent lands, start proceedings to quiet title by court action if necessary, and block up its holdings into unbroken units as large as possible. A committee of the county board, preferably a joint committee of the agriculture and conservation committees, should be authorized to investigate all land to which title has been taken, to advise the county clerk on land exchanges, and to negotiate for the sale of these lands for large-scale forest and recreational purposes.

3. Establish county forests on the nonagricultural lands which the county does not succeed in selling. These need not be large, but should be fairly compact units. These county forest lands could be entered under the forest-crop law, permitting the towns in which the forest is located to receive 10 cents per acre per year from the State. Technical assistance in managing such forests could be obtained from the State conservation commission. When supplemented by other extensive areas of public lands, county forests will offer a reliable source of raw material necessary for the maintenance of local industries.

4. Develop the recreation industry.

5. Effect economies in school costs by making the county the unit of taxation and administration.

The above program, while not necessarily a model one in all details, represents a great advance over uncontrolled settlement.

The Hill Towns of Vermont

The land utilization problem which has arisen as a result of widespread farm abandonment is well illustrated in the hill towns of Vermont. The Vermont Experiment Station in cooperation with the United States Bureau of Agricultural Economics and the Vermont Forest Service has made a study in 13 selected towns (*115; 163, pp. 142–148*): Granville, Roxbury, Fayston, Warren, Ripton, Goshen, Stockbridge, Pittsfield, Sherburne, Plymouth, Mount Holly, Shrewsbury, and Wardsboro. These towns were considered representative of 74 other towns in which this type of utilization problem exists (*115, pp. 6, 15*).

The total population of these 13 towns increased from 1810 to 1850. There was a slight decrease from 1850 to 1860 and a greater decrease, slightly over 3.7 percent, from 1860 to 1880. Since 1880, the decline in population has been rapid; the population in 1810 actually exceeded the population in 1930 by 1,300. The decline from 1920 to 1930 amounted to 18.6 percent (*115, p. 15*). Most of the decrease in population in these towns has been due to abandonment of farms and decline in the woodworking industry.

The total area of the 13 towns is 343,370 acres, classified in 1929 as follows (*115, pp. 28–30*):

	Acres
In farms:	
Crop land	40, 332
Farmstead and waste	2, 114
Open pasture	39, 656
Woods	127, 287
Total	209, 389
Woodland not in farms	130, 524
Recreational land	573
Residential, power, and business	2, 884
Total	343, 370

The total woodland area is 257,811 acres, or 75 percent of the entire area. Of the 209,389 acres in farms, only 114,576 acres are in operated farms, and 54,761 acres are in partially operated farms. Of the 40,332 acres in crop land, 26,479 are operated, 10,188 are partially operated, and 3,665 are abandoned. The operated (cultivated) crop land thus represents only 7.7 percent of the total area of the 13 towns, and, with the partially operated crop land included, it is only 10.7 percent. According to figures obtained by the survey, the number of operated farms in the 13 towns decreased from 962 in 1919 to 721 in 1930. The number of partially operated farms increased during the same period from 262 to 377 and abandoned farms increased from 156 to 282. The rate and degree of abandonment may be indicated by comparing ratios of the operated and abandoned areas to the total areas in farms in 1919 and 1929, as given in table 117 (*115, pp. 27–35*).

Table 117.—*Percentage of land in farms operated, partially operated, and abandoned in 13 Vermont towns, 1919 and 1929* [1]

Status	1919	1929
	Percent	*Percent*
Operated	70.6	54.7
Partially operated	18.7	26.1
Abandoned	10.7	19.2
Total	100.0	100.0

[1] Source of data (*115, p. 31*).

Of the 721 operated farms in the 13 towns, a sample of 159 was selected and studied to determine the economic condition of the occupants (*115, p. 91*). The net income received direct from these farms in 1928–29 averaged $213 per farm. Income from other sources averaged $354 per farm. The net cash income available for meeting family living expenses therefore averaged $567 per farm. An average of $594 of the family living had to be purchased. This leaves an average deficit of $27 per farm.

The good land is usually in small areas which are widely scattered. In most cases there is not enough good crop land within easy reach to make a farm which will give full and profitable employment to a farm family. Thus, in the opinion of the Vermont Commission on Country Life (*163*) the utilization of the small areas of good land for farming purposes is practicable only in case there are mines, quarries, woodworking, or other industries in the neighborhood which give remunerative employment. Under these conditions, the land and buildings of what would otherwise be an abandoned farm are valuable as a residence and a place to do some part-time farming. These industries are important, not only because they provide supplementary employment for the part-time farmer, but because they provide taxable property and a grouping of population which make it possible to maintain local government, schools, and the voluntary social institutions. Where such centers of life do not exist, it is better that the small, scattered areas of good farm land in the hill towns revert to forests.

The commission points out that in 1890 there were 92 manufacturing plants in the 13 hill towns and in 1929 only 30. These consist of 20 woodworking establishments, 5 cheese factories, 2 creameries, and 3 other small industries. In some towns, mines and quarries will continue to furnish employment; in others, people may find work on the roads or in the employ of summer residents. In the main, however, woodworking establishments offer the greatest possibilities for future employment in the hill towns. Therefore there should be comprehensive plans for rehabilitating the depleted forest resources of these towns.

Some of the abandoned farmhouses, as well as some of the houses in the little villages, are being acquired by nonresidents for summer homes. In 1929 there were 171 such summer homes. Of these, 63 were on farms and 108 were in villages. The number of houses abandoned each year however is in excess of the number purchased for summer-residence purposes. For instance, in 1929 in the 13 towns 44 houses were abandoned, and only 8 were taken for summer homes. In 10 years there have been over 200 farmhouses abandoned and only 47 utilized for summer residences.

It is the conclusion of the commission that the responsibility for the solution of the hill-town problem should be assumed by the State. It recommends that a permanent State land utilization commission be set up, composed of the State forester, the commissioner of agriculture, an agricultural economist from the agricultural college, and two other men chosen to represent the lumber, woodworking, and recreational interests. This commission should work with a local organization in each town. After further study there should be formulated a program and plan for the economic development of each. The commission's more specific recommendations are: (1) State acquisition of farm

lands suited only to forestry, (2) encouragement of lumber companies to acquire large holdings of timberland, (3) the restoration of forests to a sustained-yield basis, and (4) revision of the town organization to reduce the tax burden.

Appalachian and Ozark Mountain Regions

According to the Bureau of Agricultural Economics (*120, p. 22*), a decrease in crop acreage is rather general in the Appalachian and Ozark Mountain regions—

> where there are large numbers of farms too severely handicapped by rough land surface, or poor soil, or small size to maintain a reasonable standard of living for their operators. Many of these farms were originally settled by pioneer farmers partly dependent on hunting, grazing, and lumbering. The passing of game and merchantable timber, the competition of more favored districts, and opportunities to earn higher wages elsewhere have caused thousands of these small farms to become incapable of maintaining for their operators an adequate standard of living or one comparable with the standards prevailing in areas where the physical environment is more favorable.
>
> In a hilly district of southeastern Ohio, in which a special survey was made, the average net cash income from farming was only $224, and in a Kentucky foothill district only $147. The figures for these farms, which are representative of large sections, may be compared with net cash incomes averaging about $850 for farms in the East North Central area as a whole, and from $950 to $1,000 for farmers of the North Atlantic area. Necessarily food produced on the farm for family consumption was an important element in the economy of the hill farmers, increasing the value of their available net income to the neighborhood of $500, as compared with $1,150 to $1,250 for those of the North Atlantic and East North Central areas.

In the Appalachian highlands, as in other regions, social and economic forces are operating to bring about new equilibriums. For instance, the penetration of the mountains with improved highways sets in motion many changes. The roads break down the isolation of the mountaineers; they bring in new people and new ideas; they arouse new interests and create new demands. The purchase of an automobile is usually the death knell of a self-sufficing economy. A small farm that produced enough to meet the simple needs of a stay-at-home family proves inadequate to support an automobile and meet the new demands for cash. It is true that to some extent the penetration of the mountains has created or expanded the market for fruits and vegetables, and a more intensive agriculture has resulted. Where this has happened, the added cash income has been provided with no expansion in the size of the farm. The tourists who travel over the roads have also provided a market for the products of the mountaineer handicrafts. The construction and maintenance of the roads themselves provide employment for native labor and cause a flow of money into the region. A number of people find employment in garages and filling stations. Thus, to some extent, the penetration of the mountains with good roads cures the problems which it creates. However, the region is never the same again. Its quiet, self-satisfied, and self-sufficing life is destroyed. Its economy is disturbed, and usually a problem in land utilization is created. Favored regions near the larger cities may meet the problem by giving more attention to fruit and truck crops. A few regions witness resort developments, and a few others profit through the exploitation of mineral and power resources. But the transition from a self-sufficing to a money economy inevitably

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results in the abandonment of the less fertile and less favorably located farms; that is, the farms which are not adapted to cash crops. Unfortunately the abandonment is likely to be a slow and painful process, involving individual and community hardships that might be alleviated through State efforts.

New York

The agricultural area in New York increased until about 1880. Since that time the area in farms has decreased 4,500,000 acres, although the total crop production has increased. About 1,000,000 acres, which have disappeared from farms in the southeastern and northwestern parts of the State, have been taken for industrial and residential purposes and are by no means abandoned lands. Most of the true abandonment has taken place in the hilly regions, particularly in the southern highlands and on the slopes bordering the Catskill and Adirondack Mountains and lying between the fertile valleys on which farming is relatively prosperous and the high altitudes which have never been cleared.

The Department of Agricultural Economics at the New York State College of Agriculture (Cornell University) has made intensive surveys of several of the decadent areas. These surveys furnished the material for a critical study (*117*) of the problems of fiscal decline, from which the following significant conclusions are drawn (*117, pp. 48–50*):

> Abandonment has been found to be due chiefly to the characteristics of the soil and the topography * * * The expenditure of capital for improving a farm will pay better on good land than on poor land. Every step in progress makes it relatively more advantageous to obtain the food supply by the more intensive use of good land rather than by the use of land such as is being abandoned. The high ratio of wages to prices of commodities accelerates this movement.
>
> The process of abandonment usually goes through several fairly well-defined stages. First the tenants move out. Then the young people go. There are left the older owners. These try to sell the farms to people unfamiliar with the territory, if possible. Many farms are sold, and this prolongs the process of abandonment, particularly if houses and barns are repaired or remodeled. Many of the farms are still in the hands of the descendants of the original settlers. The sons are gone. When the present owners die, the farms will be sold to an endless succession of inexperienced buyers, who purchase in optimism and after being disillusioned retain possession in the hope of a sale. If the land were taken for forestry purposes, some of the occupied farms as well as the vacant farms would be purchased. Most people come to the conclusion that it would be a blessing to everyone concerned if some authority, such as the State government, would step in and, by purchase, zoning, or some such plan, accelerate the movement.
>
> * * * it seems obvious, (1) that something should be done to hasten the abandonment of lands that do not yield living wages to their owners, (2) that some other method of utilizing this land should be adopted wherever this is feasible, and finally, that some steps must then be taken to provide an adequate method of financing the services that will be required for the remaining inhabitants.

All of the evidence collected points to the conclusion that the most profitable use to which this abandoned agricultural land can be put is the growing of forests. As a matter of fact, New York has already done much in the way of reforestation. It has reforested large areas at public expense and has made provisions for the production of enough seedlings to meet the requirements of private landowners. The New York State forest preserves in the Adirondack and Catskill Mountain regions now contain 2,300,000 acres (in 1932, 2,373,804

acres in all forested State parks), and the Cornell University studies indicate that there are about 2,500,000 acres of abandoned farm land in declining communities that should be reforested (Kolbe, as quoted by Compton (*117, p. 33*)).

During 1928 the State reforestation commission made a survey of all the agricultural counties to determine the areas of nonproductive agricultural land that could be reforested by the State at low cost. As a result of this survey it was estimated that there were available 850,000 acres in contiguous areas of 500 acres or more that could reasonably be reforested by the State. It was also estimated that there was about twice as much available land in smaller areas. The commission recommended in January 1929, that the State undertake to develop areas of 500 acres or more directly and provide aid to counties to assist them in developing the tracts of less than 500 acres. Following the recommendations of the commission the New York State Legislature of 1929 appropriated $100,000 to begin such a program. A bond issue of $19,000,000 was proposed to provide funds to continue the program on an enlarged scale over an 11-year period. Two successive legislatures endorsed the bond issue, and it was ratified by the people in November 1931. The adoption of this program by the State of New York is not only an effort to restore its forest resources but is a recognition of the need for a definite land policy. It will be many years before the reforested areas become income-producing, but the acquisition program provides a market for unproductive farm lands and enables the owners to sell for cash and establish themselves elsewhere. Wherever the acquisitions can be made in blocks of several thousand acres it will be possible to close the schools, abandon some of the roads, and otherwise reduce the costs of local government.

Ontario, Canada

An interesting experiment in directing land utilization has been conducted in the Canadian Province of Ontario. In the central portion of the Province there was a belt of white pine, similar to the pineries of Michigan, which was cut over by lumbermen in the latter part of the nineteenth century. As the lumbermen advanced, farmers moved in and apparently prospered for a time. But after lumbering had ceased and forest fires had destroyed the young growth, there was no longer a market for agricultural products, and farming ceased to be profitable. The more ambitious people left, and the less ambitious who stayed have been able to eke out only a precarious living.

A survey of five townships in this old white pine belt by the Provincial forestry branch showed 768 farms in the district, only 36 of which wholly supported the people living on them. Many of the owners worked for wages away from their farms. Forty-two percent of the farms were not occupied, except that the native grass might be cut or the farm pastured by a neighboring farmer. Twenty-one percent of the farms were completely abandoned. In 1926, over 12,000 acres in the five townships were advertised for sale for tax arrears. The average accumulated tax charges on the 12,000 acres were 47 cents per acre.

The Provincial government bought better lands in another part of the Province and offered them in exchange for the farms in the cut-

over area. In the fall of 1926 five families, constituting about one-half the population of one township, accepted the proposal to be moved, the government paying their moving expenses and building houses and stables for them at the new location. The abandoned farms acquired by the government were closed to further occupancy. By this means the government was able to close one school and to save in school and road expenses in 2 years the entire cost of moving the families. In all, 15 families, the total population of about four townships, were moved (*117, p. 166*).

This experiment, in spite of the fact that it resulted in reducing the cost of local government in the evacuated areas, could not be called a success since only 5 of the 15 families stayed on the good agricultural land after being moved. This result has been ascribed to the character of the people transferred (*121*).

Since it is usually the case that the men stranded in sparsely populated regions are old and not able to adapt themselves readily to changed conditions, the transfer of such people is a difficult matter. The depopulation of these areas may in many cases have to come about slowly by the prevention of new settlement and the abandonment of the old places with the death of the occupants.

Summary

These examples are sufficient to indicate that there are sparsely settled regions or forest regions in many parts of the United States and Canada that need a simpler form of governmental organization than is required by richer and more developed regions. They need to be relieved of the excess layers of government that contribute to the burden of taxation. Many forest regions which are now severely burdened with taxes might enjoy very moderate taxation if the functions of government in these regions were limited to those which yield a benefit to forest property. School taxes always figure heavily in the tax load on rural property. It cannot be claimed that uninhabited forest land should be relieved of all school taxes, but there is justification for some relief in this field. This would easily be possible if settlement were controlled. Rigid control of further land settlement in sparsely settled regions, accompanied by the disorganization of all or most of the local governments in such regions, would certainly yield substantial tax relief to much forest land and in no way add to the burden on other classes of property.

STATE AND FEDERAL AID

OBJECTS AND EXTENT

Most of the States have come to the rescue of local government in recent years through the so-called "grant-in-aid." The two principal objects for which State aid is granted are schools and roads, and the distribution of aid for each of these objects will be discussed at some length. State aid for health work will be given a very brief treatment.

While schools, roads, and health activities have been the chief beneficiaries of State aid, the State often shares in the support of other functions. It is now recognized that most of the traditional functions of local government are affected with an interest beyond the borders

of the local unit. Because of this fact and the further fact that local units differ so greatly in wealth and taxpaying ability, the States are assuming a larger responsibility for these functions. They are either sharing the cost, leaving the administration with the local units, or they are taking over the functions entirely. The place occupied by subventions and State-shared taxes in 1928 is given in table 118.

TABLE 118.—*Subventions and State-administered taxes shared with local divisions, and ratio of each to total local revenues, 1928* [1]

State	Subventions	State-administered taxes	Ratio to local taxes of—	
			Subventions	State administered taxes
	1,000 dollars	*1,000 dollars*	*Percent*	*Percent*
Alabama	6,714	4,268	17.3	11.0
Arizona	1,969	76	10.2	.4
Arkansas	3,751	397	13.8	1.5
California	6,858	13,867	2.1	4.2
Colorado	2,131	1,996	4.5	4.3
Connecticut	1,770	3,300	2.5	4.6
Delaware	1,642		23.5	
Florida	2,598	3,605	3.5	4.9
Georgia	4,897	2,035	10.4	4.3
Idaho	20	2,635	.1	13.2
Illinois	9,586	9,200	3.0	2.9
Indiana	5,325	3,683	4.0	2.8
Iowa	797	13,554	.8	13.4
Kansas	655	3,035	.8	3.7
Kentucky	6,176	481	12.0	.9
Louisiana	5,495	1,077	10.0	2.0
Maine	2,890	196	10.7	.7
Maryland	3,305	2,390	5.7	4.1
Massachusetts	7,196	37,590	2.8	14.8
Michigan	20,081	9,825	7.6	3.9
Minnesota	12,486	410	10.0	.3
Mississippi	4,819	5,178	8.9	9.5
Missouri	6,372	1,160	5.5	1.0
Montana	1,604	2,466	6.2	9.5
Nebraska	1,333	2,805	2.4	5.1
Nevada	423	279	7.6	5.0
New Hampshire	1,167	1,581	5.9	8.0
New Jersey	21,546	14,365	8.2	5.5
New Mexico	1,030	388	11.0	4.1
New York	74,648	62,667	8.7	7.3
North Carolina	3,543	14	5.1	(2)
North Dakota	1,427	830	4.9	2.8
Ohio	4,199	17,430	1.3	5.6
Oklahoma	2,992	9,807	4.2	13.6
Oregon	1,631	1,682	3.5	3.6
Pennsylvania	28,505	4,382	7.4	1.1
Rhode Island	500		2.0	
South Carolina	3,427	1,919	11.3	6.3
South Dakota	1,597	332	4.7	1.0
Tennessee	5,504	1,836	10.6	3.5
Texas	28,371	7,279	18.2	4.7
Utah	3,781		20.4	
Vermont	2,931	5	21.6	(2)
Virginia	5,843	2,735	11.1	5.2
Washington	8,639	2,553	11.5	3.4
West Virginia	2,165		4.1	
Wisconsin	8,358	5,901	6.0	4.2
Wyoming	2,120	3	17.7	(2)
Total	334,817	261,217	6.5	5.1

[1] Source of data: (*148, pp. 18–19*).
[2] Less than 0.05 percent.

The Federal Government is making extensive use of the grant-in-aid as a means of inducing State cooperation in matters of national concern. The principal objects for which Federal aid is available are highways, forest-fire prevention, agricultural extension, vocational education, and public health. The purpose has been to

stimulate local effort and to standardize the service rather than to provide tax relief. Of course, as a result of Federal aid, certain communities and certain States have undoubtedly acquired services or public improvements, particularly highways, which they would not have acquired if the aid had not been available. The subject of Federal aid will not be pursued in detail, as the effects are in general similar to those of State aid.

EDUCATION

According to a leading authority in the field of public-school finance (*158, p. 192*), a study of State systems of school finance in the United States will reveal at least five distinct conceptions as to the purposes of State aid: (1) To provide general tax relief; (2) to provide State administration and supervision; (3) to stimulate local communities; (4) to compensate local communities for costs incurred in providing school facilities despite peculiarly adverse or difficult local conditions; and (5) to equalize school revenues, school burdens, and educational opportunities throughout the State. A brief abstract of this authority's analysis of these several forms of State aid follows:

The oldest and most universally provided type of State school fund in the United States today is that designed to afford general relief to all political corporations supporting public schools. At the time such funds first arose, it was commonly conceived that the support of public schools was a local responsibility and that any contribution from the State was merely a gratuity. This explains why no effort was made to determine whether the quotas received from the State, together with other available school revenues, would provide a sum sufficient to meet the costs of a satisfactory school program. A few States, such as Arizona, California, Utah, and Washington, guarantee annually a fixed amount for the education of each child. However, the method most commonly employed is merely to set aside the receipts from one or more specified sources and prorate them among all the minor civil divisions of the State on the basis of school census or enrollment. In recent years some States have improved on the basis of apportionment by adopting average daily attendance or aggregate attendance as the basis.

In order that State funds might be administered and distributed fairly and efficiently, it became necessary for the State to assemble a considerable amount of statistical information and provide an increasing amount of supervision. In addition to meeting the costs of State administration and supervision, several States now provide funds from which to contribute toward the salaries and expenses of local supervisory and administrative officers, such as county or city superintendents, supervisors, and attendance officers.

At one time the State funds in certain States so nearly met the minimum costs of the local schools that they had a paralyzing effect on the local districts. There was a growing disinclination on the part of the local districts to levy taxes to supplement the State funds. Schools were commonly maintained only as long as State grants permitted, and on every hand educational facilities decreased in number, availability, and quality. As a result, States began to require that a district raise by taxation an amount equal to its State quota.

That is, in the majority of the States the purpose of State aid came to be conceived as twofold: (1) to provide general tax relief and (2) to stimulate local effort.

The policy of stimulating local effort through general relief funds was succeeded in many States by a policy of providing special funds to encourage local communities to provide at their own option special types of schools, additional studies, and other unusual educational facilities.

The most important objects for which special stimulation grants are provided today include high schools, consolidation, instruction in agriculture and other vocational or trade subjects, teacher-training departments in high schools, school libraries, school buildings, free textbooks and other facilities, and the maintenance of special types of classes. Among the States which thus far have given only a small place to special stimulation-fund grants may be named Arizona, Arkansas, Colorado, Delaware, Florida, Idaho, Illinois, Louisiana, New Mexico, and Oregon. Of the States which have entered upon an extensive policy of stimulation may be mentioned New York, Minnesota, and Connecticut.

Another form of State aid may be termed compensation grants. These are subsidies paid by a State to constituent political corporations which, in making provision for certain educational facilities, are handicapped by adverse economic conditions. This type of grant borders very closely on the last type of school aid which will be described, that is, equalization funds.

During the last 15 years there has come into prominence a new conception of the fundamental purpose of State aid, namely, that of compensating for local inequalities in school revenues, school burdens, and educational opportunities, due to factors over which the local communities have little control. As a result of this new conception one State after another is attempting to establish an equalization fund or to distribute existing funds upon a basis which will take into consideration differences in taxpaying ability and need. The factors that are taken into consideration in making the distribution are numerous and involved and differ widely in the different States (*158, pp. 192–200*).

There is perhaps no yardstick for determining how much of the cost of schools should be a local obligation and how much a State obligation. In the last analysis the State is responsible for all education, and at one time the public schools in many States derived a considerable part of their support from permanent State funds, such as those built up from the sale of public lands. The collapse of these funds in some States and their inadequacy in all of them led to an increasing reliance on local taxation. When the principle of local school support had once become established, the States withdrew almost completely from the picture, and the local communities have been required to carry the ever mounting costs. Now the States, after taking a long holiday, have begun to resume their responsibility.

State responsibility for education does not mean that school costs should all be borne out of State funds. There are administrative and psychological reasons why the localities should continue to bear a considerable part of the cost of the local schools, but there is no logical reason why they should bear such varying portions of the standard costs. In 1928 the portion of the public-school costs borne

by the State ranged from 1.8 percent in Kansas to 83.4 percent in Delaware. The median was 16.5 percent (*162, p. 36*). However, these figures do not tell the whole story. If the State raises the amount it returns to the localities from a property tax, the arrangement serves to mitigate tax inequalities but does not result in any reduction in the aggregate burden on property.

In 1919 Delaware passed a law abolishing the school district and establishing in its stead the county unit. The advantages of the larger school unit became manifest almost immediately, and in 1921 the State was made the principal unit of school support.

One State has now taken a more extreme position even than Delaware. In 1931 North Carolina enacted a law by which the State assumed the current operating costs of a minimum school term of 6 months, and in 1933 the State assumed the corresponding costs for 8 months. The State is assuming this responsibility without use of the property tax, a general sales tax being adopted to obtain the additional revenue needed after heavy reductions were imposed.

HIGHWAYS

State aid for highways is a comparatively recent development and is, of course, a product of the widespread use of the automobile. To a considerable extent it represents no more than a sharing of the State-collected revenue from motor-vehicle and gasoline taxes with the local units to help them maintain local roads. At first the revenue derived from these taxes was mostly expended by the States on the primary roads, the local units even contributing from the property tax toward the cost of their construction. Later the States generally assumed the entire cost of an ever-increasing mileage of primary roads. But the attempt to improve the vastly greater mileage of secondary and tertiary roads was a heavy burden on the counties and towns and led to an insistent demand for a part of the motor revenues. This demand has been met in various ways—by returning part of the proceeds from these taxes to be expended by the local units, by aiding in the construction of certain kinds of roads, or by taking over and maintaining more and more of the main-traveled roads. The method has so varied among the different States and has changed so constantly in every State that no purpose would be served in tracing the development in detail. It may be said, however, that the main objectives have been to encourage local support of road-building programs, to standardize and harmonize the efforts of the local units, to insure proper maintenance of completed highways, and to relieve to some extent the tax burden on property.

One of the chief difficulties has been to find a basis for distributing the aid that is both just and conducive to maximum accomplishment. An improved highway benefits both the user and the adjoining property, but it is not easy to measure these respective benefits. The extent to which each of these types of benefit is recognized in the tax system will naturally influence the division of support between State and local governments, for the motor-vehicle taxes are most readily collected by the State.

The amount of State aid which can be distributed depends not only on the form of the tax system but on the extent to which the State itself assumes the function of road administration. The pro-

portionate share of roads for which the State has assumed full responsibility necessarily influences the amount of aid which it can distribute. Again, the work which can be accomplished with a given amount of revenue depends on the size and character of the administrative unit and the amount of technical supervision which is provided. A distribution of the aid among a great number of small political units is not conducive to maximum efficiency, especially if there is no close supervision of expenditures. Neither is it so likely to lead to a well integrated road system as would a more centralized control. Property-tax relief obtained through a wasteful expenditure of other revenues can hardly be defended. In other words, road aid which is so distributed as to equalize or mitigate the inequalities in local tax burdens may possibly serve more to perpetuate an antiquated political organization than to effect a better road system.

PUBLIC HEALTH

State aid in the administration of public health is being granted in several States.

Any county in New York, exclusive of a county having within its boundaries a city of 50,000 population or more, may receive State aid for the construction and maintenance of a county hospital or for the purpose of defraying the expenses of such county in any public enterprise or activity for the improvement of public health, or any public-health work undertaken by such county, within limits prescribed by the State commissioner of health. It is the duty of the State commissioner of health to formulate standards of construction, equipment, service, administration, and work which must be complied with by such counties in order to be entitled to State aid. The State pays 50 percent of the amount of expenditure as approved by the State commissioner of health.

In Ohio any general or city health district which employs a health commissioner, public-health nurse, and clerk, receives from the State one-half the amount paid to such employees, provided the amount to be paid by the State to a district for a 6-month period does not exceed $1,000. Aid is rendered to county health units in Arkansas, Ohio, and Louisiana. Towns in Massachusetts receive $5 a week from the State for each indigent tubercular patient in a county or municipal tuberculosis hospital.

EFFECT ON LOCAL PROPERTY TAXES

State aid, particularly for schools and roads, has grown to be such a large item that it might be expected to have caused a substantial reduction in local property taxes. However, the evidence at hand does not indicate that this has been the result, at least was not prior to the depression. In California, State aid for schools increased between 1919 and 1928 from $6,913,627 to $23,519,881, or 240 percent, but during the same period local district taxes increased from $14,224,851 to $57,038,288, or 301 percent (*4, p. 86*).

In Illinois, State aid for schools increased from $5,404,169 in 1920 to $7,484,288 in 1928, an increase of 38 percent. Local school taxes increased from $57,490,980 to $119,583,290, or 108 percent (*4, p. 87*).

Minnesota's State-aid fund grew from $2,543,464 in 1919 (11 months) to $6,023,511 in 1928, a gain of 137 percent. Local school

taxes increased during this period from $16,700,000 in 1919 to $35,700,000 in 1926, or 114 percent (*4, pp. 92–93*).

In Tennessee the State contribution for education increased, for a period, slightly faster than local support. Between 1924 and 1928 State aid increased from $2,897,478 to $3,644,877, or 26 percent, whereas local taxes for education during this period increased from $10,917,961 to $13,449,556, or 23 percent (*4, p. 106*).

In New York the increase in State aid has been very marked, rising from $5,564,260 in 1915 to $69,244,869 in 1928, an increase of 1,144 percent. During this period local school taxes increased from $60,317,062 to $194,113,754, or 222 percent (*4, p. 103*).

Only in New York, among the States mentioned here, has the State assumed a perceptibly larger share of the total school cost, and even in New York the absolute increase in State aid has not been as great as the absolute increase in local school taxes. In none of these States—and they are perhaps representative—was there an actual reduction in the amount of local school taxes. Of course in very recent years local school taxes have been reduced almost everywhere, but not usually as a result of increased State aid. It is possible that the State aid has kept the tax rate from rising as high as it would have risen otherwise; but that is not necessarily the case, for the increase in local expenditures has been partly a result of the stimulus of State aid. In 1918 the State was bearing 25 percent or more of the cost of schools in 15 States; 10 years later this was true of 16 States (*162, pp. 35–36*). The main purpose of State aid for schools has not been to give general tax relief but to improve the quality of education.

Neither has State aid for roads generally resulted in a reduction of local taxes. In Minnesota, State aid for roads increased between 1917 and 1927 only 19 percent, whereas county road taxes increased 152 percent (*4, p. 120*). In New York, State aid for town roads increased 22 percent between 1924 and 1928, whereas town highway taxes increased 187 percent. In the same period State road aid to the counties of New York increased only 1 percent, whereas county highway taxes increased 44 percent (*4, p. 127*). In Texas payments from State funds declined slightly between 1927 and 1928, while the share of the cost borne by the counties increased sharply (*4, p. 130*).

OTHER EFFECTS

Even though State aid does not appear to have resulted in any general reduction in local taxes, the device has probably succeeded in accomplishing the purposes for which it was designed—namely, to improve the quality of local services and to equalize to some extent the tax burden. Most observers agree that it has been an important factor in the improvement of both schools and roads. It has probably been less successful in equalizing taxes. However, this goal has been approximated in States like New York, where, after a district has levied a certain maximum tax, the State pays the remaining cost of meeting a minimum school standard, and where similarly town road taxes are essentially equalized.

Despite the rapid growth and seeming popularity of State aid, it must be recognized as a palliative. The roots of the trouble are an improper distribution of governmental functions and a needless

multiplicity of local units. Insofar as State aid yields a measure of relief from the effects of these maladjustments, it serves to delay their correction.

State aid has, for instance, served to perpetuate the use of the town as a road unit. In Wisconsin, State aid to towns for highway purposes, from 1926 to 1931, amounted to $25 per mile. In 1931 the aid was increased to $50 per mile, and the town officers were given complete control over the expenditure of the money. The result, to cite one example, is that State aid for town roads in Washburn County for 1932 was approximately the same as the total cost of town roads in 1930. Many of the towns now levy little or no road taxes, and in 11 towns the aid amounts to about $7,500 more than their average annual town road costs for the period 1926 to 1930, inclusive (*168*). This increase in road expenditures, when paid by someone else, becomes more questionable when it is recognized that Washburn County is one in which population, the number of farms, and the area of land in farms has been declining since 1920.

In a similar way State aid has perpetuated small school districts. In New York 1-teacher districts with expenditures of $1,500 or less for purposes other than retirement of debt receive a State grant equal to the amount by which such expenditures exceed a 4-mill tax on full value, provided that no district receives less than $425. In 1930–31 a representative group of six hundred and seventy-four 1-teacher districts obtained 58 percent of their funds from State aid, whereas 7 consolidated rural school districts received only 28 percent of their revenue from the State (*112, pp. 6, 8, 22*).

In referring to this New York system of equalization, Compton (*117, p. 182*) says:

> There can be no doubt that the recently enacted increase in State aid for schools was needed; yet there is doubt that it would have been needed if the education system had been organized along twentieth-century lines * * *. It may be expected that any unqualified increase in State aid will tend to further entrench the present district system. Such increases remove the incentive to consolidation.

The Institute of Public Administration, in its recommendations relative to the reorganization of local government in the State of New York (*124, p. 7*), declares:

> State aid is a dangerous palliative for the failure to coordinate work and resources. Large amounts of State aid cannot be distributed without the preparation of elaborate formulas, rules and regulations, supervision, and audit. Nor can it be long maintained without further encouraging extravagance and dividing responsibility for the maintenance of balanced budgets and reasonable taxes.

State aid has undoubtedly helped to perpetuate a multiplicity of local taxing units, which were created to serve another generation and are now no longer needed. As a tax-equalizing proposition it is a makeshift and should be so considered.

REDISTRIBUTION OF FUNCTIONS

It has already been pointed out that the general pattern of local government for rural areas was designed more than a hundred years ago, when the difficulty of travel made it necessary to bring the authority and services of government very close to the people. Not only was it necessary that the officials be close by, but the character

of government at that time lent itself to small units of administration. The principal functions were the protection of life and property, the administration of justice, the distribution of poor relief, the construction and repair of neighborhood roads, and the supervision of local schools. Now the ease of communication makes small political units unnecessary, and the changed character of the services renders these units uneconomical as administrative districts. Finally a broader concept of government has narrowed the field of local responsibility. There has thus been a steady, but generally belated, transfer of functions from smaller to larger jurisdictions. The movement has failed to keep abreast of the changes in economic and social conditions and of the more enlightened concept of jurisdictional responsibility, because of inertia, political resistance, and a narrow and mistaken concept of local self-government. The result is that the present distribution of functions, in most States, is out of harmony with either the ability to support them or the scope of the benefit.

Perhaps the needed adjustment has been more nearly accomplished in the case of road administration and support than in any other field. But even in this field the adjustment has nearly always been a belated one. It has been amply demonstrated that the township is an improper unit of road construction. Even if the State or county contributes to the cost, most townships lack the organization and equipment to build roads for automobile use. The township is still often used as a unit of road maintenance, but the same objections, with only slightly less force, obtain. The trend toward the county as the primary road unit is entirely justified. This trend is accompanied by the equally commendable one toward full State support of the main arteries. In fact, the State highway systems are being expanded to include an increasing mileage of the more important roads. Pennsylvania, for instance, since 1931 has taken over some 20,000 miles of local roads. Two States—North Carolina and Virginia—have gone the whole distance and have made the construction and maintenance of all roads, except city streets, a State function.

It is pretty generally recognized that the support of the primary roads is a proper function of the State. These main highways are avenues of intercommunity and interstate traffic and are only incidentally of local benefit. There is no such general agreement that all roads should be transferred to the State. Many view the North Carolina and Virginia experiment as radical and unwarranted. Indeed, those who endorse this degree of State centralization admit that there are still many local roads which are primarily of local benefit. Nevertheless they defend both State administration and State support. State administration is defended on the ground that it is economical and efficient, and if North Carolina's experience the first year is a fair test such is the case. The State highway commission, through the employment of 3,700 prisoners, was able to maintain 45,000 miles of local roads for $6,000,000, whereas the cost to the counties had been about $8,000,000. Moreover, according to the testimony of the rural mail carriers, farmers, and others, the roads were never kept in better shape. State support is defended on the ground that the highways should be maintained by those who use them; that is, by the motorists, and that if the roads are to be supported from gasoline and motor-

vehicle taxes, the State is the most satisfactory collecting agent. In answer to the argument that adjoining property benefits from the improved road and should bear part of the cost, it can be said that property is bearing an undue share of the cost of other functions and that the easiest and most acceptable way of granting property tax relief is to shift the cost of roads to motorists. This, of course, does not relieve farmers and other property owners of road taxes, for all classes are owners and users of automobiles. Moreover, the properties which are enhanced in value by virtue of being on a surfaced road have their assessments increased and pay higher taxes for other purposes.

In the case of schools, as already suggested, there can be no exact correlation of support and benefit, for the benefits of public education are intangible and general. Although public education is, in a sense, a State responsibility, it is a function that demands local administration and probably for that reason should be supported in considerable part through local taxes. This does not mean that the local taxing unit need be the tiny school district which now so generally prevails. The county is widely used as a unit of supervision and could profitably be used more widely as the unit of taxation. The State should, of course, continue to contribute to the support of the public schools and in many States to a much greater extent than it now does. While the educational function by its nature and sheer weight justifies joint support, it probably will and should remain primarily a local function.

Poor-relief and public-welfare activities generally have been traditionally local functions but are gradually being transferred to larger jurisdictions. Thus New York is limiting the work of the town overseers of the poor and enlarging the county work. The State is also participating through a pension for the indigent aged. Virginia is rapidly eliminating its county almshouses and substituting district homes serving several counties. Several States have adopted a system of mothers' pensions—contributed jointly by the State and county.

The care of dependent, defective, and delinquent classes has come to be largely a State responsibility. The almshouses are being properly relieved of the insane, the feeble-minded, and the delinquent and are being devoted more strictly to caring for the aged poor. Twenty-five States have adopted old-age pension systems, thereby tending to remove the need for almshouses. The ubiquitous county jail is surrendering more and more of its prisoners to State institutions. The average number of prisoners in county penal institutions decreased from 14 in 1910 to 7 in 1923. In a recent year 37 of Alabama's 67 jails were empty at some time during the year (*119, p. 277*). In North Carolina all able-bodied male prisoners serving sentence of 30 days or more have been taken over by the State and are employed on the State highways.

State police forces have been established in a dozen or more States to supplement and strengthen local police agencies. The sheriff, despite his ancient lineage, is neither competent nor free from political influence.

The administration of justice, except in the lower courts, has long been largely a State function, but certain offices are subject to too much local influence to secure competent and unbiased service. This is particularly true of the elective offices of district or prosecuting

attorney and coroner. There is a widespread conviction that the coroner's office should be abolished and that the prosecuting attorney should be appointed by and be responsible to the attorney general of the State. In its recommendations relative to the reorganization of local government in the State of New York, the Institute of Public Administration (*124, p. 14*) recommends that—

> the elective county offices of district attorney and coroner should be abolished, and the Governor should be responsible for the appointment of district attorneys and medical examiners in and for the counties or such larger administrative districts as may be required * * *. The functions of the elective county clerks, with certain exceptions, might also be transferred to the State and the appointment of these recording officers made by the Governor or secretary of state on a merit basis for the counties or larger areas as might be desired.

It cannot be claimed that the transfer of functions from a smaller to a larger jurisdiction has always, or usually, resulted in a reduction in local taxes. There are, unfortunately, few figures that throw light on the tax effect. To a large extent the transfer of functions has been prompted fully as much by a desire to improve the service as to reduce the cost. If that desire has been fulfilled, it is a distinct gain even though there is no tax reduction. It is probable that in some instances the transfer has not been reflected in an appreciable tax reduction, because of failure to reduce the machinery of local government with the curtailment of functions. In some instances, the transfer has not been complete, necessitating the retention of much of the old machinery. Finally new functions or services have appeared to replace those which were surrendered.

It is probable however that a redistribution of functions resulting in larger administrative districts does result, other things being equal, in lower overhead costs. In fact, the few figures available support this conclusion.

After a study of local government in Washburn County, Wis., the investigators concluded (*168*) that $15,000 a year could be saved in this one county by transferring town-road administration from the towns to the county. This would enable the county to reduce its levy by a like amount, or by 11.3 percent of the 1931 county levy. Almost $11,000 of the $15,000 saving would apply to rural taxes. This represents about 6 percent of all taxes levied on rural property for all purposes. The adoption of the county-unit school system in place of the present district system would, it was estimated, save $15,000 additional.

The saving in road costs in North Carolina under State maintenance has already been mentioned. The saving in the cost of supporting prisoners, while it cannot be precisely calculated, must also be very great. It could be even greater if three-fourths or more of the county jails, left now with only a handful of prisoners, were closed. Similar economies could be effected by dispensing with the county almshouses and substituting pension systems and specialized institutions. And all along the line relief could be given to certain taxpayers, as well as to taxpayers in the aggregate, by transferring functions, hitherto locally supported, to larger tax jurisdictions. The persistence of an antiquated political structure has naturally hampered a realinement of functions, for townships and counties have been reluctant to surrender their traditional prerogatives.

COMPETENT AND RESPONSIBLE LOCAL GOVERNMENT

ADMINISTRATIVE INEFFICIENCY

The high cost of local government is not due entirely to an outmoded structural set-up and an antiquated distribution of functions. It is due also to inefficient administration. Of course the type of administration is itself partly a product of the structure and functions of a government. A small, weak political unit, with few important functions, invites a crude, informal, and generally inefficient type of administration. The abolition of townships and a multitude of other subordinate units and the strengthening of the county itself through consolidation would create a condition more conducive to good administration than that which now so often obtains. But the county itself has a bad reputation; it is notoriously inefficient. The causes thus cannot be attributed solely to political structure. They are to be found partly in the American philosophy of local self-government.

Ever since the Jacksonian era of American history it has been almost a universal policy in this country to fill local offices through popular election. So great has been the faith in the Jacksonian theory of democracy that any citizen who could command the votes to be elected has been considered competent to serve as assessor, treasurer, road superintendent, auditor, or in any other official capacity. It must be apparent to any careful observer that, under modern conditions, this method of filling administrative posts is a costly failure. It not only intrusts important technical duties to untrained and sometimes grossly incompetent men but makes each officer his own master. The result is a complete lack of unity and coordination. In the case of the county there has not even been a chief executive, such as exists in the mayor of a city or a village president. The members of the county board have also been administrators, spending their own appropriations. The same has been true in township government. Rural local government in the United States, with some notable exceptions, has been and still remains both inefficient and irresponsible.

TYPES AND EVIDENCES OF WASTE

There is plenty of evidence to support this charge of incompetence and irresponsibility. A county treasurer in a Southern State boasted that "he kept his records in his head", and the report of a treasurer of a road fund was "spent it all." A tax collector reported that discounts and penalties just about balanced, so he made no record of them. A register of deeds paid a courthouse lounger $10 a month to inform him about his duties, and another continued to charge $3 for a marriage license for 2 years after the law had raised the fee to $5. A clerk of the superior court admitted that he knew nothing about his duties, but said that he kept his visitors entertained so that his deputy could work without interruption. A road supervisor saw no need to employ an engineer, declaring that he could lay out a road "with his eye." The naïveté of such officials would be humorous were it not for the costliness of their innocence. Counties have had to spend thousands of dollars for audits that should not have been necessary. Frequently records have been so incomplete that there

was literally nothing to audit. Thousands of dollars have had to be spent to straighten the course and improve the grades of roads that someone had laid out "with his eye." Tax records have been so inaccurate and incomplete that property owners have been known to escape paying taxes for years without being detected. And the work of local untrained assessors is so universally deficient that it need only be mentioned to elicit a smile. Wager (*166, p. 78*) says:

> A few conspicuous forms of waste which are manifest in almost any rural county are: (1) too many officials and deputies for the amount of work to be done; (2) the employment of officials who are unqualified for their work; (3) the constant "breaking in" of novices both as chiefs and clerks; (4) losses in purchasing supplies because of the lack of centralized systematic buying; (5) interest paid on temporary loans and loss of interest on temporary balances; (6) costly and dilatory methods of collecting taxes; (7) abuse and neglect of public property; (8) lack of any systematic accounting in some instances and duplication of accounts in other instances; (9) idleness or lost motion on the part of public employees because of poor planning and poor management; (10) losses resulting from delinquency or insolvency on the part of officials and taxpayers; (11) laxity and inequality in assessing and listing property; (12) unnecessary overhead because of a duplication of county institutions. Sometimes there is deliberate fraud—bribery, patronage, embezzlement—but the losses from such causes are nowhere near as great a drain on the treasury as these hidden and innocent leakages.

These losses are, of course, not all attributable to the lack of trained administrators; some are due to errors of judgment on the part of the policy-determining body. But even the errors of the governing board have been largely due to their lack of an executive agent.

The North Carolina Tax Commission, in its 1930 report (*80, Rept. 1930, p. 14*), states:

> We believe the time has come when serious consideration should be given the general subject of a recasting of the administrative set-up of county government It must be apparent that there is too much diffusion of executive responsibility, and that a concentration of this responsibility that would bring all administrative affairs within its control would produce more efficient and economical government.

Likewise a Virginia commission on county government, in a recent report (*164*), says:

> County government as now constituted in Virginia is complicated, overelaborate, unduly expensive, and largely removed from popular control. * * * This organization usually consists of some 30 or 40 administrative offices. These offices depend upon widely varying sources of authority. They are partly constitutional and partly statutory, partly elective and partly appointive. Some are headed by individuals; others are headed by boards. Many offices have apparently been tacked on to meet new demands as they arose; others have been continued for little reason except that they have come down from past generations. There are in the county scores of officers of one kind or another, some with jurisdiction extending over the entire county, others with jurisdiction limited to their respective magisterial districts. * * * To add to the confusion, there is no central authority in the county; little or no unifying financial control; no head of the county government at all.

The laxity which has prevailed in the collection, custody, expenditure, and accounting of public funds has been especially costly to the taxpayers. Even when there has been no deliberate fraud, recurring losses because of bad judgment and expensive audits because of tangled accounts are quite as unfair to the taxpayers. Systematic accounting and rigid fiscal control are a protection not only to the taxpayers but to the officials themselves. Tax collectors and treasurers frequently know nothing about bookkeeping and get their accounts hopelessly tangled. In one county it was reported that it cost $15,000

to audit the accounts of the tax collector. In another instance a county had recently spent $18,000 for an audit, which was stolen a few weeks after it was completed. A tax collector who died in office after 21 years of service was found to be $155,000 short. A treasurer completed his term with a $21,000 shortage. A clerk of court embezzled $68,000 over a period of 16 years before he was detected. Lack of systematic accounting and regular auditing overly tempts human nature.

Another frequent source of loss is that which arises from inadequate security. Officials have been permitted to give personal bonds, signed by prominent members of the party, who, in case of defalcation, influenced the board to accept a compromise. Public funds have often been lost through bank failures, and several instances might be cited where public funds have been used in an attempt, often a futile one, to prevent the collapse of a bank. A recent bank failure in a southern city resulted in the loss of $3,500,000 of public funds. Another bank, which failed recently, was depending almost entirely on public funds for its working capital. The county lost $700,000, the equivalent of 2 years' levies.

Another bad practice, of which most local governments have been guilty at one time or another, is to incur an operating deficit rather than to reduce expenditures or increase the tax levy. The usual method is to let the deficit accumulate for 2 or 3 years, then issue a funding bond. If the practice is illegal, no difficulty is usually experienced in getting the legislature to pass a validating act. Sometimes sinking funds are depleted to accomplish the same purpose. Governments, like individuals, find it easier to mortgage the future than to live within their incomes. Sometimes provision is not even made to meet bond maturities, the issues being refunded and the debt passed on to posterity. There seems to be a disposition to indulge in extravagances when money is cheap, issuing bonds which will very likely mature when money is dear. A single illustration will suffice. A certain North Carolina county built a modest but substantial courthouse in 1904. To pay for it a bond issue was floated which matured serially from 1925 to 1944. In 1926 the county was in a temporary state of prosperity; the optimism of the board overbalanced its reason; and a handsome new courthouse costing a quarter of a million dollars was built. Serial bonds were issued which began to mature at once. Now, when depression has hit the county, it is paying for two courthouses.

Finally, there has been untold waste in financing capital improvements. In the last two decades billions of dollars have been spent by local governments in road construction and reconstruction. It would be impossible to estimate what portion of this expenditure has been wasted. Since much had to be learned about road materials and types of construction by experimentation, mistakes have been unavoidable. But it was needlessly wasteful for hundreds of local units to be making similar experiments at the same time. Even worse has been the practice of creating special commissions by legislative act and giving each a few thousand dollars to expend. Mention might be made of a county in which, in the course of 8 years, 130 road commissions were created to expend an aggregate of $1,300,000. To be specific, the personnel of the county road board was changed four

times during the 8-year period, each of the 14 township boards was changed four times, and about 70 local commissions were created to build particular roads. All the bonds were issued by legislative fiat without a vote of the people, most of the roads were dirt roads, and many of them had washed away for lack of attention before the bonds began to mature. It is perhaps unnecessary to state that both the location of the roads and the personnel of the multifarious commissions were largely dictated by political considerations.

AIDS TO BETTER ADMINISTRATION

It would be unfair to imply that all county and township governments are inefficient or that no headway is being made to correct the shortcomings just described. Certain aids to better administration have been developed. One of the most promising is the elimination of purely executive offices from the ballot.

The application of the short-ballot principle to county government would mean that there would be no officers chosen by popular election except the county board, and that this body would be relieved of all administrative duties. These two facts in themsleves would tend to improve the quality of the board. The board would either appoint a county manager who, in turn, would appoint all the subordinate administrative officers, or, if the volume of work did not seem to justify a manager, the board itself would appoint the administrators. In either case there would be far better coordination of effort and more fixed responsibility than when each department is headed by an elective officer who is the political peer of the board itself. The success of the managerial plan in city government would seem to justify the adoption of the plan in county government as far as the situations are parallel. Several counties in North Carolina and Virginia are evolving a chief administrative office the duties of which approximate those of a manager. Only one county-manager office has yet appeared, however, which fully qualifies for that designation. This is in Arlington County, Va., which is a suburban area tributary to Washington, D. C. Probably less headway has been made in getting the short-ballot principle applied than has been made in other respects. The American people cling with unreasoning tenacity to the idea that short terms and rotation in office are the essence of democracy.

In recent years a great deal of legislation has been enacted to curb the financial excesses which have been described. At first the legislation took the form of tax or debt limitations expressed as percentages of assessed value. But it is now recognized that sound financing is not so likely to be realized through statutory or constitutional limitations as through adherence to a budget, competent accounting, safe depositories, and adequate State supervision. Some 20 States have statutory provisions for county budgets, but in a considerable number of these the requirements are too indefinite to insure a thoroughgoing instrument. If adhered to rigidly, a budget constitutes not only an effective instrument of fiscal control but a useful instrument of public education and control.

Budget laws invariably provide for hearings, at which citizens may scrutinize the proposed budget and express themselves in respect to particular items, but few people attend these hearings. Sometimes the officials do not desire public deliberations and give only the minimum amount of publicity to the hearings. Most governing bodies,

however, would welcome the views of thoughtful representative citizens. If they fear public hearings, it is because their experience has been that most of those who attend are chronic tax kickers and those who have "an ax to grind." On the other hand, citizens whose only wish is to see a balanced program of work undertaken, and that amply provided for, have not been articulate because they have had no opportunity for preliminary study. The financial reports and periodic statements that appear in the public press are rarely presented in a way to be genuinely revealing and to invite an intelligent and sustained public interest.

There is value in a citizens' organization that stands between the officials and the taxpayers. Its purpose should be to keep its membership fully informed at all times about the public business, to interpret these facts for the people, to advise with the public officials when called upon, and to help develop civic interest in public affairs. A small informal organization can be to the small local community what the bureaus of municipal research are to the large cities.

The way in which local governments have abused the power to incur indebtedness has made this aspect of financial administration particularly in need of improvement. Extraordinary expenditures may from time to time impose upon any government the necessity of borrowing. But only expenditures which are really of an extraordinary nature justify the creation of public debt. This is true of capital outlays as well as of current expenditures. The State or county or municipality which is large enough to require frequently recurring capital outlays can, by adopting a long-term program, generally pay for its capital improvements out of current revenue. The annual cost to the taxpayers is thereby reduced by the saving of interest on debt, and the credit and financial stability of the government is conserved. In general, State and local governments are not often confronted with emergency expenditures, and proper management of capital outlays should reduce to a minimum the necessity of borrowing.

Statistics prepared by the United States Chamber of Commerce (*113, p. 7*) reveal that in 1925 one-third of the expenditures of 247 cities of 30,000 or more population was on capital-outlay accounts. In this group of cities $266,000,000, or nearly 14 percent of the total current cost of operation, were required for interest purposes. In the larger cities the interest ratio is even higher, New York showing a ratio of nearly 20 percent in 1925.

Byrd (*111, pp. 21–22*), in defending the policy adopted by Virginia in 1923 of building roads on a pay-as-you-go basis, said:

> Virginians were very emphatically reminded of a bond issue of $30,000,000 floated a hundred years previously for roads and canals, on which $22,000,000 still remained unpaid. The State had paid $67,000,000 interest on this original debt, with the prospect of paying $30,000,000 more in interest before the bonds were finally retired, yet the canals had long since outlived their usefulness, and most of the roads built from that money were of little value.

Profiting from this experience, Virginians refused to endorse in 1923 a proposed bond issue of $50,000,000 for State highway construction but began building on a pay-as-you-go basis. On October 1, 1930, according to Gov. Byrd, the State had 5,097 miles of improved, hard-surfaced highways, mostly macadam and concrete, besides many new and costly bridges. In 6½ years the State had spent $70,000,000 for State highway construction and $26,000,000 for maintenance without involving itself in debt.

Local autonomy in matters of finance has been so disastrous that taxpayers are demanding protection from their own locally chosen officials. It is not that local officials are any less honest than State officials or any less devoted to the public interest. It is rather that they lack the knowledge and perspective to handle large sums of money safely and wisely, and that they are less resistant to political pressure or prominent local influence.

State supervision or control seems to offer one of the best methods of obtaining improved accounting and reporting and better financial practices, and many States now provide for some centralized control in these fields. In other phases of administration, wherever technical skill is required, there is more and more dependence on State supervision and control. Perhaps if the short ballot were adopted and the merit system introduced in rural government, as is the case in many city governments, a greater degree of autonomy would be justified. But so long as county, town, and village governments depend on popular election to fill administrative posts, increasing overhead supervision will be necessary. It is the price of that kind of democracy. The development and extent of this tendency toward State centralization warrants some attention at this point.

STATE SUPERVISION OR CONTROL

PURPOSES AND METHODS

The States have always assumed a certain responsibility for the conduct of local government. This is natural and proper, for the local units are created by the State and receive such powers as they enjoy from the State.

A statement of the purposes of State supervision was made by a committee of the National Conference on the Science of Politics in 1924 (*118*). Those which were generally approved were:

(1) To collect and publish information and statistical data for reliable knowledge of local conditions as an aid to the locality and to the State.

(2) To discover and prevent defalcation, fraud, and corruption, and to enforce generally established legal requirements.

(3) To enforce minimum standards of record keeping and other financial procedure necessary for effective local government.

(4) To promote efficiency in the methods of local government, that is, to enable municipalities to secure the same results at lower cost or better results at the same costs.

(5) To control the policies of local governments with particular reference to the distribution of public expenditures and burdens.

The committee felt that the objects of State supervision—that is, the fields which it should include—were taxation and revenues, budgets and expenditures, indebtedness, and accounting and audit. The compass of this part has been extended to include certain other fields where there has been increasing technical assistance as well as financial supervision.

Until recent years the States have sought to regulate local administration mainly through constitutional and statutory restrictions interpreted and enforced by the courts. However, as the functions of local government have expanded and have become more complex, these older methods of control have proved unsatisfactory. The mere enumeration of standards and limits, without means for effective enforcement, has failed to be an adequate safeguard. Only the most

flagrant violations of the law have been challenged and carried into court. At best it has been a policy of restraint rather than one of guidance and helpfulness. As a result the States are relying less and less upon legislative and judicial control and are setting up administrative devices.

In reviewing this development Fairlie and Kneier (*119, pp. 93 and 94*) state:

> The development of newer agencies of supervision began in the field of education, where a State superintendent was established in New York in 1813. Similar officials were provided in other States from 1825, and by 1860 had been created in all of the Northern States and a few Southern States. State boards of charities began in Massachusetts in 1863 and had been organized in 10 States by 1880. Massachusetts also established the first effective State board of health in 1869. In the field of public finance, State boards of equalization were provided early in the nineteenth century, but more active agencies of supervision of local officials began with the State examiner of public accounts in Wyoming in 1890 and the Indiana Tax Commission in 1891. New Jersey, in the latter year, established the first State highway commission. The present State constabulary may be said to begin with that of Pennsylvania in 1905.
>
> State agencies of supervision have now been established in all the States for education, health, and highways. Forty States have State tax authorities; and 30 have central supervising agencies in the field of charities and correction. The degree of administrative control varies widely. It is probably greatest in the field of education. In general, it has been developed further in the States of the North and East than in those of the South and West, but there are important exceptions in some matters.

Among the principal methods of administrative supervision Wallace (*167*) lists the following: Reports, inspections, advice, and grants-in-aid, as persuasive devices; and approval, review, orders, ordinances, removal, appointment, and substitute administration, as an ascending order of more effective methods.

EDUCATION

State supervision is more highly developed in public education than in any other field of local administration. All States require regular and often comprehensive reports to the State department of education, and about two-thirds of the States have a staff of State inspectors. In New Jersey and Virginia, county or division superintendents are appointed by the State board of education; and in Maryland, North Carolina, and South Carolina, county boards of education are appointd by the governor, legislature, and State board of education, respectively. Nevada, in 1907, abolished the office of county superintendent and divided the State into 5 districts of 1 to 6 counties each, with a deputy superintendent appointed by the State board in each district. Delaware, in 1921, replaced the county plan of supervision by a State system. Seven rural supervisors of elementary schools work under the direction of an assistant State superintendent, 3 being assigned to 1 county and 2 to each of the others. In Connecticut, a town employing not more than 25 teachers can by petition come under State supervision. A town which has once had State supervision can continue it even after its teachers exceed the limit of 25, provided the town pays the State supervisor's salary. A supervisor may serve 2 or more towns. The supervisor practically assumes the functions of a school superintendent.

Say Fairlie and Kneier (*119, pp. 342–343*):

> Other methods by which the States exercise more direct control to improve school conditions, especially in rural areas, are by establishing minimum school

terms and standards of plant and equipment, compulsory attendance laws, control over the selection of teachers, regulation of the course of study, and State selection of textbooks. These and other requirements are often made conditions of receiving State school grants; or specific grants are made for meeting particular requirements. * * * Some 18 States give a general grant of power to make rules and regulations for the conduct of school affairs Twenty States authorize appeals from local school authorities to the State department. In New York, where the decisions of the commissioner of education in such cases are final, they form an important body of administrative school law, supplementing the statutes. About a dozen States authorize the State departments to prescribe examinations in elementary schools, and five States authorize State examinations in high schools. A dozen States require the approval by the State departments of plans for the construction of school buildings. Ten States make special provision for the examination of the financial accounts of local school authorities; and about the same number authorize the requirement of certain forms of accounts.

HIGHWAYS

Most of the States have established systems of State highways under the complete jurisdiction of the State government (*119, pp. 367–368*). In addition to taking over completely the primary roads, the States are exercising an increased degree of supervision over the construction and maintenance of local roads. This is done through State highway commissions, State departments of public works, State highway engineers, or other similar agencies. Several States offer the advice and assistance of the State agencies to the local highway authorities. This is the case in Alabama, Florida, Arkansas, and Illinois. In Oregon, West Virginia, and Texas it is the duty of the State agencies to furnish such aid.

The department of public works in Massachusetts is authorized to compile statistics relative to the public ways of counties, cities, and towns, and to make such investigations relative thereto as it considers expedient. It is further provided that the division may be consulted by, and shall, without charge, advise officers of counties, cities, or towns having the care of and authority over public ways, as to their construction, maintenance, alteration, or repair.[94]

In several States, including Massachusetts, Michigan, West Virginia, and Arkansas, the State highway authorities hold institutes for the instruction of local road officials.

A more rigid type of control over local road administration is obtained through the power of selecting and removing local officials. In Illinois the county board, in selecting a road superintendent, must submit to the State department a list of from 3 to 5 persons who are considered desirable candidates. The department then determines by competitive examination the person or persons best fitted for the office and makes its report. The county board must appoint from the list of eligibles. If no one on the list is found eligible by the State department, a further list must be submitted.[95]

The county court in West Virginia may appoint as county road engineer only a person who holds a certificate of efficiency from the State road commission, and in Kansas the appointments of county engineers by the county boards are subject to the approval of the State highway commission. In the latter State and in Iowa, county engineers may also be removed by the State commission for incompetency. In Pennsylvania the State commissioner is authorized to

[94] Massachusetts, General Laws, 1921, amended, 1928, ch. 81.
[95] Cahill's Illinois Revised Statutes, ch. 121, sec. 8.

appoint superintendents of highways who are experienced in the construction and maintenance of improved roads, and it is their duty to supervise all work on the State and State-aid highways. In Wyoming all roads built jointly by the State and the counties are built under the immediate control and supervision of the State commission (*119, p. 370*). The large amount of supervision exercised by the State highway authorities has been inspired by the technical character of the work involved and has been amply justified by the results obtained.

CHARITIES AND CORRECTIONS

There has been a marked development of State control and supervision over local governments in the administration of charities and corrections. The first State board of charities was established in Massachusetts in 1863, followed by Ohio and New York in 1867. By 1913 central authorities of this nature had been established in 38 States (*119, p. 298*).

In 30 States provision is made for State inspection of local institutions, and generally advice is given by the inspectors or may be had on application to the State authorities. The power granted to State authorities is sometimes broad and general and in other instances very specific. Thus in Massachusetts the department of public welfare must visit all almshouses maintained in towns, and it may visit and inspect other places where town paupers are supported. The State welfare department in Michigan must, at least once a year, visit and examine into the condition of all county infirmaries, jails, and places of detention for juveniles. When the department finds that such institutions are insanitary or dangerous to the life or health of the inmates, or constructed so as not to permit of a proper classification of inmates, it may require that the necessary changes be made. Similar control is exercised by the central agencies of other States. In Pennsylvania, Wisconsin, and several other States, no new prison or almshouse can be constructed until the plans have been approved by the State department. In Alabama and Vermont the administration of jails is controlled and paid for by the State (*119, pp. 299–300*).

PUBLIC HEALTH

In the administration of public-health work the States have assumed a very large measure of control. In fact, the counties and cities are often little more than administrative districts. In Pennsylvania the commissioner of public health is empowered to divide the State into 10 districts and to appoint for each district a health officer, who, under the direction of the commissioner of health, has control of the sanitary affairs of the district and the registration of vital statistics. State control is almost as complete in Massachusetts and Maryland. The State board of health in New Jersey is empowered to appoint inspectors and to assign them to such duties as the interests of the public health in any part of the State may require. Wisconsin and New York also use the plan of district supervisors or inspectors.

Some States go beyond the appointment of district supervisors and provide for State appointment of county health officials. State appointment of the county board of health or some of its members obtains in Kentucky, Virginia, and South Dakota, and of the county health officer in Wyoming and Mississippi. In Vermont the State

board of health appoints a health officer for each town. In several States the power to appoint county health officers is given to the State authorities in case the local authorities fail to make an appointment, and in a few States provision is made for State approval of local health officers. State removal of county health officers is provided in several States, including Connecticut, Kansas, and Oregon (*119, pp. 320–323*).

State control over local health authorities is also secured by requiring that their regulations be approved by the State board of health. Thus, the Michigan Legislature in 1927 authorized boards of supervisors to provide for county health departments, the plan of organization to be approved by the State health commissioner. The administration of the health laws is to be carried out by the county health department "under the advice and direction of the State department of health." [96]

While there has been a tendency in recent years to build up county health administration, as is seen in the movement for county hospitals, county nurses, and full-time county health departments, there appears to have been no decline in State supervision. Indeed the tendency seems to be clearly towards centralization of authority, which in the field of public health results in that uniformity of practice so essential in curbing disease.

ASSESSMENT OF PROPERTY

To meet the inequalities and defects of a decentralized system of assessing property for taxation, some degree of State supervision and control has long been exercised. As early as 1825 a State board of equalization was established in Ohio, with power to readjust the aggregate assessed valuation of counties so as to equalize the distribution of the State tax. In later years such boards were established in most States, but their function has been only to attempt to equalize the total assessments of taxing districts. In recent years effort has been directed to the improvement of the original assessment so that little reliance need be placed upon equalization.

Supervision over local assessments was begun in Indiana, by the establishment in 1891 of a State tax commission, with two salaried members in addition to the ex-officio members of the State board of equalization. This commission was given power to prescribe forms to be used in the assessment and collection of taxes, to construe the tax and revenue laws of the State and give instructions to local officials, to see that all property is assessed according to law, and to visit each county in the State to hear compliants, collect information, and secure compliance with the law. State tax commissions with similar powers were established in New York in 1896, in Michigan and Wisconsin in 1899, and since then in most of the other States.

There are now 42 States which have tax commissions or tax commissioners with supervisory powers over local taxing officials. In 33 States the State agency has the power to order a reassessment. In 27 States it makes the State equalization and in 5 others assists in doing so. In 36 States it assesses all or a part of the public utilities (*159, pp. 175–177*).

It is known that the actual supervision exercised by the State tax commissions is often much less than their grant of power would

[96] Michigan, Public Acts, 1927, Act 306, amended 1931, Act 15.

indicate. Where the power to review is confined to the equalization of the aggregate valuations of the various counties, the supervision serves no purpose other than to prevent a county from evading its just share of State taxes. Even where the State supervising agency may equalize aggregate valuations between units within the counties, the added power merely enables the State to see to it that no town or municipality escapes its due share of the county tax. Only in those cases where the State agency may make adjustments between individual properties may real equality be obtained, and, if it is to get evidence sufficient to perform this task well, it might almost as well make the original assessment. The power to compel a reassessment, though rarely invoked, may tend to improve the original work. Among the most useful functions performed by the State tax commissions is the assessment of public utilities.

A few States have obtained a certain degree of control over assessment practice through the power to appoint or remove local assessing officers. In Maryland a supervisor of taxes for each county is appointed by the tax commission from a list of five names submitted by the county commissioners. In South Carolina local assessors are appointed every 2 years by the governor upon the recommendation of the county delegation in the legislature. In Louisiana the parish board of equalization is composed of 2 members chosen by the police jury (equivalent of county board of commissioners) and 1 chosen by the State tax commission. State administrative removal is employed in only eight States to even the slightest degree. The Governor of Colorado may, upon charges by the tax commission after a hearing, remove any local assessor from office if convinced that the assessor has willfully omitted to assess taxable property, or has failed to assess it at its true value. Likewise, the Governor of Minnesota may suspend or remove any financial officer, including an assessor, when it has been made to appear to him that such official is guilty of malfeasance. Assessors or supervisors may be removed by a State administrative agency in Indiana, Nebraska, Maryland, South Carolina, West Virginia, and Vermont (*167, pp. 88–89*).

A scientific assessment is fundamental to a fair application of the property tax, and assessment by local untrained assessors has generally failed to result in a fair and impartial assessment. Local assessment has almost always meant competitive underassessment, despite the fact that underassessment invites and conceals inequality. Indeed fairness and equity are so dependent on full-value assessment that one authority recommends that State aid for any purpose be conditioned on full-value assessment (*4, p. 5*). There is much to be said for having the original assessment made by the State. Certainly, elemental justice demands that the State insure a greater degree of equality than now obtains in most States.

ACCOUNTING

Perhaps in no other field has local government been more deficient and more in need of supervision and assistance than in its accounting and financial practices. In recognition of this need, practically every State has provided for some form of supervision by a State agency. The law in many instances is admitted to be inadequate, and its administration is often faulty, but the right of supervision is at least recognized.

Supervisory power over county officers was given the Indiana State auditor in 1852 and to a bank examiner in Minnesota in 1878. But not until 1890, when Wyoming, in its first State constitution, created the office of State examiner and provided for uniform municipal accounts, was any genuine supervision of local accounts established. Sentiment for adequate State supervision was crystallized in a report before the National Municipal League Convention in 1898. Three phases of supervision were recommended: Prescribing and installing uniform accounting for municipalities, collecting and publishing comparative statistics, and making inspections of local accounting offices. These three aspects of the proposal have continued to be the cardinal principles around which legislation has been framed in the years since (*127, pp. 248–249*). In 1902 Ohio established a bureau of inspection and supervision in the office of the State auditor, provided for a uniform system of accounting and reporting, and authorized an annual examination of the finances of every public office (*119, p. 249*). The creation of similar bureaus followed in rapid succession. State examiners of public accounts or bureaus of municipal accounts were provided in New York in 1905, in Massachusetts and Iowa in 1906, in Minnesota in 1907, and in Indiana in 1909 (*127, pp. 248–249*).

The evolution of State supervision is well illustrated in Massachusetts (*143, Rept. 11, p. vi*). The 1906 act (ch. 296) required only that every city and town in the State report the details of its finances annually to the chief of the State bureau of statistics of labor on uniform schedules prescribed by him. The experience of the first few years revealed a lack of adequate accounting systems in most of the towns. As a result, a law was passed in 1910 (ch. 598) which provided for an audit of city and town accounts and the installation of an accounting system by the bureau of statistics in accordance with its classification and system, on petition of the city council of a city or the citizens of a town. Another act of that same year (ch. 624) authorized the appointment of town acountants and prescribed their duties. The cost was to be borne by the municipality or town. The appointment of an accountant was voluntary, but if one was appointed he was required to keep the municipal accounts in accordance with the system recommended by the bureau of statistics. These laws were strengthened from time to time, and by December 15, 1918, exactly 100 cities and towns had petitioned for an audit or the installation of the accounting system. Meanwhile, the form of the accounting set-up had been improved, and the percentage of towns making satisfactory reports had steadily increased (*143, rept. 16, p. 12*). In 1922 a law (ch. 516) was passed which required all cities and towns that had not already petitioned for the installation of the uniform accounting system to vote on the question at the next election. As a result, 90 additional towns and cities petitioned for installation of the system the next year.

One of the most valuable features of the Massachusetts experience has been the publication of an annual report of comparative statistics. The first, that of 1907, contained financial statistics of only a few units, but within a few years nearly all of the cities and towns were making comparable reports and could be included in the compilation.

The example set by Massachusetts stimulated other States, and as long ago as 1923 there were 15 States which required municipalities

to make annual financial reports to the State, and in most instances the figures were published by the State in comparative tables. At the same time there were 16 other States which required some form of financial report, the requirement usually being confined to county officials or to those handling State funds (*127, p. 250*). States which take particular pains to analyze and interpret the financial data which they assemble are New York, Massachusetts, and Ohio.

It is evident that comparative tables are impossible unless the reports from which they are derived are comparable, and that the latter cannot be fully comparable unless there is uniformity in accounting. But the financial officers of most local units obtain their offices through popular election or political appointment and do not know even the rudiments of accounting. Hence it is impossible to install and maintain a uniform system of accounts in all the counties or all the cities of a State without a great deal of tutelage by State agencies. Nevertheless some progress has been made in this direction.

At least three States—Indiana, New York, and Ohio—prescribe uniform municipal accounts, and in several others a State agency is authorized to devise uniform accounting systems and to aid in their installation. Mention has already been made of the headway made in installing uniform accounts in Massachustets. Among the other States which have supplemented statutory regulation of county or municipal accounting with administrative assistance are Iowa, Michigan, North Carolina, Virginia, West Virginia, and Wisconsin.

Various agencies have been used by these States to carry on the work. In New York it is done through the State comptroller's office, and in Indiana, by a State board of accounts. In Iowa a county accounting department with broad supervisory powers was set up in 1913 in the State auditor's office. A standard system of accounts has been developed and quite widely adopted. In Virginia several counties are using a uniform system devised and installed by the State auditor of public accounts. In North Carolina most of the counties are using, with a reasonable degree of faithfulness, a classification and procedure devised by the county government advisory commission. Wisconsin has been working toward uniformity in its local accounts since 1911, under the direction of the State tax commission. West Virginia has had a uniform accounting act since 1909, and several years ago the State tax commissioner reported that "the system of uniform accounting has been so successful that where there was chaos before, there is now order, system, and efficiency" (*145, p. 279*).

Several States have carried supervision of local accounts to its final stage and have made provision for an audit of these accounts by State auditors. In some States the audits are made only occasionally, or upon invitation of the local authorities. In other States the accounts of all local officers are audited periodically.

Ohio has had compulsory State auditing of local accounts since 1902. According to a bulletin of the United States Chamber of Commerce (*114, p. 10*), these audits have resulted in the recovery by subordinate spending agencies of an average amount of $250,000 each year, which had been misspent. Large savings are also reported in Indiana, where local accounts are examined periodically by agents of the State board of accounts (*167*). The accounts of Louisiana parishes are examined semiannually by State auditors. In New York a

bureau of municipal accounts has been created in the State comptroller's office, which bureau not only receives and compiles reports of all local units in the State, but, as far as its staff permits, aids the local accountants with their bookkeeping problems. It may make an audit of the finances of any unit whenever it is deemed necessary. In 1930 audits were completed in 12 counties, 20 cities, 35 villages, and 62 towns. In Michigan, by constitutional provision, the legislature must provide for the supervision and audit of county accounts by competent State authority.[97] In Tennessee the commissioner of finance and taxation, with the approval of the Governor, appoints three auditors whose duty it is to make an annual audit of the several counties of the State. In Alabama, Virginia, New York, and several other States the State may make a special examination of local accounts from time to time. In Missouri local accounts may be audited by the State only upon local invitation (*119, pp. 410–414*).

This enumeration is not presumed to be complete, but only to illustrate the various types and degrees of State supervision over local accounts which have developed. It is known that performance in some of the States mentioned does not attain the scope indicated by the statutes.

EXPENDITURES

State supervision of local accounts serves no other purpose than to disclose the facts. It imposes no restraint on local expenditures, except in so far as intelligible and reliable reports disclose fraud or extravagance and thereby invite closer local scrutiny. The frequent failure of many local units to adhere to sound financial practices, even with all the facts before them, has caused several States to go beyond supervision and to assume a considerable degree of control over local expenditures; that is, in addition to or in lieu of constitutional and statutory restrictions, several States have set up administrative agencies with power to regulate local budgets and bond issues.

State administrative participation in local budget making has taken two forms: (1) the mere checking of the form of the budget to insure its compliance with State law, and (2) the exercise of discretionary power over the content of the budget.

Massachusetts, New Jersey, North Carolina, and Oklahoma offer examples of the first type of control. In Massachusetts, for example, the commissioner of corporations and taxation checks local budgets to insure their conformity with State laws establishing standards of local financial practice. As a result, sound budgetary practices have been pretty generally adopted in that State. In New Jersey, North Carolina, and Oklahoma, the State may intervene if a local unit fails to make provision in its budget for its debt obligations.

The States in which a State administrative agency may exercise discretionary power over local budgets are Indiana, Iowa, Oregon, and New Mexico. The best known of these plans is the Indiana plan.

In 1921 the Indiana legislature vested the State board of tax commissioners with the power to review a proposed budget or bond issue of any local unit upon petition of 10 taxpayers of the district affected. On the receipt of such petition the board fixes a date for a hearing at some point within the district from which the remonstrance was received. After hearing the evidence, the State board has the power

[97] Michigan Constitution, 1908, Act X, sec. 18. Compiled laws, 1929, v. 1, ch. 14, 15 ,20, as amended, 1931.

to approve or reduce the total budget, or any item of it; and its decision is final. It cannot order the insertion of any item for which provision has not been made by the local authorities.[98]

Local expenditures in Indiana were further restricted in 1932 by the adoption of a constitutional amendment which limited the combined tax levy on any property to 15 mills per dollar of assessed value, and created county boards of adjustment in each county to consider the various tax levies within the county and to make revisions necessary to keep all levies under the limit. The State tax board retained power in emergencies to grant to petitioning localities the right to exceed the tax limit. Despite the failure of the old plan to attain fully its objective of controlling local expenditures, the new plan can hardly be considered an improvement. A limitation of the tax levy does not insure prudent spending.

The Indiana system was the pattern for the establishment of a somewhat similar system in Iowa, the main differences being that in the latter State five taxpayers may file a petition, and the power of review is lodged in the State director of the budget.[99]

State control in Oregon [1] is less direct and is limited to the political units of a single county. The tax-levying bodies of all the political units within Multnomah County (the county in which Portland is situated) must submit their budgets to a tax supervision and conservation commission appointed by the Governor. After due consideration, this commission may—

> approve, reject, or reduce the same or any item therein, or by unanimous vote of all the members of the commission increase the same . . . upon the request in writing of the proper tax-levying board, if the commission deems an emergency to exist.

The most direct, positive, and inclusive type of control exercised by any State agency is that exercised by the State tax commission of New Mexico. Each political subdivision is required to prepare its budget in accordance with forms prescribed by the tax commission, very frequently with the assistance of a representative of the commission. The proposed budgets are then submitted to the commission, which scrutinizes and alters them as it sees fit and places its approval upon a budget only when it has been rendered satisfactory to the members of the commission. After a budget is certified to the local authorities, it is binding upon all officials, and no claims may be allowed in excess thereof.[2]

The experience with State review of local budgets in the few States where it has been tried has not been altogether satisfactory, and the plan as well as the principle involved is vigorously condemned by some authorities. It is maintained that the State agency entrusted with this function is not equipped to perform its work intelligently and that the process of review is essentially local and can be best performed by agencies intimately acquainted with the needs and resources of the locality. These critics (*128*, *129*) hold that the function of the State should be limited to the prescribing of forms and rules and the semi-judicial review of cases of disputed fact or doubtful legality. On the other hand, there are those who claim that the principle is not unsound and that State review has had a most beneficial effect (*114*, *p. 13*).

[98] Indiana Laws, 1919, ch. 59, secs. 200–201, amended 1921, 1923; Burns' Annotated Indiana Statutes, ch. 102, secs. 200-201.
[99] Iowa, Code, 1931, ch. 24.
[1] Oregon, General Laws, 1921, ch. 208.
[2] New Mexico, Laws, 1921, ch. 188; 1925, ch. 138.

Whatever the weaknesses of State review, one is forced to recognize that in few cases is there effective local review. With the present machinery local taxpayers have been without either a means of obtaining the information on which to form judicious opinion or the means for making their will effective.

DEBT

The need for State control over local debt is more imperative and more generally recognized than that for State review of local budgets. State control over local debt has thus long found expression in constitutional and statutory limitations, and local officers are accustomed to restrictions in this field. When discretionary power is lodged with a State administrative officer or board, there is room for more flexibility than if a limit is fixed by the constitution or statutes. This can be either an element of strength or of weakness, depending on the vision and courage of the administrative agency.

Most States impose restrictions on the amount of debt which the local units may incur. In 26 States the limit is fixed by the constitution and ranges from 2 to 10 percent of the assessed value of property. Thus the limit for counties in New York and Nebraska is 10 percent, and in Kentucky, Oregon, Utah, and Wyoming, 2 percent. The average is about 5 percent. In some States the constitutional limit may be exceeded by popular vote. For instance, counties in Arizona are limited to 4 percent of the assessed value, but this may be increased to 10 percent by vote of the property taxpayers. Several State constitutions specify the maximum period within which a county debt must be paid, and others enumerate the purposes for which bonds may be issued. Seventeen State constitutions make a levy for debt-retirement purposes mandatory, and in a majority of States some sort of popular approval of bond issues is required. Statutory provisions may impose restrictions similar or additional to those imposed in the State constitution (*119, pp. 417–418.*)

The regulation of debt by constitutional provision has not been altogether satisfactory. A rigid limitation has sometimes prevented a needed and desirable capital improvement or has led to the circumvention of the constitution by devious and dangerous routes. On the other hand, the ease with which legislative validation could be secured for an illegal act has made legislative control ineffective. Instead of inflexible provision in either the State constitutions or the statutes, students of public finance have come to favor an administrative control over the creation and redemption of local debt, and a number of States have set up agencies for this purpose.

Administrative State supervision over local debt may, as in the case of supervision over budgets, consist only of a scrutiny to insure compliance with the law, or it may include the exercise of discretionary power. When a State board is clothed with this larger grant of power it passes on the expediency of proposed improvements, and, if it is satisfied that the improvement is warranted, it passes on the amount of the bond issue, the interest rate, and the terms of repayment.

Massachusetts offers the best example of the first type of control. The commissioner of corporations and taxation must examine local bond and note issues to insure their conformity with the laws which pertain to the incurrence of indebtedness. These laws prescribe the

term for which bonds may be issued, limit the purposes for which indebtedness may be incurred, prevent borrowing in excess of immediate needs, provide for maintenance of sinking funds already established, and compel local units to bear from current revenues a part of the cost of capital improvements. The effect of this rigid supervision has been to improve the credit standing of Massachusetts municipalities and other local subdivisions, as evidenced in the low rate of interest at which they may borrow money (*114, pp. 17–18*). Administrative supervision in Massachusetts dates back to 1910, but not until 1921 were all special acts relating to particular jurisdictions (except those relating to the city of Boston) repealed and the general statutes made of universal application.

In New Jersey the commissioner of municipal accounts has the power to compel local units to maintain adequate sinking funds and meet debt maturities with promptness. This official also may exercise discretionary authority over temporary loans in anticipation of taxes (*114, p. 18*).

Discretionary supervision over local bond issues is exercised by State administrative agencies in Indiana, Iowa, Michigan, and North Carolina. In Indiana and Iowa a small number of citizens may petition for State review of a proposed bond issue in the same manner as they petition for review of a budget. The decision of the State agency is final, both as to the expediency of the bond issue and its amount and terms.

In Michigan the procedure and limitations under which counties, townships, cities, villages, and school districts may issue bonds is outlined in great detail by statute. Before any such subdivision may issue bonds, the officer having charge of its financial records must transmit to the State treasurer a sworn statement showing the dates of issuance, purposes, amounts, and maturities of all bonds or other indebtedness outstanding, the assessed valuation of all taxable property, the total amount of general taxes and special assessments falling due during the preceding fiscal year, and the amount of such taxes and assessments delinquent at the time of making such statement, the condition of all sinking funds, and such other information as the State treasurer may require. If the treasurer finds that the issuance of the bonds will not violate the provisions of the State laws or cause the debt to exceed any constitutional or statutory limit, he so certifies to the local subdivision. No bonds may be issued until such certification has been made.[3]

Even more drastic than the Michigan law is the one enacted by the North Carolina Legislature in 1931.[4] It creates a local government finance commission consisting of six members appointed by the Governor, with the State auditor, the State treasurer, and the commissioner of revenue as ex-officio members. One of the appointed members is designated by the Governor as director of local government. He acts as secretary of the commission and has many independent functions and powers.

Under the provisions of the act no bond or note of a municipality, county, or other political subdivision shall be valid unless approved by the commission. Neither shall the commission approve any bond or note until it is satisfied that the issue is necessary or expedient and

[3] Michigan, Public Acts, 1925, act 273, amended 1931, act 142.
[4] North Carolina, Public Laws, 1931, ch. 60.

that the amount proposed is adequate and not excessive. Further, in all cases except those involving funding or refunding bonds the commission must withhold its approval until it is satisfied that adequate sinking funds have been and will continue to be maintained, that the political unit is not in default in the payment of the principal or interest on any of its indebtedness, that the new issue will not involve any unduly burdensome increase in taxation, that the unit is complying with the law in respect to budgetary control, and that at least 80 percent of the general taxes of the unit for the preceding fiscal year has been collected. No bond disapproved by the commission may be issued except after a favorable vote at an election.

The director of the commission is required to keep himself informed as to the condition of local sinking funds, including their amount, their investment or the security given for their safe-keeping, and the rate of tax necessary to maintain them. Sinking funds may be invested only with the approval of the commission and only in specified securities. In case any unit defaults in the payment of a debt obligation, the director may appoint an administrator of finance for the unit to take charge of tax collections and the custody and disbursement of all funds. To prevent defaults the director is required to keep the local units informed when interest or principal payments are due and the rate of tax to be levied each year to meet debt service items.

SUMMARY AND CONCLUSIONS

The subject of this part has been developed at considerable length because it is believed that forest property, in common with other classes of property, is carrying a needlessly heavy burden of taxation. The burden is needlessly heavy because government, particularly in rural areas, is not organized and administered in a manner that fits modern conditions or that is in keeping with the best principles of public administration.

Modern means of transportation and communication have so reduced the barrier of distance that there is no need for the local units of government to be so small as was once necessary or desirable. In fact, many are now too small and weak to serve satisfactorily either as a unit of administration or as a unit of taxation. This criticism applies specifically to townships, to some of the New England towns, and to many of the smaller counties. The perpetuation of these units results in the election and support of a vast army of needless officeholders, a duplication of machinery, a diffusion of responsibility, and generally a poor quality of service at very high cost.

The tax burden in many localities is further accentuated by the presence of a variety of special tax districts superimposed on these other units. Most prevalent are the school districts, which because of their differing needs and resources vary greatly in the tax rates which they must impose. The local school tax together with the road tax represents the major part of the total tax burden. The inequality with which this burden has been distributed among localities has in most States been relieved to some extent through the consolidation of districts and through the distribution of State and Federal aid.

Where State and Federal aid seem necessary, they should be granted only with careful discrimination. Every service should be

supported solely on its merits and in the light of the desired objective and the cost apportioned on a sound and reasonable basis. Thus it is reasonable that the Federal Government contribute to the cost of a transcontinental highway and that the State share the cost of an intercounty highway. Or, since forest-fire prevention is essential to the conservation of an important national resource, it would seem to be a legitimate field of Federal aid. The local governments should not be encouraged, however, to turn constantly to the State and Federal treasuries whenever they want something that they are unwilling to pay for themselves. Neither should the aid be employed to retard a redrafting of districts or a reallocation of functions.

The relative position occupied by subventions and grants in the revenues of selected forest and agricultural communities was shown in part 2. The figures there given indicate that forest communities have generally come to be more dependent on aids of this sort than are the more highly developed communities. This might be expected, for sparsely settled communities cannot ordinarily provide governmental services at as low cost per capita or per dollar of assessed value as the more thickly settled communities, and the aid is designed to mitigate the inequality. Under the most widely prevailing systems of local government forest communities are likely to suffer an abnormally high tax rate unless they receive aid. But the fact should not be overlooked that such aid involves an added burden on taxpayers outside the district, and in fairness to these taxpayers the aid should not be dissipated in needless overhead expense. At best, State and Federal aid should in no way remove the obligation for economical administration of government in the jurisdictions so aided.

In neither the support of schools nor the support of other functions of local government have there been many bold attempts to prorate the cost between the local unit and the State on the basis of benefit or to effect a new distribution of functions. Likewise, there have been few efforts to zone rural territory according to population and economic outlook and limit governmental functions accordingly. In spite of attempts at equalization through State aid, the costs of local government generally bear little relation either to the quality of services enjoyed or the ability of the people to support them.

While part of the high cost of local government in rural areas is due to overorganization and an improper distribution of functions, some of it must be attributed to faulty administration. Antiquated machinery, untrained personnel, diffusion of responsibility, and the absence of those safeguards which are essential to the smooth functioning of democracy all contribute to high administrative costs. A fuller application of the short ballot, more rigid fiscal control, and a large degree of State supervision and guidance have proved useful aids to improved administration and in no way inimical to the prerogatives of local self-government.

The development of State supervision has been traced because there is evidence that it has resulted in a saving to local taxpayers and because it is believed that State supervision can be expanded with profit, particularly in respect to financial practices.

One may observe losses on every hand that sound financial practices would have averted. These losses take many forms—losses through bank failures, depleted sinking funds, needlessly heavy interest rates

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because loans were ill-timed or badly negotiated, and losses through defalcation because officers were not adequately bonded. Less visible and less measurable are the losses that result from employing incompetent bookkeepers and treasurers. Other intangible losses are those which result from the failure to adopt and adhere to a balanced budget. A balanced budget implies not only that income shall equal expenditures, but that the appropriations for each function or service shall be commensurate with the need. When governments operate without a budget there is frequently a lack of balance in both respects. The way in which local governments have abused the funding privilege and the loose and extravagant methods which have been employed in financing capital improvements illustrate the need for drastic control over local bond issues. Even where there is no suspicion of political motive or fraudulent intent, there is wisdom in having a proposed bond issue reviewed by a disinterested agency. A proposed improvement may be legitimate but not expedient.

It must be admitted that the supervision of local finance involves a burden upon the State, but it is not necessary that the State assume the whole cost. The local unit could quite properly be asked to bear the cost of an audit performed by State auditors. The cost would probably be less than if the audit were made by private accountants, especially if the State audit were performed periodically and as the capstone to a system of simple and uniform accounts. In such case, every dollar added in State taxes is likely to result in several dollars saved in local taxes.

It is generally agreed that local self-government is desirable and should not be unnecessarily limited. But it should be recognized that lack of State supervision may be as destructive of local self-government as too much supervision. Not infrequently the policies of local government are shaped by officeholders in their own interest, and the citizens are purposely kept uninformed. Even when information is not purposely withheld, it is often presented in a form that is meaningless to the taxpayers. Sometimes bookkeeping is so crude that officials themselves do not know the true financial condition of the government which they are trying to administer. Thus if the local officials are unwilling or unable to supply the voters with information to help them in shaping policy, intelligent local self-government is impossible. To the extent that the State helps assemble reliable statistical data or furnishes expert advice, it is bolstering up local self-government rather than interfering with it.

State supervision over local finances does not guarantee economy; it does not insure against malpractice. If it discourages local vigilance, if it creates a false sense of security, if it weakens local civic interest, already alarmingly feeble, it is bad. And this can well be the result if the State pretends to do more than it can do thoroughly, or if it fails to enlist local participation and sanction in its endeavors. Neither is supervision by a State administrative agency necessarily the last word in the fiscal control of local units. Any plan which would secure more effective citizen participation in local government or more speedily develop a capacity for intelligent home rule would be preferable. But where the relationship between State and local authorities is one of cooperation and mutual respect, and where the State agency considers itself a teacher and counselor rather than a dictator, no violence is done to local self-government, and the local unit should profit from the contact.

The preceding analysis of the present condition of State and local government in this country makes it evident that there are many economies which could be effected if all groups of taxpayers would work unitedly to that end. Owners of forest property who are suffering from oppressive taxation may find that there is more hope for relief in casting their lot with other groups of taxpayers and working for a reduction in the absolute burden of taxation than in seeking special treatment because of the peculiar nature of their property. In a later part of this report there are presented specific recommendations for economies and changes in organization which might permit reducing the total cost of State and local government, thereby yielding general tax relief.

PART 2. SPECIAL FOREST TAX LEGISLATION

CONTENTS

INTRODUCTION

Objections to ad valorem taxation of forest property have been recognized in some States for well over a century. Efforts to overcome these objections by various devices have resulted in much special forest-tax legislation. Property-tax exemptions and rebates, as well as direct bounties, have been offered. Limitations on the taxation of reforested lands and substitution of yield taxes on timber for property taxes have been provided. It has generally been left entirely optional with each individual owner of forest property whether he would seek escape from property taxes by these means. Obviously these laws have not proved competent to solve the forest-tax problem. A brief review of the history of special forest-tax laws, including in some cases the more outstanding incidents and circumstances leading to their enactment, will give background to a critical study of the existing laws of this type. Both the historical survey of special forest-tax legislation and the appraisal of existing laws are necessary to form an intelligent opinion as to the nature of the legislation to be recommended.

GENERAL HISTORICAL SURVEY

EARLY LEGISLATION

FIRST EFFORTS AT FOREST-TAX REFORM

A political reform movement was inaugurated in Connecticut in 1817. Had this come to full fruition, it would doubtless have exerted a far-reaching effect on the whole future trend of forest-tax legislation. A coalition of Federalist and anti-Federalist forces came into power that year, the main objective of the coalition ostensibly being the disestablishment of the State Church (Congregationalist denomination, then referred to as the "Standing Order"). Other objectives, for which the anti-Federalists in particular had long contended, were the adoption of a written constitution and a new system of taxation.

Oliver Wolcott, Jr., the coalition Governor, was a member of the "Standing Order" and a former staunch Federalist, having served as Alexander Hamilton's successor as Secretary of the Treasury under

the presidencies of both George Washington and John Adams, from 1795 to 1802. While head of the Treasury Department he made a study of the tax systems of the various States and prepared a plan for a direct Federal ad valorem property tax. The results of this study were embodied in a letter to Congress (4th Cong., 2d sess., H. Doc. 3) which formed the basis of the tax system subsequently set up by the act of Congress of July 9, 1798 (1 Stat., p. 580).

In his first inaugural message on May 12, 1817 (*217*), Governor Wolcott gave a prominent place to the subject of taxation. This he discussed particularly with reference to the inequity of the then existing system, which had come down unchanged from colonial times, and the need for its replacement by one better suited to modern conditions. He made no specific recommendations then, beyond referring the legislature to the plan embodied in his earlier report to Congress and indicating that its merits had been proved by having been put into successful operation.

The legislative committee to which tne taxation part of the Governor's message was referred in the May session was continued over the summer and brought in a partial report at the October sessions of the same year (*212*). That report contained the definite recommendation, among others, that the tax system be changed to one with an ad valorem property tax basis together with certain capitation and faculty taxes. The committee was continued to the next May (1818) session and then to the October session when it brought in a bill which was passed by the house (*182*). The council, instead of passing it, recommended that the whole subject be given still further study.

The public press during this period carried numerous communications and editorials for and against the change in tax system. While some of these were actuated by purely political considerations, much of what was written sought to instruct the public or offer constructive criticisms of the principles of the new system and to arouse a wholesome public interest in the subject. One of these in particular shows that the place of forest property in the new scheme of things was not being overlooked. Thus, in the February 16, 1819, issue of the Connecticut Courant of Hartford, a contributor, signing himself "Publius" (*176*), wrote in part as follows:

> In considering this subject, we have taken it for granted that, all taxable property, whether real or personal, is to be placed in the assessment list, at its actual estimated value. But, to this principle we cannot yield our assent, as being just. It is well known that an *ideal* value is put upon many kinds of property, particularly in populous towns; there is also productive property, and that which is unproductive; of this latter kind, we think wood land may be with propriety classed, and many kinds of buildings. Wood land of late years has risen much in value, owing to fuel being a necessary of life, and the improvident destruction of timber. To tax this description of land at its estimated full value, equal with the most productive kinds of other lands, would not only be taxing a necessary of life, but it would have a tendency to discourage the growth of timber and fuel, which would operate extremely unfavorable upon the middling and poorer classes of people, and prove injurious to the public interest.

In connection with the reference to the necessity for the growing of timber and wood just quoted, it may not be out of place to refer to an extended article on timber growing and forest conservation which appeared in the same publication under date of April 22, 1817, showing that the question was even then being seriously considered. The author was none other than Noah Webster (*216*), who subsequently was to gain renown as a lexicographer. After indicating in

the introduction to his article the wasteful use of wood for timber and fuel, he continued:

> In truth, our country cannot sustain the present consumption of wood for a century to come—We must either reduce the annual consumption within the limits of the annual growth, or that time will arrive when we must search the bowels of the earth for fuel; and if we are not able to find it in the interior of New England, we must import it; or we must abandon the soil. It is of the more importance to attend in season to this object, as at some future time we must depend more on manufactures for our clothing and utensils, than we now do; and how are our manufactories to be supplied with fuel?
>
> The first object that requires attention is to nourish and increase the growth of trees for fuel and timber. Every farm should contain a tract of land, covered with trees, the annual growth of which should be equal to the necessities of one family at least. Experienced farmers will best judge of the best mode of treating wood land for the preservation of the wood and for encouraging the most rapid growth.

In his message to the May (1819) session of the legislature (*218*)—the first under the newly adopted constitution—Gov. Wolcott referred to the subject of taxation by saying that it was of such importance that "* * * I have deemed it to be my duty to prepare a detailed view of my reflections on this subject. This will be submitted to your consideration, by a special message." This latter message was received by the legislature a few days later and the length to which he went in discussing the details leaves little room for doubt that the results of the efforts of the legislative committee as embodied in the bill then up for enactment fell considerably short of what he thought adequate.

The part of the message of especial interest here, namely, that concerning forest property, follows. After laying down the general principles of the ad valorem property tax on lands in the following words:

> It is admitted that the free proprietors of land held by an allodial tenure, ought not to be coerced to make improvements, but they certainly ought to pay taxes in proportion to the productive value of their property.

He thereupon noted an exception as follows:

> In respect to wood, or timber land, it may be justly observed, that in this State, limestone exists in but few situations, which circumstance deters the people from erecting stone or brick buildings; that fossil coal has not yet been discovered: and that great quantities of land must therefore be reserved, to supply wood and timber, for fences, fuel and buildings. Timber and wood land may also be considered as a capital, of which the interest or profits are deferred for periods of from twenty to one hundred years. If taxed annually, the rates ought to have reference to the remote periods at which the income will be received; it being certain that an excess taxation would accelerate the destruction of timber and wood, and occasion ruinous mischief (*219*).

In the sketch of a bill which the Governor submitted in order to illustrate the manner in which his various views might be given appropriate legislative expression, was the following section (in part):

> *Section 9.* That all lands and lots, except such as are hereinafter exempted, shall be valued and assessed by the acre, at such average rate as each separate and entire tract is worth in money, for the purposes of tillage, mowing or pasture, or if wood or timber land, at the permanent worth thereof as such, or for other purposes connected with husbandry. And all valuations shall be made with reference to any and all natural advantages of soil and situation, but without reference to buildings, fences, or temporary or perishable improvements. * * *

A new, or rather an enlarged, committee, representative of both branches of the legislature and composed of one member from each county, was thereupon organized to consider both the Governor's

recommendations and the work of the earlier committee, as embodied in the bill which had been passed by the house at the previous session. The bill which was finally reported out by this committee was debated for fully a week by the house and variously amended before passing and was further amended by the council, finally becoming a law on June 5, 1819.[5] While as a whole it bore a closer resemblance to the Governor's bill than to that of the original committee, the particular provision in the former concerning the valuation of forest land was not included. Contemporaneous press accounts of the debate, however, do not indicate that there was any open opposition to the forest provision, so that its omission may have been either an oversight or based on an appreciation that at that time and until forest management actually got under way the danger of overtaxation, which the Governor had pointed out, was largely theoretical. This latter consideration, indeed, may well have accounted for the fact that Wolcott did not press the point further, since when presenting a similar point in his letter to Congress when Secretary of the Treasury he expressed the following views concerning largely theoretical objections:

> An effect can only be proportioned to its cause; if, therefore, the theory should be admitted to be true, yet if its application to practical purposes is only to be justified by speculative reasoning, and shall appear to be unfounded in probability, it may with propriety be discarded.

However, it is not without some significance that the condition should have been so clearly discussed that early.

There is a further point in connection with this Connecticut tax episode that is worth noting because of the light it sheds on present-day forest-tax measures. The tax system which the ad valorem system was replacing was so far as concerned the property taxation part of it, a system of specific property taxes such as many now hail as a step in advance, so far as forest property is concerned. At that time, such form of taxes was roundly condemned.

Thus Wolcott in his letter to Congress above referred to, in discussing different systems in use by the States which might or might not be suitable to adopt for the Federal system, said:

> Taxes on the quantity of lands, without respect to quality, situation, or improvements * * * are so manifestly unequal as to be altogether improper, except in countries very recently settled, and where the taxes are very moderate.
>
> A uniform tax on lands with reference to their condition or mode of cultivation would evidently be unsuitable except in a small State where the quality of the lands, and the circumstances of the people were nearly similar * * *

Again in his inaugural as Governor he said:

> From sources of information collected at different times, and from continued reflections, my mind is convinced that the effects of the present system are far more injurious than can have been generally supposed * * *

In like tenor, the tax committee of 1817 in its preliminary report (*212*) said:

> Lands, under the different descriptions of meadow, plow land, clear pasture, etc., are set in the list by a uniform rule and rate, without regard to quality or value (Hartford and Middletown meadows excepted)—consequently no more is paid on an acre of the most valuable land in the State, than on an acre the least valuable, of the same general description—the inequality of which is apparent.

Following is the schedule of rates per acre at which different classes of land were listed, as given in the Governor's special tax message (*219*):

[5] Connecticut Acts and Laws ,May sess. 1819, ch. 2 ,pp. 338-344.

Hartford and Middlesex County meadow lands	$2.50
Plow lands	1.67
Mowing and clear pasture	1.34
Meadow land	1.25
Boggy mowing	.84
Timber lands which, if cleared, would be fit for mowing or plowing; boggy lands not mowed; and lands overgrown with woods, bushes, briars, and the like whereby the lands become unsuitable for pasture, whether the same have been cleared or not	.34
Uninclosed land, second rate (mountain timber land)	.17
Other uninclosed land	.09

EARLY WESTERN LEGISLATION

Exemption Laws to Encourage Planting

This Connecticut effort, the first so far as is known, to make suitable provision for the taxation of forest property devoted to continuous production, although it failed, is none the less significant. At that time it had seemed that the way to face the forest problem was directly through the conservation and management of the then existing forests. Kinney (*196*) shows numerous attempts to legislate forestry into existence by requiring conservative cutting and the prevention of waste, particularly with reference to the forests still in public ownership. Hough (*192*) and Ise (*194*) also show the same thing but indicate that the timber interests were then strong enough politically to block any effective legislation dealing with the existing forests. On the other hand, interest in the planting of new forests encountered no such entrenched interests to offer political opposition, while many factors were at work in its favor. This was particularly the case in the central Western States, which were then being rapidly settled up, and in New England, where much of the readily accessible original timber had been or was being cut. In both sections the scarcity of wood for fuel and for fences and buildings was imposing or threatening a hardship. In the West droughts were occasioning an added interest in the planting of forests. In New England, floods, unseasonable frosts, and summer droughts—all attributed to the destruction of forests—were also causing concern and were stimulating interest in forest planting. Consequently it is not surprising to find in these sections taxation measures, in the form of relief from taxes, together with the offering of bounties and prizes, for successful tree planting as the first tangible taxation relief measures actually to be enacted.

Nebraska Territory led in this movement by the passage of an exemption law on January 4, 1861. This action appears to have been directly attributable to Gov. Samuel W. Black. Governor Black (*178*) in his first message to the legislature, December 6, 1859, had this to say on the subject:

> While our climate is, in many respects, all that could be desired, and our soil so richly productive, it is not to be denied that the want of timber on the prairies is a great drawback, notwithstanding the fair supply to be found on the Missouri, and the inland streams of Nebraska. If it is possible, in any practicable way, to encourage the planting and growth of timber, it seems to me it should be done. But a very few years are required to grow, to a profitable size, from small beginnings, such trees as cottonwood, walnut, black locust, ash, maple, and hickory. I recommend to your consideration a plan of indirect bounty, by which, I believe, great good could be accomplished. If every settler could be induced to plant and start into successful growth, on his own land, a few acres of the trees I have named, I feel satisfied it would in the end be a decided and general gain, to exempt

a portion of his land, for a specified period, from the payment of any territorial, or other tax. I make the suggestion in the hope that the idea may meet with your approbation, leaving all the details to your judgment and discretion.

Although the council took appropriate action on this recommendation and referred it to the house on December 17, 1859, the latter failed to concur or to initiate any action of its own.

Accordingly the Governor, in his message at the opening of the 1860–61 session on December 4, 1860, again referred to the subject as follows (*179*):

> In a former communication I suggested a plan of indirect bounty, by which the growth of timber on our prairies might be successfully encouraged. I believe still that the plan is entirely practicable, and I know that it meets with general favor among the people. If every quarter section of land occupied by a settler was supplied with a reasonable amount of timber, the vast advantage would be visible to every eye and extend to every interest. Not the farmer alone, but the whole community, would receive and enjoy the benefit. That timber of the best varieties can be grown in a few years, is established, yet comparatively very little has been planted. Would not a law exempting a certain portion of each person's land from taxation for a specified number of years, as a reward or bounty for the growth of timber, accomplish the desired result? If 5 acres out of every 40 could be covered with a forest, it would be clear economy to set the entire 40 free from taxation, and the amount withdrawn from the treasury would be wisely and well bestowed. To me, the subject seems to be one of serious importance, and not unworthy of your early notice and deliberation. Whatever may be the best means, the end, at least, is greatly to be desired.

Shortly thereafter two bills were introduced in the house and one in the council. The house bill "To encourage the cultivation of fruit, forest, and ornamental trees" was finally passed and received the Governor's approval January 4, 1861 (S. L. 1860–61, p. 45).[6]

This, the first act of its kind to be passed in the United States granting tax relief to private owners for the growing of forests, provided for an exemption of $50 in valuation, for each acre thereof, of any tract of real estate in a good state of cultivation, on which there were not less than 100 fruit or ornamental trees, or 400 forest trees, in artificial groves. The act also provided that the cultivation of such trees as described on any tract should in no case increase its valuation for revenue purposes.

It is perhaps interesting to note in this same general connection that this 1860–61 session of the Nebraska Territorial Legislature adopted a joint resolution memorializing Congress to grant the territory "one section of land in each township for the purpose of growing timber thereon" (S. L. 1860–61, p. 259).

This first Nebraska act seems to have been largely overlooked in the subsequent codification of the territorial laws which appeared in 1866. That code contains in the chapter on revenue (Rev. Stats., 1866, ch. 46, p. 301) only the brief provision at the end of the original act to the effect that the cultivation of fruit, forest, or ornamental trees on any tract was not to increase its value for revenue purposes. Shortly after becoming a State, however, Nebraska passed the act of February 12, 1869 (S. L. p. 68), reviving the original law in modified form, to wit: The annual exemption was increased to $100 for each acre planted to forest trees but was limited to 5 years, to not over $500 for one person owning less than 160 acres, and by the further proviso that the 5 acres or less for which exemption was claimed must

[6] The designation S. L. ("session laws") refers to the volume of laws passed at a given session of the legislature and currently published, extensively but not exclusively called session laws. Designation of the year of the session will be made only when it differs from the year date of the particular law to which reference is being made. Volumes of laws other than session laws are specifically designated.

be a part of a 160-acre tract. A minimum of 300 trees per acre (i. e., planted 12 by 12 feet) was permitted. Homesteaders who had not perfected their claims to Federal lands were allowed an exemption of but $50 for each planted acre and the same exemption was allowed for the planting of fruit trees, if not over 33 feet apart. By the act of February 15, 1869 (S. L. p. 181, sec. 4), Nebraska also reenacted the provision that the cultivation of trees on any tract was not to increase its value for revenue purposes.

Concerning the practical results of this law, all accounts indicate that it was unusually popular, and correspondingly costly to the State. Scarcely 2 years after the passage of the law, in 1871, the State held a constitutional convention and among other things sought to perfect its revenue provisions which then made no provision for what should be taxed and what not. It was readily agreed that the so-called general property tax should be the basis of the new system. Differences of opinion arose, however, in deciding what property if any the legislature might be authorized to exempt from such tax. The report of the convention (*206, v. 2, pp. 426–447; v. 3, pp. 251, 355*) shows that there was a long and spirited debate over a provision to permit the granting of tree-planting exemptions on the scale then operative. The opposition emphasized both the excessive cost and the inequity and proved strong enough to force the proponents to offer a compromise, namely, that—

> the legislature may provide that the increased value of lands by reason of live fences, fruit and forest trees grown and cultivated thereon shall not be taken into account in the assessment of such lands for the purposes of taxation.

The draft constitution of this convention failed of ratification. In 1873 Gov. Robert W. Furnas (*188*) in his message to the legislature referred to the tree-planting exemption law as having "admittably served its purpose" and "become oppressive." "I am convinced", he continued, "a more efficient plan can be inaugurated at very much less expense and confusion with a desired uniform system of taxation avoided." These bounties, he indicated, had cost the State not less than $200,000 the past year, and he recommended that the law be repealed and in its stead that a law providing for a tree commissioner, or State forester, and other features be passed. Again, in his 1875 message (*189*) he referred to the matter and stated that $464,769.25 of property value had that year been granted exemption from taxation by reason of tree planting. Another constitutional convention met later that same year and its draft was ratified by popular vote. It comprised largely the draft of the 1871 convention and included the compromise tree-exemption provision. Nevertheless exemptions under the former act of February 12, 1869, continued to be granted in large amounts until 1878. In that year the Union Pacific Railroad Co. sought relief, through an injunction against the commissioners of Saunders County, from the excessive tax burden which the practice imposed on its property. As a result the State supreme court held the law inconsistent with the new constitution and all current exemption thereunder void.[7]

Exemption acts to encourage the planting and growing of forest trees on privately owned lands in other of the Prairie and Middle Western States followed the original Nebraska law in rather quick

[7] *Union Pacific R.R. Co.* v. *Board of County Commissioners of Saunders County.* Nebr. Repts., v. 7, 1878, pp. 228–229.

succession. Such falling in line to copy new legislative devices is not unusual, and the significance of the rapid spread of exemption acts and certain other forest tax plans should not be exaggerated.

Wisconsin, by the act of March 4, 1868 (S. L. ch. 102, p. 101), provided, in connection with tracts of 5 acres or more where not more than one-fifth of the area was occupied by belts of trees of certain-named varieties which had been reserved from the natural growth or successfully planted, that the area so occupied be granted exemption from taxation until the trees should attain a height of 12 feet whereupon a bounty of $2 an acre, effective in the form of a tax rebate, was to be granted annually.

Iowa, by the act of April 6, 1868 (S. L. ch. 92, p. 126), provided that, for each acre planted to forest trees not over 8 feet apart and kept properly cultivated, a property value exemption of $100 a year for 10 years on account of States taxes and one of not over $500 on account of county taxes might be granted; the latter, however, was to cease when the trees attained 3 years of age. A subsequent amendment by the act of February 21, 1872 (S. L. ch. 3, p. 4), provided that no one should be allowed an exemption in excess of one-half the value of his property and that no allowance should be made on account of trees grown by nurserymen for sale.

Dakota Territory, by the act of January 5, 1869 (S. L. ch. 26, p. 306), provided that any person who should—by either sowing seed or planting—grow, cultivate, and keep in good condition 5 acres of timber trees not over 8 feet apart could hold exempt from taxation one-fourth part of the value, including improvements, of the quarter section whereon the trees were cultivated, the exempted value in no case to exceed $1,000 for a period of 10 years, or during such part thereof as the trees were kept in good growing condition.

Idaho Territory, by the act of January 4, 1875 (Comp. and Rev. Laws, 1875, p. 712), provided for an exemption of $100 for each acre of 5 acres or more of trees planted and maintained at a distance of not more than 12 feet apart for a period of 10 years after such planting, but no exemptions were to be granted either for plantings made after August 1, 1885, or if trees were nursery planted for purposes of sale.

Washington Territory, by the act of October 27, 1877 (S. L. p. 411), required the county commissioners in Stevens and Whitman Counties, being in the treeless portion of the State, to grant exemption of real and personal property from taxation, except for Territorial purposes, to the extent of $300 annually to anyone who in that or the previous year had planted 1 or more acres of forest trees and kept them growing, the county board to prescribe the minimum number of trees per acre.

Wyoming, by the act of December 14, 1877 (S. L. p. 129), provided for exemptions for forest planting essentially like those of the Nebraska law of February 12, 1869, the chief difference being that the amount of the exemption per acre was double that of the latter, namely, $200 for privately owned land and $100 for unperfected homesteads. By the act of December 9, 1879 (S. L. ch. 83, p. 148), repealing and reenacting that of 1877, the exemption period was increased from 5 to 10 years, and the maximum area on which exemption could be claimed was increased to 25 acres out of each 160 acres owned, without the maximum limitation of $500, and homesteads were put on the same footing as owned real estate.

Colorado, by the act of February 12, 1881 (S. L. p. 250), provided

for the exemption for a period of 10 years of all increase in value of irrigated lands by reason of the planting of fruit or forest trees thereon.

New Mexico, by the act of March 1, 1882 (S. L. ch. 62, sec. 4, p. 110), provided an exemption of $100 annually for 10 years for each acre of forest trees planted not over 12 feet apart and properly cultivated; likewise for fruit trees not over 33 feet apart.

In Utah Territory, the act of March 10, 1886 (S. L. ch. 1, p. 1), provided an exemption of $500 worth of property for a period of 5 years for each acre planted to forest trees for timber purposes if the trees were planted not more than 10 feet apart and were properly cared for.

Bounties and Prizes to Encourage Forestry

Scarcely had the wave of exemption laws started by Nebraska gotten under way when another means intended to accomplish the same end was begun by Minnesota, namely, the offering of prizes or bounties. This movement included 6 of the States which had passed exemption legislation and 4 others.

Minnesota, by the act of March 7, 1867 (S. L. ch. 32, p. 60), appropriated $300 annually to enable the State Agricultural Society to offer premiums for the best 5 acres of cultivated timber, limited to groves artificially grown from seed, cuttings, or layers.

Kansas, by the act of March 2, 1868 (S. L. ch. 112, p. 1094), declared every person who, within the following 10 years, should plant 1 or more acres of prairie land to any kind of forest trees, except locust, or should plant forest trees for one-half mile or more along the highway and should so care for them that they should not be over a rod apart at the end of 3 years should be entitled to a bounty from the county treasury for 25 years in the annual sum of $2 an acre or half mile of roadside trees. By an act of March 28, 1872 (S. L. ch. 204, p. 402), this act was amended to require the planting and cultivation of at least 160 trees to the acre and to remove the 10-year limitation, so that such plantings at any time could qualify for the bounty. By an act of March 5, 1874 (S. L. ch. 76, p. 110), however, the existing law was repealed.

Wisconsin provided for a bounty as a part of its exemption act of March 4, 1868, which has already been described.

Missouri, by the act of March 25, 1870 (S. L., p. 69), provided a bounty substantially the same as the Kansas act of March 2, 1868, except that the bounty for highway planting was reckoned by the quarter mile instead of half mile and was limited in all cases to 15 years after the third year from planting. This act, amended as to punctuation by the act of February 4, 1875 (S. L. p. 97), was declared unconstitutional in 1891.[8]

Minnesota, by the act of March 6, 1871 (S. L., ch. 30, p. 75), provided for a bounty which also was awarded under very similar circumstances to that in the Kansas act of March 2, 1868. That act however was amended by the act of February 20, 1873 (S. L. ch. 19, p. 136), in certain details, chief of which was that the bounty would be paid by the State instead of the county, within the limit of $20,000 a year. This law, as codified, was amended by the act of March 14, 1913 (S. L. ch. 76, p. 64), so as to make the bounty available to plantations on any land throughout the State and not merely those on prairie lands. It was further affected by the act of March 31,

[8] *Deal* v *Mississippi County*, 107 Mo. 406, 18 S. W. 24.

1913 (S. L. ch. 140, p. 160), a general law repealing all "standing" appropriations, including the provision of this law, making the sum of $20,000 available each year for the payment of tree-planting bounties. To take care of such bounty payments, the general appropriation act of April 28, 1913 (S. L. ch. 401, sec. 46, p. 583), carried an amount of $10,000 for the next biennium. No such appropriation was made in 1915 or in subsequent biennial appropriation acts. In this withdrawal of financial support from the bounty act, the attitude of the then newly organized State forestry board is significant. In the first annual report of the State forester, issued in December 1911 (*205, Rept. 1*), it was pointed out that, in expending to date the sum of nearly $600,000 for tree-planting bounties in the prairie section, the State had greatly exceeded its efforts to preserve the enormously valuable existing natural forests elsewhere in the State. This same point was strongly reiterated in the 1912 report (*205, Rept. 2*), and the recommendation was made that, in order to offset this disparity, not to exceed 40 percent of the bounty appropriation be made available to the forestry board, to enable it to conduct experimental and demonstration work of direct value to all forests and forest owners. It was also recommended that any balance from the bounty appropriation be made available for the expenses of a State forest nursery.

Nevada similarly followed the provisions of the Kansas bounty act in the act of March 7, 1873 (S. L. ch. 82, p. 162), the chief difference being that the bounty was made applicable only to plantings made within 5 years of the passage of the act, which limitation was extended to 10 years by the act of March 5, 1877 (S. L. ch. 113, p. 185). The amending act also specifically excluded from the benefits of the bounty willows and cottonwoods planted for the express purpose of protecting ditches and canals.

Illinois, by the act of February 9, 1874 (Rev. Stats. 1874, ch. 136, p. 1056), authorized county supervisors to offer a bounty of not more than $10 an acre for 3 years for the planting of 1 or more acres of forest trees, the trees to be not more than 10 feet apart, and cultivated for 3 years.

Nebraska, by the act of February 27, 1879 (S. L. p. 187), required counties to pay annually a bounty of $3.33 per acre for not over 3 acres of forest trees planted in rows (six rows 8 feet apart with trees 4 feet apart in the rows) along the north section lines and half section lines of any tract for such time, not exceeding 5 years, as this plantation should be cultivated. This act, as codified, was repealed by the act of March 22, 1899 (S. L. ch. 3, p. 53).

Dakota Territory, by the act of March 13, 1885 (S. L. ch. 145, p. 212), provided for an annual bounty of $2 per acre for a period of 10 years for the planting within the succeeding 5 years of 1 or more acres of forest trees, except black locust or cottonwood, and cultivating the same for 3 years. Like the Minnesota law, planting by railroads within 200 feet of their tracks and by settlers on Federal timber culture claims were ineligible.

Kansas, by the act of March 2, 1889 (S. L. ch. 254, p. 386), followed the Illinois act of 1874 and authorized county supervisors to offer a bounty of not more than $10 an acre for a period of 5 years for each acre planted to forest trees spaced not over 10 feet apart and kept cultivated and in good condition, lands entered under the Federal

timber culture laws being ineligible. This law was carried on the statute books up to 1923 but was omitted from the code adopted in that year, on recommendation of the code commission as being inoperative (*195, p. 207*).

Wyoming Territory, by the act of March 11, 1890 (S. L. ch. 42, p. 71), similarly followed the Illinois 1874 act, except that the bounty did not become payable until the trees had been planted and cared for for 5 years, Federal timber culture homesteads being ineligible. This law was carried on the statute books until 1931 when the provisions as then codified (Wyo. Compiled Statutes, sections 1575–1578) were repealed by the act of March 3, 1931 (S. L. ch. 73, sec. 179, pp. 136–137).

South Dakota, upon becoming a State, provided, by the act of March 6, 1890 (S. L. ch. 152, p. 320), that, for 1 or more and not over 6 acres planted within the succeeding 10 years to "not less than 900 [forest] trees per acre, and 100 or more of evergreens" and cultivated for 3 years, an annual bounty should subsequently be given for a period of 10 years of $2 per acre and $1 for each 100 evergreens not exceeding 1,200. As the bounty period under the above act was about to expire, the act of March 9, 1909 (S. L. ch. 268, p. 414), was passed, providing for a bounty of $2 per acre per year for 6 years for land planted after the year 1908 to at least 1,000 trees to the acre and cared for and cultivated successfully for 3 years, at least 300 living trees being required in any year for which the bounty was claimed. This latter act was amended by the act of March 14, 1913 (S. L. ch. 216, p. 299), making the bounty $5 per acre each year for not over 6 years for land planted after 1910 having a survival of 150 trees at the time bounty was claimed, the bounties for the unexpired period of the 1909 act to be in accordance with the terms of the amending act. Additional amendments to date are as follows: The act of February 10, 1917 (S. L., ch. 147, p. 195), the act of March 14, 1919 (S. L., ch. 349, p. 430), and the act of March 8, 1927 (S. L., ch. 212, p. 257).

North Dakota, on attaining statehood, reenacted by the act of February 5, 1890 (S. L., ch. 70, p. 245), the Territorial law of 1885, with the modification that $3 instead of $2 per acre was to be paid each year, provided 400 living trees were maintained per acre. By the act of February 28, 1905 (S. L., ch. 187, p. 335), 1 to 10 acres of prairie land, when planted with any kind of forest trees not more than 8 feet apart each way, with a minimum of 400 kept in growing condition, entitled the owner to an annual deduction (virtually a tax rebate although called a bounty) of $3 an acre from any real-estate taxes against the farm of 80, 160, or 320 acres on which the trees were growing. In addition, for hedgerows along boundary lines of public highways or other portions of premises, a bounty of $2 a year for 5 years was allowed for each 80 rods having at least two living trees to each rod. Railroad companies and holders of Federal timber culture claims were excluded from the benefits of the act. This law was codified in the same year, becoming sections 2082 to 2085. Section 2082 was then amended by the act of March 12, 1907 (S. L. ch. 41, p. 34), which eliminated the rebate character of the allowance and provided for its payment directly from county general funds although no payment could be made in excess of the amount of real-estate taxes levied against persons applying for such payments.

The act of March 3, 1911 (S. L. ch. 308, p. 552), amended the provisions concerning the proof of planting (sec. 2084), and the law as thus amended was included in the 1913 code as sections 2813–2816. The act of March 2, 1915 (S. L. ch. 262, p. 384), amended section 2813 by changing the limitation on the bounty payment from that provided in the 1907 amendment, so that the bounty should not exceed the taxes levied on the particular quarter section of land on which the planted trees were growing. Finally the act of March 8, 1933 (S. L. ch. 268, p. 420), repealed all four sections (2813–2816).

Fixed Assessment Laws

Lastly two other Midwestern States modified their property tax laws in still another way, namely, by limiting the taxable value of the property devoted to forest growing to the fixed sum of $1 an acre. These were Indiana and Iowa.

Indiana, by the act of March 8, 1899 (S. L. ch. 256, p. 570), provided that not over one-eighth of any tract might be set aside for forest growing and that, if at least 170 trees per acre, either natural or planted, of certain named species, were maintained and properly cared for, the property was to be taxed at a valuation of $1 an acre. Not more than one-fifth of the trees could be cut in any 1 year, and all trees cut were to be replaced by others so as to maintain at least the minimum number at all times. This act, which became a law without the Governor's approval, was repealed by the act of February 27, 1905 (S. L. ch. 49, sec. 3, p. 64), after an unsuccessful effort was made to draft a substitute law which would better conform with the requirements of the constitution. The same form of tax relief, however, was subsequently revived by the act of March 10, 1921 (S. L. ch. 210, p. 567), still in force, the details of which are described elsewhere.

Iowa, by the act of April 10, 1906 (S. L. ch. 52, p. 35), adopted most of the features of the Indiana 1899 act. This act, after being codified in the 1907 supplement to the 1897 code as sections 1400c to 1400p, was amended by the act of March 22, 1911 (S. L. ch. 65, p. 48), so as to admit plantation of certain additional species to qualify.

EARLY EASTERN LEGISLATION

Exemption Laws to Encourage Planting

Almost simultaneously with but quite independent of the above-described movement in the prairie and other Midwestern States, a like movement was getting under way in the Northeast. Maine led, with an exemption law in 1872. The proximate inception of this action was an address before the annual meeting of the Maine Board of Agriculture in 1869 by one Calvin Chamberlain, a pioneer fruit grower and member of the board since its organization in 1856. He and the secretary of the board, Stephen L. Goodale, were designated a committee to draft a memorial to the House of Representatives (*198, Rept. 14, pp. 65–85*) making such suggestions as they deemed important with reference to the expediency of inaugurating a State policy of encouraging the preservation and production of forest trees; likewise to call the matter to the attention of Congress. Their memorial was accompanied by the draft of a bill, the one which was ultimately passed 3 years later.

From the inception of the board of agriculture, however, these two men had been carrying on an active campaign through the board, to arouse interest among the farmers in the forests as modifiers of climate in general and especially as influences affecting agriculture. Thus the first annual report of the secretary of the board in 1856 summarized the replies to a questionnaire of some 30 questions (*198, Rept. 1, pp. 48–50*), which was widely distributed to farmers in all parts of the State. Questions as to whether the woodlands were increasing or decreasing (*198, Rept. 1, pp. 76–77*) and as to the effect of lumbering upon agriculture (*198, Rept. 1, pp. 168–175*) elicited replies which indicated a keen appreciation of climatic influences. The 1865 report of the secretary (*198, Rept. 10, pp. 71–104*) also indicates how closely new developments on the subject were being followed, since thirty-odd pages of it were devoted to extended excerpts from George P. Marsh's recently published Man and Nature and its chapter on woods, dealing with the influence of forests on climate. The New England Farmer and other publications indicate similar tendencies through the Northeast.

This Maine law of February 29, 1872 (S. L., ch. 66, p. 41), provided for an exemption for 25 years, commencing within 10 years following the passage of the act, of any area of land from which the primitive forest had been removed and upon which a new forest of not less than 2,000 trees to the acre had been planted and cultivated for 3 years, on condition that the grove or plantation was kept alive and in thriving condition throughout the exemption period. This act, as codified, has since been amended by the act of March 27, 1907 (S. L., ch. 169, p. 185), the act of March 24, 1909 (S. L., ch. 136, p. 148), and the act of April 16, 1927 (S. L., ch. 247, p. 232).

Connecticut followed Maine, with the act of March 7, 1877 (S. L., ch. 49, p. 172), which provided for an exemption for 10 years of plantations of certain species of trees not less than 1,200 in number per acre, on land valued at not over $15 and not previously wooded, the exemption to begin when the trees had attained a height of 6 feet. This law was amended by that of March 31, 1886 (S. L., ch. 90, p. 596), which established Arbor Day. By this law the exemption period was extended to 20 years and the maximum value of the land to $25 while certain species were added and others dropped from the list of approved species. A new act of August 23, 1911 (S. L., ch. 205, p. 1479), while not repealing its predecessor, contained the same provisions and in addition vested the State forester with authority to determine the manner of planting and the responsibility for proper enforcement of the law. The act of May 7, 1913 (S. L., ch. 58, p. 1666), which provided for a yield tax, amended code section 2320 (i. e., the exemption laws of 1877), by providing that exemptions thereunder should apply only to lands planted before January 1, 1913, thus virtually suspending its operation. Similarly, the act of May 26, 1913 (S. L., ch. 108, p. 1699), amended chapters 205 of 1911 and in addition directed that the State forester issue no certificates of exemption thereunder after June 1, 1913. By the act of June 3, 1929 (S. L., ch. 179, p. 4610), a new exemption law was enacted.

Massachusetts, by the act of April 9, 1878 (S. L., ch. 131, p. 94), closely following the one in Connecticut, granted an exemption for

10 years for planting not less than 2,000 trees to the acre on land not woodland within the previous 5 years and not valued at over $15 an acre, the exemption to begin when the trees had grown to 4 feet in height. This law was amended by the act of March 17, 1880 (S. L., ch. 109, p. 71), to include all pines as well as white pine and then was largely reenacted by the passage of the act of February 25, 1908 (S. L., ch. 120, p. 89), which also extended the exemption privilege to include land stocked with a natural growth of 600 trees if increased by planting to 1,200, exemption beginning after the trees attained a height of 2 feet. This act was codified as section 6 of part 1 of the act of June 12, 1909 (S. L., ch. 490, p. 543), an act to codify and amend the laws relating to taxation. There was also passed at that same session, but not included in or affected by the codification, the act of March 18, 1909 (S. L., ch. 187, p. 140), which granted a 10-year exemption to land valued at not over $10 and well stocked with thrifty white pine seedlings having an average height of not less than 15 inches. However, the subsequent removal of trees of commercial value, other than those removed for the improvement of the pine, terminated the exemption.

The 1908 law, as codified in 1909, was finally repealed by section 26 of the act of June 2, 1914 (S. L., ch. 598, p. 529), which provided for the yield tax. The 1909 law was also repealed, but somewhat later, namely, by the act of May 29, 1918 (S. L., ch. 257, sec. 34, p. 230), an omnibus act "making substantive corrections in existing laws", among them chapter 12 of the revised laws on assessment of local taxes.

Rhode Island passed the act of April 8, 1878 (S. L., Jan. sess., ch. 663, p. 94), with substantially the same provisions as the Massachusetts act, which became a law a day later, except that the exemption was for 15 years and land up to $25 in value was eligible. That act was later superseded by the one of May 22, 1908 (S. L., ch. 1581, p. 204), also similar to the Massachusetts law of the same year except that a tract was made immediately eligible for exemption and only 500 planted trees per acre were required. The tract, however, had to be managed under a working plan approved by the commissioner of forestry, and no more than 300 acres in one ownership could be included. This act is still in effect.

Vermont, by the act of December 7, 1904 (S. L. 17, p. 21), following the Massachusetts act of 1878, provided for tax exemption for 10 years on forest plantations that were made and cared for as should be required by the State forestry commissioner. By the act of December 18, 1908 (S. L. 11, p. 9), creating the office of State forester, that officer was given the supervision of such plantations. The act of February 13, 1913 (S. L. 1912, 22d bien. sess., act 40, p. 33), one of the twin acts which established the yield-tax system, also amended it by limiting its application to plantations established prior to January 1, 1913, and thus practically rendering it inoperative. The exemption method was later revived, however, by the act of March 26, 1923 (S. L. 19, p. 29).

Rebate Laws

In addition to the above exemption laws enacted by the several States in the Northeast, two others in that group resorted to the

slightly different method of granting partial exemptions through tax rebates.

Pennsylvania, by the act of June 1, 1887 (S. L. 173, p. 287), provided for the annual repayment over a period of 30 years of certain sums of money by the counties on account of land either planted to not less than 1,200 trees to the acre or equally well stocked with a natural growth of young trees, the stand of either sort to be well cared for. The annual sums to be rebated during the first 10 years were to equal 90 percent of the annual taxes, but not more than 45 cents per acre; those during the second decade 80 percent, but not more than 40 cents per acre; and those during the final decade 50 percent, or not more than 25 cents per acre. The act permitted a thinning of the stand of either sort to not less than 600 trees per acre at the end of the first 10 years.

A second act, that of May 25, 1897 (S. L. 70, p. 88), granted an annual rebate of 80 percent of all taxes, but not exceeding 45 cents per acre, for so long as the forest was maintained in good condition, on any tract of not more than 50 acres having a stand of trees averaging not less than 50 in number per acre, each tree being not less than 8 inches in diameter at 6 feet from the ground. This was an effort to supplement the first act so as to take care of stands in the later stages of development. This 1897 act received a minor amendment by the act of April 11, 1901 (S. L. 48, p. 77), which was followed by the act of April 8, 1905 (S. L. 88, p. 118), replacing both acts but containing the same general provisions. This latter act was declared unconstitutional in 1906.[9]

Meanwhile the original 1887 rebate act, which had been amended in minor respects by the act of March 22, 1901 (S. L. 19, p. 52), was superseded by the act of April 20, 1905 (S. L. 179, p. 246). This provided for a rebate of 80 percent of all taxes, but not exceeding 45 cents per acre, for a period of 35 years for any tract of not over 500 acres in a single ownership which had either been planted to not less than 300 trees to the acre or on which the same number of trees of natural growth had been preserved or which offered a combination of both, the stand in any case to be well cared for. This latter law, like its companion 1905 law, was declared unconstitutional in 1908.[10] While the adverse decisions in the single case contested under each of these two rebate laws chiefly served to indicate, though not to establish conclusively, their unconstitutionality, they did serve to discourage others from attempting to take advantage of them and thus hastened their becoming inoperative.

New Hampshire, by the act of April 2, 1903 (S. L., ch. 124, p. 127), enacted essentially the same rebate and other provisions as were contained in the original 1887 Pennsylvania law, except that stands of natural growth were not included. This was reenacted, essentially without change, by the act of April 3, 1925 (S. L., ch. 55, p. 72), and is still in force.

Bounties and Prizes

The only State in the Northeast to resort to bounties or premiums was Massachusetts, and that at an early date. By the act of February 20, 1819 (Laws of 1819, Jan. sess., ch. 114, sec. 5, p. 182), it was made—

> the duty of every incorporated agricultural society to offer, annually, for a period of 5 years, such premiums and encouragement, for the raising and preserving oaks

[9] *Tubbs* v. *Tioga Township*, 32 Pa. Co. Ct., 504.
[10] *Christley* v. *Butler Co.*, 37 Pa. Super. Ct. 32.

and other forest trees * * * as * * * shall seem best adapted to increase and perpetuate an adequate supply of ship timber, within this Commonwealth.

According to Hough (*192*)—

the discussion in agricultural societies and by the public journals in this State (Massachusetts) on the subject of forest culture, and the various economies relating to forest products, date further back and contain more material than those of any other State in the Union.

The efforts made to promote the cultivation of forest trees by premiums date from a relatively remote period. Thus, in 1804, even before the act above referred to was passed, the State Society for the Promotion of Agriculture offered a premium of $25 for the best growth of several varieties of trees of not less than 600 in number per one-quarter acre and $50 similarly if all the trees were oak.

This same society persevered in its activities and in 1876, 2 years before the exemption law of 1878 was passed, offered premiums of $1,000, $600, and $400 for plantations of not less than 5 acres in extent, comprising at least 2,700 trees to the acre, if made on land that was poor, worn out, or otherwise unfit for agricultural use. The awards were to be made in 1887. However, notwithstanding the substantial amount of these offerings, the records showed that but two competitors were entered for the awards.

EARLY SOUTHERN LEGISLATION

Only two Southern States, namely, Alabama, 1907, and Louisiana, 1910, embarked on a program of tax exemption, and they did so only after that particular phase of the movement had largely spent itself elsewhere. Furthermore the climatic factor as a reason for seeking the establishment or reestablishment of forests, potent in both the Middle West and Northeast, exerted perhaps a minimum of influence here. Rather it was the economic factor of threatening timber exhaustion which was then coming strongly to the front and stimulating the forestry movement.

In fact the Alabama exemption provision was contained in section 5 of the general forestry organization act of November 30, 1907 (Laws of 1907, spec. sess., no. 90, p. 192), and it is specifically stated that the exemption is given "in order to encourage the practice of forest culture." The exemption was to be for 10 years, beginning 10 years after the owner of a tract of land assessed at not over $5 an acre had entered into and operated under a contract with the commissioner of forestry to plant or grow useful timber thereon as prescribed by him. Failure properly to comply with some technical formality in the course of its passage however affected the validity of the entire act of 1907, so that the tax provision was never used and was finally amended by the act of September 28, 1923 (S. L., Act 486, p. 638), which substituted a yield tax for the exemption provision.

Louisiana, in revising its general forestry law of 1904, passed the act of July 7, 1910 (S. L. 261, p. 446). In it was introduced for the first time, as section 13 thereof, a provision for forest-tax relief. This was framed on the line of the Pennsylvania yield-tax legislation then for several years under consideration but with the yield-tax portion omitted. This omission evidently was necessary because of constitutional restrictions, since subsequently the yield tax was adopted in a separate act after amendment to the constitution had been

effected. Thus the principle, as so enacted and continued in force for more than 15 years, was in effect one of straight exemption. As first enacted in 1910 a nominal taxable value of $1 an acre was all in the way of taxation that was required, as in the case of the Indiana 1899 law and the Iowa 1906 law. However the owner of lands which were otherwise suitable, i.e., were cut over and not valued at more than $5 an acre, had to enter into a contract with the State to reforest his lands and care for the growing forests under State supervision for a stipulated term of years not to exceed 40. In 1920 the whole law was extensively rewritten and reenacted by the act of July 8, 1920 (S. L. 232, p. 386). The taxation provision then became section 11 in the new act and was modified in several particulars. Thus cut-over land valued as high as $10 an acre, instead of $5, could be classified, but instead of being given a nominal fixed valuation of $1 an acre for taxation purposes during the contract period, its value was fixed at its actual value at the time of classification but with a minimum value of not less than $5 an acre. Also a minimum contract period of 15 years was provided, while leaving the maximum at 40 years as formerly.

Since there was a strong element of doubt as to the constitutionality of suspending the operation of the property tax by means of a contract in the case of these reforestation tracts, the legislature by the act of July 8, 1920 (S. L. 180, p. 290), provided for the calling of a constitutional convention to convene in 1921 to consider this and other constitutional matters. The amended constitution agreed on at this convention was adopted June 18, 1921, to become effective July 1 of that year. Among the amendments was one specifically authorizing the fixing by contract of taxable valuations on specific tracts of land for the duration of the agreements under terms prescribed by law.

The act of July 13, 1922 (S. L. 90, p. 161), reenacted the conservation law of 1920 and materially changed section 11. It admitted to classification cut-over lands valued at from $3 to $8 an acre, instead of $5 to $10, for an initial contract period of not over 15 years, subject to 1 renewal for 5 years. The taxable valuation of the land at the outset was to be fixed at its then actual value only for the first 10 years of the contract period. A revaluation was then to be made, to to give effect to any changes in value that might have taken place, including that due to the growth of the young forest. Similarly a new assessment was required in the event that the contract was renewed at the end of the 15-year period.

The next legislature again revised the conservation law including section 11, by the act of July 10, 1924 (S. L. 71, p. 106). By this revision the contract period was restored to a maximum of 40 years as in the original 1910 provision and the practice of fixing the valuation at the outset for the entire contract period was likewise restored. By the acts of July 8, 1926 (S. L. 120 and 121, pp. 185–186), two additional changes were effected. Act 120, without changing the contract period, provided that any timber grown on land which had been under contract should be free from all other taxation than the yield tax for a period of 50 years, without regard to the length of the particular period for which the land was under contract. The second, act 121, authorized the revision of those contracts made under the very much circumscribed provisions of the 1922 law so as to conform with the more liberal ones of the 1924 amendment.

LATER EFFORTS

ORIGIN AND DEVELOPMENT OF THE YIELD-TAX IDEA

The above exemption, rebate, and bounty laws, aiming at the encouragement of forests established chiefly by planting rather than the perpetuation of those derived from natural seeding, cover the activities of the States initiating action in this field in what may be called the early regime, i. e., up to and including the year 1910. Acts of the same sort initiated subsequently belong chiefly to the more modern regime, wherein a different type of law prevailed. They will be considered in their proper place therein.

The efficacy of these laws of the earlier regime came under adverse scrutiny shortly after the forestry movement was crystallized by the organization of State or Federal forestry departments and the engagement of the services of technically trained foresters. Thus as early as 1888 the late B. E. Fernow, at that time the leading technical authority in the country and chief of the then Division of Forestry of the United States Department of Agriculture, openly opposed such tax exemption legislation. In an address (*185, pp. 52–57*) outlining an adequate legislative program at a forestry convention held in Michigan preparatory to recommending the establishment of a State forestry department he said, after discussing other more important features of such a program:

> There still remains to be considered the legislation of direct encouragement to tree planting. This, in my opinion, is the last to be attempted, the most difficult to devise and execute, the most harmful to the morals of a community if not properly framed and guarded * * * I said to the Pennsylvania Board of Agriculture the other day: "The provision of your recent law [the rebate law of 1887], which will allow me a release of taxes for three decades of 45 cents, 40 cents, and 25 cents per acre at the highest, does not even encourage me to undergo the trouble of asking for it, although I have some 4,000 acres which I could bring under the provisions of the law." * * *

Exemptions and similar devices nevertheless continued for many years to be resorted to by numerous States, as has already been shown. These efforts at least served as gestures of encouragement while promising to be much less expensive, though obviously less effective, than the means Dr. Fernow then favored as a substitute, namely, the widespread distribution, free or at nominal cost, of forest planting stock.

Meanwhile the idea of employing some form of tax relief as an encouragement of forestry would not down and was finding a new avenue of expression. In some localities timberland owners were complaining of impositions by the local tax authorities, and some went so far as to contend for a change of some sort. Such was the case in Michigan at about the time the State forestry work was being organized. About 1890, according to the late Filibert Roth, John J. Hubbell, then chief engineer of the Manistee & Northeastern Railroad, a one-time land surveyor and timber cruiser, began to agitate for a new form of taxation, one that was destined to claim the serious attention of the entire country for upwards of a generation at least after his time. While his earliest pronouncements on the subject are not now readily available in print, the Michigan Forestry Commission (*202, p. 27*) made reference to Mr. Hubbell and his proposals as follows:

In an exhaustive article by J. J. Hubbell of Manistee, than whom there is no better authority in Michigan on matters of reforestation, we find the following practical suggestions concerning the assessment of property and taxation of timber and timber lands:

The excerpt that followed ran in part thus:

* * * I would advocate a separation of stumpage values from the value of the lands upon which they stand. * * *

By such a division the land itself could be assessed and taxed * * * The timber itself I would have exempt from all taxation as long as it is left standing. * * *

As to the final tax upon timber, I would place the entire amount upon it at the time of cutting, and which for further convenience I will call the "cutting tax." I do not feel competent to say what this cutting tax should be, but it ought to be based upon a fixed pro rata of the stumpage value of the timber cut, and for the purpose of illustration I will place it at 10 percent as a maximum rate.[11]

Mr. Hubbell then went on to point out that to impose the maximum rate immediately after the enactment of such a tax law as he proposed would be manifestly unjust and to suggest a sliding scale of rates beginning at 2 percent in the first year and increasing by 2 percent each year until the maximum rate was attained. He estimated that such a law would net the State a revenue of $800,000 annually, besides preventing discrimination against nonresident owners, extending the life of the then mature forests, and taking away from the timberland owners the excuse that they were forced to cut as rapidly as possible to avoid excessive taxation.

Mr. Hubbell was apparently the most persistent and the most esteemed among those proposing forest-tax plans, judging from the frequency of references in the State reports over a period of years. But he was not alone. The Indiana law of 1899, for example, had its adherents and was published in the same Michigan booklet (*202, p. 33*) from which the above quotation from Hubbell was taken. The 1905–6 report of the Michigan Forestry Commission (*203*) contained several references to forest taxation. Mr. Hubbell was called upon at two different sessions of the Michigan Forestry Association meeting to discuss the subject. In one of these talks (*203, Rept. 1905–6, p. 120*) he discussed his plan of a separate land and timber-cutting tax and in the other (*203, Rept. 1905–6, p. 114*) made the significant statement that—

If you are going to bring up the subject of taxation, bring it up for the whole State, applicable to the lumberman and the farmer and have it on the same basis.

In addition to Mr. Hubbell, the president of the association, John H. Bissell, offered an entirely different plan (*203, Rept. 1905–6, pp. 80–82*), which he summed up thus:

The rule should be:

The assessment of all real estate by itself and without reference to improvements of any kind or any growing crop thereon—farm or forest—at the fair cash value of similarly situated and constituted neighboring lands; the growing crop not to be assessed for taxation; the improvements to be assessed separately.

Alfred Gaskill, representing the United States Forest Service, in an address given at another session of the association (*203, Rept. 1905–6, p. 117*), on the relation of the Forest Service to State work in forestry, discussed the proper legislation with reference to fire protection and a suitable method of taxation "to stimulate planting rather than induce the rapid demolition of timber areas." The report also

[11] The excerpt appears to have been taken almost verbatim from Mr. Hubbell's paper *(193)*.

contains two other items on forest taxation. One quoted Arthur Hill, of Saginaw, a lumberman, who favored an amendment to the tax laws to provide for a "flat rate per acre for a long term of years" (*203, Rept. 1905–6, p. 153*). The other quoted the secretary of the Indiana State Board of Forestry on the activities in that State in preparing a tax-rebate bill to take the place of the earlier (1899) Indiana law, which meanwhile had been considered to be unconstitutional (*203, Rept. 1905–6, p. 154*).

The Michigan Forestry Commission report of 1907–8 (*203*) carries the account of the Great Lakes Forestry Conference and of the meeting of the Michigan Forestry Association, at both of which meetings forest taxation was extensively discussed. At the first-mentioned meeting such nationally prominent men as Filibert Roth, B. E. Fernow, then of Ontario, Pres. Charles R. Van Hise, and Dean H. L. Russell, of the University of Wisconsin, and A. C. Shaw, of the Federal Forest Service took part, along with members of the Michigan Constitutional Convention's Committee on Public Lands and Reforestation and the legislative Forestry Commission of Inquiry. At the second of these meetings, besides Prof. Roth and Dr. Fernow, several local timberland owners spoke on the subject of forest taxation. One of these, Charles W. Ward, submitted a plan (*203, Rept. 1907–8, p. 81*), which seemingly embodied Mr. Hubbell's proposed change in the method of taxation but limited its scope of application.[12] Instead of Hubbell's broad objective classification, embracing all forests as such, it introduced a subjective classification based on a specific mental attitude of each individual owner toward his forest, namely, whether or not he would elect to place it under State forestry supervision. Oddly enough this subjective classification in the end prevailed, not only in Michigan but elsewhere.

A parallel campaign, having the same yield-tax objective as in Michigan but sponsored initially by a group of Federal and State forest officials—technical foresters and, for the most part, members of the Society of American Foresters—was inaugurated around the turn of the century. The two branches of the movement seem however to have been quite independent of each other, except that on occasions several of the more active men in the technical group, like Dr. Fernow, A. C. Shaw, and Alfred Gaskill of the Federal Bureau of Forestry, and E. M. Griffith, State forester of Wisconsin, were invited to address some of the Michigan meetings. Aside from Michigan the efforts of this group focused most directly on the State activities in Wisconsin and Pennsylvania, as will be brought out subsequently. The discussions by this group further served to bring the question before the public in a general way and undoubtedly were influential in leading to the decision of the National Conservation Commission to have a thoroughgoing study made. This was undertaken by the United States Forest Service through the employment of Fred R. Fairchild, of Yale University, the results appearing as a part of the Commission's report (*101*).

[12] A fuller report of Ward's proposal was printed in the American Lumberman (*214*). Subsequently, an article by Ward in the same journal (*215*) indicates that the plan he proposed in 1907 arose from his own independent thinking on the subject over a period of years and was not an adaptation of Hubbell's proposal. In this 1911 article he said: "There has been in my mind for many years, even as far back as 1882, a fair method of assessing timber holdings." This consisted for mature forests of (1) an assessment under the property tax of the soil value as unimproved agricultural land and (2) a levy of a specific tax on each 1,000 board feet of lumber, or its equivalent in other products, upon the standing timber being cut and manufactured; and for all newly planted land exemption from all ad valorem taxes and, in lieu of such, a specific tax of 5 or 10 cents an acre each year until the planted trees could be brought to maturity when the exemption and annual specific tax would cease and the property be taxed as proposed for matured forests.

Before proceeding to chronicle the efforts of the several other States which pioneered the yield-tax movement along with Michigan, brief mention should be made of a number of individuals who helped to crystallize public sentiment on the subject prior to the publication of the Fairchild report. These were, in addition to those mentioned elsewhere, arranged according to the chronology of their first published contributions: C. A. Schenck, 1899; C. W. Weld, 1902; Ernest Bruncken, 1903; Alfred Akerman, 1905; D. H. Darling, 1907; C. H. Goetz, 1907; E. G. Cheyney, 1907; G. E. Ames, 1908; T. B. Walker, 1908; and James B. White, 1908.

Pennsylvania, although fifth in the order of actual enactment of a forest yield-tax law, was among the first of the Eastern States to consider such a step. Its earliest stirrings of record date from the publication in 1892 of Primer Series No. 3 by Joseph T. Rothrock, the State's pioneer forester (*210*). This publication, by the way, is the earliest of record in the United States on the yield-tax idea. The legislative program that was finally successful in 1913 was first introduced in the 1907 session and at each intervening session thereafter. The bills, of which there were three, were originally drafted by Simon B. Elliott, of the State Forestry Reservation Commission. Furthermore, Mr. Elliott had a contribution on the subject of forest taxation in the report of the State Department of Forestry for 1905–6 (*184*), in which he advocated the separate taxation of land and timber, the land to continue subject to annual ad valorem taxation and the timber to be subject to a tax only when cut, at a rate of not over 2 percent on its value. In a note appended to this article the author pointed out that Joseph T. Rothrock, the first commissioner of forestry, had anticipated him by many years in advocating such a tax plan in the report of the State Board of Agriculture for 1894 (*211*). The 1905–6 report (*209*), in addition to Mr. Elliott's article, refers to other sources which the department had found helpful in its consideration of this subject, as follows: The report of the committee on forest taxation authorized by the Massachusetts Legislature in 1905 and the investigation made by Alfred Gaskill under the direction of the Federal Forest Service, which was incorporated in the paper on the yield tax which he presented before the Society of American Foresters in December 1904 (*190*). It is interesting to note, in this connection, that filed with the original Gaskill manuscript is a mimeograph copy of a draft of An Act for the Taxation of Woodlands, prepared by the author, with the State of Pennsylvania used for illustration. Furthermore several of the features original with this draft appear in the subsequent Pennsylvania bills and acts as finally passed.

Massachusetts was also among the first to investigate the possibilities of getting away from the unsatisfactory exemption type of legislation. Delay in adopting the new principle, however, was doubtless attributable chiefly to the fact that, whereas the Massachusetts Constitution very closely circumscribed the legislative power concerning taxation, the constitutions of the States which enacted such laws with little delay gave their legislatures sufficient latitude to enable them to adopt the yield tax without first seeking a constitutional amendment.

The very first report of Akerman, the first State forester of Massachusetts (*177, Rept. 1, p. 6*), covering the last 5 months of 1904, announced the fact that the subject was being considered but would

have to be further investigated before definite recommendations could be made. The second annual report (*177, Rept. 2, pp. 7–9*), showed that the Governor in his inaugural address had recommended that laws be enacted providing for a fairer system of taxation for forest lands, that a bill on the subject had been introduced, that the legislature for lack of time to investigate the matter thoroughly had failed to pass the bill but had adopted a resolution authorizing such an investigation, and that a committee, of which the State forester was a member, was hard at work collecting, translating, and examining the forest-tax laws of foreign countries and those of the States that had any laws on the subject. The report of that committee to the legislature of 1906 (*199*), which was referred to the next (1907) session for action, presented both the data on foreign laws and a program intended to embody the essential principle of the foreign laws but in such a way as to be in harmony with the prevailing system of taxation in Massachusetts. It called for the valuation of land as if there were no forest, to which value would be added the value of the average annual cut which the forest thereon might bear without over-cutting, the sum of the two to be the total assessment for annual property taxation. The recommendation came to naught, in part because the plan proposed did not sufficiently harmonize with constitutional limitations and in part, perhaps, because of a change in the forestry administration, by which both the State forester and the assistant State forester who had sponsored the proposal were replaced by those who had no special interest in the tax plan.

The constitutional amendment question, which was essential to whatever forest-tax plan was to be adopted, first came up directly in connection with a commission authorized under chapter 142 of the Resolves of 1909 (S. L. p. 921). This commission was charged with investigating (1) whether it was desirable to classify property (in general) for purposes of taxation, (2) if so, would it be necessary to amend the constitution in order to permit such classification, and (3) was it desirable to amend the constitution. The action was precipitated by the recommendation of a 1907 commission, namely, that intangible personal property be segregated from the general run of property and be liable only to a tax of 3 mills on the dollar of full valuation, which proposal, when submitted to the supreme judicial court for an advisory opinion, was declared to be unconstitutional. The forestry interests thus embraced the opportunity to join forces with those interested in the classification of intangible property to urge a general classification amendment to the constitution. It is interesting to note that representatives of the Massachusetts Forestry Association, and others who appeared before the commission in behalf of forestry, advocated the yield tax instead of the increment tax plan proposed by the 1905 Massachusetts commission.

The resulting report (*200*) to the legislature, however, in summing up as to the advisability of classification, held that—

> the case of forestry, therefore, does not impress the commission as one that can be dealt with satisfactorily by a change in the tax laws under the proposed constitutional amendment.

It furthermore opposed the general principle of classification and advised against the proposed amendment. Following this failure in 1910 Governor Foss, in a special message of May 17, 1911 (S. L., pp. 1198–1210), dealing with various phases of the taxation situation,

urged the adoption of a special constitutional amendment solely to authorize suitable forest taxation. Such an amendment was thereupon prepared and approved by that and the succeeding legislature (S. L. 1911, pp. 1106–1107; S. L. 1912, ch. 115 of the Resolves, p. 919), and was then ratified by popular vote at the general election in November 1912.

Thereupon the 1913 legislature, by chapter 131 of the Resolves of 1913 (S. L. pp. 1180 and 1181), provided for a commission to recommend the kind of legislation that should be adopted. The report of this commission (*201, p. 12*) found—

> that the proper method of forest taxation has been the subject of much investigation in the United States, and that fortunately there is complete agreement concerning the principles that should govern such taxation—

citing in this connection a considerable number of reports of State and Federal investigations, all of which, except the Massachusetts report of 1906, advocated the yield tax.

The unique feature of this 1914 report and the bill that was drafted and later enacted by the legislature was the so-called "commutation tax." This was a property tax to be paid annually in addition to the tax on the bare land in those cases where a forest had been established on the land and was already large enough to be subject to taxation at the time of classification under the yield-tax law. Its purpose was to prevent, as a result of the change in tax system, a reduction in the current revenue of the local community up to the time when such forest would ordinarily be cut. On the other hand, it aimed also to protect the forest owner from having the assessments on such forest increased from time to time while it was growing to maturity, as would otherwise be the case under the property tax. In compensation for the payment of such commutation tax, the rate of yield tax finally to be levied on such forest when cut was to be correspondingly less than that which applied on the cut from property which never had been subject to the commutation tax. In this manner it was intended to equalize the total tax burden on the two classes of forest property.

Although New Hampshire even now is without a yield-tax law, it is of historical interest to note that in few if any States have the forestry interests made more persistent and long-continued efforts than in New Hampshire to obtain a constitutional amendment releasing forest property from the rigid application of the proportional requirement of ad valorem property taxation. Forest taxation first came up for detailed discussion in 1906 in the report of a general study by Lyford and Margolin of the Forest Service (*197, pp. 204–208*). This was promptly followed by a study of the forest-tax situation by J. H. Foster, then of the United States Forest Service, in 1907, in which the adoption of a yield tax was recommended (*186*). The proposal and bill for carrying it into effect, having failed to receive the approval of the legislature, was laid before the consitutional convention held in 1912, and the convention's approval of an amendment of the constitution was obtained (*207*). This amendment provided not only for forest taxation but for the classification of money at interest and the levy of a tax on incomes received from stocks of foreign corporations and money at interest, except money on deposit in savings banks. It, however, failed of ratification by scarcely 700 of the required two-thirds of the popular vote, although getting a majority vote (*207, p. 584*).

In 1914 J. H. Foster, then professor of forestry at New Hampshire State College, made a further study for the State Forestry Commission, bringing his 1907 study down to date (*187, pp 474–480*). In 1918 another convention was assembled, and a forest-tax amendment among others was again introduced. However, the convention, without acting on any proposals, adjourned almost immediately subject to call after the close of the war. Reconvened in 1920, the forest-tax proposal was reintroduced, but, after being debated at great length, was defeated in the convention. The convention was again reconvened in 1921, without taking any action. Finally, in 1923, the convention approved a general tax amendment, which simply authorized the legislature to impose and levy assessments and taxes with no other restriction than that they be reasonable. The adoption of forest, income, gasoline, and other forms of taxation, other than the uniform ad valorem property tax, would thus have been possible. This amendment likewise failed of ratification by popular vote.

At this same time two different organizations had special committees investigating the subject. The New Hampshire Farm Bureau Federation committee included forest taxation as a part of its farm taxation program (*207a*) while the New Hampshire Civic Federation committee gave exclusive attention to forest taxation (*206a*). In 1927 the legislature provided for a recess tax commission, which latter reported a comprehensive tax program to the 1929 legislature (*208*). This included an optional forest-yield tax, as well as an income tax and certain corporation and other business taxes. Because of the doubtful constitutionality of the forest-yield tax and income-tax features, among others, the legislature referred the program to the supreme court for an advisory opinion before undertaking to enact this program. This opinion was in the main favorable to the entire program, provided certain modifications suggested by the court were adopted. One of these was to eliminate the optional feature from the proposed forest-yield tax law and make it applicable to all immature forests instead of to only a part of them as would otherwise be the case. This imposed condition introduced a fiscal difficulty into the yield-tax situation, because of its adverse effect on current revenues of many local communities, to offset which the State has as yet to find a generally acceptable means.

Wisconsin was another State that early investigated the possibilities of the yield tax as a way out of its forest-tax difficulties. The second annual report of the State forester (Griffith (*191*)), submitted December 1, 1908, contained several references to the subject. Among these was the taxation resolution adopted at the Lake States Forestry Conference, called at the suggestion of Griffith, held at Saginaw, Mich., November 1907, as follows:

> It is the sense of this conference that lands containing forests should be taxed in the usual manner so far as the land is concerned, said land to be assessed as if it contained no timber; but the forest products should be assessed and taxed only when they are cut and removed, and then in an appropriate manner (*191, p. 97*).

The State forester's report also contained a detailed discussion of the subject, which concluded with the draft of a proposed yield-tax bill (*191, pp. 93–95*). The latter, as indicated in the report, was prepared as the result of a resolution of the Wisconsin Timberland Owners' Association, requesting that the forestry department prepare such a bill. Subsequently, in 1910, the State forestry department, in

cooperation with the United States Forest Service and the State tax commission, sponsored a thorough-going field study conducted by Alfred K. Chittenden and Harry Irion, of the Forest Service, the results of which were published in a bulletin of the State forestry department (*181*). Nothing came of this effort, since shortly afterward the local forestry movement became involved in a constitutional difficulty, and the State's forestry work languished for several years. Prior to the adoption of the present law, the State constitution had to be amended. This action was instituted by the successive adoption of a joint resolution of both houses of the 1925 (S. L., Joint Res. 61 and 62, p. 725) and 1927 (S. L., Joint Res. 13, p. 972, certificate, pp. 1005–1006) legislatures. The amendment was ratified at the judicial election on April 5, 1927.

Washington is another State that began early to seek the adoption of the yield tax, though its struggle came to a successful issue only after a score of years. In 1910, Gov. M. E. Hay, of Washington, at the suggestion of the Washington Conservation Association, appointed a Washington State Commission on Forest Legislation. Francis G. Miller, then dean of the University of Washington Forest School, was chairman of the subcommittee on forest taxation which recommended a constitutional amendment.[13] In 1912 the United States Forest Service undertook a detailed study of forest taxation in Washington under the direction of Professor Miller (*204*). Neither one of these efforts progressed to the legislative stage. In 1921 the Washington State Forestry Conference was organized, and, among others, a committee on taxation was named. By the time of the fourth annual conference in October 1924 the committee had evolved a definite legislative program in the shape of two bills, one for a constitutional amendment and the other for a law. These were introduced into the special session which convened in November of the following year. The first of these, the constitutional amendment, was passed by both houses (S. L. Extraord. sess., 1925–26, ch. 110, pp. 169–171) but failed of ratification at the succeeding general election in November 1926. The bill for a law, having been introduced for its educational effect in helping the passage of the constitutional amendment, was withdrawn before it came to a final vote. Following this defeat, the conference did not again risk alienating the support of other interests likewise in need of constitutional tax relief by sponsoring a special amendment applying only to forests, but joined hands with these other interests and supported a general classification amendment (S. L. 1927, ch. 180, pp. 213 and 214). This amendment failed of ratification when first submitted, at the general election in 1928, but was finally adopted in a somewhat modified form (S. L. 1929, ch. 191, pp. 499 and 500) by the general election of 1930.

Connecticut was the last of the pioneer States to investigate at some length the possibilities of the yield tax before enacting that principle into law. The groundwork was laid by the act of May 2, 1911, (S. L., ch. 45, p. 1034), which provided for the appointment of a commission to investigate forest taxation. Three of the six members of this commission were technical foresters and therefore in touch with

[13] WASHINGTON STATE COMMISSION ON FOREST LEGISLATION. REPORT . . . SUBMITTED TO THE GOVERNOR. November 16, 1910. Analytical index to recommendations, 43 pp. + pp. A to H (appendixes A and B); the report of the commission, pp. 1–8, appendixes C to G, covering the reports of five subcommittees, pp. 9–68 and appendixes H and I, pp. 69–99), pp. 7–8, and 49–87 being on forest taxation. [Mimeographed.]

the yield-tax movement, which had been engaging the attention of the profession for fully a decade and had been the subject of two investigations conducted under the direction of the United States Forest Service, the first by Alfred Gaskill in 1904 and the second and more comprehensive by Fred R. Fairchild, of Yale University, in 1909, as previously noted. The report of this Connecticut commission (*183*) contained among other things a discussion and outline of legislation recommended by the commission and an additional contribution by Professor Fairchild on forest taxation in Europe.

THE RECENT STATE LEGISLATION

There follows a description of the legislation which grew out of these various preliminary yield-tax discussions and investigations which have been recounted. These State laws are arranged chronologically according to the time each State enacted its first yield-tax law, although subsequent enactments in the same State are discussed before taking up the laws of another State.

The Michigan act of April 25, 1911 (S. L. 135, p. 195), was almost a verbatim copy of the 1899 Indiana $1-an-acre assessment law, to which was added a provision imposing Hubbell's cutting tax, the latter having since come universally to be called a yield tax. The points of departure of this law from its Indiana prototype were all on the side of restricting its application. Thus the area that could be set aside by the owner as a private forest reserve could not exceed one-eighth of a tract of 160 acres; furthermore half of the main tract had to be improved and devoted to agriculture. The rate of yield tax established by this law was 5 percent. Thus the first of this new type of forest-tax legislation, which was thereafter to claim and hold public attention for a generation or more, fell far short of the complete program advanced at the inception of the campaign 20 years earlier.

Michigan followed its initial law with two others after considerable intervals. The first of these, the act of April 17, 1917 (S. L. 86, p. 155), resembled so closely the general make-up of the initial one that it was generally accepted as a mere refinement of it and intended to repeal and replace it. However, both laws are given in full in the Compiled Laws, 1929 (see secs. 5735 to 5757). In 1925 Michigan broadened its treatment of the subject by passage of the act of April 24, 1925 (S. L. 94, p. 126), which provides for applying the yield tax to commercial forest property. This act, which was patterned chiefly after the Pennsylvania 1913 law, has since thrice been amended, namely, by the acts of April 30 and June 2, 1927 (S. L. 86, p. 121, and 356, p. 855), and that of May 28, 1931 (S. L. 199, p. 326).

In point of time New York was the first State to follow the Michigan lead in yield-tax legislation. The phraseology of the legislation, however, gives no indication that New York followed Michigan in that respect. Quite the contrary, in fact. Nor do the State reports of that period indicate even the approximate origin of the movement, the subject being only rarely and casually mentioned. However, the Pennsylvania forestry report for the years 1912–13 (*209, Rept. 1912–13, pp. 23–24*), in commenting on its own success in finally passing a yield-tax law after 6 years of "patient effort and education", mentions that "the idea (embodied in that law or rather group of three laws) has been thought so good that it has been followed in the States of New York and Louisiana." Thus, New York, although taking its

yield-tax ideas from the bills which Pennsylvania had been considering for several years, was first to enact them into law.

New York in 1912 enacted a trio of forest-tax laws, two embodying the yield-tax principle and the third a typical exemption law of the old regime. The two yield-tax laws were complementary, one dealing with forests on denuded and waste lands up to 100 acres in extent and the other dealing with those on wood lots up to 50 acres. Each of these amended the tax law by adding new sections, 16 and 17, respectively, thereto. The first was the act of April 10, 1912, and the second the act of April 15, 1912 (S. L. v. 1, ch. 249, p. 469; ch. 363, p. 710). In neither case could lands within certain specified zones surrounding cities or towns of designated size be c assified. In each case lands bearing a natural forest growth as well as forest plantations were eligible. Under both sections the owners were required to enter into written agreements with the State to submit to State forestry supervision and direction, the requirements under the wood-lot section being the more rigorous.

Under section 16, where land was denuded and waste, at least 800 trees to the acre were to be planted, whereas if there were a partial stand of trees or brush, underplanting at the rate of at least 300 trees to the acre was required. For a period of 35 years after planting or underplanting, all forest value, as well as all land value of the planted land and half the land value of the underplanted land, was to be exempted from taxation. Thereafter no further tax concession was to be granted to the land values of either class or to the forest values on the underplanted lands. However, if the trees on the planted lands were kept growing for an additional 5 years, thinnings for the purpose of increasing the rate of growth being permitted, the exemption of the timber value was to be extended for that additional period. But in the event that cutting for purposes other than increasing the growth were made within the 5-year extension period, a yield tax of 5 percent of the stumpage value of the timber cut was to be collected. After 40 years the planted timber as well as the land was to become fully taxable under the general tax laws.

Under section 17, the wood-lot yield-tax section, the land value was to continue to be assessed and taxed according to the existing provisions of law, except that the valuation was in no case to exceed $10 an acre, while the forest value was to be exempt therefrom for so long as the owner continued suitably to manage his forest. Then, in lieu of the annual tax from which such forest was granted exemption, the timber when cut was to bear a yield tax of 5 percent on its stumpage value.

The third of the trio of acts, the straight exemption law, was the act of April 16, 1912 (S. L. v. 2, ch. 444, art. 4, sec. 89, p. 907), which amended the conservation law (ch. 65 of the Consolidated Laws) by adding a practically new article on forests (art. 4). This provision was concerned only with tracts of 5 or more acres of waste, denuded, or wild forest lands unsuited for agriculture, having a value of not more than $5 an acre. Owners of such land might enter into an agreement with the State to reforest or underplant the existing forest or brush on such land in the amount and manner to be prescribed as well as to care for and maintain the forest for a period of 35 years. The agreement so entered into was to be recorded in the office of the county clerk and its provisions were deemed to be covenants running

with the land for the stated period. During such period the assessors were not to assess the trees and timber at all or the land at a greater value either than that of the land for the last 5 years, if separately assessed during any part of that period, or than that of other similarly situated lands of the same sort that were separately assessed. Furthermore the right to both exemption and fixed assessment was declared to be inviolable and irrevocable as a contractual obligation of the State so long as the owner complied with the conditions imposed on him during the specified period. The act of May 9, 1916 (S. L. v. 2, ch. 451, p. 1189), repealed and replaced article 4 of the conservation law, the former tax exemption section carrying over into the new article as section 57.

This group of New York laws remained on the statute books for several years to very little purpose; they were finally all three repealed and a new section 16 of the tax law enacted by the act of April 23, 1926 (S. L., ch. 610, p. 1088). This new section was patterned on the revised Massachusetts yield-tax law of 1923. It was much more limited in scope than that law, however, since it applied only to plantations established subsequent to January 1, 1921. On the other hand it increased the maximum allowable volume of growing stock per acre that could be carried from 25,000 board feet of softwoods or 8,000 of hardwoods (or their equivalent in cords) to 40,000 board feet for softwoods and 20,000 board feet for hardwoods. A minor amendment of this section was made by the act of March 30, 1927 (S. L. ch. 431, p. 1088), namely, the elimination of any restriction as to the location of a tract within certain distances of towns and cities of different sizes. The section was again amended by the act of April 17, 1930 (S. L. ch. 572, p. 1062), by which the time restriction was removed, so that a plantation made any time in the past could qualify, rather than merely those that were established since January 1, 1921. Also, as to the valuation which should be placed on the land from year to year, the assessors were restricted to that which the land had at the time of coming under the provisions of the section. The act of April 9, 1931 (S. L. ch. 346, p. 779), amended the section again, so as to extend its provisions to cover not only planted and underplanted forests but those of natural origin as well. Finally the act of April 26, 1933 (S. L. ch. 470, sec. 24, p. 1022) changed the number of this section from 16 to 13; this is the law as it now is.

Vermont was the third State to fall in line in the adoption of the yield-tax type of forest-tax law. Like New York, it anticipated and patterned its legislation on that of another State, namely, Connecticut, that did not get around to acting thereon until somewhat later. Vermont passed twin acts, one of February 13, 1913, and the other of February 22, 1913 (Laws 1912, 22d bien. sess., Act 40, p. 33; Act 41, p. 34). The first of these concerned lands with forests not over 15 years old, and the other, those with older forests.[14] These laws were somewhat amplified and codified by the act of April 4, 1917 (S. L. 254, entitled "The General Laws of Vermont of 1917"). They were again amended by the acts of March 11 and April 9, 1919 (S. L. 28, p. 34; 29, p. 35), chiefly in the matter of administrative procedure of appraisals and the appeal therefrom. Impatient at their apparent ineffectiveness to encourage the private practice of forestry, Vermont, while leaving these yield-tax laws on the statute books,

[14] Act 40 also limited the application of the exemption act of 1904, as elsewhere noted.

reverted to the exemption methods of the old regime and enacted the act of March 26, 1923 (S. L. 19, p. 29). These three Vermont laws, being still extant, are described elsewhere (pp. 400–401).

Connecticut was the fourth State to adopt a forest-tax law based on the yield-tax principle. This is contained in the act of May 7, 1913 (S. L., ch. 58, p. 1666). The act [15] recognized and provided somewhat different treatment for young forests (those not over 10 years old) and for older forests, as already indicated for Vermont. The act was amended by the act of March 31, 1915 (S. L., ch. 90, p. 1953), which chiefly amplified the assessment procedure of lands offered for classification. As amended, the act has remained on the statute books to date, its details and effectiveness being described elsewhere. Connecticut recently amplified its forest-tax program by an exemption law reminiscent of the old regime, namely, the act of June 3, 1929 (S. L., ch. 179, p. 4610), which is elsewhere described (pp. 391 and 396).

The Pennsylvania forest-tax program was the fifth to be adopted and, as already noted, was embodied in three separate acts. One of these, the act of June 5, 1913 (S. L. 284, p. 426), set up a definite class of forest land to be known as "auxiliary forest reserves" and attempted to endow the class with certain exclusive and distinctive features, in order, it was thought, to satisfy certain constitutional requirements relating to uniformity of taxes within a class. This act contained a contract feature binding owners to handle their forests according to the rules and regulations of the State forestry department. Another, the act of June 5, 1913 (S. L. 269, p. 405), established a special tax system for such reserves, providing for a reduced assessment of not over $1 an acre taxable annually under the property tax and a 10-percent tax on the actual stumpage value of the timber when and as cut. The third, the act of June 5, 1913 (S. L. 270, p. 408), provided for the payment of certain fixed charges annually by the State to the local communities in which such reserves were situated to be devoted to road and school purposes and intended to offset in part at least any loss in property-tax revenue that the changed tax status might impose. These three laws still remain on the statute books as originally passed, but their validity has been rendered doubtful by a declaratory judgment [15a] holding that the second of these laws, "Forest Reserve Taxation Act" (S. L. 269, p. 405) is unconstitutional because the requirement relating to uniformity of taxes within a class had not been met.

Massachusetts was the last State of the early group to put the then new yield-tax principle on its statute book. The law is the act of June 2, 1914 (S. L., ch. 598, p. 529). Despite the fact that this law was carefully drawn to make it as simple and clear as possible, the commutation tax feature already referred to proved complicated and difficult for the laymen to understand, with the result that but few owners availed themselves of its advantages. It was amended in minor respects as regards assessment procedure by the act of May 29, 1918 (S. L., ch. 257, p. 230), and was finally repealed and superseded by the act of May 2, 1922 (S. L., ch. 360, p. 379), which is the

[15] This act also amended the exemption act of 1877 (code sec. 2320), as elsewhere noted.

[15a] Court of Common Pleas of Bucks County, February Term, 1931, No. 15 [The Borough of Langhorne Manor et al., petitioners for a declaratory judgment on the constitutionality of the Acts of June 5, 1913, P. L. 405 and 426]. Judgment entered, May 2, 1932. The opinion is "unreported" but is on file in the office of the Attorney General of Pennsylvania and in the State Department of Forests and Waters.

present law. The Massachusetts income-tax law (act of May 26, 1916, S. L. ch. 269, sec. 5, p. 196) passed 2 years after the forest-tax law, exempts incomes received from land classified under the forest-tax law.

Maine, after a considerable interval, was the next State to adopt the yield tax, by the act of March 30, 1921 (S. L., ch. 78, p. 85). This was patterned after the Pennsylvania law of 1913, except for the centralized administrative control features which in the latter law were very rigid and in the Maine law were almost wholly lacking. At the very next session this law was strengthened in certain particulars by the act of March 31, 1923 (S. L., ch. 138, p. 153), notably in the provisions for the appraisal of the land and of those trees above a certain size which were not to be given any tax concession and for the withdrawal of those portions of the area which might subsequently be devoted to agriculture or other uses than tree-growing. Finally, the entire act was repealed and reenacted, along the same lines but much clarified, by the act of April 13, 1929 (S. L., ch. 306, p. 310). At the previous session, without affecting its yield-tax legislation, Maine revived the exemption type of law of the old regime by the act of April 16, 1927 (S. L., ch. 247, p. 232).

Recently the yield-tax law, after having been but little used by forest owners, has come into considerable prominence. Owners who had been getting along very well under the property tax found the latter becoming oppressive under depression conditions and consequently sought classification under the yield-tax law as a means of escape. This movement so alarmed the towns whose property tax revenues became adversely affected thereby that they instructed their representative in the 1933 legislature to seek to have the law repealed. This was effected by the act of March 23, 1933 (S. L., ch. 139, p. 270).

New Hampshire, by the act of May 4, 1923 (S. L., ch. 66, p. 83), followed the 1922 Massachusetts yield-tax act as closely as its constitutional restrictions would permit. An out-and-out yield tax levied at a special rate was however not possible. So in its place a tax at the current property tax rate on the value of the felled timber as personal property, instead of its value on the stump as realty, was provided. As such, the law was hardly a yield-tax law at all, but rather a timber-exemption law with a tax on the timber only when reduced to the status of personalty by felling. However it was something more than that, because under the general property tax law only the felled timber that is actually on the ground at the beginning of the assessment year is taxable, whereas under this forest-tax law the timber was taxable at the time of felling, whenever that might occur. The law was amended at the next session by the act of April 10, 1925 (S. L., ch. 65, p. 84), which increased the area eligible for classification from 50 to 100 acres and modified certain other details of classification. In this same year New Hampshire also revamped its old rebate law of 1903 by the act of April 3, 1925 (S. L., ch. 55, p. 72).

Alabama, by the act of September 28, 1923 (S. L., Act 486, p. 638), adopted as a part of its general forestry reorganization act, replacing the inoperative 1907 act, provisions for a yield tax on auxiliary State forests, along the line of the Pennsylvania 1913 law, replacing the exemption provisions of the 1907 act. This act remains unchanged to date.

Mississippi adopted the yield-tax principle, in very much circumscribed form due to constitutional restrictions, in the act of April 12, 1924 (S. L., ch. 329, p. 571). This law, while relieving the forest value from annual taxation for only the first 10 years, authorized a special annual property tax on the land to provide funds for organizing a county system for the conservation and protection of the classified property. This law completely failed of its purpose and was finally repealed by the act of May 5, 1932 (S. L., ch. 261, p. 571).

Ohio adopted the yield-tax principle in the act of April 7, 1925 (S. L., S. B. 186, p. 260), and has since amended and clarified it in certain details by the act of May 2, 1927 (S. L., H. B. 278, p. 181).

Kentucky, by the act of March 25, 1926 (S. L., ch. 9, p. 22), adopted the yield tax, following the general plan of the Michigan 1925 law. However one provision in this law, namely, that concerning assessment for annual ad valorem taxation, was held by the attorney general to be in conflict with the constitution, so that the law was not allowed to go into operation. It was consequently repealed and replaced by the act of March 15, 1930 (S. L., ch. 3, p. 24). No special tax principle is involved in this new law. The State, in consideration of the granting to it by the owner of certain rights during an agreed leasing period, is to compensate the owner through a rental fee in whole or in part for the ordinary property taxes on the property, while receiving in return half of the proceeds from the sale of timber cut from the property or from subleasing the right to graze, cultivate, or otherwise use portions of the property to an extent not detrimental to the main objective, namely, the "growth of timber and the propagation and growth of game and wild animal life."

Louisiana, by the acts of July 8, 1926 (S. L. 120, p. 185; 162, p. 264), passed a yield-tax law supplementing its contract law and a proposed constitutional amendment making the yield-tax principle effective. Ratification of the latter was effected at the general election held in November of the same year.

Minnesota adopted the yield tax by the act of April 18, 1927 (S. L., ch. 247, p. 356). At the next session of the legislature, by the act of April 19, 1929 (S. L., ch. 245, p. 273), it changed the method of taxing the land from an annual property tax of 8 cents on the dollar of assessed valuation to a specific tax of 5 cents per acre.

Wisconsin followed Minnesota very closely with its act of July 28, 1927 (S. L., ch. 454, p. 659). Prior to that, however, the State constitution had to be amended. This action was instituted by the successive adoption of a joint resolution of both houses of the 1925 and 1927 legislatures and was ratified at the judicial election on April 5, 1927. At the following session the 1927 law was amended by the act of July 31, 1929 (S. L., ch. 343, p. 421). In this same year the income-tax law was also amended by the act of August 1, 1929 (S. L., ch. 350, p. 457), so as to allow owners whose lands were listed under the forest-tax law to deduct, if they so desired, the cost of seed, seedlings, planting, and soil preparation in determining taxable net income. By another act, that of August 19, 1929 (S. L., ch. 405, p. 534), the privilege of listing lands under the forest-tax law was extended to counties holding tax-delinquent lands on practically the same terms as apply to privately owned lands, except that the counties were not required to pay any acreage fee. The act of April 6, 1931 (S. L., ch. 39, p. 62), broadened the latter privilege to include

lands in the process of reversion to county ownership. Most recently, the original 1927 law was again amended by the acts of June 28, 1933, July 13, 1933, and July 31, 1933 (S. L., ch. 327, pp. 683–690; ch. 411, pp. 877, 878; ch. 491 (sec. 4), p. 1204).

Oregon's yield-tax law is that of February 20, 1929 (S. L., ch. 138, p. 107), which is based in part on the draft of a law then and for some time previously under consideration for Washington and in part on the Wisconsin law of 1927.

Idaho followed closely after Oregon with enactment of the act of March 14, 1929 (S. L., ch. 185, p. 329). Then by the act of March 2, 1931 (S. L., ch. 71, p. 124), the procedure of classification was amended in certain particulars.

Washington, by the act of March 12, 1931 (S. L., ch. 40, p. 117), finally achieved the yield-tax goal for which State forestry interests had been striving since 1910.

Meanwhile three other States, ignoring the yield-tax idea, adopted legislative programs reminiscent of the old regime. Thus California, by senate constitutional amendment no. 10 (Laws, 1925, ch. 36, p. 1327, filed with the secretary of state, Apr. 17, 1925), which was ratified at the general election of 1926, reverted to the old-regime form of exemption. This was made effective on all immature forest trees, either planted or of natural origin, growing on land from which at least 70 percent of the merchantable original-growth timber over 16 inches in diameter had been removed. Maturity was left to be determined by a board after the trees had been exempt for a period of at least 40 years.

This constitutional amendment was unique and an innovation in forest-tax legislation in that it required no session law to make it effective and no classification of individual properties; it was universally applicable to all forests answering the description set forth in the constitutional provision.

Virginia, by the identical acts of March 25, 1930 (S. L., ch. 399, p. 841; ch. 421, p. 912), provided for the leasing of certain privately owned lands by the State for forest, fish, and game purposes, in consideration of a grant to the owner of the privilege of deferring the payment of the current property taxes thereon and paying them, together with interest at 6 percent, at the time the timber is cut. The law is in a measure similar to the Kentucky law passed 10 days earlier.

Delaware, the last State to adopt a forest-tax law, enacted one of the old-regime type, granting a 30-year exemption. This was provided in section 2 of the act of March 12, 1931 (S. L., ch. 72, p. 287), an act amending the general forestry law, namely, chapter 50 of 1927

DEVELOPMENT OF FOREST-TAX EXPEDIENTS

About two decades ago the yield tax began to be rather widely adopted. The purpose was to promote the practice of forestry by means of establishing a sound principle of taxation to take the place of such concessions as exemptions, bounties, and rebates. The subsequent history of forest-tax legislation has been marked by the adoption of a series of expedients, whose chief purpose was to make the yield-tax principle workable. Each of these expedients, at the

time of its adoption, was hailed by many as the crowning feature necessary to make forest-tax legislation effective.

Optional classification was adopted as a means of putting the yield tax into effect selectively. Its purpose was to exclude from the benefits of forest-tax legislation the great bulk of forest land whose owners had no interest in forestry, and to keep within bounds the loss in property-tax revenue which otherwise would have been large enough to require a readjustment burdensome to other taxpayers.

Revenue considerations likewise played an important part in gaining acceptance for the expedient of imposing limitations on the size and value of the properties eligible for classification. This expedient also had the advantage of excluding lands having a high value because of other prospective uses than forestry.

Authority was given to the State forestry departments to administer certain vital features of the laws, such as those concerning eligibility for classification and the making and enforcing of rules and regulations designed to insure a degree of forestry practice. One State, Minnesota, went so far as to authorize the carrying on of the required operations at State expense where the owner failed to perform them himself, all such expense to be assessed to the owner and either paid with current taxes or added, with interest, to the yield tax on timber subsequently marketed.

A degree of certainty as to taxation of classified forest lands was sought in some States through fixed or limited assessments or tax rates, and in others through fixing directly the specific amount of annual tax per acre. These devices were intended to offer the forest owner a stabilized annual tax substantial y lower than the full property tax but sufficient to give some support to loca revenues.

The payment by the State to local communities of stipu'ated sums annually to replace, in whole or in part, their loss in tax revenue through the transfer of forest property from the property-tax to the yield-tax rolls was another fiscal device intended to make easier the more widespread adoption and application of forest-tax laws. The State was usually to be reimbursed for this outlay by a larger share of the revenue from the yield tax than it would otherwise receive. This device was expected to overcome the opposition of the local communities where the loss of forest property from the tax base might otherwise resu t in increased taxes on all other classes of rural property.

The setting up of a contract between State and owner defining the method of taxation was an expedient intended to protect the forest owner who would undertake the practice of forestry under the favorable tax provisions offered by the special forest-tax law from any subsequent change in the terms of the law or from its repeal. The contract feature was expected to insure that such an owner would retain unchanged the tax advantage offered by the law until his forestry investment had matured.

The failure of the above expedients in connection with optional classification to effect any widespread substantial results in promoting the practice of forestry led to the idea of segregating, by decision of an appropriate State authority, a general class of forest property which would be given the benefit of appropriate taxation regardless of the action of the owner. It was believed that those owners who were prepared to practice forestry if the tax obstacle were removed but who

would hesitate to seek classification under an optional forest-tax law, would welcome classification initiated by State authority and would proceed to put their plans into effect. It was also hoped that such classification, by offering a moderate tax without imposing any obligation other than fire protection, would check the tendency to let cut-over forest lands revert to public ownership and would ultimately lead to increased practice of forestry by private owners not now interested in this use.

The theoretical and practical soundness of these various expedients is discussed in the following section and in part 12.

EXISTING FOREST-TAX LAWS

INTRODUCTION

Having traced the history of special forest-tax legislation from its beginning n the United States to the present date, attention is now directed to the more important provisions and results of the aws on the statute books of the States at the present time (1933). There are at present in effect 35 special forest-tax laws in 26 States. These include all 3 Pennsylvania laws (1 yield tax and 2 rebate) held unconstitutional by decisions which have not been tested by appeal to the highest court. These laws have been carefully analyzed, and digests of all those in effect on January 1, 1932, have been published in a progress report,[16] to which the reader is referred for a description of the essential features of the several laws. Certain of these digests, modified on account of amendments through 1933, will be used later in this part to illustrate the various types of special forest-tax legislation.

In order to facilitate comparisons between the several laws, each of these digests follows a uniform list of topics in uniform order. Marginal numbers in the digests refer to these topics, as listed in the following outline:

I. Classification and designation.
II. Modification of general property tax:
    1. Elements of property favored.
    2. Character of favor.
    3. Elements of property not affected.
    4. Apportionment of State and local taxes.
    5. Operation of property tax otherwise not changed.
III. New specific or other special property tax:
    1. Description.
    2. Administration.
    3. Penalties.
    4. Distribution of revenue.
IV. Yield tax:
    1. Object (i. e., material upon which imposed).
    2. Exceptions (i. e., material not subject to yield tax).
    3. Rate.
    4. Official permission to cut (when required for administration of yield tax).
    5. Administration: Owner's statement, assessment, appeal, penalties, etc.
    6. Collection (when different from general property tax).
    7. Distribution of revenue.
V. Relief from other taxes and other favors.
VI. Contribution of State to towns or counties:
    1. Purpose.
    2. Amount and measure; to whom paid.
    3. Distribution.

[16] See footnote 10, on page 14.

VII. Classification of property:
1. Initial classification:
a. Qualifications of the property (including land and trees).
b. Procedure:
(1) Petition by owner.
(2) With whom filed.
(3) Official hearing, investigation, appeal, etc.
(4) Classification effected by specified authority; appeal.
(5) Contract executed between owner and State.
(6) Classification or contract recorded.
2. Continuance of classification:
a. Continuing requirements.
b. Official control of cutting.
c. Official authority to make and enforce rules subsequent to classification.
d. Official inspection for enforcement.
e. Effect of transfer of property.
3. Declassification:
a. Causes, procedure, appeal, etc.
b. Declassification tax or penalty.
VIII. General penalty provision.
IX. General appeal provision.
X. The law a contract.
XI. Amendments:
1. Restriction on power of legislature to amend or repeal.
2. Right of owner to advantage of amendments.

It should also be noted that in the forest-tax law digests in this part, quotation marks indicate exact quotations from the law in question, while brackets are used to enclose comments upon the law. All passages not so marked are to be understood as representing faithful paraphrase of the words of the statute, except when a negative statement records the failure of the law in question to mention a particular topic.

All of the special forest-tax laws, as previously indicated, are designed to give owners of forest land some kind of relief from the unrestricted operation of the property tax. They may be grouped for analysis both according to whether they are of general or limited application and according to the nature of the relief provided. The following is a classification of this kind, including the laws which were in effect on July 1, 1933:

A. Laws granting tax relief to forests regardless of the origin or area of the stand and not requiring lease or deed to the State.
1. Yield tax:
a. Optional:
(1) Land tax unmodified:
(*a*) Contract: Alabama.
(*b*) No contract: Massachusetts.
(2) Land tax restricted:
(*a*) Contract: Idaho, Louisiana, Minnesota, and Wisconsin.
(*b*) No contract: Connecticut, Michigan, New York, Ohio, Pennsylvania, and Vermont.
b. Nonoptional:
(1) Land tax restricted:
(*a*) Contract optional: Oregon and Washington.
2. Exemption (none with contract feature):
a. Optional:
(1) Land tax unmodified: Connecticut.
(2) Land exempt: Delaware and Maine.
(3) Nominal fixed assessment: Indiana and Iowa.
b. Nonoptional:
(1) Land and mature timber tax unmodified: California.

B. Laws granting tax relief to planted stands, to areas of limited size, or to properties leased or deeded to the State (none with contract feature).
1. Yield tax:
a. Optional:
(1) Land tax restricted: Michigan.

2. Exemption:
   a. Optional:
      (1) Land and mature timber tax unmodified: New Hampshire (forest tree exemptions), and Vermont.
      (2) Land exempt: Rhode Island and New Hampshire (deed to State required in New Hampshire).
   b. Nonoptional:
      (1) Land tax unmodified: Colorado and Iowa.
3. Tax reduction or deferment, lease to State required:
   a. Optional:
      (1) Rental not to exceed tax: Kentucky.
      (2) Deferment of tax with 6 percent interest: Virginia.
4. Rebate:
   a. Optional: New Hampshire and Pennsylvania (two laws in Pennsylvania).
5. Bounty:
   a. Optional: Illinois, Minnesota, and South Dakota.

The extent to which the existing forest-tax laws are applied is shown by table 119. Both the area classified under each law and its percent of the total privately owned forest area are given. The distribution of the classified area is indicated by the number of owners and number of counties represented. Naturally it is possible to include in such a table only those laws which call for classification and listing of the lands to which they apply. The only law of widespread application (that is, not restricted to planted stands or to areas of limited size) which does not require such classification and listing, is the California constitutional amendment.

TABLE 119.—*Extent and distribution of private land classified under forest tax laws, 1933* [1]

State	Extent		Distribution	
	Area	Ratio to total private forest area [2]	Owners	Counties
	Acres	*Percent*	*Number*	*Number*
Alabama	[3] 50,494	0.2	11	8
Connecticut (yield tax)	4,565	.3	34	7
Connecticut (exemption)	4,433	.3	27	8
Delaware	None	0	0	0
Idaho	[3] 77,145	1.8	2	4
Indiana	85,854	2.5	1,358	89
Iowa	47,329	2.0	2,528	99
Kentucky	None	0.	0	0
Louisiana	379,796	2.1	76	12
Maine	3,000	[4]	30	4
Massachusetts	[5] 24,800	.8	96	10
Michigan (commercial)	87,952	.5	70	36
Michigan (wood lot)	[6] 1,584	[4]	55	24
Minnesota (yield tax)	None	0	0	0
New Hampshire (forest tree exemption)	[5] 8,431	.2	198	----------
New Hampshire (land deeded to State)	10	[4]	1	1
New York	12,453	.1	19	12
Ohio	48,009	1.0	560	72
Oregon	719,135	5.2	----------	14
Pennsylvania (yield tax)	45,897	.4	50	25
Rhode Island	88	[4]	1	1
Vermont (yield tax)	37,472	1.2	20	----------
Virginia	None	0	0	0
Washington	185,248	1.8	35	12
Wisconsin	231,994	1.6	178	21

[1] Sources of data: Reports of State foresters and other State officials.
[2] Based on commercial forest areas (refer to pt. 6, table 68).
[3] Data of 1932.
[4] Less than 0.05 percent.
[5] Data of 1929.
[6] Data of 1926.

In order to dispose of the less important laws at the outset, those of limited application will first be discussed.

LAWS OF LIMITED APPLICATION

All laws which are limited in application to planted stands, to areas of small size, or to properties which are leased or deeded to the State are classified as of limited application. This group includes one law which imposes, instead of the property tax, a yield tax on timber cut from farm wood lots (Michigan), 6 laws (Colorado, Iowa, New Hampshire—2 laws, Rhode Island, and Vermont) which exempt trees from all taxation under special conditions, and 2 laws (Kentucky and Virginia) which grant certain concessions related to taxation to owners who are willing to lease their lands to the State. This group includes also the rebate laws of New Hampshire and Pennsylvania and the bounty laws of Illinois, Minnesota, and South Dakota.

The only yield-tax law of limited application, that of Michigan, is designed to take care of farm wood lots which conform to certain standards of forestry practice. The exemption laws of this group, with the exception of those of New Hampshire, concern only planted stands. Both of the New Hampshire laws are limited to small areas, one granting exemption of forest trees except in the year when cut and the other granting complete exemption, but requiring that the owner deed the tract in question to the State, subject for 10 years to right of reconveyance under specified conditions. The laws providing for lease to the State apply to natural as well as to planted stands. The rebate and bounty laws, except in Pennsylvania, were intended to encourage forest planting and are therefore applicable to plantations only. The rebate laws of Pennsylvania, two in number, are limited to small areas. They have both been held unconstitutional by the lower courts, and, while their validity has never been finally determined, no attempt is made to apply them.

The practice of encouraging forest planting by means of rebates and bounties has in general been abandoned, and the laws to which it gave rise are largely inoperative. They never accomplished substantial results except in unusual cases, as those of Nebraska and Minnesota, the history of which has been given in the earlier part of this section.

The laws providing for lease or deed to the State are primarily conservation measures and are mentioned here only because they have an incidental relation to taxation. Their purpose is to extend State management to private forest lands. New Hampshire is the only State that has had such a law for a long enough period to permit of an adequate test. Here the property must be deeded to the State, reserving right of reconveyance within 10 years, and the owner is automatically relieved of any tax liability while the land is State property. In Kentucky the State is authorized to lease a forest property for a rental not greater than the property tax, while in Virginia the State may assume limited control of the property, also under a lease, during which time the tax may be deferred until the timber is marketed or becomes merchantable. However, simple interest on the amount of the deferred tax is charged, at the rate of 6 percent per year, and must be paid with the tax. The tax-deferment feature of the Virginia law can become operative only when accepted by the voters of the county concerned. In general these

laws do not offer sufficient inducement to the owner to compensate him for the sacrifice demanded. They have not been applied at all in Kentucky and Virginia, and the extent of application in New Hampshire has been negligible from a taxation standpoint.

The yield-tax and exemption laws of this group, with the exception of the New Hampshire law involving deed to the State, are similar in principle to those of general application to be discussed later, aside from the previously mentioned restriction to planted stands or small areas. The only one of these laws which is known to be applied to more than 0.05 percent of the privately owned forest land area is the forest tree exemption law of New Hampshire, where over 8,000 acres, or 0.2 percent of the private forest land area, are classified. This New Hampshire law is restricted to tracts of not over 100 acres belonging to 1 owner in any 1 town. The next most widely used law is the Michigan wood-lot law, which is applied to almost 1,600 acres. This law allows to classified wood lots an exemption of all property value over $1 per acre, imposing a substitute tax of 5 percent based on the yield, or stumpage value of forest products, when cut. A study of the situation in Michigan has led to the conclusion that, while the wood-lot law has enabled a small number of farm wood-lot owners to obtain a reduction in taxes, it has failed to accomplish any substantial improvement in farm forestry.

These laws of limited application represent attempts to encourage forestry on a small scale by means of tax subsidies or concessions limited to specific cases. Most of them would not be susceptible of wide application because of the effect on public revenues. It is safe to conclude that the laws of this group are of no practical importance in contributing to the solution of the forest-tax problem. Digests follow of the Michigan wood-lot law and of the forest-tree-exemption law of New Hampshire. For the outline of these digests, reference should be made to the fine print explanation page 374.

MICHIGAN. PARTIAL WOOD-LOT EXEMPTION AND YIELD TAX, PASSED IN 1917

Compiled Laws of Michigan, 1929, sections 5747–5758.

I–II. On properties classified as "private forest reservations", the value in excess of $1 per acre is exempt from the property tax. Otherwise the operation of the property tax is not changed.

IV. A license fee (yield tax) is imposed upon the stumpage value of all timber removed from such properties, other than firewood and building material for the domestic use of the owner or his tenant. The rate of the fee is 5 percent. Timber may not be removed before the fee has been paid. The assessment of the fee is made by the township assessor, being based on a return of the measurement or count and the variety and stumpage value of the trees cut, supplied to him by the owner after cutting and before removal; products not subject to the yield tax need not be reported.

VII–1–*a*. The initial qualifications for classification are as follows: The property must be a part, not exceeding one-fourth, of a tract of not over 160 acres, of which at least one-half is improved and devoted to agriculture. The trees must be of the kinds specifically designated in the act or in a regulation of the State board of agriculture. A stand of 1,200 planted forest trees per acre must be present or, if the site is already partially stocked, open areas must be planted at a spacing of approximately 6 by 6 feet.

VII–1–*b*. The procedure of classification is initiated by application of the owner to the county treasurer, including description of the property. Such descriptions are certified annually by the treasurer to the township supervisor or assessor, who requires of the owner an oath as to the truth of the description and his intent to maintain the property according to the law. Classification is thereby effected. [No contract is apparently executed between the owner and the State] although section 5756 states that "the State board of agriculture shall also prescribe the form of application and contract. * * *"

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The property must be maintained as a wood lot and must not be used for the pasturage of livestock until 90 percent of the trees are 2 inches in diameter, and then only under regulations of the State board of agriculture. The forest must be kept fully stocked and must be restocked after cutting in a manner to conform with the regulations of the State board of agriculture. The supervisor or assessor personally examines each private reservation when the real estate is assessed for taxation [every year] to determine whether it meets the qualifications required by this act. The law contains no provision with reference to the effect upon classification of transfer of the property.

VII–3. Declassification is effected either by the owner's withdrawal or by his failure to comply with the requirements of classification. A declassification tax is imposed equivalent in amount to the yield tax on the timber standing on the property at the time of declassification.

NEW HAMPSHIRE. FOREST-TREE EXEMPTION, PASSED IN 1923, AMENDED IN 1925

Public Laws of New Hampshire, 1926, chapter 60, sections 27–43.

I–II. On properties classified as "classified forest lands", the standing forest trees are not taxed under the general property tax. Only the land value of "classified forest land" is included in the town valuation for the purpose of apportioning the State and county taxes. Any timber cut is subject to a tax in the year when cut, "at the same valuation as other property" [meaning its value as personal property after felling, according to an opinion of the attorney general's office rendered in 1927], except that the owner may cut, for his own or a tenant's use, wood not in excess of $50 in stumpage value in any 1 year free of tax. For the purpose of this tax, the owner reports the amount cut in each year, from which report the assessors may appeal to the State forester, who investigates and holds a hearing and renders final decision. Otherwise the operation of the property tax is not changed.

VII–1–*a*. The initial qualifications for classification are as follows: The area that any one owner may classify must not exceed 100 acres in any one town. The land must be forest land. The value of the trees, exclusive of fuel wood, must not exceed $25 per acre on the average. The forest must be stocked or set with young trees so as to promise a minimum prospective average yield of 25,000 board feet of merchantable timber per acre, exclusive of water, bog, or ledge areas.

VII–1–*b*. The procedure of classification is initiated by application of the owner to the assessors, or the tax commission for land in unorganized places. The assessors decide whether the property fulfills the requirements for classification and assess the value of the land alone. Upon acceptance of the assessors' decision by the owner, he receives a certificate from the assessors, the recording of which in the county registry of deeds effects classification. [Although not specifically so stated in the law, it may be assumed that in unorganized places, the assessors' function as here stated is performed by the tax commission.] In case of dispute as to the eligibility of the land for classification, the owner may appeal to the State forester, who investigates, holds a hearing, and renders final decision.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The land must not, for a period longer than 2 years, contain on the average as much as 25,000 board feet of merchantable timber per acre. Transfer of the property does not affect classification.

VII–3. Declassification is effected by the owner's withdrawal, or by his failure to reduce the volume of timber below an average of 25,000 board feet per acre within 2 years after notice by the assessors that in their judgment the land contains this amount of timber, or by action of the assessors 30 days after notifying the owner that the property has become more valuable for other uses than the production of trees. The owner may appeal from any withdrawal to the State forester, whose decision is final. In case of dispute as to the volume of wood or timber contained on such land, the owner may appeal to the State forester, who investigates and holds a hearing and renders final decision. After declassification the entire property becomes subject to the general property tax. Upon withdrawal by the owner, he pays the land tax and a tax on the estimated value of the standing timber at the same rate as upon other property for that year.

VIII. If any owner fails to comply with the law he is fined not less than $10 nor more than $200, and the land may be declassified by the assessors.

LAWS OF GENERAL APPLICATION

All of the special forest-tax laws of general application may be divided into two types, (1) yield-tax laws and (2) exemption laws. As above indicated, yield-tax [17] laws exempt the timber from the property tax and substitute a tax based on the stumpage value of timber or other products payable when these are cut and removed; while the term "exemption laws" is applied to laws which exempt timber properties from taxation under the property tax, in whole or in part, without substituting any other tax.

YIELD-TAX LAWS

General Description

The forest-tax laws of general application which impose a yield tax on the timber in lieu of the property tax are 14 in number. These laws follow the same general pattern. Each describes the qualifications which make properties eligible for taxation in the special manner provided and sets up the necessary procedure. Each indicates the modification of the property tax to be granted, such as the exemption of tree value. Laws which require the retention of land value subject to the property tax often indicate how the value of the land element is to be determined. Each law gives the rate or rates of the yield tax, specifying to what class of forest yield this tax is applicable and the manner in which it is to be administered and collected. Often the conditions under which the value of trees is to be determined for the purpose of finding the forest yield are stated. Most laws permit the exemption of certain products from the yield tax, as those cut for domestic use. It is also usual to prescribe the distribution of the revenue from the yield tax. Many laws require submission of classified properties to some degree of regulation by the State, in which case the extent of the regulation is defined and the responsibility for carrying it out placed on some appropriate administrative branch, as the State forester's office. Nearly every law prescribes the conditions under which declassification may be accomplished and the property again restored to the ordinary property tax roll. Often there is a declassification tax imposed in this connection, as an offset to the tax concessions which have been allowed, particularly when declassification follows the taxpayer's failure to fulfill his obligations under the law. Usually there are penalties for noncompliance with specific provisions, general penalties, and provisions for appeal.

Optional, with Land Tax Unmodified

Twelve of the fourteen yield-tax laws are of the optional type; that is, no forest land is classified except on application of the owner, who thus has the option of permitting his property to remain under the property tax. The optional yield-tax laws resemble in outline the general plan of yield-tax legislation which has just been described, and, in addition, each sets up a procedure by which the owner may take the initiative to have his property taxed under the law.

[17] The yield tax as used in the United States should not be confused with the Ertragssteuer of Germany and similar taxes used in many countries of Europe. "Ertragssteuer" is literally translated "yield tax", but it is really a property tax based on assumed net yield or yield capacity and is payable annually regardless of whether any yield is actually realized; it has no similarity whatever to the yield tax as used in the United States.

Only two of the optional yield-tax laws, those of Alabama and Massachusetts, leave the land value subject to the property tax without modification. The Massachusetts law is one of the best drawn and simplest of all the special forest-tax laws. It has no contract feature, no complicated administrative requirements, and no provisions for State regulation. A digest of this law follows.

MASSACHUSETTS. FOREST TREE EXEMPTION AND YIELD TAX, PASSED IN 1922

Massachusetts chapter 61, General Laws, 1932, as amended by Laws of 1933, chapter 254, section 57.

I–II. On properties classified as "classified forest lands", all forest trees are exempt from the property tax. The value of the trees on such properties is excluded from the town valuation for the purpose of the general apportionment of State and county taxes. Otherwise the operation of the property tax is not changed.

IV. A yield tax is imposed upon the stumpage value of all wood or timber cut from such properties, except wood or timber, not exceeding $25 in stumpage value in any year, for the owner's use or that of a tenant on the land. The rate of the tax is 6 percent. Assessment of the yield tax is made on the basis of the owner's sworn return to the town assessors before May 1 of each year as to the amount of all wood and timber cut from the property during the year ending the preceding April 1. The assessors may appeal to the State forester for a redetermination of the quantity cut. Ten percent of the revenue from the yield tax is distributed to the State.

VII–1–*a*. The initial qualifications for classification are as follows: The property must not have been valued on the town tax lists of the year preceding classification at more than $25 per acre. The forest must not average for the entire tract more than 20 cords per acre when classified, but must be so stocked with trees as to promise to average per acre over the whole tract, except for water, bogs, and ledge areas, at least 20,000 board feet of softwoods or 8,000 board feet of hardwoods or a proportionate quantity of the two in mixture.

VII–1–*b*. The procedure of classification is initiated by application of the owner to the town assessors. The assessors, if they decide that the property fulfills the qualifications, issue a certificate of classification. If the assessors reject the application, appeal may be taken to the State forester, who examines the property, hears both parties, and renders decision, which is final. Classification is effected when the owner records his certificate in the registry of deeds office of the county or district.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The trees must not exceed for a period longer than 2 years a maximum stand per acre, on the average, of 25,000 board feet of softwoods or 10,000 board feet of hardwoods or a proportionate quantity of the two in mixture and must within 5 years after cutting be replaced by a new stand capable of meeting the minimum requirements as stated above. Transfer of the property does not affect classification.

VII–3. Declassification is effected by the owner's withdrawal and may be effected by the assessors upon the owner's failure to reduce the volume of timber below the maximum limits specified for continued classification within 2 years after notice by the assessors that in their judgment the land contains this amount of timber, or upon his failure to restore the tract to the condition specified for initial classification within 5 years after any cutting, or when in the assessors' judgment the property becomes more valuable for other uses than the production of trees. A declassification tax is imposed, equivalent to the yield tax on the timber then standing on the property. In opposition to declassification because of excess volume of stand, the owner may appeal to the State forester, who examines the property, hears both parties, and renders decision, which is final. In case the land is declassified because of the assessors' determination that it has become more valuable for other uses, the owner may appeal to the commissioner [of conservation], whose decision is final.

VIII. Failure to comply with the law is punishable by a fine of not less than $10 nor more than $500, and in addition the land may be declassified by the assessors.

XI–2. The original chapter 61 as passed in 1914 and superseded in 1922 is declared to be in effect with respect to properties already classified thereunder.

OPTIONAL, WITH LAND TAX RESTRICTED

The optional yield-tax laws with land tax restricted cover the essential points indicated for this class in general, and in addition they define the nature of the restriction on the land tax. In these laws, the restriction is accomplished by means of:

A specific tax per acre of $0.08 or $0.10 (Minnesota, Wisconsin, Michigan).

The limiting of assessed values to a maximum amount per acre of $1 (Idaho, Pennsylvania).

The fixing or limiting of assessed values by the initial value (Louisiana, New York, Vermont).

The fixing of assessed value at the initial value and limiting the tax rate to 10 mills (Connecticut).

The fixing of the tax rate to one-half the general rate of the tax district (Ohio.)

The following digests of the Ohio and Wisconsin laws illustrate more fully the nature of the optional yield-tax laws with land tax restricted.

OHIO. FOREST-TREE EXEMPTION, LIMITED LAND-TAX RATE, AND YIELD TAX, PASSED IN 1925, AMENDED IN 1927

Page's Ohio General Code, 1926, sections 5554–1 to 5554–8, as amended by house bill no. 278, page 181, Laws of Ohio, 1927.

I–II. On properties classified as "forest lands", the forest trees are exempt from the property tax. The property is otherwise assessed on the same basis as similar properties in the vicinity. That part of the assessed value of the property which is represented by the agricultural value of the land is taxed at one-half the rate of the general property tax. Otherwise the operation of the property tax is not changed.

IV. A yield tax is imposed upon the stumpage value of matured timber cut from such properties, except timber "cut or removed, and used" on the owner's land, "or by the owner in the same taxing district for domestic use, or for domestic improvements having a taxable value." Mature timber includes forests which have attained a maximum development at which they may be most profitably cut and converted into wood products as prescribed by the regulations of the State forester. The rate of the tax is 5 percent. The owner is required to file annually prior to May 1 with the county auditor a sworn statement, on forms prescribed by the State tax commission, of the amount of timber cut during the 12 months immediately preceding March 1, its stumpage value, and such other information as may be called for by the rules. The penalty for failure to file such a statement or to give the true stumpage value is a fine of not less than $50 nor more than $500 or imprisonment for not less than 30 days nor more than 6 months or both. The tax due must accompany such statement. The revenue from the yield tax is distributed, one-half to the county and one-half to the State, the latter amount being placed to the credit of the board of control of the Ohio agricultural experiment station, division of forestry, for forestry purposes.

VII–1–*a*. The initial qualifications for classification are as follows: The property must comprise at least 3 acres, must bear a forest growth, must be declared by the owner to be devoted exclusively to forestry, and must otherwise conform to conditions prescribed by the State forester. The forest may comprise any and all species and sizes of trees found in the native woods of Ohio and such other species, listed in the law or approved by the State forester, as have been planted or shall hereafter be planted for forestry purposes; it may embrace any stage of development or origin, as mature old growth, second growth, sprout growth, or planted growth; it must be fully stocked with native growth, or, if only partly so stocked, must be interplanted with enough other trees to assure a spacing of 8 by 8 feet over the entire area, or, in the absence of native growth, must comprise at least 680 planted trees of approved species per acre; the forest must represent a good stand as understood by competent foresters and as determined by the State forester.

VII–1–*b*. The procedure of classification is initiated by declaration of the owner, filed in accordance with rules prescribed by the State forester and approved by the tax commission, stating that the property is devoted exclusively to forestry or timber growing. The State forester must act upon the declaration within 6 months. If he approves it he certifies it and files a copy with the auditor of the

county, thereby effecting classification, provided that classification does not become effective until 6 months after the date of application.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The forest must receive reasonable protection and must be cared for and managed according to regulations laid down by the State forester. All rules for carrying out and administering the law are prepared by the State forester, subject to the approval of the State tax commission. The law contains no provision with reference to the effect upon classification of transfer of the property.

VII–3. Declassification is effected either by the owner's withdrawal or upon his failure to protect the forest or to observe the regulations as to its care and management. If the property has been classified less than 25 years, a declassification tax is imposed, equal to the full amount of back taxes with interest for the period of classification, when such period does not exceed 10 years, otherwise for the last 10 years of such period, less the amount of taxes actually paid for such period. [The language of the law is obscure as to the declassification tax, but the above appears to be the meaning.]

WISCONSIN. SPECIFIC PROPERTY TAX AND YIELD TAX, PASSED IN 1927, AMENDED IN 1929, 1931, AND 1933

Wisconsin Statutes 1933, secs. 77.01–77.14, 71.03 (9) and 71.04 (9).

I. Properties may be classified as "forest crop lands", of which certain lands are designated as under "special classification."

II. Forest-crop lands are exempt, both land and trees, from the general property tax.

III. An annual specific property tax, called the "acreage share", is imposed at the rate of 10 cents per acre, except that on properties under "special classification" the "acreage share" is imposed at the following rates per acre for each of the first 8 years of classification: First year, 40 cents; second year, 35 cents; third year, 30 cents; fourth year, 25 cents; fifth year, 25 cents; sixth year, 20 cents; seventh year, 20 cents; and eighth year, 15 cents. The revenues from this tax are payable to the town treasurer like other property taxes. If such tax is not paid by February 20 of any year, there is a penalty of 2 percent plus interest at the rate of 1 percent per month, and the land becomes delinquent and is subject to redemption by the owner within 3 years. Forty percent of the "acreage share" and of all other moneys received by the town treasurer on account of forest-crop lands is apportioned to the school districts in which these lands are located in proportion to the forest-crop land area in each within the town; 20 percent is paid to the county treasurer and 40 percent is retained for the town.

IV. A yield tax is imposed upon the stumpage value of all merchantable wood products cut from such forest-crop lands, except fuel wood used by the owner. The rate of the tax is 10 percent except that wood products cut from lands under "special classification" are subject to the following rates upon stumpage during each of the first 8 years of classification: First year, 2 percent; second year, 3 percent; third year, 4 percent; fourth year, 5 percent; fifth year, 6 percent; sixth year, 7 percent; seventh year, 8 percent; and eighth year, 9 percent. If the conservation commission [hereinafter referred to as the commission] finds that the owner has destructively cut the timber on classified lands "without making satisfactory provision for adequate restocking", the foregoing yield-tax rates are doubled. No such taxable products may be cut until 30 days after the owner has filed with the commission and also with the tax commission a notice of intention to cut, specifying the kinds and amounts of products to be cut, and has filed with the tax commission a bond in such amount as required by the tax commission unless waived by it. For the assessment of the yield tax the commission determines annually, for all localities containing forest-crop lands, the stumpage values of the various classes of forest products likely to be cut from such lands. The owner reports to the commission semiannually the varieties and quantities of products cut during the preceding 6 months. The commission may accept such report, or it may itself determine the facts, with or without a hearing. In either event the facts are reported to the tax commission, which levies the stumpage or yield tax on the basis of the report and the stumpage values then in force. At any time within a year after any cutting should have been reported, and after giving the owner opportunity to be heard, the commission may determine whether the quantity of wood products cut from any forest-crop land was substantially in excess of

the amount on which the yield tax theretofore levied was based, and if so it notifies the tax commission, which then levies a supplemental yield tax. Failure to make any report required by this paragraph or intentionally making any false statement in connection with the requirements of this paragraph is a misdemeanor, subject to a fine of not more than $1,000 or imprisonment for not more than 1 year or both. A penalty of 10 percent of the amount of the tax is imposed if the tax is unpaid for 30 days, and thereafter both tax and penalty draw interest at 1 percent per month until paid. The tax is collected by the State treasurer. All revenues from the yield tax are credited to the general funds of the State. The State retains from yield-tax revenues an amount equal to the total payments made under paragraph VI below with interest thereon at 5 percent, and an amount equal to 5 percent of these payments (made under paragraph VI) to cover administration costs. Any yield-tax revenues in excess of these amounts are paid by the State to the town treasurer to be apportioned by him as provided in paragraph III above.

V. Amounts expended in the planting, maintenance, and protection of forest-crop lands may be deducted in computing net income taxable under the State income-tax law.

VI. The State in consideration of the expected loss to local revenue on account of the law] pays annually to each town the sum of 10 cents per acre on all forest-crop lands in the town, or proportionately less in case of insufficient appropriation. This State contribution is apportioned by the town treasurer to the county, town, and school districts in the same manner as the "acreage share."

VII–1–*a*. The initial qualifications for classification are as follows: The property must comprise not less than 40 acres, except in case of farm wood lots or of small tracts contiguous to larger ones already classified, and must appear to the commission to be destined permanently for the growing of timber rather than for agricultural, mineral, recreational, or other purposes. The forest must be such as to give reasonable assurance that merchantable timber will result within a reasonable time after classification. If any of the land "bears a stand of merchantable timber" and "less than 50 percent of the original volume thereof has been removed since 1915, such land is entered under special classification."

VII–1–*b*. The procedure of classification, including "special classification", is initiated by a petition of the owner to the commission. Such petition must state, among other things, that the owner intends to practice forestry on the forest-crop land and that he believes this land to be more useful for forestry than for any other purpose. The commission, after public hearing and independent investigation, determines whether the qualifications have been met and, if so, orders the property so classified on condition that all unpaid taxes against the property be paid within 30 days. If the tax condition is met, such order is recorded by the county register of deeds and is filed with the tax commission, the assessor of incomes, and the town clerk. No recording of "special classification" is required. If the commission orders the petition denied the order is final in case of areas under 40 acres, otherwise the owner may appeal to the courts.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The forest-crop land must, except in case of farm wood lots, be open to the public for the purposes of hunting and fishing under such regulations as the commission may from time to time prescribe; it must not be used for any purpose other than forestry except that grazing is permitted on farm wood lots. The forest-crop land continues classified for a period of 50 years, subject to an extension of another 50 years, by mutual agreement. The commission is required once every 5 years to make an investigation to determine whether forest-crop lands are entitled to continue so classified, and such investigation may be made at any time on application of the tax commission, any owner of forest-crop lands, or the town board, or on the motion of the commission itself. Transfer of the property does not affect classification. Whenever 50 percent or more of the merchantable saw timber shall have been removed, "special classification", if in effect, is discontinued.

VII–3. Declassification is effected by the owner's withdrawal, by the commission upon the owner's failure to comply with the initial requirements, or by the expiration of the 50-year term. Use of the forest-crop land for purposes other than forestry, except grazing on farm wood lots, any time after 5 years results in declassification by the commission. The owner has the right of appeal to the courts from any findings of fact. A declassification tax is imposed, which varies according to the cause of declassification. If the owner at any time withdraws his forest-crop land voluntarily, or if, any time after 5 years, he uses such land for anything other than forestry, except grazing on farm wood lots, the declassi-

fication tax is the difference between all property taxes that would have been paid had such land not been classified and all yield taxes and acreage charges actually paid, with simple interest at 5 percent on both sides. Forest-crop lands are assessed annually for the purpose of determining the possible future declassification tax. The State deducts from the declassification tax all moneys with interest at 5 percent per annum paid by it on account of such classified land and remits the balance "to the treasurers of the respective units of government that would have been entitled to such tax had it been originally levied, and in the same proportion." If the initial requirements are violated within the first 5 years of classification, the declassification tax is a payment by the owner to the State of the amount paid by the State to the town on account of the forest-crop land, with interest at 5 percent. If the declassification taxes and penalties are not paid to the State within 3 years, such land becomes the property of the county. On the expiration of the 50-year term, if classification is not renewed, the yield tax is levied on the value of the entire stand of merchantable timber.

X. Classification is declared to establish a contract which runs as a covenant with the land, by which the State agrees that neither the repeal of the act nor any subsequent amendment shall apply to property already classified, except by the mutual consent of the owner and the conservation commission.

Nonoptional, with Land Tax Restricted

The two yield-tax laws of the nonoptional type (Oregon and Washington) are similar to the optional yield tax laws with land tax restricted, except that, in addition to defining the qualifications that make forest lands eligible under the law, they require the State board of forestry rather than the owner to take the initiative and to proceed with classification until all the eligible lands in the State are taxed under the law. They give the owner no option to withhold his property from classification if it clearly belongs to the class of "reforestation lands" as defined in the respective laws. In practice, it is understood to be the policy of the Oregon board to give great weight to the desires of the owner, and of the Washington board to make the law in effect an optional one by classifying only land which is listed by the owner. However such policies are subject to change by administrative action.

The two laws of this type are much alike, except that the Oregon law imposes a specific tax of $0.05 per acre on the land, while the Washington law fixes an assessed value of $1 per acre west of the summit of the Cascade Mountains and $0.50 east of this summit. In Washington property in general is assessed in the neighborhood of 25 percent of true value,[18] so that classified lands in that State are taxed as if they had actual values of about $4 per acre on the west side of the Cascades and of about $2 on the east side. Also the 12½-percent yield-tax rate is fully effective from the beginning in Oregon, while it comes into effect by degrees in Washington. A digest of the Oregon law, which was the first of this type to become effective, follows.

Oregon. Specific Property Tax and Yield Tax, Passed in 1929

Oregon Code, 1930, secs., 42–101 to 42–122.

I–II. On properties classified as "reforestation lands", the "forest values" of the land and forest crop are exempt from the general property tax. All buildings, improvements, water and power rights, mineral, or other values other than forest values are subject to taxation as heretofore. Otherwise the operation of the property tax with respect to the classified properties is not changed.

III. An annual specific tax, called the "forest fee", is imposed at the rate of 5 cents per acre, levied, collected, and distributed in the same manner as the general property tax, including the same penalties for nonpayment.

[18] See pt. 4 of this report and (*213, p. 5*).

IV. A yield tax is imposed upon the gross value, immediately prior to harvesting, of any "forest crop", i.e., timber, forage, chittim bark, Christmas trees, or any other marketable growth from the forest soil, which tax shall be due "* * * so long as such land shall remain in private ownership and irrespective of any subsequent classification * * *." The rate of the tax is 12½ percent. Before harvesting any forest crop, a written permit must be secured from the State board of forestry [hereafter called the board], which must first either have a full assurance that the yield tax will be paid or require the permittee to give sufficient bond to indemnify the State against any loss of yield-tax revenue. The permit must set forth the unit values of the several kinds of forest crop on the property. These unit values, which must be filed and be open for public inspection, are determined by the board as being the true market values immediately prior to harvesting. Any taxpayer may have a hearing before the board if he objects to the unit values listed in a permit, and he has thereafter the further right of appeal to the courts from the board's final decision. While such appeal is pending before the courts he may make a cutting after filing a sufficient bond to indemnify the board and tax-collecting officers against any loss of taxes pending an adjudication of the issues in the courts. The owner on specified dates must transmit to the board and to the tax collector a sworn statement containing the number and the kind of units of all forest products harvested during the preceding 6 months from each legal subdivision of not more than 160 acres. For the purpose of determining the correctness of any statement, representatives of the board or of the State tax commission [hereafter called the commission] may enter upon classified land, may examine the owner's records, or require the attendance and take the sworn testimony of any person. Any person harvesting forest crops from classified land without a permit or failing to pay the yield tax must pay an additional yield tax of 10 percent. The tax and penalty with interest at 10 percent are a first lien on the forest crop, and in addition to the statutory remedies for the collection of delinquent taxes against real and personal property, the county must maintain an action against the owner and secure a writ of attachment serviceable in as many counties as the district attorney may direct. Furthermore, any person harvesting forest products from classified land without a permit is guilty of a misdemeanor and subject to a fine of not more than $1,000 or imprisonment for not more than 6 months or both. The yield tax must accompany the statement forwarded by the owner to the tax collector, and it is apportioned by the county treasurer as are other taxes.

VII–1–*a*. The initial qualifications for classification are as follows: The property must be chiefly suitable for forest-crop production. The land must not bear a mature forest crop in merchantable quantity; if it was assessed for its forest trees on the 1928 tax roll it cannot be classified without the approval of the county court until these trees are cut and removed. Immature stands left, after harvesting, for a future forest crop may be classified.

VII–1–*b*. As soon as possible after the enactment of this law the board must determine what lands within the State meet the initial qualifications. Every year thereafter it must make a similar determination for all lands still remaining unclassified. All eligible lands are listed by legal description and a copy sent to the county assessor. A duly advertised hearing is then held at the county seat by one or more members of the board. At least 60 days prior to such a hearing a notice thereof is sent by mail to each owner of the land proposed for classification. After hearing all testimony for and against classification, the board reconsiders and revises the list of lands to be recommended for classification and forwards it to the commission with a report of the hearing. The commission then reviews the report of the hearing and the list of lands recommended for classification and finally determines what lands shall be classified and prepares an appropriate order. A certified copy of this order is forwarded to the county assessor, to the board, and to the owner of the land. Any taxpayer can request a hearing before the board on any subject pertaining to the activities of the board and has the further right of appeal to the courts from any decision of the board or of the commission.

VII–2. The requirements of continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. The board must ascertain periodically if classified lands continue to be protected as required by law and used primarily for forest-crop production; if not, the board recommends to the commission that they be declassified. Classified property under contract is to be held for the growing of forest crops upon terms and conditions required by the board. The board is authorized to make rules and regulations necessary to accomplish the purposes of the law. The law contains no provision with

reference to the effect upon classification of transfer of the property except as noted in X below.

VII–3. Declassification is effected by the commission upon the basis of facts and recommendations submitted to it by the board, when in the commission's judgment it is to the public interest or when in its judgment the lands are not being used to accomplish the purposes of the law. Any taxpayer may have a hearing before the board on any subject pertaining to the activities of the board and may appeal to the courts from the board's or the commission's final decision. The declassification tax, when declassification is because of improper use, is the excess, if any, for the period during which the property was classified, of the ad valorem property tax on comparable land [evidently intended to include the trees] over the amount of the forest fees paid. This excess is subject to the same interest, penalty, and cost charges as apply to delinquent ad valorem property taxes and is collected as are such delinquent property taxes.

VIII. Any person who knowingly makes any false return or representations under this law shall be deemed guilty of a misdemeanor and be punished by a fine of not less than $100 nor more than $1,000 or by imprisonment for not less than 30 days nor more than 1 year or by both.

X. The board on behalf of the State and at the owner's request may, on and after July 1, 1933, enter into a contract with a landowner for the purpose of developing and growing forest crops on the land for a specific period, if in the board's judgment such an agreement will accomplish the purposes of this law. Property under contract is taxed annually as classified land under this law. Contracts are recorded by the board in the deed books of the county, and the property may be transferred when, in the judgment of the board, it will not defeat the purposes of the law and when the State and its taxing agencies are amply protected against any loss of revenue. Contracts may be cancelled by the board upon the failure of the owner to comply with the terms and conditions thereof or with the forest laws of the State that affect the lands covered by such contracts. A contract, unless it is renewed by mutual agreement, terminates at the end of a specified period, which period must not exceed the number of years estimated by the board as necessary to mature the forest crop.

Experience and Critical Analysis

The experience with optional yield-tax laws is that they have had no substantial direct effect on the forest tax situation. As shown in table 119, the portion of the private forest area to which the law is applied is less than 1 percent in 7 of the 12 States having laws of this type, namely, Alabama, Massachusetts, Minnesota, Connecticut, Michigan, New York, and Pennsylvania. Even the most widely used optional yield-tax laws have classified under them no more than 2.1 percent of the total privately owned forest area of the State concerned. It is the usual history of such laws that immediately after their passage some lands were classified at a rapid rate. However, as soon as the owners who were active in backing the passage of the law and those who were aroused to take action by the publicity attending its passage had had time to get the classification of their lands accepted by the responsible State authority, the additional area classified each year was much reduced. Thus the law has remained applicable to a relatively small area, most of which was classified within a few years of the law's adoption. A study of the nature of the optional laws suggests a number of reasons for their failure to exert any large and direct influence on the taxation of forest lands.

The optional feature is in itself a handicap, being in general foreign to taxation practice. By definition a tax is a compulsory contribution to government, and to introduce any optional features is to some extent to lessen the tax character of the contribution. An option suggests that a special favor is being granted, even though in fact the law may not go beyond the bounds of fairness to both the forest owner and the general public. A property owner is deterred from

seeking classification under an optional law, both by the feeling that his neighbors will disapprove and by the fear that the assessor will discover or pretend to discover that his other property is undervalued. The prevailing underassessment of all property makes it easy for the assessor to offset any tax advantage on forest property by an increase in assessment of other property of the same taxpayer, although there is no evidence that this is actually done except in rare cases. This handicap may be lessened by an active effort on the part of the State forestry department to promote a favorable public attitude toward those who take advantage of the law and by strict control of the resulting adjustments made by the assessor. However, if the special forest-tax law does not concede more than justice requires, the immediate tax advantage may not be sufficient to overcome even a slight hesitation on the part of an owner.

Many of the optional laws have been drawn up with so many provisions to safeguard the public interest that the taxpayer is likely to feel that any advantage which he might gain through the law is outweighed by the obligations assumed and the dangers of arbitrary and oppressive administration of regulatory provisions by the State authorities. For example, the Alabama law provides that on classified lands timber may be cut, turpentined, or otherwise utilized only in accordance with the rules of the forestry commission. In Michigan the owner of properties classified as "commercial forest reserves" must obtain permission from the department of conservation to cut merchantable forest products, and he is not allowed to exercise exclusive hunting and fishing privileges on the classified land. A forest property classified under the New York law must be cut according to the principles of practical forest management as directed by the conservation department. In Pennsylvania a classified forest property is subject to the provision that, when the trees become "suitable for merchantable forest products", the department of forests and waters shall at the request of the owner or on its own motion designate the kind and number of trees most suitable to be cut, if in its judgment there be any, and these shall be removed in accordance with its instructions. Provisions such as these may be entirely justified in view of the tax concessions with which they are joined, but they undoubtedly deter many owners from applying for classification under optional laws.

Most of these laws offer tax relief only or chiefly to immature timber, which in many instances escapes the attention of the assessor and consequently needs no relief from the property tax under existing conditions. Especially where ownerships are generally small the saving from classification in dollars and cents seems insignificant, even if the percentage saved is substantial. These conditions are illustrated in Massachusetts, where there is a special forest-tax law that is unusually free from burdensome administrative provisions. The taxation of immature stands is at present moderate in that State, partly because of low assessments and partly because tax rates on rural real estate are generally moderate, and therefore there is little inducement to an owner to seek any change.

It is to be noted that in many States, after the effort necessary to secure passage of the law, it has been given little further publicity, so that a large number of forest landowners do not even know that such a law is in effect, while others are ignorant or misinformed as to its provisions.

Finally it must always be remembered that taxation is by no means the only obstacle to the practice of forestry; in many cases it is not even the chief obstacle. Where other economic factors outside of taxation make forestry appear so unattractive to private capital that forestry would not be undertaken even though the tax obstacle were entirely removed, it should be obvious that a tax option which does no more than equalize the taxation disability between forestry and other investments will not command the interest of the forest land owners.

On the other hand, it should be recognized that, even though an optional yield-tax law may have had no substantial direct effect on the forest-tax situation in any State, it may nevertheless have had an indirect effect. The publicity necessary to secure passage of the law may have produced some educational benefit by making more citizens forestry-minded. Tax assessors may have been constrained to assess forest lands more moderately lest the owner take advantage of the option offered. There is little evidence available as to the importance of these indirect results. In any case, no law could be justified solely because it might lead to such haphazard and indirect benefits.

The experience with yield-tax laws of the nonoptional type has been very short, but it indicates that they promise to have far broader influence for good or ill than those of the optional type. The earliest nonoptional law was adopted by Oregon in 1929, and in spite of the difficulties of initiating classification policy and methods, over 700,000 acres, or 5.2 percent of the privately owned forest land, have been classified. This is more than double the proportion classified under the most popular of the optional yield-tax laws, and the work of classification is still in its early stages.

Experience with yield-tax legislation, both of the optional and nonoptional type, points to inherent difficulties in this kind of tax legislation. The rates of the yield tax are not based on any clearly defined principles. In the first laws they were chosen apparently by guess or compromise. In many of the later laws they were obviously copied from some other State. In no State has there been any attempt to make these rates responsive to revenue requirements or to changes in rates of taxation imposed on property in general. The rates now in effect vary from 5 to 12½ percent. The rate is 5 percent in 1 State, Ohio; 6 percent in 3 States, Louisiana, Massachusetts, and New York; 10 percent in 5 States, Alabama, Michigan, Minnesota, Pennsylvania, and Wisconsin (except for temporary lower rates in case of special classification); and 12½ percent in 3 States, Idaho, Oregon, and Washington. In Connecticut and Vermont there are two rates, 7 and 10 percent, depending on whether at the time of classification the trees were over or under a specified age (10 years in Connecticut and 15 in Vermont). The 7-percent rates in Connecticut and Vermont and the 12½-percent rate in Washington come into effect by degrees; all of the others are fully effective from the start.

In general, the yield-tax rates imposed are so low that they allow a material reduction in taxes not only below what they would have amounted to under the property tax, but even below that of a net income tax imposed as a substitute for the property tax at an equivalent rate. Consequently it has seemed necessary to offset such

undertaxation by requiring the beneficiaries to accept a degree of public control not imposed on ordinary taxpayers. It has been found exceedingly difficult to strike a balance between the concessions and offsetting requirements so as to be fair both to the public in general and to the forest owner. In optional laws particularly it has been found difficult to offer a reasonable concession to the owner that is sufficiently attractive to overcome his hesitancy to submit his property to the requirements.

The problem of public finance which a universal application of the yield tax to private forest property would present has not been faced in existing laws. In the practical application of these laws the collection of yield taxes in a substantial amount has been postponed so far in the future and their amount has been so difficult to predict, that it has not seemed necessary to be greatly concerned with the cost of collection, the distribution of the revenue, or with its stabilization by setting up reserves for years of abnormally low production. In most of the existing laws there are no financial provisions whatever, except those specifying the distribution of the yield tax. It was apparently understood at the time of passage of such laws that their application would be so greatly restricted that their effect on public finances would be negligible, at least for a long time.

This understanding has been proved to be correct. Information regarding the amount of revenue derived from the forest-yield tax was obtained from 12 of the 14 States having such laws in force. Of these 12 States, 6 reported that no yield tax had ever been received by either State or local governments. This was in spite of the fact that the present yield-tax laws had been in effect in these States for from 4 to 21 years. During the last 3 fiscal years (1931, 1932, and 1933), the Wisconsin yield-tax law has resulted in the collection of only $1,125.72 in yield taxes—this is at the rate of a little more than $0.001 per classified acre per year. During the same period the Michigan yield-tax law applicable to commercial forests produced a total of $138.98 in yield-tax revenues; previous to this period only $2.50 in forest-yield tax had been paid. The Massachusetts yield tax produced about $20 in 1931. This is the only yield tax collected during the 11 years the Massachusetts law has been in effect. The Ohio yield tax produced $61.54 during the 8 years it has been in effect. The Oregon yield tax has produced $502.89, that was in 1932. In Washington $300 in yield-tax revenue has been collected. In each of these 5 States, Michigan, Massachusetts, Ohio, Oregon, and Washington, the yield-tax revenues have amounted to less than $0.001 per acre in those few years when any yield tax at all was received, and in Wisconsin the return has been but very slightly better.

A few States have endeavored to compensate local units of government for loss of tax revenue through classification of land under special forest-tax laws by payments out of State funds. In Pennsylvania the State pays the road and school districts each $0.02 per year for each acre classified. In Michigan the county, and in Wisconsin [19] the town, is paid $0.10 per year by the State for each acre classified, but these liberal contributions to local revenues are intended to be reimbursed at least in part from the proceeds of the yield tax. In Wisconsin the State must be fully reimbursed before the local units

[19] The Wisconsin forest-crop law includes various provisions relating to county-owned forest land which have no direct bearing on the taxation of privately owned lands and are therefore not discussed in this report.

get any share of the yield-tax proceeds, and in Michigan the State gets one-half of these proceeds in any event.

EXEMPTION LAWS

There are now in effect six special forest-tax laws of the exemption class which are of general application. These laws contain provisions similar to those indicated as characteristic of the yield-tax laws, except that they provide no yield tax and no other tax in lieu of the exemption allowed to the properties to which they apply.

Optional

Five of these six exemption laws are of the optional type. In one of these, that of Delaware, both land and timber are entirely exempt for 30 years, but this advantage is counterbalanced by the restriction that timber may be cut only under supervision of the State forestry department and may be removed only with the permission of that department. The Maine law exempts lands set apart for reforestation for 20 years, and is subject to conditions in respect to number, distribution, and cultivation of the trees which are more readily met by plantations than by naturally regenerated stands. Though it has long been on the statute books, this law has not been widely invoked and the area now classified under its provisions is about 3,000 acres. In Connecticut the more recently adopted forest-tax law of 1929 allows the exemption of all the trees for an indefinite period, but requires that the land be taxed at full value. This is the only exemption law which may at the outset apply to merchantable trees. It is unusual in the very broad authority given the State forester. He may approve classification when, in his opinion, it would be advantageous to the community and to the owner to permit the trees to remain standing until they become suitable to be cut for lumber. This law was passed in 1929 and has not yet been widely applied, since less than 5,000 acres, or about 0.3 percent of the privately owned forest area, are classified under its terms. Digests follow of the Connecticut and Maine laws.

CONNECTICUT. TEMPORARY FIXED ASSESSMENT AND ULTIMATE TREE EXEMPTION, PASSED IN 1929

General Statutes of Connecticut, revision of 1930, sections 1188–1191.

I–II. Properties classified are set in the list of the owner at the same value which actually appeared in the last completed assessment prior to the owner's request for classification, which value may not be changed until the next general revaluation of all the taxable real estate in the town [by general law all real estate must be revalued at least every 10 years], when the land, exclusive of trees, is valued in the same manner as other land in the town, and thereafter the trees are exempt from the property tax. [The law does not use the term trees, but uses "tree growth" which has been interpreted by the courts as meaning trees.] The owner of classified land may enter a protest concerning the revaluation of the land with the assessors of the town and with the [State] tax commissioner. A hearing is then held by the tax commissioner or by an assessor of a town in the county whom he designates and who is paid by the owner. At the hearing the revaluation may be affirmed or a new value placed on the property, which then is the value until a subsequent general revaluation unless appeal is taken to the courts. Otherwise the operation of the property tax is not changed.

VII–1–*a*. The initial qualifications for classification are as follows: The property must include trees and be of such character that in the opinion of the State forester it would be advantageous to the community and to the owner to permit the trees to remain standing until they become suitable to be cut for lumber.

VII–1–*b*. The procedure of classification is initiated by application of the owner to the State forester. The State forester, after an examination, decides whether the qualifications have been met and, if so, issues a certificate of classification, which he files in his office, copies being filed with the tax commissioner, and with the board of assessors of the town. A copy also goes to the owner, who must have it entered on the land records of the town.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained. Wood and trees on classified land owned by a farmer may be cut by him when necessary for his own use in the conduct of the farm, or for improving or erecting buildings thereon. The law contains no provision with reference to the effect upon classification of transfer of the property.

VII–3. Declassification may be effected by the State forester whenever he shall ascertain that the property is no longer used for the purposes contemplated by the law, notice thereof being sent to the tax commissioner, the assessors, and the owner.

MAINE. FOREST TRACT EXEMPTION, PASSED IN 1872, AMENDED IN 1907, 1909, AND 1927

Revised Statutes of Maine, 1930, ch. 13, sec. 6, paragraph XI.

Properties classified as "set apart for * * * reforestation" are exempt from the property tax for a period of 20 years. The land must be cleared land or land from which the primitive forest has been removed, which has been planted or set apart for the production of forest trees and successfully cultivated for 3 years, the trees at the time of classification being not less in number than 640 per acre and well distributed. The procedure of classification is initiated by application of the owner, to the assessors, stating that such land is set apart for the sole purpose of reforestation and for the benefit of the State, and stating all facts in relation to the growth and cultivation of the incipient forest. The trees must be kept alive and in a thriving condition during the 20-year period.

The two remaining exemption laws of the optional type, those of Indiana and Iowa, are very similar. These laws are designed to promote better management of farm wood lots by requiring as a condition of classification the exclusion of grazing and the maintenance of a full stock of growing trees. They both provide for assessment of the land at a specific figure, $1 per acre in Indiana and $4 per acre in Iowa.

The Iowa law permits the greatest ease in listing or withdrawing lands, but in practice the owner is obliged to ask for renewal of classification each year, as the listing is not treated as automatically continuous.[20] The administration of this law is in the hands of the township assessors, whose knowledge of the properties concerned is relied upon to prevent improper classification. The Indiana law contains an unusual provision designed to prevent it from being used by speculators as a means of tax avoidance. A law that offers such substantial reduction in taxes might ordinarily attract applications from owners having no interest in the practice of forestry, but who wished to hold for appreciation in value real estate having possibilities of development for residential, resort, or other purposes. Such an owner would count upon withdrawing his land from classification when the time was ripe for sale or other disposition. This abuse of the law is effectively prevented by a declassification tax equal to the increment in value from the time of classification as determined by comparison of an official appraisal made and placed on record at the time of classification with an appraisal made at the time of declassification.

Relative to the privately owned forest area, the Indiana law is one of the most widely applied of optional laws, including those providing for a yield tax. Over 86,000 acres, or about 2.5 percent of the private

[20] The obligation on the owner to apply for renewal of classification each year is apparently not imposed by law, but it is reported to be an administrative requirement, by W. F. Sullivan, in an unpublished master's thesis, Iowa State College. 1928.

forest area, are classified under its terms. This result appears due to the decided tax concession which is offered and to the effective administration by the State forester's office in the department of conservation. The law is well advertised, and landowners are definitely encouraged to take advantage of its provisions. Preliminary to classification, an inspection of each wood lot is made by a qualified forester, and the owner is advised what silvicultural measures are necessary to make it eligible under the law, as well as other treatment that would be beneficial.

A digest of the Indiana law follows.

INDIANA. FOREST TRACT FIXED ASSESSMENT, PASSED IN 1921

Burns Indiana Statutes, 1926, secs. 4771–4789.

I–II. Properties classified as "forest plantations" or "native forest lands" are assessed for general taxation purposes at $1 per acre. If any oil, gas, stone, coal, or other mineral is obtained from such land, this may be assessed separately. Otherwise the operation of the property tax is not changed.

VII–1–*a*. The initial qualifications for classification are as follows: The property must contain at least 3 acres; it must not have dwellings or other buildings thereon, other than a sugar camp or a sawmill in order to utilize the timber grown thereon. The trees may have been secured by planting, by seeding, or by natural regeneration and may be of any species except those specifically not deemed to be timber trees. The land must carry a good stand of trees, as set forth in exact detail in the law, without open areas.

VII–1–*b*. The procedure of classification is initiated by application of the owner to the State forester, a copy of which must be recorded in the office of the county recorder. The application must contain a detailed metes-and-bounds survey of the property to be classified and must state the value of the land and of all other land in the same section outside of cities and villages as appraised by the township assessor. Such appraisal shall be the true cash value, including any mineral, stone, oil, or gas value. The owner may appeal from this appraisal to a board consisting of the assessor, auditor, and treasurer of the county, and the decision of such board is final The expense of the survey is borne by the applicant, the expense of the appraisal by the county. If, in the opinion of the State forester, the application and the property comply with the law, he immediately notifies the county auditor that the property has been duly classified.

VII–2. The requirements for continued classification are as follows: The initial qualifications must be maintained so far as they are applicable. No domestic animals may graze upon the property. The State forester is required to inspect the property "at any time." The owner is required to make an annual written report to the State forester. Transfer of the property does not affect classification.

VII–3. Declassification is effected by the owner's withdrawal or by the failure of the property to meet the requirements of the law as determined by the State forester. A declassification tax is imposed, being "an unearned increment tax"; that is, the difference between the appraised value of the land made by the township assessor, at the time of declassification, and its appraised value at the time of classification. The owner has the same right of appeal from the appraisal at the time of declassification as he has in case of the original appraisal. The tax is distributed, 25 percent to the State, 50 percent to the county, and 25 percent to the township.

VIII. Any person violating any provision of the law is guilty of a misdemeanor and liable to a fine not exceeding $250, to which may be added imprisonment not exceeding 6 months.

Nonoptional

Among the laws of general application the only exemption plan of the nonoptional type is that of California. This plan is automatically applicable to all land of the special class regardless of any action taken by the owner. The exemption, granted by a constitutional amendment adopted in 1926, applies to all immature forest trees which have been planted on land not previously bearing merchantable timber, and to trees that have been established by planting or by

natural growth upon land from which the merchantable original growth timber has been removed to the extent of 70 percent of all trees over 16 inches in diameter. Timber is considered mature at such time after 40 years from the time of planting or removal of the original timber as shall be determined by a board representing the State board of forestry, State board of equalization, and the assessors of the county. This constitutional amendment is considered in effect without subsequent statutory enactment.

It was the expectation that the California plan would have little immediate effect on local revenues, since it was the custom of assessors to recognize no value in young timber stands such as those exempted. The purpose of the enactment is to provide a safeguard against future burdensome taxation of immature forests and thus act as an incentive to private operators to hold and protect their cut-over lands.

Opinions differ as to the effectiveness of this plan. Gross undervaluation is so widespread in California (*12, pp. 59 and 60; 180, pp. 17–26*) that it would require a very intensive study to determine how immature forest lands are actually assessed in comparison with other property. If all assessments were made at 100 percent of value, it would be possible for owners to be certain of getting the advantage of the exemption allowed, and in such case the inducement to hold and protect cut-over lands for growing timber crops would be substantial. Under the present system of general undervaluation, it is practically impossible for an owner to tell whether or not he should be entitled to a lower assessment on his cut-over lands on account of the exemption of the growing timber. If he should insist on a reduction in assessment of his cut-over lands, the same condition of undervaluation would permit the assessor to offset the reduction by an increase on his other property. Therefore it is possible that the California tax amendment may have made little or no change in the present situation, but it does offer the promise of a substantial advantage to owners of growing timber properties in the futute, if ever a reform in the assessment system by which assessed values will be made to approach the legal standard is brought about.

Critical Analysis

The laws exempting timber from taxation without imposing any yield or other substitute tax have been shown to be in the nature of subsidies. In the laws of the kind which have just been discussed, the subsidy is strictly limited in amount through provisions restricting the period of the exemption or the class of trees to which it is applicable. In all except the California and Connecticut exemption laws there are offsetting requirements or obligations imposed on the owner of a forest property as a condition of the exemption.

The questions involved in the levy and collection of yield taxes are avoided in the exemption laws. Otherwise the difficulties encountered in formulating yield-tax legislation are met in connection with exemption laws. There is the same difficulty of offsetting tax concessions by special requirements in such a way as to strike an even balance between the interest of the taxpayer and of the public as a whole. Also the problem of meeting revenue losses is generally met in these laws indirectly by restricting the exemption to classes of

timber of little present importance in the tax base or by other restrictions which have the effect of preventing them from being widely applied.

COMPARATIVE TABLE

Table 120 shows the most important provisions of the existing forest-tax laws in such a way as to simplify the making of comparisons between the different laws. The information presented is so condensed that it must naturally omit many provisions that might be of importance to one seeking detailed information. For more complete digests, similar to those which have been given to illustrate the different types of forest-tax laws, the reader is referred to the progress report which deals with this subject.[21]

[21] See footnote 10 on p. 14.

TABLE 120.—*Essential provisions of special forest tax laws, July 1, 1933*

State	Classes of property subject to classification; application by owner required unless otherwise noted	Modification of tax system		Control of cutting and management by State authority	Declassification tax (in addition to being again taxed as other property)	Contract, grazing, and miscellaneous provisions
		Property tax	Yield tax			
Alabama	Land suited for forest culture; use must not be incompatible with forestry.	Forest trees exempt	10 percent on timber cut; revenue one-half to State, one-half to county.	Timber may be cut, turpentined, or otherwise utilized only in accordance with the rules of the forestry commission.	Declassification tax, at the termination of the contract or its violation, equivalent to the yield tax on the standing timber.	Contract for not less than 5 years.
California	All land with immature forest trees or lands from which 70 percent of all trees over 16 inches have been cut; application by owner not required.	Immature forest trees and stands from which 70 percent of all trees over 16 inches have been cut are exempt. Property tax at maturity, after 40 or more years.	----------	Maturity determined by assessor and State boards of forestry and equalization.	----------	Prescribed by constitutional amendment.
Colorado	All land with planted timber trees; application by owner not required.	Increase in value due to timber exempt until trees are suitable for economic use, not to exceed 30 years.	----------	----------	----------	
Connecticut (yield tax).	Woodland or land suitable for forest planting, of 5 acres or more, valued at not more than $25 per acre, and fully stocked; planted trees approved by the State forester.	Land and forest trees of over 10 years taxed on fixed assessment for 50-year periods. Rate during first 100 years not to exceed 10 mills; trees under 10 years exempt.	2 percent after 10 years to 7 percent after 50 years on trees over 10 years old at classification; rate on other trees 10 percent; timber cut for owner's use exempt.	----------	5 mills per year levied on difference in value of property at the end and at the beginning of classification; no provision for voluntary withdrawal.	No grazing; inspection of property as deemed necessary by forester.
Connecticut (exemption).	Property of such character that it would be advantageous to community and to owner to permit the trees to remain standing until suitable to be cut; decision rests with State forester.	Property assessed at same value as prior to classification until next general revaluation (within 10 years) when the trees are exempt from further taxation.	----------	----------	No declassification tax imposed.	
Delaware	Land of not less than 5 acres with sufficient forest growth to develop a merchantable timber stand, but with trees not over 5 feet high except seed trees.	Property exempt from the property tax for a period of 30 years.	----------	Timber may be cut only under supervision of State forestry department and removed only with permission of said department.	Average value per year of property during period of classification multiplied by the several yearly tax rates.	

Idaho	Cut-over or burned-over land chiefly valuable for the purpose of reforestation. Land now with commercial timber eligible after timber has been cut according to State regulations.	"Reforestation value" of land above $1 per acre is not assessed; growing forest trees are exempt. Value for other purposes than forestry assessed as other property.	12½ percent on material cut, except on that for domestic use of owner or for use in harvesting crop; the revenue goes into county general fund.	Managed in compliance with reasonable regulations imposed from time to time by the State cooperative board of forestry.	Difference between the taxes that would have been paid if not classified and those paid since classification. When contract terminates tax is equivalent to the yield tax on all merchantable timber then standing. In case of intent to escape taxes, all taxes are due that would have been paid if not classified with interest at 10 percent.	Law is declared a contract for 50 years subject to renewal.
Illinois	Land of 1 or more acres planted with forest trees and "properly cultivated" for 3 years.	Same as other property				County board may offer a bounty of $10 or less per acre per year for 3 years.
Indiana	Land of not less than 3 acres without buildings other than those necessary to utilize the timber, fully stocked with species of timber trees as specified.	Assessed for general taxation purposes at $1 per acre.		Owner must make an annual written report to the State forester.	"An unearned increment tax", being difference between appraised value of land at end and beginning of period of classification.	No grazing; inspection of property by forester at any time.
Iowa (fixed assessment).	Land of not less than 2 acres, containing not less than 200 forest trees per acre of specified species.	Property assessed at $4 per acre.		Not more than one-fifth of the total number of trees can be removed in 1 year.		No grazing, planting required after removal or death of any trees.
Iowa (exemption)	Land planted to trees for any use, except if classified as above; application by owner not required.	No increase in the valuation of the property because of planted trees.				
Kentucky	Land suitable for the growth of forest timber trees and for the propagation of wild animal life.	Usual property tax less rentals paid by the State, which may not be greater than the tax.		General control by forestry department with consent of owner required for sales of timber or subleases.		Cash and share lease to State forestry department, for not less than 20 years nor more than 100 years.
Louisiana	"Forest land" denuded of timber but suitable for forest growing, valued at from $3 to $8 per acre upon which the owner agrees to grow suitable and useful timber trees.	Land assessed at a fixed valuation for a period not to exceed 40 years, trees exempt for 50 years.	6 percent on the severed value of forest products from property classified after Act 120 of 1926; revenue one-fourth to State, three-fourths to parish.	Rules are laid down in the contract by the commissioner of conservation.	Declassification taxes if the contract is terminated for cause are as delinquent taxes, with 6 percent interest, on increments of value exempt by classification.	Contract, for not over 40 years.
Maine (exemption)	Land cleared of primitive forests; cultivated for 3 years; stocked with 640 or more trees per acre; and used for forestry.	Property exempt from the property tax for a period of 20 years.				

TABLE 120.—*Essential provisions of special forest tax laws, July 1, 1933*—Continued

State	Classes of property subject to classification; application by owner required unless otherwise noted	Modification of tax system		Control of cutting and management by State authority	Declassification tax (in addition to being again taxed as other property)	Contract, grazing, and miscellaneous provisions
		Property tax	Yield tax			
Massachusetts	Property assessed at not more than $25 per acre and including not over 20 cords per acre, but so stocked with trees as to promise a specified minimum stand per acre.	Forest trees exempt; such tree values excluded from the town valuation for the purpose of the apportioning of State and county taxes.	6 percent on wood and timber cut; stumpage cut for owner's use exempt up to $25 in any 1 year; revenue 10 percent to State.	The stand must not exceed for longer than 2 years a maximum of 25 M feet of softwoods or 10 M feet of hardwoods per acre.	Equivalent to the yield tax on all the timber then standing on the property.	
Michigan (wood lot)	Land not to exceed one-fourth of the area of a tract of not over 160 acres, one-half of which is being farmed; planted or interplanted with specified species and stocking.	Property value in excess of $1 per acre exempt.	5 percent on all timber removed; firewood and building material for the owner's use exempt.	The forest must be kept fully stocked and restocked after cutting to conform with regulations of the State board of agriculutre.	Equivalent to the yield tax on all the timber then standing on the property.	Regulated grazing allowed after 90 percent of the trees are 2 inches in diameter.
Michigan (commercial).	Land adequately stocked with immature forest trees and capable of supporting a thrifty forest stand or essential to the proper development of a forest property, and not used for other purposes.	Property exempt; pays instead an annual specific tax of 10 cents per acre; revenue one-fourth to county, three-sixteenths to the town, and nine-sixteenths to school district; State pays county 10 cents per year for each acre classified.	10 percent on all forest products cut; revenue one-half to State, one-half to county; stumpage cut for owner's use exempt.	Permission necessary to cut merchantable forest products; no exclusive hunting and fishing privileges.	5 cents per acre for each year classified, plus 10 percent of the stumpage value.	If law is amended so as to increase burden on owner, he may withdraw without paying declassification tax.
Minnesota (bounty).	Land of 1 or more acres not owned by a railroad, planted with a specified number of trees other than black locust.	Same as other property				State pays a bounty of $2 50 per acre for 6 years; not to exceed $25 per year.
Minnesota (yield tax).	Land of not less than 160 acres, suitable for and devoted to forestry, the surface of which has a full value of from $3 to $10 per acre; farm wood lots may be of from 20 to 40 acres with no value limit specified.	Unmerchantable timber at classification exempt. A specific annual tax of 5 cents per acre, and a special annual tax of 3 cents per acre for protection.	10 percent on all timber cut, except merchantable timber on property at date of classification and timber cut for owner's use.	Cutting is permitted only with the permission and under the regulations of the commissioner of forestry; the property must be managed under a definitely prescribed plan of culture executed, if necessary, by State at owner's expense.	The difference between the taxes that would have been paid if not classified and those paid since classification with interest at 6 percent on both sides. When contract terminates tax is equivalent to the yield tax on all merchantable timber then standing.	Contract, of which the law is declared to be a part, may not exceed 50 years but may be renewed for 50 years by agreement.

New Hampshire (rebate).	Land valued at not more than $25 per acre, planted with a specified number of softwoods, and not classified as below.	A rebate of 90 percent of the taxes during first 10 years, 80 percent during second 10 years, and 50 percent during third 10 years.	----------	----------	----------	Owner must apply to assessor for rebate annually.
New Hampshire (complete exemption, deeded land).	Land of not over 25 acres per owner and adapted for forest growth.	Property exempt while in State ownership; given to the State, reserving right of reconveyance within 10 years.	----------	Property held, reforested, protected, and managed by forestry commission.	Reconveyance at cost of improvements with interest at 4 percent less profits from sale of forest products.	
New Hampshire (immature timber exemption).	Forest land of not over 100 acres per owner in a town and with trees valued at not to exceed $25 per acre, but stocked so as to promise a minimum future yield of 25 M feet per acre.	Standing forest trees exempt; only the land value of classified land is included in the town valuation for apportioning State and county taxes.	No yield tax; timber taxed in year when cut at the same valuation as other property; $50 stumpage per year for owner's use exempt.	When in the judgment of the assessors the land contains 25 M board feet of timber the owner must reduce the volume.	In case of withdrawal by owner the land tax and a tax on value of the standing timber at the same rate as other property for that year is imposed.	
New York	"Forest land" of 15 acres or more best adapted to tree growth, planted or underplanted with a specified number of suitable forest species, or with natural second-growth which will produce timber in 30 years.	Forest trees exempt and the land not assessed higher than similar lands without forest growth in the same district, and not assessed higher than at time of application for classification.	6 percent on timber cut except thinnings and that cut for owner's use not to exceed $25 in value per year; revenue two-thirds to town, one-third to school district.	When the stand exceeds 40 M feet of softwood or 20 M feet of hardwood it must be cut and thereafter managed according to forestry principles under the direction of the conservation commission.	6-percent tax on the value of the timber on the property at the time of declassification.	
Ohio	Land of 3 acres or more to be devoted exclusively to forestry and fully stocked with approved species of any size or origin.	Forest trees exempt; that part of the assessed value of the property represented by the "true and actual agricultural value" taxed at one-half the usual rate.	5 percent on stumpage value of mature timber cut except when used by the owner, revenue one-half to county, one-half to State for forestry use.	The forest must be cared for and managed according to the regulations of the State forester.	If the property has been classified less than 25 years it pays full back taxes for the last 10 years, with interest, less the taxes actually paid.	
Oregon	All land in the State classified by board of forestry on its own initiative and accepted by the tax commission as chiefly suitable for forestry which does not contain any mature forest crops in merchantable quantities; land assessed on the 1928 tax roll as with mature forest growth cannot be classified without the permission of the county board until it is cut; application by owner not required.	Forest values exempt, instead an annual "forest fee" of 5 cents per acre is paid.	12½ percent on all timber, forage, chittim bark, Christmas trees, or "other marketable growth from the forest soil."	----------	Declassification because of "improper use" imposes a delinquent property tax of the difference between the amount paid by comparable property not classified and that actually paid by the classified property.	Forestry board may enter into a contract after July 1, 1933, with owners of land chiefly valuable for forest crops, classifying such land for a period not to exceed the number of years estimated as necessary to mature the forest crop.

TABLE 120.—*Essential provisions of special forest tax laws, July 1, 1933*—Continued

State	Classes of property subject to classification; application by owner required unless otherwise noted	Modification of tax system		Control of cutting and management by State authority	Declassification tax (in addition to being again taxed as other property)	Contract, grazing, and miscellaneous provisions
		Property tax	Yield tax			
Pennsylvania[1] (rebate, large trees).	Land of not over 50 acres, with 50 or more trees per acre at least 8 inches in diameter, and no portion of the property cleared.	A rebate of 80 percent of the local and county taxes, but not more than 45 cents per acre.				Owner must file annually with the assessor an affidavit stating number of acres which meet requirements of the law.
Pennsylvania[1] (rebate, young trees).	Land of not over 500 acres, with not less than 300 planted or sprout trees to the acre, up to 50 original forest trees allowed as part of the 300 trees per acre required.	A rebate of 80 percent of all taxes for 35 years, but not more than 45 cents per acre. Rebate period begins from the time the trees are planted or destroyed by fire.				No grazing permitted until 200 trees per acre are 4 inches in diameter.
Pennsylvania[1] (yield tax).	Surface land set apart for growing trees which will eventually be suitable for merchantable products.	Land and forest trees valued at not more than $1 per acre for determining tax; State pays road and school district each 2 cents per year for each acre.	10 percent on the stumpage value of all timber cut.	Forest must be managed and cut when and as prescribed by the State department of forests and waters.	Form of a delinquent property tax on the original annual assessments less taxes actually paid since classification, provided no previous yield tax has been paid.	
Rhode Island	Land of 1 to 300 acres worth not more than $25 per acre, planted to 500 or more trees per acre of specified species.	Land and trees exempt for 15 years.		Forest must be managed under a working plan approved by the commissioner of forestry.		
South Dakota	Land of from 1 to 10 acres planted to trees of species, number, and arrangement as specified.	Same as other property				Bounty of $5 per acre per year for 10 years.
Vermont (yield tax).	Land outside of cities and villages either (1) "young timber land" fully stocked with trees not over 15 years old secured by approved planting if necessary, and (2) "wild forest land" of 5 acres or more unsuited to cultivation but suited to forest trees and stocked wholly or in part by trees over 15 years old.	Trees not more than 15 years old at classification exempt and land thereunder assessed at not to exceed $3 per acre. Timber over 15 years old and land thereunder assessed as in year preceding classification. Initial assessed values, fixed until year 1950, then values redetermined and fixed for an additional period of 50 years.	10 percent on all products cut from "young timber land", and 0.1 percent per year classified to a maximum of 7 percent on the cut from "wild forest land"; timber for domestic exempt.	In the case of "young timber lands" the trees must not be removed, or the land used in a way detrimental to the forest. "Wild forest land" must be maintained as a wood lot and cut when mature.	In case of withdrawal by State "young timber land" pays at the rate of 0.5 percent for each year classified on all timber standing. If "wild forest land" is not cut when mature tax is equal to yield tax; no provision for voluntary withdrawal.	No grazing on "young timber lands." Assessor has administrative authority over "wild forest land"; State forester over "young timber land."

Vermont (exemption).	Land with immature timber grown from transplanted seedlings.	Immature timber exempt for 30 years from date of transplanting.				Owner must file application in year of planting.
Virginia	Forest land or land suited to the growth of timber; law operative only when accepted by the voters of the county.	Property tax with interest at 6 percent may be deferred for a period not longer than 40 years.		Administration, cutting, and removal of timber under regulation of State forester. Permits to cut timber issued by State forester jointly with county board of supervisors.	Deferred taxes plus interest at 6 percent, and, if classified less than 10 years, an additional fee of 5 cents to 15 cents per acre.	Lease to State as forest, game, fish, and recreational reserve for not longer than 40 years. No rental provided.
Washington	All land in the State classified by State forestry board on its own initiative and accepted by tax commission as chiefly suitable for forestry which does not contain any mature forest crops in merchantable quantities; application by owner not required.	Forest value of properties assessed at $1 per acre if located west of the summit of the Cascade Mountains, at 50 cents per acre if located east of the summit of the Cascade Mountains. [By law, property in general assessed at 50 percent of full value.]	12½ percent on the stumpage value of all timber cut after 12 years. 1 percent for each year that has expired from date of classification if cut within 12 years.		Declassification imposes a delinquent property tax of the difference between the amount paid by similar unclassified lands in the county and that actually paid by the classified property.	The State board of forestry may enter into a contract with owners of reforestation lands, fixing the classification of such land for a period not to exceed the number of years estimated as necessary to mature the forest crop.
Wisconsin	Properties permanently destined for timber growing, and if not now including a merchantable stand of timber, giving assurance of such a stand within reasonable time; farm wood lots eligible regardless of size; other properties must comprise 40 acres, although smaller tracts are eligible when contiguous to larger ones already classified; special classification for merchantable timber until 50 percent removed.	Land and trees exempt from general property tax; an annual specific tax of 10 cents per acre imposed, temporarily higher specific tax on lands under special classification; State pays town 10 cents per year for each acre classified; 40 percent of moneys received by town apportioned to the school districts in which land is located.	10 percent on all wood products cut, except fuel wood used by the owner; temporarily lower rates on products cut from lands under special classification; all rates doubled if reproduction is not provided for; revenue goes to reimburse State, balance to towns.	Open to public hunting and fishing except on farm wood lots.	(1) If the property is used for other purposes 5 or more years after classification or in case of withdrawal by the owner the tax is the difference between taxes that would have been paid less those paid, with simple 5 per cent interest on both sides; (2) in case of other use or improper culture within 5 years of classification the tax is equal to amount paid by State to town; (3) expiration of contract imposes tax equivalent to yield tax on all timber standing.	Contract, for 50 years subject to renewal; investigation of property every 5 years by conservation commission; grazing permitted on wood lots.

[1] Held unconstitutional by a decision which had not been tested by appeal to the highest court.

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CRITICISM OF CERTAIN FEATURES

The mathematical principles underlying the yield-tax and exemption laws have been discussed in part 3. At this point it is appropriate to consider certain features which seem to limit the usefulness of the existing legislation of this kind. The first to be considered arises from the use of the fixed or limited assessment or the specific tax on the land.

It has been shown that if the land element of a forest property is taxed under the unmodified property tax, it is in danger both of relatively high assessment and of high local tax rates. The realization of this danger has led to a demand for special treatment of classified forest lands in addition to the provisions affecting the timber. Such special treatment has appeared to offer an easier way than following the hard road of reforming the administration of the property tax, particularly of assessment practice. The restrictions on the taxation of land, as shown, have usually taken the form of fixed assessments or specific taxes. A degree of certainty appears to be introduced into this part of the tax burden by these devices. The fact is usually overlooked that prospective changes in the general price level of all commodities or in the special price level of forest products may make a fixed assessment or a specific tax a highly uncertain burden. In case of a long-continued drop in the price level of forest products, the owner might quite reasonably anticipate that there would also be a drop in the value of his forest lands which would, under the normal operation of the property tax, result in lower assessment and lower taxes. If the tax were specific it could not drop at all; if the assessment were fixed the tax cost could not drop as rapidly as it otherwise might. If an attempt be made to adjust for such changes by legislation amending the law as to the fixed assessment or the amount of the specific tax, the element of certainty claimed for these devices would be destroyed in another way.

Under a system of fixed assessment or specific tax on forest land, the less valuable land suffers a heavier burden in proportion to its value than does the more valuable land. Forest land varies materially in price per acre. A fixed annual tax may impose a severe burden on low-priced land, and a very light burden on high-priced land. The same situation holds in the case of a fixed assessment. A fixed assessment is far more burdensome on low-priced than on high-priced forest land. The specific tax is not related in any way to governmental needs, so that the effect of variation on those needs on property not subject to this tax is unduly intensified. The fixed assessment or the specific tax is inherently arbitrary and inelastic and not proportioned either to ability to pay or to benefit received, and the specific tax is not adjustable to public-revenue requirements.

The hope of obtaining certainty as to the future burden of taxes on forest property has also been responsible for the contract feature which has been included in a number of existing laws. The contracts provided for in these laws usually attempt to prevent future legislatures from changing the tax status of specified forest properties by setting up a contractual relationship between the owner of the forest property and the State. The owner is seldom required to assume any real and unavoidable responsibilities in consideration of this protection. Such one-sided contracts are of doubtful validity in

law, as indicated by the court decisions that bear on this question. Aside from their doubtful legal status, such contracts are speculative in character because of unpredictable future events which may entirely change their effect. A line of action that is appropriate now might lead to grave injustice if adhered to in the face of changed conditions, such as a material alteration in the monetary system. The contract feature is therefore regarded as inadvisable.

Some of the difficulties in connection with the optional feature that characterizes most of the forest-tax laws have been discussed in explanation of the relatively small areas classified under these laws. It has also been indicated that, if any such law were widely applied, there would be reason to suspect that special favors were being granted of sufficient weight to overcome the hesitation of the owner to classify his property for taxation by an unusual method. As a general principle, it would seem that if a certain tax reform is worthy of adoption at all, it should apply to all owners of the kind of property involved, not only to those who choose to take advantage of a certain option.

The plan of compensating local units of government out of State funds for loss of tax revenue from classified forest lands is a feature of some of the yield-tax laws which is subject to certain dangers. From the viewpoint of tax equity, such payments should be sufficiently moderate so that the State may be reasonably certain of eventual reimbursement from the yield tax. Also, the local government organization thus assisted should be adapted to the real needs of the communities which it serves. The dangers are that the payments may be fixed in a haphazard manner so as to constitute a drain on the resources of the State beyond possibility of reimbursement from yield taxes, and that they may prevent or delay the reorganization on a more economical scale of overdeveloped local government.

CONCLUSION

It is evident that the special forest-tax laws now in effect are to be regarded as experimental in character, rather than as furnishing any model for adequate legislation on this subject. The laws of the optional type, whether they include the yield-tax feature or not, appear to be inherently destined to a narrow application. Those of the nonoptional type, as soon as sufficient time for classification has elapsed, will be more severely tested by the broader application which they demand. The nonoptional yield-tax laws of Oregon and Washington promise substantial benefit in preventing the threatened breakdown of private ownership of cut-over lands in those States. On the other hand, they are subject to the discriminations and dangers of the specific land tax or of the uniform fixed assessment. They also fail to set up any method of adjusting the yield-tax rate to public requirements. These difficulties are not so apparent now as they will be in the future, as the specific tax and fixed assessment are not very far from the present tax and present assessment on cut-over lands of the grades now being considered for classification, and yield taxes are not yet due. Neither can the California plan be set up as a model, not so much because its effect under the present imperfect administration of the property tax is questionable as because it represents a plan that is not justifiable except as a strictly temporary

measure. As shown in parts 3 and 12, the permanent exemption of the forest growing stock from taxation is a greater concession than can be justified. Furthermore, any attempt to apply a temporary exemption to be removed at or near the maturity of present second-growth stands would seem to lead to the insoluble difficulty of finding any certain and inexpensive method of determining when each stand has reached that time. In short, while the forest-tax legislation of the past has given valuable experience, it has been chiefly negative in character. As yet it has not developed any law which may be regarded as representing an adequate solution of a positive sort to the forest-tax problem.

PART 10. OTHER TAXES IN RELATION TO FORESTRY

CONTENTS

INDIVIDUAL AND CORPORATION INCOME TAXES

FEDERAL INCOME TAX

GENERAL DESCRIPTION

The sixteenth amendment to the Constitution of the United States authorizing the Congress to levy a tax on income was proclaimed February 25, 1913, by the Secretary of State as having been ratified and adopted as a part of the Constitution of the United States. In the first revenue act passed after the adoption of the amendment (act of Oct. 3, 1913, 38 Stat. 168) in section II, subsection D, incomes received from March 1, 1913, to December 31, 1913, were subjected to the tax imposed by that act. Consequently, March 1, 1913, marks the beginning of the period during which income taxes lawfully may be assessed and collected under the sixteenth amendment. Although that date marks the beginning of the modern Federal income tax, the fact is that prior to 1917 the rates were so low and the exemptions so liberal that this tax was almost negligible as an economic factor.

The participation of the United States in the World War beginning in 1917 made it immediately necessary for the Federal Government to raise huge sums of money. The enormous debt and other obligations arising out of that war have contributed largely to a heavy Federal budget, with which the Nation will be burdened for many years. The income tax has become the chief reliance of the Federal Government in meeting this budget.

The normal tax on individuals was increased from 1 to 2 percent in 1916. This rate was again doubled in 1917 for incomes of over $2,000, and the personal exemption was reduced. There was in 1918 a third increase in normal rates, which became 6 and 12 percent, the lower rate applying to the first $4,000 of net taxable income. Surtaxes, which were imposed at progressive rates, at first did not go above 6 percent, but these rates were successively raised in 1916, 1917, and 1918, when they reached a maximum of 65 percent on the excess of net incomes over $1,000,000. After 1918 normal rates were reduced, and after 1921 surtax rates also. These rates reached a low level in the period 1925 to 1931 and were accompanied by high personal exemptions and credits for dependents.

The Revenue Act of 1926, which was made applicable to 1925, fixed a normal rate of 1½ percent on small incomes ($4,000 or less) and surtaxes up to a maximum of 20 percent applying to the excess of net incomes above $100,000. In addition, in the years 1924 to 1931, the amount of the tax was further reduced by 25 percent of the tax on "earned income", as defined from time to time in the revenue acts. A special reduction of 1 percent in the normal income-tax rates was allowed for 1929 only, giving the small incomes of that year the benefit of a rate of only 0.5 percent. In 1932 the normal rates were again increased to 4 percent and 8 percent, the lower rate applying to the first $4,000 of net taxable income, the earned-income credit was discontinued, and the personal exemptions were reduced. At the same time, high surtaxes were restored, the rates reaching a maximum of 55 percent applicable to the excess of incomes beyond $1,000,000.

The income tax on corporations has had a similar history. There were increases in rates in 1916 and 1917, and a maximum burden was reached in 1918, when heavy excess-profits taxes were imposed in addition to an income-tax rate of 12 percent. Beginning with 1919 there was a marked reduction in these taxes; in 1922 the excess-profits taxes were discontinued, and the income-tax rate was increased to 12½ percent. During the period 1928 to 1931 the rate was 12 percent, with a drop to 11 percent in 1929. In 1932 the tax on corporations was increased to 13¾ percent. More detailed information as to these rates may be found in the publications of the Treasury Department (*225*, *226*, *tables A to D*).

While the rates will undoubtedly vary from year to year, it appears that a fairly heavy Federal income tax must be reckoned with for a long period to come.

In general, the Federal income tax is levied on incomes only when realized in cash or its equivalent. This feature makes it appropriate to the business of forestry, since the amount and due date of the tax are automatically adjusted to the irregular character of the income afforded by the unorganized forest properties of this country. However, there are some practical difficulties in the application of the income tax which will be discussed at this point.

THE DEPLETION ALLOWANCE

In the process of manufacturing lumber, pulpwood, or similar goods, a capital asset, standing timber, is converted to an article of commerce, such as lumber or pulpwood. A similar phenomenon takes place when coal or metallic ore is removed from the mines, or oil from its natural storage grounds. The reduction of capital assets involved in the conversion of these materials from their natural state is known in accounting terminology as depletion. In the meaning attached to income by accountants and Federal income-tax law, income does not include any receipts which represent the value of a capital asset which is thus used up in the process of manufacture. Therefore, to reflect correctly income for a definite period, such as a year, it is necessary to make allowance for this depletion. In the case of a lumber business, the depletion for a given year is the stumpage value of the timber felled during that year. In other words, to determine the net taxable income of a lumber manufacturer owning a timber supply, there is deducted

not only ordinary and necessary expenses of the business and depreciation of the plant, but also the stumpage value of the timber taken from the forest. The portion of the annual receipts which represents this stumpage value is a return of capital and as such cannot properly be included in taxable income.

The basis for the determination of the stumpage value which may be deducted from gross income as depletion of timber is highly important. This basis has been fixed as original cost, with proper adjustments for capital increases or deductions, except when the timber was acquired prior to March 1, 1913. In that case, if the cost so adjusted to that time is less than the fair market value at that date, the fair market value on March 1, 1913, rather than the cost, governs the depletion allowance. The latter provision insures against taxation of any appreciation in value which occurred before the date March 1, 1913, when the income tax law went into effect. Capital additions to cost, or to value as of March 1, 1913, may include taxes and other carrying charges on unimproved and unproductive real property, unless they have been taken as a deduction by the taxpayer in determining the net income for the taxable year or prior taxable years.[22]

The allowance for depletion is based upon the number of units of timber felled during the year and the unit value of the timber in the account or accounts pertaining to the timber cut. This unit value is known as the depletion rate. The depletion rate for a given timber account in a given year is the quotient obtained by dividing the sum of the value of the timber on hand at the beginning of the year and the cost of the number of units acquired during the year and proper additions to capital, by the sum of the total number of units of timber on hand in the given account at the beginning of the year, and the number of units acquired during the year, and the number of units required to be added (or deducted) by way of correcting the estimate of the number of units remaining available in the account. The amount of the deduction for depletion with respect to a given timber account is the number of units cut during the year from the timber covered by that account multiplied by the appropriate depletion rate. While depletion of timber takes place at the time that the timber is felled, depletion for purposes of income-tax accounting is treated as taking place at the time when, in the process of exploitation, the quantity of timber so felled is first definitely determined (*223, art. 249; 227, art. 241*).

The above method of accounting for depletion is designed primarily to fit the usual lumbering operation, where the forest is being destructively cut and growth of timber is a negligible factor. The Federal revenue acts do not make special mention of growth, but the regulations of the Treasury Department pursuant to these acts provide that, if as a result of growth, or for other reasons, the quantity of timber becomes greater than the balance shown in the timber account, a new estimate of the recoverable units may be made as a basis for a new depletion rate (*223, art. 255; 227, art. 246*). For example, if the timber account at the end of a given year, before deducting depletion for the year, shows a balance of 10,000,000 board feet and $60,000, and a new estimate of the timber shows the actual quantity on the

[22] For more detailed information refer to current Treasury Department regulations. This paragraph is based on regulations 77 (*227, arts. 240–248*).

ground to be 12,000,000 board feet, the new estimate will be taken as the correct balance of timber, and the depletion rate will be changed

$$\text{from } \$6, \left[\frac{\$60{,}000}{10{,}000}\right], \text{ to } \$5 \text{ per M board feet, } \left[\frac{\$60{,}000}{12{,}000}\right].$$

The result of this treatment of growth is that the owner of a forest who is cutting conservatively, either for a second crop of timber or for conversion to permanent forestry on an annual sustained or periodic yield basis, will find his depletion rate for that forest gradually reduced as the original timber in the account is gradually replaced by timber which has become merchantable since the original base for depletion was established. This reduction in the depletion base, or money capital remaining in the timber account, would be at least in part offset if the owner were required to add to capital accounts current expenditures which are generally considered as the cost of growing timber, such as taxes on cut-over land held for timber growth, cost of protecting and administering such land, and the extra logging costs arising from precautions taken to secure regeneration and to protect young trees for the benefit of the next crop. These items might be treated as capital additions instead of current expenses under the present law, but, since they are not usually segregated from the ordinary operation expenses and the taxpayer naturally prefers to take them as deductions from current income, it seems probable that in general they are not so capitalized. (The term "capitalize" is used in this part in the accounting sense, meaning to treat as capital on the books of account.) However, when part of the timber that was merchantable at the basic depletion date is reserved from felling as a basis for the future crop, its depletion value remains in the account as an initial investment in the new stand, corresponding to the initial cost of a planted stand. Also, when artificial reproduction is used in place of or to supplement natural reproduction, the cost of planting has been held to be a capital expenditure, not deductible from gross income as current expense, but added as capital to the depletion base of the next crop. Presumably the same principle would apply to the cost of cultural operations, such as pruning and weeding, whether of natural or artificial stands. Nevertheless the tendency will be for the timber accounts to show values which do not fully reflect the actual cost of growing the timber even in planted stands, except in the unusual case where the owner has no other income and therefore does not care to charge off the taxes and other costs annually. The option of capitalizing the taxes and other carrying charges is allowed only with respect to unimproved and unproductive real property.

It is not to the interest of forest owners who, as operators or otherwise, are recipients of taxable income, to ask for theoretically correct treatment of depletion. This would require that all expenses incurred primarily to establish the future crop be capitalized as a basis for depletion allowances, or else that they be offset against current depletion charges. It is financially advantageous to take these expenses as deductions from gross income as early as possible. In fact, it has been proposed that the present partial inconsistency between the treatment of natural regeneration and planting should be done away with, not by correcting the treatment of natural regeneration through capitalization of the entire cost, but by giving planting cost the legal status

of current expense regardless of its obvious capital character. Clearly, any treatment of capital investment as expense in determining taxable income is in the nature of a subsidy, as a sum equal to this capital investment thus escapes current taxation as income, and other taxpayers have to make up the loss in revenue. The amount of this loss in tax revenue is the product of the sum incorrectly treated as expense and the tax rate. The theoretical net gain to the taxpayer is somewhat less than this amount, since eventually depletion allowances will be reduced by the amount of the capital expenditures currently excluded from capital account, and taxable net income will be correspondingly increased. However, the increase in taxes on this account is so far in the future and so uncertain in amount that its present value is negligible.

The present treatment of depletion is reasonably satisfactory as a temporary makeshift during the period in which the chief money income from forests is either from destructive cutting or from more conservative operations which nevertheless involve material reduction in the existing wood capital. It is fairly easy of application and gives owners of unproductive forest properties the option of capitalizing taxes and other carrying charges, or of using them to reduce taxable income from other sources. While the treatment of capital expenditures is defective in that costs of natural regeneration may be charged off as current expense, this defective treatment is chargeable to the practical difficulty of determining and segregating the correct amounts of these capital expenditures rather than to any inconsistency in the law. The taxes lost are very small in amount, and the advantage of collecting them would be offset by the administrative difficulties involved in endeavoring to enforce the separation and capitalization of the items in question.

The proposal to grant forest plantations an advantage of the same character by treating forest planting costs as current expense may also be defended on the ground that the amounts involved are small, but the argument based on administrative convenience does not apply. In fact a specific change in the income-tax law would be required in order to make this possible (222). The changing of the law contrary to sound income-tax theory in order to meet this special interest would be a dangerous precedent. Even if governmental aid by this method were otherwise desirable, the amounts would be too small to have any substantial effect in encouraging forest planting and would be unequal as between different taxpayers. This contribution to private forest planting would be available only to corporations and individuals with current taxable income to be reduced by planting expenditures. In the case of individuals, the progressive rates on income would make the contribution larger for those with higher incomes. Under the 1932 law, the aid would amount to 4 percent of the planting cost for taxpayers with net taxable incomes not in excess of $4,000, and a maximum of 63 percent for those with net incomes of over $1,000,000; it would amount to 13¾ percent of the planting cost for corporations with taxable incomes.

When annual sustained-yield forests begin to be established on a large scale it will be desirable to make provision by law or regulation for a change in the treatment of depletion for income-tax purposes applicable to such forests. Two different methods of accounting for depletion are suitable for sustained-yield forests. Either of these

methods might be required, or the taxpayer might be given the option of electing to follow one or the other.

The first method of accounting for sustained-yield forests would involve a minimum of change from the existing income-tax regulations. It requires a depletion account for each part of the forest which constitutes a management unit. This account is built up by the addition of capital charges for the establishment, improvement, and protection of the trees and is reduced by proportionate amounts as the trees are cut, sold, and lost by fire or other casualty. The only material change from the present procedure is the requirement that all capital expenditures in connection with growing timber be treated as capital charges to the appropriate depletion accounts, with no option to treat any part of these charges as current expense. This method maintains on the books of account a reasonably accurate cost for the existing timber stands. It permits the determination of the cost of the particular timber depleted in a given year and thus enables an accurate determination of annual income. It takes account automatically of variations from the normal in either capital additions or depletion. To realize fully these advantages there must be careful and consistent accounting, and to check the results at any time the review must go back over a long period. The disadvantages of this method from the viewpoint of tax administration are that proper capitalization of all charges would be hard to enforce and that satisfactory accounts would be difficult to obtain from taxpayers whose properties were not large enough to warrant the employment of an expert accountant.

The second method of accounting for depletion in sustained-yield forests would regard depletion as not taking place at all where there is a regular annual income based on annual fellings of approximately equal quantities of timber. The total wood capital in such a forest remains undiminished as the timber felled is replaced by growth. Since this method allows no deduction for depletion, it is, of course, proper to treat the cost of planting as well as of all other cultural operations as maintenance expense and to charge it off annually. Thus, under this plan, the depletion account is dispensed with, and all normal costs of maintaining the forest are treated as annual expense. Special provision for capitalization or depletion is necessary only in case of abnormal additions to or reductions of the forest capital. As will be described in part 11, this second method is the basis for the income-tax regulations of the German Reich, where credit for depletion is allowed only in cases of extraordinary fellings or sales, and the cost of planting and other cultural operations is capitalized only when these are on a scale large enough to be entirely out of proportion to the normal annual expenditures necessary to maintain the forest. This method has the advantage of simplicity, though it does not permit as accurate a determination of income as the first method in years of abnormal development or depletion.

PROFIT AND LOSS FROM SALES

The provisions of the Federal income-tax law with reference to computing the profits from sales of capital assets, insofar as they have any effect on forestry, are favorable. The base from which profits or losses are computed is the same as for depletion. However, the rate of the tax on capital gain is limited to 12½ percent, provided the asset

has been held by the taxpayer for over 2 years. Naturally the deduction for capital losses is limited in the same manner. This limitation, which was first introduced into the revenue laws in the act of 1921 for the purpose of removing an artificial obstacle to transfers of capital assets, has the effect of making forest growing an attractive investment from the tax standpoint for capitalists whose income is subject to high surtaxes. At the 1932 rate, any person with a net income of more than $16,000 is subject to taxes and surtaxes of 13 percent or more on the excess of income over $16,000. In 1929 about 200,000 individuals reported net incomes in excess of that figure (*224, Statis. 1929, table 3*). Even in 1930, when the effect of the current depression had already begun to be felt, more than 60,000 persons reported net incomes of $25,000 or over (*224, Statis. 1930, p. 5*). To individuals of these high income groups there are few methods of obtaining relief from high surtaxes. Securities which are exempt from surtaxes are limited in supply and offer a low yield. An investment in land which is restocking to forest or which may be economically restocked may offer a very attractive opportunity to the investor with a large income. It enables him to invest his capital without realizing any current taxable income. Not only does he avoid the taxes on the current income which would have normally been realized on this capital, but he gains still further tax reduction because the State and county taxes and other carrying charges on the growing forest increase his allowable deductions from other income. It should be noted that such reductions in taxable income come out of the highest surtax bracket, thereby giving the maximum benefit. When the lands are eventually sold and the value which has accrued over a period of years is realized, the tax on the income is limited to 12½ percent. Therefore, if lands can be purchased for growing timber on such a basis as to offer fair returns to the investor when the trees reach a size profitable for cutting, an investment in such lands has special advantages to the man whose income is so large that relief from high surtaxes is desired. Of course, it is true that the investor has no guarantee that this favorable provision will be retained in the income-tax law, although it has remained unchanged in substance since its incorporation in the 1921 revenue act. Also, the present high surtax rates on large incomes may not be permanent. However, if income-tax rates are low at the time the forest matures, the owner will not be restricted to direct sale in order to get the advantage of a moderate rate of taxation but can either liquidate through manufacture of the timber and sale of the land, or make the forest a continuous enterprise with annual or periodic yield.

STATE INCOME TAXES

The direct effect of the State income taxes on forest property is at present slight, because of the relatively low rates. A few States tax incomes of corporations only. There were, on January 1, 1933, 20 States with personal income-tax laws, 19 of which appear to be sufficiently broad in scope to include income from forestry (*159, pp. 174–177*). The rates in nearly all of these States are progressive, but they stop at limits varying between 3 and 7 percent, except in Wisconsin, where there is a surtax of one-sixth of the normal tax after certain deductions. In determining net income under these laws

allowances are made for depletion of timber on principles generally similar to those embodied in the Federal income-tax law. The only State which has any special provision relating to forestry in its income-tax law is Wisconsin, where it is provided that costs of establishing, maintaining, and protecting forest plantations on lands registered under the Wisconsin special forest-tax law as "forest-crop lands" may be charged as current expense.[23] As pointed out in the discussion of the proposal to insert a similar provision in the Federal income-tax law, this exceptional treatment of a capital expenditure amounts to a subsidy to forestry.

The indirect effect of State income taxes on forestry is beneficial. These taxes were generally adopted in order to make possible the reduction of taxes on real estate. While this result was not always accomplished, it is probably true that the property-tax burden on real estate would have increased more rapidly had it not been for the use of income taxes. In 11 of the 20 States with personal income-tax laws, the receipts from this tax contribute directly to the support either of local units of government or of the public-school system. In the other 9 they are treated strictly as revenues of the State (*159, pp. 175–177*).

GENERAL

At the present stage of development, taxation of income, whether by the Federal Government or the States, has but little direct effect on the business of holding or growing forests. The Federal income-tax system has been shown to favor forestry as an investment for wealthy individuals. In general the income tax is the ideal method of taxing forests from the standpoint of the forest manager and owner. Taxes are proportional to net income and do not have to be paid except in years when income is realized in cash or its equivalent. There is no piling up of interest on taxes paid in advance of income and no problem of financing such advance tax payments. The only difficulties on the side of the owner are in the accounting field. Adequate records must be kept to substantiate depletion deductions, both as a base for determination of profit or loss from sales of timber and forest lands and to show net income within the meaning of the tax statutes. From the public viewpoint, the inequalities in yield of income taxes between different years make them ill adapted as a principal source of meeting public revenue requirements. In years of depression revenues fall rapidly, and it is a hardship on the public to make up the losses by sharply increasing rates just when additional taxes are most burdensome. If income taxes are relied upon as the chief source of revenue for any unit of government, some plan is called for by which the sum available from this source each year may be stabilized by building up a reserve in years when the yield is heavy to be drawn upon in years when the yield is light. Such plans have been proposed but have never been tried (*221*). There appears to be no insuperable obstacle to the satisfactory solution of this problem for the larger units of government, but it is generally agreed that the income tax is not well adapted to the use of units smaller than a State or Federal Government. However there is nothing to prevent a State from using income-tax revenues to give direct aid to local units of government or to defray a part of the cost of public schools

[23] Wisconsin Laws, 1929, ch. 350.

or other local functions. The present tendency seems to be toward increased use of income taxes. This tendency is favorable to forestry so far as these taxes serve to reduce the burden of the property tax.

DEATH TAXES

Death taxes may take either of two forms: (1) A tax upon the estate as a whole regardless of the number of the beneficiaries or their relationship to the testator or (2) a tax on the several shares into which the estate is divided for transmission to the beneficiaries. In this second form cognizance is taken usually of the relationship between each beneficiary and the testator. The first form is usually called the estate tax, the latter the succession tax or the inheritance tax. In either case the tax is, of course, imposed only upon such part of the estate as falls within the legal jurisdiction of the State imposing the tax. Death-tax rates are generally progressive, with respect to the size of the estate in the case of the estate tax, and with respect to both the degree of relationship of the several beneficiaries and the amount of the respective shares under the succession tax. The Federal Government uses the estate tax. The States generally employ the succession tax.

The effects of death taxes on the forest owner and on the practice of forestry depend on the type of forest and the type of forest management.

In the case of a small sustained-yield forest a moderate death tax might be paid out of income, with no unreasonable burden on the owner or adverse effect on the enterprise. In many cases, however, such a tax is greater than can be paid out of current income, thus necessitating either heavier cutting than is consistent with good management or the sale of a portion of the property. In either case the management of the forest on a sound basis might be disrupted.

The effect of heavy death taxes on an old-growth forest being converted, or capable of being converted, to sustained yield would be similar. Either excess cutting or subdivision of an economic forest unit might prevent the attainment of a sustained-yield enterprise.

In the case of immature or second-growth forests, the imposition of death taxes is still more likely to have a discouraging, if not deleterious, effect. Ordinarily it would be impossible to derive sufficient income from the forest to pay the taxes. Lacking other resources, the estate might be driven to a forced sale of a portion or of all the property. This would have the effect of increasing the severity of the tax, even though it did not affect the future management of the forest.

The payment of death taxes on an old-growth forest being destructively cut, or held for destructive cutting, would have no adverse effect on forestry. In the latter case, the owner would of course sustain a loss if he were forced to liquidate on an unfavorable market.

It is because they impose, all at once, a comparatively heavy tax obligation, which may frequently exceed the current income of the forest, that the death taxes are capable both of working hardship upon those who inherit forest property and of interfering with the most economical ownership or management of the forests. Under reasonably moderate rates, this feature of death taxation is capable of correction or mitigation at least, by the simple device of spreading the tax payments over a series of years.

In Great Britain death taxes are based on the value of trees or timber at the time of the death of the owner and need be paid only at the time the timber is cut. If the tax rate is 20 percent, for example, the tax payable each year is 20 percent of the net receipts from stumpage, after deducting for management expenses subsequent to the time of death. As soon as the total receipts from stumpage, before deduction of management expenses, equals the value of the timber for probate, the death-tax obligation is discharged. If the beneficiary dies before that time, the unpaid balance is canceled, the timber is again valued and a new death tax is levied upon the new value. This method of collection was adopted so that the imposition of a death tax would not result in the destruction or overcutting of the forests in order to obtain funds to make payment. The result is the conversion of the death tax into a sort of yield tax.

This plan is well suited to Great Britain, where the forests are generally managed on a sustained-yield basis. As forests in the United States are not now commonly so managed, such a provision for payment of death taxes would cause the death-tax claim to be attached to a great number of forests for many years without any payment. A modification of the British system which would be suitable to conditions in the United States will be proposed in part 12.

After all, death taxes are ordinarily not a very important consideration in a broad view of the American forest tax problem. Death taxes are not levied directly upon most of the old-growth timber nor upon much of the second-growth. Farm wood lots and many small forest tracts are transferred in small estates which enjoy liberal exemptions. Larger timber properties are generally owned by corporations, a class of owners which is not subject to death taxes. The stockholders of the corporations must, of course, pay such taxes, but this fact does not ordinarily influence the management of the property. Even though a stockholder might sell a portion—or even all—of his stock in a forest-owning corporation in order to raise money to pay an inheritance or estate tax, the result would be merely to substitute another stockholder in his place, without any effect on the policy of the company. Only where a corporation was closely held might the situation approach that of the individual proprietorship. If a majority or a controlling part of the capital were owned by one stockholder, whose estate comprised little other wealth, payment of a heavy tax might lead to such sale of stock in the corporation as would deprive the heir of the control and so prevent, for example, the passing of the business on from father to son, or otherwise break the continuity of management.

Another consideration which lessens the importance of death taxes in the whole problem of forest taxation is the fact that a very large estate paying death taxes at the higher rates seldom consists chiefly of forest property or of stock in a forest property. When there is an abundance of other property which might more easily be liquidated than the forests, there is little or no death-tax problem affecting the forest-growing business.

The national committee on inheritance taxation presented to the National Conference on Estate and Inheritance Taxation in 1925 certain conclusions and recommendations regarding death taxes, which being applicable to such taxes on all kinds of property, have more or less bearing upon the business of growing timber. They are pre-

sented in the following paragraphs of this section, together with some comment relating them to the peculiarities of forest property (*220*).

The death-tax rates, according to this committee, should be moderate. It suggests that the sum of Federal and State death taxes should not exceed 15 percent of the value of the property or the whole of the normal income for 3 years. If this suggestion were adopted, together with the suggestion for installment payments, the death taxes on forests might usually be paid within the lifetime of the new owner, even on the largest forest estates, without unduly interfering with the most profitable plan of management.

The minimum and maximum basic inheritance tax rates which were in effect in the various States in 1932 are as follows (*159, pp. 154–155*):

	Percent		Percent
Alabama	(24)	Nebraska	1– 4
Arizona	1–25	Nevada	0
Arkansas	1–40	New Hampshire	5
California	1–12	New Jersey	1–16
Colorado	2–16	New Mexico	1– 5
Connecticut	1– 8	New York	4/5–16
Delaware	1– 5	North Carolina	1–26
Florida	1–20[25]	North Dakota	1– 7
Georgia	4/5–16	Ohio	1– 8
Idaho	1–15	Oklahoma	1–16
Illinois	2–16	Oregon	1–25
Indiana	1–15	Pennsylvania	2–10
Iowa	1–15	Rhode Island	½– 8
Kansas	1–12½	South Carolina	1– 7
Kentucky	1–16	South Dakota	1–20
Louisiana	2– 7	Tennessee	1–10
Maine	1– 7	Texas	1–20
Maryland	5	Utah	3– 5
Massachusetts	1–12	Vermont	1– 5
Michigan	1–15	Virginia	1–15
Minnesota	1–16	Washington	1–12
Mississippi	4/5–16	West Virginia	2–10
Missouri	1–30	Wisconsin	2–30
Montana	1–16	Wyoming	2– 4

It will be seen that only eight of the States have rates which materially exceed the maximum recommended by the national committee on inheritance taxation.

That inheritance tax rates should be substantially uniform throughout the United States is another recommendation of this committee. This condition has now largely been brought about by the provision in the Federal estate tax law allowing a credit for State inheritance taxes paid to the amount of 80 percent of the Federal tax. The majority of the States have provided, usually by adding complimentary estate or succession tax provisions to their basic inheritance taxes, for a minimum State tax equal to 80 percent of the Federal tax. So far as the State tax rates are kept low, so as not to exceed 80 percent of the Federal rates, uniformity is achieved, and the total amount of State and Federal taxes to be paid by the beneficiaries will not depend upon the residence of the testator nor upon the location of his property.

Inheritance tax laws and rates should be stable. If the rates and provisions of a State inheritance tax law are changed in nearly every legislative session, as is now often the case, the law cannot operate

[24] In Alabama, 80 percent of the Federal inheritance tax rate.
[25] Or not to exceed 80 percent of the Federal inheritance tax rate.

justly. The burden of taxes imposed only at death should not be dependent upon an accidental fact, such as the year of death. A person should be able to predict with some degree of accuracy the amount which his estate will have to pay upon his death. This fact is especially true in the case the estate consists of a forest property continuing through several generations of owners.

It is desirable that estate tax laws be substituted for the succession tax laws now in vogue in nearly all of the States. This recommendation is made for the purpose of simplification in administration and to enable States to take full advantage of the credit granted by the Federal estate tax law. If it is desired to make distinction between different classes of beneficiaries, this may be accomplished by providing for exemptions of various amounts depending upon the relationship between beneficiary and testator.

As death taxes are a levy upon capital at progressive rates and are assessed and collected at irregular and unpredictable intervals, the equitable distribution and justice of them cannot be measured by the same scales as used in the case of the property tax and the income tax. Their future effect upon an individual forest property is not reflected in its value, but their effect upon the future of the general business of forest growing can be foreseen. As a matter of public policy, death taxes should be adjusted so that they will not discourage anyone from embarking upon this business.

SEVERANCE TAXES

The term "severance tax" is a collective one embracing several types of tax applied specifically to natural resources, such as minerals, gas, oil, timber, and the like, at the time of their severance from a state of nature. The tax may take the form of a gross-income tax or a net-income tax or a specific tax on the number, quantity, weight, or other measure of the particular class of product being severed. Whatever the form of tax, it will fall into one or the other and sometimes into both of two general categories, namely, those levied in whole or in part in place of the ordinary property tax and those levied in addition to the property tax. Formerly only the first type was of importance. This type came into use as an expedient for getting around the technical difficulties inherent in the assessment of certain classes of property, particularly minerals, and for relieving the local assessors of work for which they were especially unqualified. Thus as early as 1846, Michigan, while it could not abolish entirely the assessment and taxation of iron and copper mines under the property tax, limited the property tax on such wealth to the revenue needs of the local communities and imposed in its place, for all other revenue purposes, a specific tax on the value of the products of such mines. In 1853 this was changed to a tax of so much a ton on the output of coal, iron, and copper mines. From then on many other States with mineral and other natural resources adopted this expedient. In late years however many of these States have abandoned the severance tax and gone back to the property tax, but with expert centralized assessment substituted for the usual local assessment. The legislatures of these States have considered the property tax the fairer and more equitable form of taxation.

The forest-yield tax, so called, belongs to this first type of severance taxes and is elsewhere (part 12) discussed in detail as to its advantages and disadvantages. Accordingly only the second type, namely, those levied in addition to the property tax, needs further attention here.

Severance taxes of this type are regarded as license taxes for the privilege of engaging in the business of extracting or otherwise severing of a natural resource from the ground or inland waters of the State levying the tax. As already noted, however, they may take any one of the several specific forms mentioned. They are usually justified on one or more of the following grounds. Any natural resource is a free gift of nature, not arising from human efforts, and is severable and removable from the tax jurisdiction of the State. Consequently, it is held that the State should share in the returns over and above what is contributed by the ordinary property tax, such share serving to compensate it for the permanent loss from the tax base which the exploitation of such resource effects. Again, because of the fact that the value of such property when taxable under the property tax is progressively depleted, such property does not bear its fair share of the property tax burden. This discrepancy the additional tax tends to offset. A further justification claimed for it is that, following the exploitation of certain natural resources, the land surface is ruined for any subsequent use or is left in such condition that it will be a long time before it can again be rehabilitated and become a productive asset to the community. This situation, it is held, calls for the licensing of such exploitation operations, in the interest of conservation, as a means of controlling the damage so far as possible, and for the charging of a fee to be used in rehabilitating the land afterward.

On the other hand, those who oppose the supertax idea for such resources as minerals, oil, gas, and timber claim that the State should have an equal interest in the fertility of farm land and in safeguarding it against depletion and abuse. Furthermore, it is urged that such resources are no more the heritage of the State in which they happen to be found than they are of other States and of the Nation, and that users of these resources in these other States should not be required to pay tribute to the State where they naturally occur. In answer to the argument based on diminishing value and the disappearance from the State of its natural wealth, it is claimed that a part of the resource at least is converted into other taxable forms of wealth, which continue to be a taxable asset of the State.

While there are several States that levy this kind of severance tax on their natural resources, only two include timber. These are Arkansas and Louisiana. The Louisiana law,[26] as most recently amended (1928), provides for 5 different classes and 2 additional subclasses of timber, classified by species. The rates, per thousand feet cut, range from 7 cents for second-growth pine and black, tupelo, and sap gums to 26 cents for cypress. In addition, turpentine (crude gum) is taxable at the rate of 10 cents per 400 pounds. ("Other forest products" than those specifically mentioned are declared also to be taxable (sec. 1), though no specific rate is provided for any such (sec. 2).) The tax is due and payable quarterly. One-fifth of the

[26] Louisiana session laws, 1922, act 140, as amended 1928.

revenue from the levies on timber, along with those on oil, gas, salt, shell, sand, and gravel, are allocated to the producing counties up to a maximum of $200,000 in any 1 year. The remainder of the revenue goes to the State severance tax fund. The county quotas are distributed to the school districts and other local jurisdictions according to the amount of ad valorem property tax payable to each, as shown by the last complete assessment roll.

The Arkansas tax law followed very closely the Louisiana law in force at the time of its enactment. The Arkansas law, as most recently amended (1929), provides for a flat tax of 7 cents per thousand board feet of timber severed, to be reported and collected quarterly, and for the allocation of two-thirds to the common-school fund of the State and one-third to the producing county, half of the latter to go to the highway funds and half to the common-school funds of the county.[27]

In both States the producer is required to pay the tax in the first instance. If the producer is not the owner he is required and empowered to withhold the amount of the tax from his royalty payment to the owner, whether such payment be in money or in product. Furthermore, the Louisiana law makes the owner of the property from which the resource was severed ultimately liable for any delinquent severance tax. Such delinquent tax becomes a first lien and mortgage on the property.

Whether or not a severance tax may be regarded as justifiable depends on the conditions under which it is applied. In an undeveloped district where the property-tax burden is well under that which property in general is normally called upon to bear, the additional contribution which such property is called upon to make may not be unjust. If the resource is being destructively exploited, the severance tax would appear to be justifiable, even when property-tax rates are normal. No exception seems to be called for in the case of timber, either old growth or second growth, simply because it is a renewable resource. The fact that the forest is being destructively cut means that renewal is not a responsibility of the owner and that, if a fortuitous young growth appears, it will almost inevitably be long delayed and of inferior quality. During the recovery period such a forest will contribute little or nothing in taxes to the support of community functions and may involve the community in heavy protection expenses to keep it from becoming a menace to other property. A severance tax limited to undeveloped districts with low property-tax rates or to resources being operated destructively may therefore be regarded as a just contribution. However, it would generally be difficult in actual tax administration to distinguish between undeveloped and normal districts or between forest properties which were being destructively operated and those which were being converted to forestry use.

A severance tax levied on timber, young or old, forming a part of an organized forestry enterprise would be unwarranted, since none of the reasons usually put forward to justify this form of taxation would apply. The Arkansas law as it now stands is a particular case in point, and also the Louisiana law to only a somewhat less degree. Thus the Arkansas law places an extra tax burden on timber cut from any and all forests—even those under annual sustained-yield manage-

[27] Castle's Annotated Supplement to Arkansas Statutes, secs. 9793a–9793q.

ment. These latter forests, however, occasion none of the detrimental effects to tax revenues and other community interests that would serve to justify a severance tax on destructively operated forests. The Louisiana law likewise burdens all forests alike except forests which are so completely cut over that they are eligible for classification under the reforestation contract law, and by such classification become exempt from property taxes on trees. If the present merchantable forest were cut selectively and left in the best possible condition for conservative forest management, it would contain too much timber to be eligible for classification under the reforestation contract law, and would be subject to both the full property tax and the additional general severance tax.

PART 11. TAXATION OF FORESTS IN NORTHWESTERN EUROPE

CONTENTS

INTRODUCTION

In northwestern Europe forestry has been practiced successfully on private lands for more than a century. Have these countries, where forestry is well established as a permanent land use under private ownership, encountered a forest-tax problem, and if so, how have they solved it?

It has already been shown (pt. 3) that the tax problem that is peculiar to forestry in the United States arises out of the necessity of deferment of income, which is in turn a result of destructive treatment of forests in the past. This problem does not exist where forests have been cut conservatively and so organized as to yield a substantial income annually or at intervals only a few years apart. In general it may be said that the difficulties arising out of the public necessity for regular annual tax revenues which loom so large in the United States at present are avoided to a great extent in the countries where forestry is well established, because in those countries the larger forests yield a more or less regular income and can bear without embarrassment an annual tax on the same basis as other property. The subject of forest taxation in other countries might then be dismissed by the statement that the problem has been solved in those countries, not by tinkering with the tax system but by proper organization of private forests.

While such a summary disposition of the subject is conceivable, it is preferable to consider more carefully the tax situation of forests in some of the countries where private forestry is practiced on a substantial scale. While the difficulties arising from deferment of income from forestry may not be important, other phases of the forest-tax problem may be found. The methods of taxation applied in these countries, while not necessarily appropriate to the American tax system, may offer some suggestions of practical value. The problems encountered, where different from those in this country, may suggest possible difficulties which, if foreseen, may be avoided.

The countries selected for study are chiefly those where forestry is well established with respect to both public and private lands. France, Germany, and Switzerland have long been outstanding countries in the practice of forestry. Great progress has also been made in forestry in Sweden, Norway, and Finland. While her forests are of much less relative importance, Great Britain has been included because her effort to expand forest production since the World War is reflected in certain modifications of the tax system designed to favor private woodlands.

This part presents, for each of the above countries, a very general picture of the tax system and governmental organization as a background, to be followed by a more detailed discussion of the taxes that particularly affect forest properties. Special attention will be given to the valuation of forests for tax purposes. Finally, in most of the countries covered in this investigation, the taxation of typical forest properties selected as examples will be described in some detail as an aid to the understanding of the practical operation of the tax system.

GREAT BRITAIN[28]

GOVERNMENTAL AND TAX STRUCTURE

Government in Great Britain is highly centralized, and the most important forms of taxation are those imposed by the National Government. The receipts of national taxation go to the national exchequer or treasury and are used to maintain interest and other payments on the national debt, to support the military and civil services, and to sustain a large part of local services, such as education, roads, and the relief of the poor. About four-fifths of the total tax revenues are levied by the central government. The treasury receipts from various taxes for Great Britain and Northern Ireland (the United Kingdom) in 1930–31 are shown in table 121 (*231, p. 131*).

TABLE 121.—*Tax receipts of Great Britain and Northern Ireland, 1930–31*

Tax	Receipts	
	Pounds sterling	*Dollars*
Income tax and supertax	328, 900, 000	1, 576, 000, 000
Customs and excise	245, 400, 000	1, 194, 000, 000
Death taxes	82, 600, 000	402, 000, 000
Motor-vehicle taxes	27, 800, 000	135, 000, 000
Stamps	20, 700, 000	101, 000, 000
Other taxes	3, 800, 000	19, 000, 000
Total	704, 200, 000	3, 427, 000, 000

[28] This section, except as otherwise noted, is a condensation of a more detailed report by Wilfred E. Hiley, former lecturer in forest economics, Imperial Forestry Institute, Oxford, England, and a temporary member of the staff of the Forest Taxation Inquiry.

The converting factor used is $4.86656, the 1933 par value of the pound in United States money.[29]

Outside of the above taxes, the national treasury also has a substantial income from the post office, from crown lands, and from miscellaneous sources.

Local taxation is of much less relative importance in Great Britain than in the United States. The receipts provide for local services such as street lighting and sewage disposal and give partial support to education, roads, and relief of the poor. The taxes paid to the local authorities of various kinds are aggregated in what are known as "rates." These rates are levied on an assumed annual or rental value of land and buildings, which is determined from the gross estimated rental of the property by applying specified deductions. The system of rating is founded on traditional usage and is very complex. No attempt will be made to explain the system as a whole, since by the derating act (Local Government Act, 1929) agricultural land and woodlands have been entirely relieved of rates. Industrial properties were, at the same time, relieved of three-quarters of their appropriate rates, so that rates have come to be almost exclusively a tax on dwelling houses and lots. The local authorities are reimbursed by the national treasury for the revenue lost by derating.

A minor local tax applicable to farms and some woodlands is the "tithe." Tithes were originally a tenth part of agricultural produce paid in kind for the upkeep of the church. By the Tithe Commutation Act, 1836, and the Tithe Act, 1925, these contributions were commuted to a fixed money payment. This tax has become burdensome on account of the severe agricultural depression, and the farmers are now (1933) resisting its collection and agitating for its abolition (*229*). Woodlands pay tithes only if the land was cultivated in 1836 and has since been planted.

It is evident, then, that since derating has been accomplished local taxation does not weigh heavily on forest land. National taxation affects woodlands chiefly through the income tax, including the surtax, and through the death taxes.

THE ECONOMIC IMPORTANCE OF FORESTS

Great Britain is a very sparsely wooded country and is dependent on foreign sources for all but one-twentieth of the timber and wood which she consumes. The woodlands are just under 3,000,000 acres in extent and constitute only 5.3 percent of the total land area, a smaller portion than in any other country of Europe. The trees planted in hedgerows and pastures give the landscape a wooded appearance, but contribute little to timber production.

The existing forests are in part the result of planting operations. The most extensive of these operations which have been carried out on private estates were directed to the afforestation of areas in the Scottish Highlands. Plantings in that region were made on a substantial scale in the seventeenth and eighteenth centuries (*234, p. 12*). These Scottish plantations were mostly formed of European softwoods to which the climate and soil are well adapted, whereas contemporaneous English plantations were chiefly made with oak and

[29] This par value is, of course, based on the gold content of the American dollar prior to devaluation and the official gold content of the British pound.

other hardwoods, largely as standards over hazel coppice (*238*). It is now difficult to distinguish woods which have been planted at some time or other from untreated areas. It is probable that very little woodland is left in which planting has not had its part.

The area and distribution of woodlands by categories in England, Wales, and Scotland are shown in table 122. From this table it will be seen that nearly half (47.9 percent) of the woodland is composed of high forest and 17.9 percent of coppice or coppice with standards. "Felled or devastated" amounts to about half a million acres (16.1 percent), most of which was cut during, or immediately after, the World War. Altogether, the area of unproductive woodland, which includes "felled or devastated", "scrub", and "uneconomic", amounts to over a million acres (34.2 percent).

TABLE 122.—*Distribution of woodlands in Great Britain, by categories, 1924*[1]

Category	England	Wales	Scotland	Total	
Economic or potentially productive forest:	*Acres*	*Acres*	*Acres*	*Acres*	*Percent*
Conifers	195, 231	46, 940	429, 470	671, 641	22. 7
Hardwoods	338, 456	43, 957	60, 941	443, 354	15. 0
Mixed conifers and hardwoods	220, 390	22, 106	59, 199	301, 695	10. 2
Total high forest	754, 077	113, 003	549, 610	1, 416, 690	47. 9
Coppice and coppice-with-standards	495, 229	35, 331	8, 120	538, 680	17. 9
Scrub	87, 410	34, 534	206, 569	330, 513	11. 2
Felled or devastated	194, 742	62, 132	221, 132	478, 106	16. 1
Uneconomic (including ornamental woods and shelter belts)	109, 529	8, 611	86, 758	204, 298	6. 9
Total	1, 630, 987	253, 401	1, 074, 224	2, 968, 672	100. 0
Total land area	32, 037, 243	5, 098, 762	19, 060, 728	56, 206, 733	
	Percent	*Percent*	*Percent*	*Percent*	
Ratio of woodland to total land area	5. 1	5. 0	5. 6	5. 3	

[1] Source of data: From (*232, table II and appendix 3 (a)*)

The woodlands are fairly evenly distributed, the more heavily forested regions being the southeast of England (Kent, Surrey, Sussex, Hants) with 12.2 percent of woodland and the northeast of Scotland (Kincardine, Aberdeen, Banff, Elgin, Nairn) with 11.8 percent of woodland.

Of the total area of woodlands shown in table 122, approximately 2,706,000 acres[36] were in private ownership in 1924. The present area of woodlands (1933) has been increased by planting, but, as the new plantings are chiefly in public ownership, the area in private hands is substantially the same. The current annual production of British woodlands was estimated in 1924 at about 56,000,000 cubic feet, valued at a little over £2,000,000 ($9,700,000) (*232, table III (a)*).

It is evident that forests are not normally of great economic importance in Great Britain and are not a large element in the taxable wealth. The public interest in maintaining these forests and increasing their area arises partly from their importance in time of war when normal sources of supply may be very expensive or entirely cut off.

[36] Computed from total area of woodland as given for 1924 in the Forestry Commission Report on Census of Woodlands (published in 1928) (*232, table III (a)*), with deductions for area of publicly owned woodlands as estimated by Hiley from data in official reports and other sources.

TAXES THAT AFFECT FOREST PROPERTY

INCOME TAX[1]

The income tax has the largest yield of any single tax in the British system of taxation. In the main it is a tax on the incomes of individuals, for nearly 90 percent of the total actual income of £2,520,000,000 ($12,260,000,000) assessed for taxation in 1929–30 was distributed among individuals resident in the United Kingdom. This income tax paid by resident individuals is a graduated tax, that is, the real effective rate of tax levied on each pound of actual total income rises gradually from a fraction of a penny in the pound until, including the surtax, it closely approaches a maximum rate of 13s. 4d. in the pound, or 66⅔ percent. Income tax paid by individuals is thus one tax on the total income of the individual, and not a series of taxes on the separate sources of his income. It is imposed in terms of a "standard rate" (5s. in the pound or 25 percent for the year 1931–32) for a "year of assessment" (from Apr. 6 in one calendar year to Apr. 5 in the following year), and there are also higher rates applicable to individuals whose total incomes exceed £2,000 per annum, the difference between the tax at the standard rate and the tax at the appropriate higher rates being the surtax applicable to the individual concerned.

The peculiar distinction of the British income tax is collection at the source. Whenever it is possible to do so, the tax is obtained by deducting it before the income reaches the person to whom it belongs. Wherever possible the formal assessment is laid, normally at the standard rate of tax, on each source of income by itself and on persons who are debtors in respect of income belonging to other persons. Power is given to the payers of income to deduct the appropriate tax (normally at the standard rate) from the payments made to the ultimate proprietors of that income. For example, instead of tax being collected directly from the various persons who may be interested in the rents arising from lands or buildings which are let, it is normally assessed on, and recovered from, the occupier of the property, who deducts it from the rent paid to his landlord. The landlord in turn, if the property is encumbered with a mortgage or subject to a ground rent, may deduct the appropriate tax from the payments of those charges.

As indicated above, graduation of the income tax is provided for by means of certain allowances and deductions, which brings the tax on small incomes to rates much lower than the standard of 5s. in the pound or 25 percent, and by the surtax on total incomes exceeding £2,000. The surtax is imposed on the total income as computed for income-tax purposes for the year of assessment, and is so imposed as a deferred installment on income for that year, payable on January 1 of the year following the year of assessment. The scale of surtax rates for portions of income in force for the year 1930–31 is based on the following schedules, increased by 10 percent in accordance with the Finance Act No. 2, 1931:

	s/d		s/d
£2,000–£2,500	1/0	£8,000–£10,000	5/0
£2,500–£3,000	1/3	£10,000–£15,000	5/6
£3,000–£4,000	2/0	£15,000–£20,000	6/0
£4,000–£5,000	3/0	£20,000–£30,000	6/6
£5,000–£6,000	3/6	£30,000–£50,000	7/0
£6,000–£8,000	4/0	£50,000	7/6

[1] The description of the general aspects of the British income-tax system under this heading is condensed from a report of the League of Nations (*388, pp. 167–181*).

The above scale expressed in dollars and percentages is as follows:

	Percent		Percent
$9,700–$12,200	5. 0	$38,900–$48,700	25. 0
$12,200–$14,600	6. 2½	$48,700–$73,000	27. 5
$14,600–$19,500	10. 0	$73,000–$97,300	30. 0
$19,500–$24,300	15. 0	$97,300–$146,000	32. 5
$24,300–$29,200	17. 5	$146,000–$243,300	35. 0
$29,200–$38,900	20. 0	$243,300	37. 5

The tax is based upon a division of income into five classes or "schedules", called A, B, C, D, and E. The law does not attempt a general covering definition of income but defines the income that falls under each of these five divisions. The five schedules and their general scope are:

A.—Income from the ownership of lands, houses, etc.
B.—Income from the occupation of lands.
C.—Income from Government securities, when such income is taxed by deduction at the source.
D.—Income from trades, professions, and vocations; foreign securities and possessions; interest and miscellaneous items of income.
E.—Income from employments.

The actual income in respect of which tax is charged for any year of assessment may, but commonly does not, represent the actual income received by the taxpayer in the year. This arises from the fact that the income tax acts provide a variety of rules for the assessment of different classes of income under the five schedules. The schedules which concern forest lands are A, B, and D.

Schedule A relates to income derived from ownership of land as distinct from occupancy. It includes the annual or rental value of all land, houses, buildings, and the like. Broadly speaking, annual value of land and buildings means the rent at which the property is let or is worth to be let by the year, the tenant bearing the usual tenant's rates and taxes, and the landlord bearing the cost of repairs and other customary charges. Annual value for the purpose of schedule A throughout Great Britain is determined every 5 years, and the value thus fixed is continued, subject to the qualifications stated below, during the intervening years. A new assessment, begun in 1930–31, came into force for the year of assessment 1931–32. The annual value fixed at the periodic date is subject to increase in the case of structural alterations to a property, and new properties are brought into assessment at their appropriate annual values. Reductions of annual value are made, on proof that the annual value has diminished.

The annual value determined in the manner described constitutes the gross assessment. From this gross assessment of annual value there is deducted, in order to arrive at the net assessment, certain statutory allowances or deductions for repairs, maintenance, and the like.

Schedule B relates to the occupation of land as distinct from ownership. The amount of taxable income under this schedule is made on a conventional basis, which assumes that the profits arising bear a relation to the annual value of the land occupied. From the years 1922–23 onwards, the profits have been assumed to be equal to the annual value of the land in the case of lands used mainly or solely for husbandry. In the case of other lands, including woodlands, the income is assumed to be one-third of the annual value. The device

of a conventional assumed income makes it possible to assess farmers who fail to keep adequate accounts. However, a farmer occupying lands used only or mainly for husbandry may obtain a reduction from the conventional assessment to the actual profits of the year, if these are less than the amount of the assessment, or he may elect to be assessed under schedule D. The profits from woodlands are normally brought into assessment under schedule B.

Schedule D is the principal schedule of the income tax, and relates to business and professional incomes and miscellaneous items. Income charged under this schedule is normally computed for the purpose of assessment on the actual income of the preceding years. It applies to woodlands only when the taxpayer elects this schedule in place of schedule B, as explained later.

The application of the income tax to forest lands involves the determination of income in two parts. That arising out of ownership is reported under schedule A, and that arising out of occupancy, normally under schedule B, and exceptionally under schedule D. Since the incomes under schedules A and B are determined by conventional rules, forest owners, like other landowners, are generally taxed not on the actual income but on an imaginary income, which need bear no relation to the actual income. Under the system of landlord and tenant under which most agricultural land is held in Great Britian, there is ample experience on which to base assessments of rental values of crop and pasture lands. Woodlands, however, are almost invariably retained and managed by the owner, so that there is insufficient experience on which to determine rents. In practice this rental value is determined by tradition and usage.

The range of annual values at which woodlands are actually assessed is very wide. There is at least one area, probably a small area of ornamental woodland where an appeal has not been considered justified, that has been assessed at an annual value as high as £2 ($9.70) per acre. At the same time areas which border on moorland or useless waste have been assessed as low as 2½d. ($0.05) and 4d. ($0.08) per acre. On 57 areas purchased or leased by the forestry commission, the original assessments averaged 3s. 1d. ($0.75) per acre. On appeal these assessments were revised by assessment committees and reduced to an average rate of 1s. 9d. ($0.43) per acre (*230, pp. 10, 90, 92*). These assessments probably refer chiefly to bare land which is being afforested and not to existing woodlands. Particulars as to assessments were obtained from the chief inspector of taxes for two areas in the south of England. One of these areas is located in Somerset, Dorset, and Wiltshire and includes 15,032 acres of woodland with a range of annual values from 2s. ($0.49) to £2 ($9.70) and an average value of 5s. 6d. ($1.34). The other is in Hampshire and includes 32,687 acres with a range of annual values from 1s. 6d. ($0.36) to £1 10s. ($7.30) and an average value of 3s. 6d. ($0.85). The average quality of these areas is undoubtedly far superior to those of the forestry commission cited above, but the average assessment is probably higher than it should be, since it would appear that some of the owners were too ignorant or too indolent to secure a just assessment.

The annual value of sporting rights, if any, should be included in the assessment under schedule A. When the annual value includes sporting rights no clear differentiation is made between the value of these rights and other values, but in a general way the annual value

of sporting rights on areas which are suitably wooded may be assessed at about 2s. 6d. ($0.61) and the annual value of the woodland at about 2s. ($0.49) per acre.

As indicated before, the schedule A assessment is subject to a statutory allowance for repairs. This allowance in the case of woodlands is one-eighth of the assessment. In special cases deductions are also allowed for the cost of maintenance of sea walls and embankments against tidal rivers and for drainage rates charged by a public assessment to meet the cost of draining farm land or embanking land liable to flooding. A landowner may claim an additional deduction of an amount by which the actual cost of maintenance, repairs, insurance, and management, according to the average of the preceding 5 years, has exceeded the statutory allowance for repairs. The amount of the tithe paid on account of a woodland subject to this charge may also be deducted from the schedule A assessment before computing the tax.

Under schedule B agricultural lands and woodlands are taxed in respect to the income from occupation, which, as stated above, is assumed to be one-third of the annual rental value before deductions as assessed for the purposes of schedule A. When woodlands are managed on a commercial basis, an allowance of one-sixth in respect of earned income, subject to a maximum allowance of £250, may be made.

An example of an actual assessment under schedules A and B follows:

Area, 406,378 acres.

	£	s.	d.	£	s.	d.
Schedule A:						
Gross assessment of annual value				145	0	0
Deduct one-eighth for statutory allowance for repairs	18	0	0			
Less tithes	34	0	0			
				52	0	0
Net assessment				93	0	0
Schedule B:						
One-third of gross assessment for schedule A				48	5	0
Total				141	5	0

Instead of having the income from woodlands assessed in the conventional manner under schedule B, landowners may elect (under Finance Act No. 2, 1915, and subsequent amendments) to make a return of the actual income, in which case they are assessed under schedule D (profits from businesses, professions, etc.). In order to obtain this privilege, proof has to be supplied that the woodlands are being managed on a commercial basis with a view to the realization of profits.

This option confers a great benefit on those owners who engage in planting, for the following reasons:

In the first place, the costs of making and keeping up plantations need not be treated as capital, but are allowed as current expenses in the management of woodlands. These costs include the schedule A net assessment as equivalent to rent.

Secondly, for the purposes of this option woodlands which are being currently planted or replanted or which have been planted or replanted since July 19, 1916, may be treated as woodlands on a separate estate. Thus those woodlands on which a loss is necessarily incurred

may be assessed under schedule D, while those woodlands from which a profit is obtained are assessed under schedule B.

Finally, if a loss is incurred with respect to woodlands under schedule D, the income tax and surtax may be recovered on a corresponding amount of income on which tax has been paid.

Thus an owner who has an income of £60,000 ($292,000) a year would pay income tax and surtax at the rate of 12s. 6d. in the pound (62.5 percent) on the last £10,000 ($48,700) of income. If he spends £1,000 ($4,870) in planting up an area of land, he can obtain a return of income tax and surtax amounting to £625 ($3,040) and the net cost of the plantation is only £375 ($1,830). He may at the same time be drawing income from other woodlands on which he pays tax under schedule B on an amount far below the actual income.

Once an owner has elected to be taxed under schedule D in respect of any area of woodland, he must continue to be taxed under this schedule so long as he remains in occupation, and he must pay tax on the actual net receipts from thinnings and other fellings. But when a change occurs in the occupation of the woodlands, as by sale or bequest, the new occupier is at liberty to be assessed under either schedule B or schedule D.[32] By electing to be assessed under schedule B, a new occupier can receive the proceeds from felling and pay tax on one-third of the annual value which will represent a very small sum in proportion to the actual income.

Inquiries have elicited the information that, presumably through ignorance, a great many owners who are making plantations fail to take advantage of remissions that may be obtained under schedule D. Others have made the mistake of placing the whole of their woodlands under schedule D. No figures are available of the total area assessed under the 2 schedules, but in the 2 areas previously cited the proportion of woodland assessed under schedule D was:

Area (1) 1,830 out of 15,032 acres, or 12.2 percent.

Area (2) 1,989 out of 32,687 acres, or 6.1 percent.

DEATH TAXES

Death taxes are chargeable to the capital value of an estate when it passes by inheritance; they comprise what are known as the "estate duty", "succession duty", and "legacy duty."

Estate duty, or the estate tax, is levied on the market value of all property, real or personal, settled and free, passing at death. Stocks and shares are valued at the market price at date of death or, if they are not quoted, at a valuation based on local inquiries. Real property and such personal property as furniture and money in the bank or house are valued by professional appraisers or, if the estate is large, by the valuation department of the inland revenue. The basis of valuation is the price obtainable in the open market if sold at the time of death in the most advantageous manner. The last provision has been so interpreted that agricultural estates have been valued as if subdivided into lots. It has been claimed that in certain cases this method has resulted in overvaluing the estate as a whole.

The rates of estate duty provided in the Finance Act of 1930 are steeply graduated from 1 percent on the whole value of estates

[32] As this point was not quite clear, the forestry commission addressed a letter (Nov. 3, 1920) on the subject to the board of inland revenue. Under date of Dec. 15, 1920, the board of inland revenue replied "if there is a change in the occupation of woodlands, either on the owner's death or on a sale of the woodlands, the new occupier will be at liberty to elect to be assessed to income tax either under schedule B or schedule D."

between £100 ($490) and £500 ($2,430) in value to 50 percent on the whole value of estates of over £2,000,000 ($9,700,000).

There are certain statutory reliefs and exemptions from the estate duty, only a few of which particularly concern forest property. All agricultural lands, including woodlands, are taxable according to the 1919 schedule of rates, which is somewhat less onerous than the schedule of 1930. This relief applies only to the value of the land and not to that of the timber. Reductions in the taxes levied, varying from 50 to 10 percent, are allowed when a second death causes the property to pass by inheritance within 1 to 5 years of the first death. There are also special concessions to woodlands, which will be explained later.

Succession duty is payable by the successor on the value to him of property derived from a predecessor. It is in general charged only on real property and leaseholds. The rates of this succession tax depend not on the amount of the succession but on the relationship of the successor to the predecessor. The husband or wife, children and their lineal descendants, including the husband or wife of any such person, and the father or mother or any lineal ancestor pay a rate of 1 percent. Brothers and sisters and their descendants and the husband or wife of any such person pay a rate of 5 percent. Other relatives and strangers pay a rate of 10 percent. Succession duty is liable to exemptions and concessions similar to those granted for estate duty.

Legacy duty is a duty similar to succession duty but imposed on the legatee on succession to personal property. The rates of legacy duty are the same as those of succession duty cited above.

Death duties weigh very heavily on agricultural estates, for the money income which such estates yield is low in comparison with the capital value for which they may be sold. Also overvaluation by inventory methods which do not take adequate account of the value of the property as a whole may be a factor in making these taxes burdensome.

In regard to timber on an estate, several special concessions are allowed. The value of the timber is not included in calculating the total value of an estate for the purpose of determining the rate. Thus if an estate is entirely agricultural and is valued at £105,000, and if £40,000 of this value resides in the trees and timber, then death duties are payable at the appropriate rate for an estate of £65,000 (12 percent) and not at the rate for £105,000, which would have been 14 percent. Death duty is paid on the value of the timber at the rate assessed for the remainder of the estate, but only if and when the timber is cut. The timber is valued at the time of death; and as timber is subsequently cut duty will be paid, at the rate due, on the net receipts from each sale after deducting necessary expenses since the time of death. These deductions are very important, since the owner may deduct from the principal not only the costs of selling the timber and management in the interim but the cost of replanting if the area is replanted. If in the course of time duty is paid on an amount equal to the valuation of the timber at time of death, then liability to duty ceases. For example, if the timber is valued for probate at £10,000, and the successor has to pay 20 percent in estate and succession duty, his total liability is £2,000. If he cuts £1,000 worth of timber each year and replants the land, then the duties will be paid off in 10 years, but instead of paying £2,000 he will pay 20 percent

on an amount which equals £10,000 less the cost of selling, management, and replanting.

Also if the amount of the estate taxes has not been paid off by the date of the next death, then all liability ceases and the new owner is responsible only for the duty incurred at this subsequent death.

Underwood (coppice) is not liable for death duty.

TAXATION OF SAMPLE FORESTS

The actual operation of the tax system in Great Britain as applied to forest lands may be better understood by considering in detail the taxation of some sample properties containing woodland.

PROPERTY NO. 1

Description

This property is a ducal estate in southwest England, which includes 2,000 acres of woodland on good soil. This woodland is favorably situated with regard to markets, especially for materials which are used in coal mines. It is very well managed.

The nature of the woodlands of this property is as follows:

	Acres
Coniferous plantations:	
0–10 years	249
11–20 years	38
21–40 years	100
Over 40 years	66
Total	453
Hardwood plantations:	
0–10 years	9
Over 10 years	13
Total	22
Coppice under standards (hardwoods): 40–200 years	1,366
Cleared areas	159
Total	2,000

Management

The management of the woodlands is very intensive as regards the quarter which is classified under plantations. Over 40 acres are now planted annually, and this area is increasing in value each year. The area under coppice with standards is being gradually converted to young plantations and the cut in this class of woods is probably about equal in volume to the growth. There is thus a certain capital increment which should be added to income, but its amount is uncertain.

Capital Value

The capital value of woodlands of this nature is difficult to determine, but if merchantable timber is assessed at its current stumpage value on the assumption that it can all be cut in 1 year, and immature stands are evaluated on a compound-interest curve associating their original cost with their expected future value, the growing stock is probably worth rather more than £100,000. The land is valued at £5 per acre, or a total of £10,000.

Income and Expenditure

The income and expenditure during 3 successive years are shown in table 123. The large net income obtained in the year 1927–28 was secured at the expense of capital in order to help pay off death duties; but the net incomes in the 2 subsequent years, about £2,600 per annum, probably allow of a small capital appreciation. To this annual net income should be added the value of the shooting rights (which are retained by the owner), which computed at 2s. 6d. per acre per annum amount to £250 per annum. This brings the total net income up to £2,850.

Table 123.—*Statement of income and expenses for years 1927–28 to 1929–30 on sample property no. 1* [1]

Item	1927–28			1928–29			1929–30		
Income:									
Sale of timber:	£	s.	d.	£	s.	d.	£	s.	d.
Conifers	4,449	7	5	1,787	12	10	1,915	13	1
Hardwoods	2,304	14	11	1,032	11	4	1,411	0	9
Firewood and tops	251	8	4	267	2	7	383	14	11
Underwood	110	3	6	79	17	9	95	19	7
Thinnings	199	13	10	399	15	2	400	3	8
Nursery plants	27	7	7		15	0	0	0	0
Forestry commission grant	0	0	0	69	0	0	62	18	0
Compensation repaid	0	0	0	6	14	8	12	10	9
Total	7,342	15	7	3,643	9	4	4,282	0	9
Expenses:									
Maintenance of roads, fences, etc	162	10	3	226	16	0	187	16	2
Nursery work and plants	306	15	4	134	2	5	208	11	7
Planting	388	19	6	505	8	1	559	19	4
Felling	98	9	10	48	5	6	47	13	11
Haulage	52	14	1	0	0	0	125	19	4
Marking and measuring	70	5	6	56	8	10	55	10	8
Trimming shrubs	27	19	0	48	6	0	56	14	7
Clearing windfalls	0	0	0	0	0	0	78	5	0
Part of forester's salary	112	3	2	171	11	3	168	6	7
Tools and stationery	5	8	1	12	19	8	23	16	6
Total	1,225	4	9	1,203	17	9	1,512	13	8
Net income	6,117	10	10	2,439	11	7	2,769	7	1

[1] Source of data: Statement by the agent of the property.

The item "trimming shrubs", which appears as a cost in this account, should not strictly be debited to the forestry account for, though the forestry staff does the work, the money is spent in the interest of village improvement. Clearing windfalls in 1929–30 means clearing hedgerow elms, which had fallen across the roads. This cost is balanced by the sale of elm timber, which realized £88 7s. 6d. and is included in the other side of the account.

Taxes

The assessment for income tax and the amount of taxes paid in the fiscal year 1929–30 was determined as follows:

	£	s.	d.
Schedule A:			
Gross assessment of annual value	525	0	0
(The annual value varies from wood to wood, but averages 5s. 3d. per acre, including 2s. 6d. for sporting rights.)			
Deduct one-eighth for statutory allowance	65	15	0
Net assessment	459	5	0
Schedule B:			
One-third of gross assessment for schedule A	175	0	0
Total taxable income from woodlands from schedules A and B	634	5	0
Amount of income tax due at 4s. to the pound	126	17	0

The amount of the net assessment shown in schedule A might have been reduced by the amount of tithes, £10 9s. 7d., paid in respect to these woodlands. By an oversight this had been neglected.

A statement of the total income tax, rates, and tithes paid on woodlands, without regard to surtax or tax recovered under the maintenance claim, is given in table 124. The amount of the income tax differs slightly from the amount shown in the above tabulation. This is due to a few acres of additional woodland having been bought and a few acres having been let to the forestry commission:

TABLE 124.—*Income tax, rates, and tithes paid on woodlands of sample property No. 1, without regard to supertax or tax recovered under maintenance claim*[1]

Year	Income tax			Local rates			Tithes			Total		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
1927–28	127	7	0	285	6	5	10	9	7	423	3	0
1928–29	127	5	0	274	19	9	10	9	7	412	14	4
1929–30	127	1	0	(2)			10	9	7	137	10	7

[1] Source of data: Statement by the agent of the property.
[2] Derated.

The tax recovered for the year 1929–30 under the maintenance claim is based on the items listed below:

	£	s.	d.
1. Maintenance of young plantations, fencing, draining, and roads	18	9	2
2. Maintenance of old plantations, fencing, gates, drains, and roads	187	5	11
3. Stationery	0	4	0
4. Half cost of purchase and upkeep of tools	11	16	3
5. Trimming shrubs in village	56	14	8
6. Clearing windfalls	78	5	0
7. Proportion of forester's salary	60	0	0
Total	412	15	0

The above list is that which was accepted for the year in question, though it includes certain items which appear to be not strictly allowable. Items 1, 2, and 4 are certainly occupier's costs and not landlord's costs and should have no place in the maintenance claim; items 5 and 6 are costs which, though incurred outside the woodlands, are legitimate; item 7 is however of doubtful legitimacy.

The amount of £65 15s. 0d. has already been deducted from the annual value, being the statutory allowance for repairs. It thus appears that income tax and surtax can be recovered on the difference between £412 15s. 0d. and £65 15s. 0d., which is £347. Item 6 of the maintenance claim is, however, an unusual cost, which was due to an almost unprecedented gale in January 1930. It has been seen in the statement of income and expenses that the item did not occur as a cost in other years. If this is deducted, the amount of £347 is reduced to about £269. The net amount on which tax is ultimately paid may therefore be assessed at £634 5s. less £269 or £365 5s. This is little more than 12 percent of the actual income from the woodlands.

The total amount of taxes paid on the income from these woodlands of course includes surtaxes, which depend on the total assessable income of the owner, a sum which was not disclosed. If his income were £10,000 a year, the amount of income tax and surtax paid on the woodlands would have been about £110 (about £128 in the year

1930–31). If his income were £50,000 a year, the amount of tax paid would have been about £130 (£150 in 1930–31).

The actual assessment of the woodlands for local taxation was not obtained. In general this assessment is approximately equal to the gross annual value under schedule A, and was no doubt in this case about £525. The actual amount of the local taxes paid in 1927–28 and 1928–29 have been given, and these would represent a rate of about 11s. in the pound on the annual value (55 percent) which is rather less than the average for England, which was 12s. 3¼d. (61 percent) in 1926–27. Since April 1, 1929, these rates are no longer payable on the land.

The tax situation of the forested portion of this sample estate will now be summarized. These woodlands, which are 2,000 acres in extent and have a capital value of about £110,000 ($535,000), bring in a net annual income, before taxes and without allowance for the agent's salary, of about £2,850 ($13,900) per annum. For purposes of income tax, this income is assessed at £634 ($3,090) and when tax has been paid on this, a part, amounting to the tax on £269 ($1,310) can be recovered under the terms of the maintenance claim. Thus income tax and surtax are ultimately payable on £365 ($1,780). The rate of tax payable on this income depends on the total wealth of the owner. If his income were £10,000 ($48,700) a year, the rate (for income tax and surtax) would be about 6s. in the pound or 30 percent (about 7s. or 35 percent in 1930–31). At this rate he would have paid about £110 ($535) (£128 or $623 in 1930–31). If his income were £50,000 ($243,000) a year, the rate would be 8s. 10d. in the pound or 44 percent (10s. 3d. or 51 percent in 1930–31). At this rate he would have paid about £161 or $784 (£186 or $905 in 1930–31).

These are the amounts of tax assessed under schedules A and B. The estate does not take advantage of the benefits obtainable under schedule D.

Until 1929 local rates were a much heavier tax on the woodlands than national taxation, and the amount of this tax was about £280 ($1,360) a year. Owing to derating, this is no longer payable. It is possible that shooting rights will be rated in the future, in which case the rate on such rights would probably amount to about half the old rate on woodlands.

This property also affords an example of the operation of the laws governing death taxes with respect to forest land. The late owner died in 1923 and was succeeded by a distant relative. The total value of realty and personalty (including stocks and shares) was rather over £600,000 ($2,920,000) apart from the value of timber. Realty was £350,000 ($1,700,000). The death taxes payable were, therefore, estate duty, 27 percent, and succession duty, 10 percent. The total amount to be paid was about £220,000 ($1,070,000) apart from the duty on the timber. This was met by sale of stocks, shares, and a small property distant from the mansion, and by raising a mortgage of about £50,000 ($243,000).

The standing trees and timber were valued for probate at £65,000 ($316,000) on which the taxes would amount to £24,000 or $117,000, but these taxes are paid on timber only as and when it is sold. Timber to this value will probably not be sold in the lifetime of the present owner, in which case the total amount of these taxes will never become

due. Estate and succession duty, therefore, operate as a kind of yield tax on the proceeds of the timber felled; in this case 37 percent of the net proceeds from the sale of timber is paid in this form of tax.

These taxes are payable on the net income received from timber after deducting all necessary expenses since the death of the deceased, and therefore deductions may be made for management of the areas felled from the time of death, cost of advertising sale of timber, cost of felling if the timber is felled by the estate staff, and the cost of replanting. This last allowance is very important. Interest at 4 percent per annum is charged for the period between the receipt of income by the estate and payment of taxes to the inland revenue.

The net value of timber felled and sold between the death of the previous owner and 1930 was £22,037 ($107,244), on which estate and succession duty with interest amounted to £8,497 ($41,351). Standing timber to the value of £2,003 ($9,748) was also disposed of on an outlying part of the property which was sold. Though this timber was not felled, estate duty amounting to £541 ($2,633) had to be paid on it.

PROPERTY NO. 2

Description

This property is located in the south of England and includes 2,579 acres of woodland. It is mostly situated on marginal agricultural land, and the forest quality of the soils on which the woods are growing is moderate to good. The present owner is a wealthy man and, as the woods had been largely devastated by previous owners, his object of management has been to build up the capital value of the property rather than to obtain an annual income.

The nature of the woodlands of this property is as follows:

	Acres
High forest:	
Plantations (mostly coniferous):	
1–10 years	91
11–20 years	182
21–40 years	185
Total	458
Old stands	2,077
Coppice	44
Total	2,579

The high forest is of poor quality, and most of the value resides in the plantations, which are not yet ripe for felling. There is no local market for mine timber as on sample property no. 1.

The estate possesses a sawmill and a creosoting plant, which are used principally for manufacturing estate requisites.

No assessment of the capital value has been made, but it probably lies between £60,000 and £100,000 including the land.

Income and Expenditures

The income and expenditures during 4 successive years are as shown in table 125. The figures in this table do not take account of the value of certain saw timber used on the property. It is estimated that, if these figures had been available, an average annual net income of about £500 would have been shown.

TABLE 125.—*Statement of income and expenses for years 1925–26 to 1928–29 for sample property no. 2* [1]

Item	1925–26	1926–27	1927–28	1928–29
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Income:				
Timber	643 19 6	328 3 7	396 7 10	1,573 13 6
Firewood	626 7 0	606 15 7	491 15 8	386 12 11
Posts and rails	165 12 4	134 11 4	261 8 2	243 10 0
Nursery	118 8 9	270 12 10	68 15 2	2 16 0
Pea sticks	5 7 4	8 17 0	19 9 6	16 10 6
Sundries	21 13 6	41 19 5	31 2 6	30 17 0
Wood and timber supplied to repairs department	498 9 5	329 13 7	474 1 3	400 4 0
Labor repaid	123 0 2	168 1 4	221 2 6	275 10 9
Horse sold	25 0 0	0 0 0	0 0 0	0 0 0
Sporting values	159 0 0	159 0 0	159 0 0	159 0 0
Total	2,386 18 0	2,047 14 8	2,123 2 7	3,088 14 8
Expenses:				
Labor	1,716 18 10	1,733 1 9	1,894 5 9	2,168 19 4
Work done and supplies by other departments	186 9 3	172 9 1	340 14 3	286 8 7
Goods purchased	231 14 8	237 3 1	126 1 9	125 9 11
Tithes	46 14 0	46 14 0	46 14 0	46 14 0
Total	2,181 16 9	2,189 7 11	2,407 15 9	2,627 11 10
Net income	205 1 3	−141 13 3	−284 13 2	461 2 10

[1] Source of data: Statement by the agent of the property.

The income tax was calculated in accordance with the following assessment:

	£ s. d.	£ s. d.
Schedule A:		
Gross assessment of annual value (average 6s. 8d. per acre)		935 4 0
Deduct:		
One-eighth for statutory allowance for repairs	117 0 0	
Tithes	46 14 0	
Land tax	6 4 0	
Total		169 18 0
Net assessment		765 6 0
Schedule B:		
One-third of gross assessment for schedule A		311 15 0
Total		1,077 1 0

TAXES

The above woodlands lie in 6 different parishes, and the gross annual value per acre ranges in the different parishes from 3s. 10d. to 9s. The land tax referred to under schedule A is a small and semi-obsolete national tax, which varies from 1d. to 1s. in the pound (0.4 to 5 percent) on the annual value of land and buildings. In most parishes it has been redeemed, and on this estate it is payable in only 2 of the 6 parishes.

Income tax has been paid on £1,077 at 4s. in the pound (20 percent). The tax is thus £215 8s. 0d. Surtax has no doubt been paid at the then existing maximum rate of 6s. in the pound (30 percent), which would amount to £323 2s. 0d., making a total of £538 10s. 0d. For the year 1930–31 the amounts paid were increased to £242 0s. 0d. and £403 4s. 0d., making a total of £645 4s. 0d. If allowance is made for the various deductions that are allowed on income tax and the increments of surtax, these amounts would be reduced by between one-twentieth and one-tenth.

No maintenance claim is made for woodlands, as it is deemed that this would not amount to more than the one-eighth statutory allowance for repairs.

Table 126 is a comparative statement of the amount of local taxes or rates for the year ending September 30, 1930, showing amount of rates actually paid and the amount that would have been paid had derating (elimination of local rates or taxes on farm and woodlands) not come into force. The ratable value previous to derating was in each parish rather less than the gross annual income for income tax. The continuance of the payment of rates is presumably due to the assessment of sporting rights.

TABLE 126.—*Effect of derating on local taxes on property no. 2* [1]

Parish	Present ratable value	Rate in pound	Rates actually paid	Ratable value previous to derating	Rate in pound	Amount of rates that would have been paid	Amount of saving to property due to derating
	£ s. d.	s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.
Ampfield	24 0 0	8 3	9 18 0	153 1 0	8 3	63 2 8	53 4 8
Farley Chamberlne	47 0 0	8 4	19 11 8	49 17 6	8 4	20 15 8	1 4 0
Hursley	63 0 0	8 ½	25 6 8	320 14 0	8 ½	128 18 11	103 12 3
King's Somborne				105 10 0	11 0	58 0 6	58 0 6
Michelmersh	25 0 0	10 9	13 8 9	40 0 0	10 9	21 10 0	8 1 3
Sparsholt				154 0 0	9 11	76 7 2	76 7 2
Total	159 0 0		68 5 1	823 2 6		368 14 11	300 9 10

[1] Source of data: Statement by the agent of the property.

To summarize the situation of the forested portion of this property with reference to taxes, the woodlands, which extend to 2,579 acres, have a capital value of £60,000 ($292,000) to £100,000 ($487,000). The net income is impossible to determine accurately, because the profits from the sawmill are unknown, but it probably amounts to about £500 ($2,430) per annum before paying taxes.

The amount paid in taxes was about £500 ($2,430) to the National treasury (£600 or $2,920 in 1930–31) and £365 ($1,780) in local rates, which last amount was reduced to £68 ($331) by the derating act (Local Government Act), 1929.

Thus the amount of the taxes still exceeds the net income; before 1929 taxes exceeded the net income by 70 percent.

The capital appreciation of the woodlands owing to growth probably approaches £1,000 ($4,870) a year.

Very considerable savings in taxation might have been obtained by electing to have the young plantations assessed under schedule D in place of schedule B.

PROPERTY NO. 3

This is a small estate in Oxfordshire owned by a wealthy woman and managed with great regard for aesthetic values. The woodlands are 327 acres in extent, of which 85 acres are plantations of less than 30 years. The old woodlands are as essed under schedule B and the young plantations (63 acres) under schedule D. There is an overlap of about 16 acres which are taxed under schedule B and schedule D, an anomaly to be corrected in the next reassessment.

The income taxes on these woodlands are assessed as follows:

	£	s.	d.
Schedule A:			
Gross assessment of annual value on 327 acres at 3s. 2d. per acre	52	0	0
Deduct:			
One-eighth for statutory allowance for repairs	6	10	0
Tithes	10	0	0
Total	16	10	0
Net assessment	35	10	0
Schedule B:			
One-third of gross assessment for schedule A	17	0	0
Total	52	10	0

The maintenance claim for the estate as a whole is so large that all the schedule A tax for the whole estate (including the woodlands) is recovered. This means that, as owner, the proprietor derives no income from the estate and consequently pays no tax.

Sixty-three acres of young plantations are taxed under schedule D. Tax under schedule A is also payable, but as the schedule A net assessment may be inserted as one of the costs, i. e., as the rent paid to the owner, it is easier to omit it on both sides of the combined account of schedules A and D. As owner she pays tax on the rent. As occupier she recovers tax on the rent as a cost. About 12 acres of land are planted every other year. On these young plantations there is necessarily a loss when the expense of establishment is charged off annually as allowed under schedule D. This loss for the year 1929–30 was as follows:

	£	s.	d.
Cost of planting 13 acres	104	0	0
Deduct forestry commission grant	19	10	0
Total	84	10	0
Cost of managing remaining area	81	0	0
Total	165	10	0

In 1928–29 there was no planting and consequently no forestry commission grant. The cost of management was £42 9s. 9d. Thus under schedule D tax is recovered on about £100 per annum (the average of 2 years, £165 and £42).

So far as local taxes are concerned, the woods have now been derated. Before 1929 rates were paid at about 9s. 6d. in the pound on a ratable value of 4s. per acre, including sporting rights. The amount paid annually was about £31.

To summarize, tax is paid under schedule A on £35 10s. 0d. ($173), and this tax is recovered under the maintenance claim. Tax is paid under schedule B on £17 0s. 0d. ($83). Under schedule D tax is recovered on about £100 ($490). Thus the amount of the taxes on the entire estate is less than it would be if the woodlands were subtracted from the estate. No account of actual income and expenditure on the woodlands on the estate was obtained, but it is probable that they are run at a loss. Nevertheless considerable net income could be earned on the woodlands assessed under schedule B without altering the assessment or computation of taxes. This estate is an interesting example of the extent to which the British tax system may favor forestry.

A GROUP OF PROPERTIES

About 14,000 acres of woodlands in the south of England are managed by a firm of land agents. Figures were supplied showing the assessment for 4,173 acres belonging to eight different owners. On this area the average gross assessment for schedule A was just over 4s. ($0.97) per acre, including sporting rights. However, excluding the sporting rights on 1,013 acres when these rights were separately assessed, the total gross assessment amounted to £729 ($3,548). Deducting one-eighth for the statutory allowance for repairs and £69 ($336) for tithes, the net assessment would appear to be £569 ($2,769). It was returned, however, at £583 ($2,837). The schedule B assessment was £254 ($1,236), and the total amount of income tax paid (under schedules A and B at 4s. in the pound or 20 percent) was £167 ($813). On no estate was the maintenance claim sufficiently large to secure any repayment of income tax under schedule A.

Two other areas were assessed under schedule D in place of schedule B. In respect of one of them, an area of 117 acres forming part of a woodland estate of 374 acres, income tax and surtax had been recovered on an average annual amount of £238 ($1,158), based on 3 successive years, that being the average net expenditure on the area. The other area comprised the whole woodland section of an estate and was 572 acres in extent. It would have been better if only the young plantations had been put under schedule D and the old woods left under schedule B, but the previous agent had elected to assess the whole under schedule D so that no change could be made during the tenure of the present occupier. In respect to these 572 acres of woodland, income tax and surtax had been recovered on an average annual amount for 3 successive years of £228 ($1,110). Tax was paid under schedule A on each of these areas, the net assessment being £56 ($273) in the first case and £188 ($915) in the second.

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

The British income tax and surtax are extremely favorable to the practice of forestry. A holder of forest land, as owner, is obliged to include in his taxable income the rental value of such land, whether any income is actually realized or not. However, as occupier, he is normally assessed under schedule B, which means that he is allowed to declare a conventional income fixed by rule in place of the actual income, and the conventional income in the case of old timber may be much smaller than the actual. As occupier, the forest-land owner is allowed to claim assessment under schedule D instead of schedule B. As previously explained, schedule D is a form for the declaration of the actual profits from businesses, professions, and miscellaneous sources, and in order to qualify for this privilege precise accounts must be kept and woodlands must be managed for commercial purposes. This choice operates greatly to the advantage of a woodland occupier, for two reasons. (1) He is allowed to make a return on the plantations made since 1916 in an account separate from the remainder of the woodlands, so that the old woods from which a substantial income can be obtained are taxed on a small conventional income under schedule B, whereas the young plantations are taxed on the actual income they yield under schedule D. (2) If the young plantations show a loss, as they always do when the costs are all treated for tax

purposes as current expense, this loss can be claimed as a reduction in the income of the owner, who thereby escapes taxation on a corresponding amount of his income from other sources. The costs of making a plantation thus go to swell a deficit, on the amount of which income tax and surtax are returned. Therefore a wealthy owner, who pays in taxes 66 percent of any amount of income over £50,000 ($240,000) a year, may recover from the inland revenue 66 percent of the cost of making or maintaining young plantations by using this cost to reduce his taxable income. Once an occupier has put any piece of woodland under schedule D, he must keep it there, but his successor, either after a sale or his death, can elect to put it under schedule B. Thus, if plantations are not felled within the lifetime of their maker, the income which they ultimately yield need not be taxed except under schedules A and B. The value of the timber cut in 1 year may be £100 ($490) per acre, but the owner is taxed as though his annual income were about 5s. ($1.22) a year. Under such circumstances a high rate of taxation provides a subsidy on the making of plantations, and there are some owners who are increasing their annual plantings as a result of the rise in income tax and surtax in 1930.

The high rates of the death taxes imposed in Great Britain have doubtless caused estate owners to cut mature timber in order to secure the cash with which to meet their obligations. This tendency to cut timber to meet death taxes is discouraged by the provision that both estate and succession taxes on timber value need not be paid until the timber is cut and sold. Even when the mature timber is cut, there is every incentive to replant. There is a direct governmental bounty in the form of forestry commission grants in aid of planting which will defray a part of the cost, in addition to the substantial income tax benefits from listing young plantations under schedule D.

These concessions in favor of woodland owners were granted partly on the ground that trees were a national inheritance which owners should not be penalized for preserving. Similar concessions had previously been granted to owners of valuable pictures and books. Parliament was also influenced by the view that the recurrent imposition of death taxes would greatly aggravate the economic difficulties of forest management, and the concessions in respect to these taxes were intended to encourage good forestry.

FRANCE

GOVERNMENTAL AND TAX STRUCTURE

The French Government is highly centralized and permits of little local variation in governmental and tax structure. The most important taxes are those levied by the National Government, and these will be discussed first, following which there will be a discussion of local taxation.

NATIONAL TAXATION

The yield from national taxes and the net revenues from government monopolies are shown in table 127, which also indicates the relative importance of each principal source of income. It is evident that the income and related taxes contribute the largest share of the revenue.

TABLE 127.—*Income from National taxes and Government monopolies, France,*[1] *1927*

Nature of tax	Millions of francs	Thousands of dollars
Direct taxes:		
Income and related taxes	12,873	504,300
"Assimilated" taxes (chiefly the war-profits tax)	804	31,500
Indirect taxes:		
Registration taxes on transfers of title	6,112	239,400
Stamp taxes	2,270	88,900
Customs	2,618	102,600
Turn-over tax	8,605	337,100
Other indirect taxes	8,222	322,100
Gambling taxes	253	9,900
Monopolies:		
Tobacco	1,643	64,400
Matches	72	2,800
Powder	67	2,600
Posts, telegraph, and telephone	304	11,900

[1] The revenue figures are of 1927 except tobacco which is of 1925, matches of 1923, powder of 1926, and posts, telegraph, and telephone, and gambling taxes of 1924. Sources of data: Column 2, from (*243, pp. 318–363*); column 3, by computation. As elsewhere in this and in the following sections, French francs are converted to dollars on the basis of the par value (1933) of the franc in gold dollars—1 franc equals $0.039175.

SCHEDULAR INCOME TAXES

In France, as in Great Britain, the income-tax law recognizes different schedules for income from sources of different kinds. But, whereas in Great Britain the schedules are used solely for the classification and method of assessment of different types of income, the rate being levied on the total of the assessment so determined, the French schedules are governed by separate and particular laws, and the rates, as well as the abatements and exemptions, are different for the different schedules. The French system of taxing income is thus compounded from many separate tax methods.

The various classes of income tax are given below, with individual descriptions condensed from those in a recent report of the League of Nations (*233, pp. 59–71, 97–100*):

Tax on income from buildings (la contribution foncière des propriétés bâties).

Tax on income from lands (la contribution foncière des propriétés non bâties).

Tax on income from intangible personal property (l'impôt sur le revenu des capitaux mobiliers).

Proportional charge on mines (la redevance proportionnelle des mines).

Tax on industrial and commercial profits (l'impôt sur les bénéfices industriels et commerciaux).

Tax on agricultural profits (l'impôt sur les bénéfices de l'exploitation agricole).

Tax on salaries, wages, pensions, and annuities (l'impôt sur les traitements, salaires, pensions, et rentes viagères).

Tax on profits from noncommercial occupations (l'impôt sur les bénéfices des professions non commerciales).

TAX ON INCOME FROM BUILDINGS AND LANDS

The taxable income derived from real property is assessed by the tax administration (administration des contributions directes).

In the case of buildings with the lands which they occupy (propriétés bâties), including also uncultivated lands used for commercial and industrial purposes, the assessment is based on the information given in the lease. If the property is not leased, the income is calculated on the basis of the income derived from properties of the same kind and the same size which are leased. If neither of these two methods of assessment is applicable, the taxable income is deter-

mined directly on the basis of a suitable rate of interest on the market value of the property.

In the case of other lands (propriétés non bâties) the taxable income is assessed according to a tariff based on the kind of crop and its class, every kind of crop being divisible into several classes according to the fertility of the soil.

The assessments thus made are in principle reviewed every 10 years in the case of buildings, and every 20 years in the case of lands. During the interval between revisions they remain unchanged.

The rate of the national tax is 16 percent of the taxable income from both buildings and lands.

TAX ON INCOME FROM INTANGIBLE PERSONAL PROPERTY

The tax on income from intangible personal property comprises the tax on income from securities (valeurs mobilières) and the tax on income from loans, deposits, and cash-security (créances, dépôts, et cautionnements).

The tax on income from transferable securities is imposed on (1) the income from capital invested in companies in the form of shares or other holdings; (2) the income from capital loaned to companies and public corporations; and (3) the emoluments of directors of companies with share capital. As a general rule, this tax is deducted at the source; companies and corporations must pay it in advance and recover from the recipients of the income.

The tax on income from debts, deposits, and cash security is levied upon all income from personal property which is not liable to the tax on income from transferable securities. It is not deducted at the source, but must be paid personally by the recipient of the income.

The regular rate on all of these classes of personal property income is 16 percent, with a somewhat higher rate applicable to director's fees, income from certain foreign securities, and bond-lottery winnings.

PROPORTIONAL CHARGE ON MINES

The proportional charge on mines is a tax payable on profits from the operation of mining concessions located in France.

In the case of French corporations liable for the tax on income from transferable securities which work mines only in France and whose principal object is the working of those mines, the taxable profits are, as a rule, fixed arbitrarily (forfaitairement) at the amount declared for distribution during the year previous to the year of the tax in dividends or any other form of payment—in other words, at a figure equal to that taken for the assessment of the tax on income from securities payable by the corporations on behalf of the recipients.

In the case of other mining concerns (whether operated by a private person or a corporation), the taxable net profit is the difference between the income actually received during the year previous to the year of the tax and the expenditures during the same year, that income including not only the proceeds of the sale of minerals extracted and sold, but also the value of the quantity consumed by the concern.

The rate of this tax is 25 percent.

TAX ON INDUSTRIAL AND COMMERCIAL PROFITS

The tax on industrial and commercial profits is payable only on the profits made on industrial or commercial enterprises operated in France.

The rate of this tax is progressive, being calculated from a schedule beginning with a total tax of 22.5 francs for a profit of 800 francs or less, 45 francs for a profit of 801 to 1,500 francs, and continuing progressively to 50,000 francs. Above 50,000 francs the total amount of the tax is 15 percent of the profit, any fraction of the latter under 1,000 francs being neglected.

TAX ON AGRICULTURAL PROFITS

The tax on agricultural profits is imposed on the income derived from the working of land by tenant farmers, or by the owners themselves over and above the income the owners would derive from their properties if they merely leased them.

As a general rule, the tax is based on a profit which is calculated arbitrarily at five-fourths of the income in respect of which the land is assessed for the land tax. In the case of arable land, the arbitrary agricultural profit is equal to 150 percent of the rental value of the land.

Before the tax rate is applied, every taxpayer is entitled to deduct from his taxable profit 500 francs for his wife, for every member of his family working and living with him, and for every dependent relative. The tax is payable only on the amount by which the taxable profit, less the above deductions, exceeds 2,500 francs. Further, for the purpose of assessment, that portion of the profit which comes between 2,500 and 4,000 francs is reckoned at a quarter of its value, and that portion which comes between 4,000 and 8,000 francs is reckoned at half its value. The rate of tax is 12 percent.

TAX ON SALARIES, ALLOWANCES AND EMOLUMENTS, WAGES, PENSIONS, AND ANNUITIES

The tax on salaries, allowances and emoluments, wages, pensions, and annuities is assessed at the taxpayer's place of domicile and is paid annually on the salaries, allowances, etc., received during the previous year.

As a general rule, the tax is assessed on the basis of the particulars (names and addresses of recipients of taxable income and amount of such income) supplied to the administration by employers, heads of enterprises, and persons responsible for the payment of pensions or annuities.

The rate of the tax is 10 percent, but there is an exemption of 10,000 francs, in addition to deductions for wife, children, and dependent relatives. Also, amounts below 40,000 francs are subject to fractional deductions.

TAX ON PROFITS FROM NONCOMMERCIAL OCCUPATIONS

The profits subject to this tax include income from the liberal professions (medicine, law, public functions, offices, etc.), professional income other than that derived from industry, trade, agriculture, public functions, and private employments, and, generally speaking, profit from any remunerative occupation or operations not subject to any other schedular tax. The tax on profits from noncommercial occupations is assessed at the place where the occupation is carried on, and according to the circumstances existing on January 1.

In principle the tax is assessed every year on the net profits for the previous year. In the case, however, of literary, scientific, and artistic work, the income from which is not received annually, the taxable profit may, at the taxpayer's request, be assessed by deducting from the average income for the last 5 years the average expenditure for the same years. Taxpayers who adopt this method of assessment for any 1 year cannot, however, change the plan in subsequent years.

The rate of the tax is 12 percent, but there is an exemption of 10,000 francs, and amounts below 40,000 francs are subject to fractional deductions.

General Income Tax

In addition to the schedular income taxes enumerated above, the national taxes include a general income tax (impôt général sur le revenu) which is an essentially personal tax levied on the total income of the taxpayer from all sources. The rates of this tax are progressive.

A landowner may pay this tax either on the schedular incomes assessed on the estimated basis for the land tax or on his actual income. In the former case he is allowed a reduction of 25 percent for expenses on income from real estate; in the latter he can deduct his actual management costs, including the direct and "assimilated" taxes.

The fraction of the income which, after the deduction of certain allowances for personal status and for family expenses, exceeds the sum of 10,000 francs is taxed. The current (1933) tax rates applicable to taxable income vary from 1.33 percent for the fraction of this income which does not exceed 20,000 francs to 33.33 percent for the fraction of the income which exceeds 550,000 francs (*159, p. 89*).

Registration Taxes on Transfers

Outside of income taxes, the most important national taxes from the viewpoint of forestry are the registration taxes on transfers. Taxes of this nature are listed in table 128 with the receipts from each in 1926. It will be noted that the two most important of these taxes are the transfer taxes on sales of real property and the inheritance taxes.

Table 128.—*Revenue from registration taxes, France, 1926* [1]

Item	Millions of francs	Thousands of dollars
Transfers:		
On a valuable consideration:		
Personal property:		
Securities	983	38,500
Personal debts, annuities, State offices (créances, rentes, prix d'office)	16	600
Businesses (fonds de commerce)	280	11,000
Material, furniture, etc. (meubles corporels)	139	5,500
Real property and rights to real property	1,871	73,300
Free:		
Between living persons (donations)	162	6,300
Resulting from death (successions)	1,653	64,800
Nontransferable property (taxe representative du droit d'accroissement)	2	100
Other contracts and civil and administrative documents	871	34,100
Judicial and extrajudicial documents	93	3,600
Mortgages	89	3,500
Tax on capital insured by fire insurance companies	20	800
Fines	43	1,700
Miscellaneous receipts	18	700
Total	6,240	244,500

[1] Sources of data: Column 2, from (*243, p. 340*); column 3, by computation.

The registration tax on the transfer of real property is payable on all transfers made for a valuable consideration, since registration is compulsory. The base of the tax is the price at which the sale was effected, but if there is reason to think that this price is below the market value, the value at date of sale as determined by expert appraisal may be used instead of the sale price. The rate of this tax (1933) is 12 percent (*159, p. 92*).

Inheritance taxes are levied at rates which are progressive as regards the size of the estate and which vary according to categories of beneficiaries, special reductions being allowed for children so as to favor large families. The current (1933) rates are thus graduated from 1 percent to 56.4 percent.

Gifts, if legally attested, are taxed at complicated rates, varying (1933) from 3 percent to 48 percent according to the amount and degree of relationship between the donor and recipient. In practice this tax is levied chiefly on marriage settlements and other contractual engagements.

The taxes on transfers of other kinds are very numerous and complicated; as they have little bearing on the taxation of forests, explanation of their details will not be attempted.

Turn-over Tax

The turn-over tax (taxe speciale sur le chiffre d'affaires) is a tax on sales and brings in about one-fifth of the revenues of all national taxes. It consists of three different levies as follows (*243, pp. 346–347*): (1) A 2-percent levy on gross receipts from all commercial sales and all imports. Of this levy 0.1 percent goes to the Departments and communes, and 1.9 percent to the National Government. (2) A 2-percent levy on gross commissions, interest, and other proceeds from commercial services. The proceeds of this levy are distributed as in the case of the levy on gross receipts from sales. (3) A special luxury tax, varying from 4 percent to 13 percent, on sales of certain products.

The 2-percent tax on gross commercial receipts has thus nothing whatever to do with the profit or loss of the business, although deduction of turn-over tax paid is allowed in calculating net income subject to the income tax. The tax is almost universal so far as commercial transactions are concerned; the only exemptions comprising necessary food products and certain other articles, such as coffee, tea, sugar, meat, coal, and fertilizers, which are already sufficiently burdened by special taxes.

LOCAL TAXATION

The governmental subdivisions which are empowered to levy taxes are the 90 Provinces or Departments (departements) and the 38,004 communes (communes).[33] In addition small levies are also made by various official or semiofficial bodies such as chambers of commerce, hospitals, and other institutions to cover certain of their expenses which are considered to be for public purposes.

The Department is essentially an administrative subdivision of the National Government. The commune is the principal unit of local government. The finances of both Departments and communes

[33] The number of communes varies from time to time; that given is reported for the year 1931, see (*240*).

are closely related to those of the National Government. A rough idea of the relationship may be obtained by outlining the existing method of supporting the more important governmental functions.

Schools

Schools are supported chiefly by the National Government and by the communes, with some assistance from the Departments. The teachers are generally paid by the National Government. The school buildings, lodgings for teachers, furniture, and the like, are furnished by the communes for the primary schools and by the Departments for the normal schools. Secondary schools in the larger towns are supported by the National Government.

Roads

Roads are supported by the National Government, the Departments, and the communes, but chiefly by the first two. The national highways (routes nationales) are supported by the National Government. The regional highways (chemins des grandes communications et routes departementaux) are supported by Departments. Local roads (chemins vicinaux) are supported by the communes, but they receive substantial subventions for this purpose from the Departments. The National Government also gives subventions for road purposes to the Departments and communes. For the rest, the communes obtain the necessary funds themselves from their own taxes, namely, the taxe vicinale and the taxe des prestations.

Railroads

The main railroad systems are supported by the National Government. One railroad system is Government owned; the others are all privately owned but revert to the Government eventually. The Departments own small local railways and tramways. Some of the communes also own tramways. There are, in addition, some departmental and communal autobus lines.

Other Departmental Functions

The Departments are also concerned with relief of the poor and the sick, child welfare and protection, care of pregnant women and old people, free medical assistance in hospitals, and care of the insane. They also have charge of the prisons, the police, and the courts; they furnish buildings for the police.

Other Communal Functions

Poor relief and other charity services are furnished also by the communes, although the chief expense is borne by the Departments, assisted by the National Government. (A project is now being considered to relieve the communes of all this expense.) The communes have no police or prisons or courts, except in the large cities and towns, and here part of this expense is borne by the cities and part by the National Government. All other strictly local services are rendered by the communes.

Departmental and Communal Taxes

As indicated by the preceding outline of the methods used in supporting governmental functions, the local tax system in France is exceedingly complicated. It is not within the scope of this report to describe in detail the taxes for departmental, communal, and other local purposes.[34] An important part of the local revenue is from the centimes additionnels which are taxes levied upon a basis originally established for national tax purposes. There are subventions and grants from the National treasury to the Departments and communes, substantial payments from the communes to the Departments, and small payments to the National treasury from both Departments and communes.

The most important taxes imposed both by the Departments and communes are the centimes additionnels and the fonds communs.

The centimes additionnels are in effect taxes on local real estate assessed on a rental basis, and upon local business assessed according to rules based on external factors. They were originally levied as a supplement to the apportioned tax which in earlier times was levied by the National Government. When this apportioned tax was abandoned in favor of the present proportional income taxes, the Departments and communes continued to use the last applied national tax as a base for the centimes additionnels, the amount of this tax being termed the principal fictif. The principal fictif for improved property thus dates from 1890, with modifications from time to time when new lands are brought into cultivation and new buildings constructed and old ones destroyed. The apportioned tax on unimproved property was retained by the National Government much longer, so the principal fictif for this class of property dates from 1914. Changes in the principal fictif for unimproved property are very rare. The departmental and communal centimes additionnels are thus levied on the principal fictif for each property. The number of the centimes additionnnels is calculated so as to produce the revenue required by each Department and each commune.

There are great variations in the rates of the centimes additionnels among the Departments and communes. Some small communes have nothing to collect, obtaining sufficient revenue to meet their needs from other sources, sometimes from communal forests. The average rate is about 15 percent of the principal fictif.

The fonds communs constitute another important source of tax revenue for the Departments and are also shared by the communes. These revenues are shares of the turn-over tax and of certain other taxes imposed by the National Government.

The communal revenues, amounting to more than double the sum of the Department revenues, are drawn in part from the above-mentioned taxes and in part from numerous other sources. The latter includes the taxe vicinale, the taxe des prestations, octrois, and miscellaneous fees.

The taxe vicinale, as indicated before, is a tax raised for the support of local roads. This is a supplement to the centimes additionnels and is levied on the same base. The taxe des prestations is a tax on cattle, horses, etc., and is an alternative to the taxe vicinale. Where the landowners are in political control, it is usually used for the support

[34] For detailed information as to local taxation in France refer to Haig (*243, pp. 364–394*).

of local roads in place of the taxe vicinale. Octrois are local consumption taxes generally levied on produce which enters towns. This form of taxation is being rapidly abandoned, and less than 3 percent of the total number of communes employ it. The Paris levy now accounts for more than half the octroi collections in France. Miscellaneous municipal fees include market fees, parking fees, sanitation fees, and the like.

THE ECONOMIC IMPORTANCE OF THE FORESTS

The forests of France are one of the most important resources of that country. They occupy nearly one-fifth of the total land area, or an area of a little more than 10 million hectares (25 million acres). The National Government owns 1.4 million hectares (3.5 million acres), the communes and public institutions (établissments publics) own 2.4 million hectares (5.9 million acres), and private owners 6.4 million hectares (15.8 million acres). A large part of the communal and institutional forests are managed under Government supervision. The private forests are held mostly in small tracts; 1½ million owners possess each less than 10 hectares (25 acres) of forest. About 700,000 workmen out of a total population of about 41 million are normally employed in forest and sawmill operations (*244, pp. 363, 473; 240, p. 852*).

The economic importance of forestry has long been recognized by the French Government. The Forest Ordinance of 1669, which was prepared by Colbert in the reign of Louis XIV, was by far the most progressive measure of its time and antedated by more than a century any far-reaching attempts in other countries to control the public and private forests. It formed the basis of the Code forestier which is still operative. The ordinance was never put into full effect, and in the eighteenth century and during and after the Revolution very considerable deforestation occurred, until in 1850 the forest area reached a minimum of 8.8 million hectares, or 16.5 percent of the area of France. After 1850 the area of woodlands was increased by afforestation, and by 1908 it reached about its present extent. Since the war there have been heavy fellings, as private owners have been anxious to realize capital from their woodlands, but there has been very little decrease in forest area.

French forestry is notable for the contributions it has made to the development of forests for protective purposes. Not only has an area of over 700,000 hectares of sand dunes and similar land been planted in the Landes, but large extents of mountain slopes have been afforested in order to prevent erosion.

TAXES THAT AFFECT FOREST PROPERTY

LAND TAXES

The tax levied by the National Government on unimproved property (la contribution foncière des propriétés non bâties) is a tax on the income from land. As already explained, it is levied not on the actual income, but on an estimate of the annual income which land of the particular quality and location should be capable of yielding. These estimates are made very infrequently, so that improvement or deterioration may not be reflected in the tax status for many years. This lag naturally favors the improvement of agricultural and forest land.

The estimate of the annual income from land for tax purposes is intended to reflect the rental value (valeur locative). This rental value includes only the income which the owner may derive from his land if he merely leases it. The income derived from the manual or directing work of the operator and from the investment of working capital represented by agricultural implements, cattle, working capital necessary for current operations, and the like, is not taken into account in the assessment of the land tax but is subject to the tax on agricultural profits. Thus a landowner who merely leases his land is liable only for the land tax, and the tenant farmer is liable only for the tax on agricultural profits. The forest-land owner is, as a rule, both owner and operator, but in practice he is not subject to the tax on agricultural profits unless he has an income from resin or bark.

A revision of assessments for land taxation is now under way, but the current taxes levied by the National Government are based on the last general revaluation authorized in 1907 and carried out in the years 1908–12. (Law of Dec. 31, 1907, art. 3.) In most of the communes the maps on which this revaluation was based go back to the early part of the nineteenth century, though in some communes the maps were brought up to date in 1850. These maps (plans cadastral) are supplemented by a list (état des sections) showing the names of owners of the parcels at the time the map was made with the rental value of each parcel, and by an index of owners (matrice cadastrale), which is kept up to date.

The law of March 29, 1914, sanctioned the valuations of 1909–12 and laid down the principle that these valuations would be kept up to date through a continual process of revision, taking the communes successively in such a manner that the lands in any one commune would be revalued every 20 years and the buildings every 10 years. This plan was not carried out because of the intervention of the World War. The change in the level of rental values because of the inflation of the franc following the war was so great that a revaluation could not be made equitably in this manner, for the taxpayers in the communes to be revalued last would have too great an advantage over those residing where the new values would have become effective many years earlier. A general revaluation to be effective throughout the country at the same date was called for by the new conditions and was authorized in 1924. It was found impracticable to make this revaluation in a satisfactory manner in time to meet the fiscal requirements, and therefore the old valuations were increased by 75 percent, and the rate of the tax was raised to 18 percent. Effective beginning 1931 the increase in valuation was reduced to 50 percent and the rate of the tax reduced to 16 percent. While the current (1933) rate of 16 percent appears high in comparison with the rate of 4 percent which was in effect in 1914, it is evident that in view of the low base, the proportion of actual income taken by the land tax is likely to be low. Relative to the annual property tax in the United States, it is indeed very low, even including the local land taxes (centimes additionnels and taxe vicinale) levied by the Departments and communes.

It has been explained before that these local taxes are levied on an obsolete base known as the principal fictif. It is contemplated that they will be levied on the basis of the new revaluation now being made when that becomes effective.

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The land taxes are not generally regarded as burdensome to forest lands. The chief difficulties have been in connection with the assessment of the tax base. The forest owners complain that the methods used in the valuation now in force made under instructions issued in 1909 are not entirely fair to forest property, and they are endeavoring to get these methods corrected in the revaluation which is now being made and which is to be completed in 1935.

Instructions for the valuation of forest land[35] require that the average income from forest properties should be deduced from their actual product in typical cases by the following method: Each kind of forest in a commune should be classified separately, and a scale of rental values corresponding to each such classification established. These values should be based on representative sales of timber, from which the yield in money should be obtained for a given class of forest at the end of the usual rotation. This yield should be divided by the number of years in the rotation to obtain the gross annual income. The costs of maintenance, administration, protection, and restocking should be deducted from the gross income to obtain the average net income. The result should be increased, when appropriate, by the net income from other resources such as resin, bark, and various fruits. The practice has been to omit income from resin and bark in determining taxable income from the land, but to tax this income under a different schedule as agricultural profits (bénéfices de l'exploitation agricoles).

The instructions also provide that neither income from hunting rights nor damages caused by game should be considered as affecting the taxable value of forests which are under normal management for the production of timber crops. Only in the case of forests under special management as hunting and pleasure grounds should the value of hunting rights be included. The net rental value of hunting rights should be determined in accordance with the price at which the same or similar rights are leased, with reduction for costs of game protection and maintenance and for damages to the crops caused by game.

The above method of valuation is best applicable to simple sprout or coppice forests (tailles simple) managed on a short rotation for fuel wood, a very common type among the private forests of France. It is not so well adapted to forests managed in whole or in part for the production of larger trees or high forest (futaie), where longer rotations are required. The instructions provide that high forests of hardwoods should be valued as if they were simple coppice forests of the same species and that forests of resinous species which do not sprout should be valued by comparison with other kinds of forests which do regenerate by sprouting, taking into consideration the relative fertility of the soil. These instructions were so difficult to apply in practice that the taxable income was ordinarily taken as the actual income from the forests over the period of the rotation, divided by the number of years in the rotation, reduced by the amount of the average annual expenses.

The chief objections to the existing valuation made under the above instructions, aside from the fact that it is now entirely out of date,

[35] Instruction ministerielle de 31 Décembre 1908, art. 26 (*245, p. 153*). This document was sanctioned by the law of Mar. 20, 1914, art. 2.

are that the classification was somewhat faulty owing to inadequate provision for expert assistance in making it, and that the method disregards the interest on expenses incurred in advance of income and thus penalizes all forests, especially those which are managed on a long rotation for large timber, in comparison with types of culture which yield annual income. As many of the privately owned forests are too small to handle on an annual sustained-yield basis, this method of valuation is especially burdensome to the owners of small tracts of woodland used for growing saw timber.

It is expected that steps will be taken in the valuation now under way to meet the above objections. Provision has been made (*241*) for advisory commissions in each department, these commissions to include forest owners designated by the local chamber of commerce. So far the operation of these commissions is not regarded as entirely satisfactory, partly because of a tendency of the commissions to give perfunctory approval to the work of the finance administration (*244, p. 476*). An effort is being made to bring about more effective cooperation between the finance officers and the forest owners. So far (1933) the valuation work has not gone beyond the point of bringing up to date the cadastral maps and classifying the lands. Schedules of rental values have not yet been set up. The associations of forest owners are pressing for recognition of the periodic character of the income from a given parcel of forest land and the calculation of the annual income by a method which takes account of compound interest on expenses incurred in advance of income. The tax administration (administration des contributions directes) has promised to submit a bill providing for this method of valuation for the approval of the parliament (*244, p. 447*).

Certain exemptions are allowed from the land tax in favor of reforestation. If a new forest is established by planting or sowing on land which has been cleared, an exemption of three-fourths of the tax is allowed for the first 30 years. If the forest is established in certain specified situations where the public interest in forestry is greatest, as on mountain summits or upper slopes or on sand dunes, complete exemption is allowed for the first 30 years. These exemptions have been interpreted by the finance ministry to apply only to forests established on land which has been cleared and not to forests which have been replanted pursuant to the normal regeneration procedure. However, in a recent case (1930) the owner has obtained on appeal a court judgment awarding him the exemption in the case of replanting with resinous trees after clear cutting, but in this case the land had remained idle for several years before the replanting was undertaken (*239, p. 198*).

Exemption from the land tax is also allowed in respect to property which has been reseeded or replanted to trees after a forest fire (art. 9 of the law of Mar. 26, 1924). The period of the exemption is equal to the age of the stand which was burned, except that it must not exceed 20 years. This exemption does not apply to a forest property which has restocked naturally after a fire, but in that case the loss of income on account of the fire may be allowed for by remission of the tax pertaining to the burned timber (art. 37 of the law of Sept. 15, 1807) (*238, p. 635*).

GENERAL INCOME TAX

The general income tax (impôt general sur le revenu) does not affect forest property specifically, for, as previously explained, it is a personal tax and may take a low, moderate, or high proportion of the income from a forest according to the circumstances of the owner. This tax corresponds to the surtax on individuals under the Federal income tax of the United States, except that capital gains resulting from sales of properties which have appreciated since acquisition are not as a rule subject to the French income tax.

REGISTRATION TAXES AND TRANSFERS

The taxes which have been most burdensome to forestry in recent years—those most complained of by the forest interests—are the taxes on transfers of real estate between living persons and on inheritances.

If a forest or part of a forest is sold or transferred as a gift, the transfer taxes place a premium on the cutting of the timber. If the forest is to be maintained and only the increase cut, it must be transferred intact as real estate and a tax must be paid on the value of the entire forest at the high rates applicable to real estate transfers, at least 12 percent. If, on the other hand, the forest is to be destructively cut, the high rate of tax may be paid on the land value only, and a relatively low rate on the timber value, since the timber in that case can be transferred as personal property separately from the land. Therefore, when a forest is put on the market, the wood merchant or real estate agent who counts on destroying the forest has, on account of this difference in tax rates, an initial advantage in the bidding over anyone who is interested in acquiring such a forest for the purpose of maintaining it in a productive condition. All that is necessary to obtain this advantage is to arrange the transfer so that the purchase of the right to cut the timber will appear as a separate transaction from the purchase of the land.

In the case of inheritance taxes there is no distinction between real and personal property and therefore no direct premium on cutting. However, the high rates encourage overcutting or destruction of forested estates because of the difficulties experienced by the heirs in realizing the sums with which to pay the inheritance taxes. When the heirs are forced to liquidate, they are likely to find the high bidders to be the merchants who buy for destructive cutting.

The above-described situation was improved somewhat by a recent law (finance law of Apr. 16, 1930, art. 15), which relieved forests of three-fourths of the transfer tax on sales and gifts of real estate on condition that the purchaser or recipient submit the forest or woodland transferred for 30 years to a system of normal operation to be determined by decree, subject, in case of infraction, to a penalty equal to one and one-half times the reduction in tax. The forest service (l'administration des eaux et forets) is charged with the enforcement of this condition, the Government retaining a lien on the property as a guarantee of compliance. This provision is far from satisfactory to the private forest owners and has been attacked vigorously (*235, pp. 473–474; 236, 237*). It has been

charged that the premium on the destruction of the forest has not been entirely removed, because the land value is usually closer to one-tenth of the total value than one-fourth, and because many owners would hesitate to commit themselves and their heirs to the specified system of operation for 30 years. During that time inheritance taxes or some other unusual charge might have to be met. Unless the forest had already been so heavily cut that it could in no case yield an income within the 30-year period for meeting such demands, it might be considered imprudent to assume the required obligation. However, it is now admitted that, partly due to the excellent relations between the forest owners and the personnel of the forest service, this provision has been taken advantage of more generally than was at first anticipated (*244, p. 474*).

So far nothing has been done to mitigate the unfortunate effect of the heavy inheritance taxes on forest properties. The forest landowners have made a number of proposals, none of which has been satisfactory to the ministry of finance, but it is understood that there is now (1933) a possibility of agreement. The formation of an advisory commission, including representatives of the forest owners, to assist in framing such legislation and pursuant regulations is under discussion (*244, pp. 475–476*).

The forest owners have been placed in a somewhat better situation with respect to the registration taxes on transfers by a decision of the supreme court (la cour de cassation) issued October 28, 1931, affecting the valuation of forests for the purpose of these taxes. The finance officers had required a valuation based on the value of the soil plus the value of the trees for immediate realization. The court upheld the view that the value intended by law is that which is accepted by the general opinion, taking into account the nature of the property and the normal method of operation. It was not intended, according to this decision, that the valuation should contemplate the destructive exploitation of the forest or take into account the value to an owner for reasons of taste, family pride, personal interest, and the like. The appraisal approved by the court was based on the value of the soil determined directly by considering the quality of the land and the cost of reforestation, plus the value of the trees with full deduction of all the costs and expenses which would result from the acquisition itself, and from either the conservation and administration of the property after its acquisition or from its orderly liquidation (*242*).

It has been proposed that perpetuation of private forests and continuity of management could be assured in spite of the inheritance taxes through the incorporation of private holdings in forest-management companies (*244, pp. 478–479*). Then if an heir had to raise money to meet inheritance taxes, he could sell some of his shares in the forest-management company without causing abnormal cutting of timber or otherwise disrupting the management plans. However, the various corporation taxes in France are so heavy that they shut off this avenue of escape. The schedular income tax alone would be doubled, since this is applied both to the income of the corporation and to the dividends paid to the stockholders. The property of such a corporation would also be subject to the taxe de mainmorte, a tax levied by the National Government on real estate which is held by corporations or associations so that it escapes transfer taxes. Since

the net income of a forest is not appreciably increased by incorporation, forest properties could not bear these additional charges. Consequently the forest owners are asking that forest-management societies whose forests are operated normally in accordance with the requirements of the Government forest service be relieved of the special taxes which apply to ordinary commercial corporations.

TAXATION OF PUBLICLY OWNED FORESTS

The French practice is to subject all publicly owned forests to taxation. The Government forests are valued for purposes of the land tax (impôt foncier) on the same basis as other property. The Departments and communes impose upon them the usual supplementary local taxes (centimes additionnels). The communes also impose the taxe vicinale on the Government forests in all cases where that tax is used in preference to the taxe des prestations. The National Government does not, however, impose its own taxes on its own forests.

The communal forests, similarly, are valued like other property for the land tax and are subject both to the tax levied by the National Government and to the centimes additionnels of the Departments. They are subject also to the taxe de mainmorte. Moreover, in contrast with the practice of the National Government, the communes impose their own local taxes on their own forests.

TAXATION OF SAMPLE FORESTS

It is very difficult to obtain information as to the financial and tax situation of private properties in France. However it was found possible to obtain fairly complete information in regard to the land taxes in four cases, which will serve to illustrate the way the system is applied. The first two examples are located in central France and the last two in the southwest. None of these figures take into account the current depression, which has undoubtedly increased greatly the weight of taxation relative to income and value.

PROPERTY NO. 1

Property no. 1 is a privately owned forest of about 450 hectares (1,100 acres) of which 85 percent is in hardwoods, 10 percent in softwoods, chiefly pine, and the remaining 5 percent in waste land, swamps, and roads. The stand is chiefly of oak, mixed with ash and elm. The hardwoods are managed by the usual coppice-under-standards method, and the coppice is cut on a 26-year rotation.

The average gross annual revenue from the coppice during the 6-year period, 1925–30, was 168 francs per hectare. The cost of operation, with allowance for operating profit, for the above 6 cuttings amounted to 65 francs per hectare. The general costs amounted to 58 francs per hectare, of which about three-fourths, or 43 francs, were allocated to the coppice, as the standards (larger trees reserved for saw timber) are not of great importance in this forest. Thus the net annual revenue from the coppice, based on the 6 years' experience, was approximately 60 francs per hectare ($0.95 per acre). This income capitalized at 4 percent gives a capital value of 1,500 francs

per hectare ($24 per acre). This method of valuation would be likely to give high results, because during the 6-year period taken as a sample the best cutting areas were operated. In the opinion of the owner the sale value of the land without the standards would not be over 1,000 francs per hectare ($16 per acre). The value of the standards cannot be determined directly on the basis of annual cut as the growing stock on this forest is being built up, and therefore the large trees are not being cut except to remove defective specimens. The existing stock of standards is estimated at 2,250 francs per hectare ($35.70 per acre) making a total value for the forest of 3,750 francs per hectare ($59.50 per acre). Table 129 shows the land tax (impôt foncier), together with the local taxes (centimes additionnels and taxe vicinale), which were paid for a 6-year period. The 44 hectares recently planted to pine are allowed an exemption of three-fourths of the land tax, which makes the total taxes about 300 francs less than they would otherwise be.

TABLE 129.—*Land taxes on property no. 1, 1925–30* [1]

Year	Francs per hectare	Dollars per acre
1925	8.87	0.141
1926	9.35	.148
1927	14.84	.235
1928	16.48	.261
1929	16.59	.263
1930	16.88	.268
Total	83.01	1.316
Average	13.84	.219

[1] Source of data: Report furnished by owner.

The average land tax on this property thus amounts to 0.37 percent of the estimated value of the forest if the larger figure of 3,750 francs per hectare is accepted, or 0.43 percent if the more conservative figure of 3,250 francs per hectare is used, the latter being based on a valuation of 1,000 francs per hectare for the coppice.

The reader should bear in mind that the income from this forest is also taxed under the general income tax, the rates of which are progressive. The rates to which the owner of this forest was subject in the years in question are not known. Also, in picturing the total tax burden, consideration must be given to inheritance taxes, which take a heavy toll at irregular intervals.

PROPERTY NO. 2

Property no. 2 consists of a forest of 2,600 hectares (6,400 acres). Of the total area, 2,400 hectares are in coppice under standards managed on a rotation of 30 years, so that there is normally available about 80 hectares (200 acres) for annual cutting. The other 200 hectares are waste land and young stands recently reforested. The timber cut each year consists both of the coppice and of the suitable trees among the standards, which are the larger trees reserved in one or more previous cuttings. The annual income from the sale of wood

and timber for the 5-year period, 1926–30, averaged 235 francs per hectare for the entire forest. The total expenses, including cost of felling, transportation, restocking the forest, pruning, maintenance of roads and ranger cabins, insurance, and taxes, averaged for the same period approximately 65 francs per hectare. Thus the net income after taxes averaged for this period approximately 170 francs per hectare ($2.70 per acre). Capitalized at 4 percent, the value of the property would be 4,250 francs per hectare ($67.50 per acre).

The direct taxes levied on this property, from 1926 to 1930, consisting chiefly of land taxes with additional sums for local purposes (impôt foncier and centimes additionnels) were as shown in table 130. These taxes, averaged for the 5-year period, were 8.3 percent of the net annual income before taxes for the period, and 0.36 percent of the value. The rate of personal income tax paid by the owner of this forest was not ascertained.

TABLE 130.—*Land taxes on property no. 2, 1926–30* [1]

Year	Francs per hectare	Dollars per acre
1926	9.89	0.157
1927	16.31	.259
1928	15.50	.246
1929	16.65	.264
1930	18.43	.292
Total	76.78	1.218
Average	15.36	.244

[1] Source of data: Report furnished by owner.

PROPERTY NO. 3

Property no. 3 contains about 5,000 hectares (12,350 acres) and is practically all in maritime pine. The market value, as estimated by the owner, is between 4,000 and 5,000 francs per hectare ($63.40 and $79.30 per acre). This forest is well managed and under normal conditions yields a good return. In 1929 it was yielding a current net return after taxes of approximately 200 francs per hectare ($3.20 per acre). Of course both value and return would doubtless be materially reduced at present (1933).

In 1929 the land taxes (impôt foncier and centimes additionnels) amounted to 6.66 francs per hectare. This was at a rate of 3.2 percent of the net income before taxes, and one-sixth of 1 percent of the property value of 4,000 francs. The tax figures for 1927 and 1928 were not materially different. It seems probable that taxes are not now (1933) materially reduced and are therefore taking a greater portion of income and of value.

There is also an additional tax, that on agricultural profits (bénéfices de l'exploitation agricole) imposed on the profits arising from the utilization of resinous products from pine forests of this type. This tax is levied on the owner at his place of residence and was not ascertained.

Upon the death of the owner in 1925 the inheritance taxes on this forest amounted to 27 percent of its value.

PROPERTY NO. 4

Property no. 4 has a total area of 3,000 hectares (7,410 acres), and it consists pr ncipally of maritime pine. Its market value was estimated by the manager from 4,000 to 4,500 francs per hectare ($63.40 to $71.40 per acre). In 1929 the net income after taxes was 250 francs per hectare.

In 1929 the land taxes (impôt foncier and centimes additionnels) amounted to 7.02 francs per hectare. This was at a rate of 2.7 percent of net income before taxes and of slightly over one-sixth of 1 percent on a property value of 4,000 francs. The figures for the years immediately preceding were approximately the same as for 1929.

The amount of the tax on agricultural profits (bénéfices de l'exploitation agricole) was not ascertained.

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

It is evident that the land taxes levied in France do not constitute a serious handicap to forestry in spite of the fact that they are levied annually and must be paid regardless of the actual income from the forest. The reason these taxes are not very burdensome is, (1) that the rates are low relative to actual value and income and, (2) that the larger forests are so organized and managed as to yield income annually, while the small wood lots, where income is necessarily periodic, are usually owned in connection with farms or other real estate yielding annual income. There is a strong probability that the revaluation which is expected to become effective after 1935 will increase somewhat the burden of the land taxes, but this may not be the case if the forest owners succeed in their efforts to have it made on a favorable basis.

In spite of the moderate rate of the land taxes, the French Government has recognized the difficulties connected with the establishment of new forest plantations by granting special exemptions for the period of 30 years in favor of such plantations. These exemptions are justified by the lack of current income during this period and the public interest in the extension of forestry. The public interest is safeguarded by the public control exercised as a condition of the exemption. This policy seems consistent with the fact that the establishment of new forests by private owners is also favored, under certain conditions, by direct Government subsidies.

The forest-tax problem in France does not center upon the annual property tax as in the United States, but on the registration taxes imposed when prope ty is transferred. It is the taxes on transfers between living persons and those on estates transferred by inheritance which in France have threatened private forestry and placed a premium on the destruction of forests, particularly of those which contain adequate reserves of saw-timber size. This is a recent problem, growing out of the heavy charges imposed on the public treasury by the World War. As above noted, some progress has been made in improving this situation so far as transfers between living persons are concerned, and there is at present (1933) a serious effort to change the laws governing inheritance taxes with a view to removing the danger to conservatively managed private forest estates.

GERMANY [36]

GOVERNMENTAL AND TAX STRUCTURE

POLITICAL DIVISIONS

In order to make clear the German system of taxation it is necessary to sketch briefly the political structure of the country. Germany is a federation of States comprising a total area of 182,000 square miles and having a population (in 1925) of 63,000,000 (*264, p. 5*). The National Government is called the Reich. In 1930 there were 17 States (Länder), including the 3 Hanseatic cities, which might be termed city-states. Of these Prussia is by far the largest, containing 63 percent of the area and 61 percent of the population. Schaumburg-Lippe, the smallest of the States, has a population of only 48,000 and an area of 130 square miles.

Each State is divided into a number of smaller units. Prussia (*250, pp. 14–15*), for example, is divided into 14 provinces (Provinzen). These 14 provinces were (in 1925) subdivided into 35 governmental districts (Regierungsbezirke). Each governmental district is divided into districts (Kreise) which, to prevent confusion with the governmental districts, will be termed "counties" in this report. There are 534 of such counties in Prussia, of which 415 are rural counties (Landkreise) and 119 city counties (Stadtkreise). In most of the provinces the rural counties are further divided into office districts (Amtsbezirke) of which there are 6,172. The communal associations (Gemeindeverbände) are composed of communes which are territorially united. This term is sometimes used to mean the total of all grades of government below the State, but is often used coterminously with the county.

The ultimate territorial divisions are the communes (Gemeinden) which may be either towns (Stadtgemeinden or Städte) or rural communes (Landgemeinden). Some of the old feudal properties had a particular form of government of their own; these were called estate districts (Gutsbezirke). Under the law of December 27, 1927, these estate districts in Prussia were for the most part converted to communes or joined to existing communes, and by January 1, 1929, all but 578 had been dissolved. Before this law went into effect the numbers of communes and estate districts in Prussia were as follows:

Towns	1,092
Rural communes	29,465
Estate districts	11,856
Total	42,413

THE TAX SYSTEM

General (*250; 266, pp. 648–655*)

Before the World War there was a characteristic division of the sources of taxation between the National Government (Reich) and the constituent states (Länder). The National Government obtained its revenue almost exclusively from indirect taxation under the system instituted by Bismarck. The principal sources of revenue were the customs duties and a group of excise taxes. The States obtained most of their revenue from direct taxation, the principal

[36] This study was made prior to the supremacy of the National Socialist party. The information in this section therefore relates to conditions as they were previous to 1933.

taxes being the income tax (Einkommensteuer), the property tax (Vermögensteuer), and a system of yield taxes (Ertragsteuern) levied upon the yield capacity of land, buildings, business, and capital (Grundsteuer, Gebäudesteuer, Gerwerbesteuer, and Kapitalrentensteuer). These Ertragsteuern, though the term is commonly translated as "yield taxes", are not to be confused with the American forest-yield taxes. In addition there were frequently certain other direct taxes and a number of indirect taxes, fees, duties, etc., although these latter were usually of minor importance. The National Government, just before and during the war, found itself seriously hampered by the restriction of its revenue sources to indirect taxation and its inability to impose its levies directly upon the wealth and income of the people. In the political and financial reorganization which came with the republican revolution after the war, there was a drastic reorganization in the tax structure of the National Government and the States. The income tax, which had been the backbone of the tax systems of most of the States, was transferred to the National Government. The tax on the yield from capital (Kapitalrentensteuer) was made a part of the income tax. The property tax was also taken from the States and given to the Nation. Of their former system the States retained only the yield taxes on land, buildings, and business. In order to make up this loss to the States, a large portion of the revenue which the National Government receives from direct taxes is turned over to the States, which in turn hand over portions to the communes. These amounts are called transfers (Überweisungen). The national tax system was put in form in a series of taxation laws enacted in 1925, and the existing system of national taxation therefore dates from that time. The following laws were passed on August 10, 1925.

1. The income tax law (Einkommensteuergesetz).
2. The corporation tax law (Körperschaftsteuergesetz).
3. The law concerning property and inheritance tax (Vermögensteuer- und Erbschaftsteuergesetz).
4. The national valuation law (Reichsbewertungsgesetz).
5. A law modifying the turnover tax (Umsatzsteuergesetz).
6. A law concerning the financial allotment between the National Government, the States, and the communes (Finanzausgleichsgesetz).

In 1928–29 the National Government revenue from direct and indirect taxes was as shown in table 131 (*257, p. 106*). Here, as elsewhere in this section, values are given in American dollars as well as German reichsmarks. The converting factor used is $0.2382, which is the 1933 par value of the reichsmark in American gold dollars.

TABLE 131.—*Revenue of German National Government from direct and indirect taxes, 1928–29*

Tax	Receipts	
	Reichsmarks	*Dollars*
Direct taxes (Steuern)	6, 146, 800, 000	1, 464, 200, 000
Customs and excises (Zölle und Verbrauchsabgaben)	2, 877, 600, 000	685, 400, 000
Total	9, 024, 400, 000	2, 149, 600, 000

Of this amount there were allocated to the States and communes 3,412,500,000 RM (*257, p. 362*) ($812,900,000), leaving 5,611,900,000 RM ($1,336,700,000) for the use of the National Government.

In 1928–29 the tax incomes of the States, commnues, and other local governments, including the allocations from the National Government, were as given in table 132 (*264, p. 461*):

TABLE 132.—*Tax incomes of German State and local governments, including allocations from the National Government, 1928–29*

Governmental unit	Tax receipts	
	Reichsmarks	*Dollars*
States	2, 937, 100, 000	699, 600, 000
Communes and other local units	4, 396, 800, 000	1, 047, 300, 000
Hanseatic cities	394, 500, 000	94, 000, 000
Total	7, 728, 400, 000	1, 840, 900, 000

The total annual revenue from taxes of all kinds is therefore 13,340,300,000 RM ($3,177,700,000), which represents a per capita tax of about 212 RM ($50).

NATIONAL GOVERNMENT TAXES

Table 133 shows the relative importance in point of yield of the various taxes of the National Government for 1928–29 (*257, pp. 104–106*).

TABLE 133.—*Income from taxes levied by the German National Government, 1928–29*

Tax	Receipts	
	Reichsmarks	*Dollars*
Individual and corporation income tax (Einkommen- und Körperschaftsteuer)	3, 718, 000, 000	885, 600, 000
Turnover, or sales, tax (Umsatzsteuer)	1, 000, 100, 000	238, 200, 000
Property tax (Vermögensteuer)	450, 800, 000	107, 400, 000
Transportation tax (Beförderungsteuer)	354, 100, 000	84, 400, 000
Motor-vehicle tax (Kraftfahrzeugsteuer)	181, 400, 000	43, 200, 000
Land and capital transfer tax (Grunderwerb- und Kapitalverkehrsteuer)	167, 400, 000	39, 900, 000
Betting and lottery tax (Rennwett- und Lotteriesteuer)	80, 200, 000	19, 100, 000
Inheritance tax (Erbschaftsteuer)	73, 600, 000	17, 500, 000
Insurance tax (Versicherungsteuer)	59, 300, 000	14, 100, 000
Tax on exchange (Wechselsteuer)	52, 500, 000	12, 500, 000
Currency depreciation equalization tax on debts (Obligationensteuer)	9, 400, 000	2, 200, 000
Customs and excises	2, 877, 600, 000	685, 500, 000
Total	9, 024, 400, 000	2, 149, 600, 000

It will be recalled that the National Government does not have the use of all this revenue. Of the total revenue from the individual and corporation income tax, 75 percent goes to the States and communes. From the turnover tax, 30 percent must be transferred to the States and communes. The land-transfer tax (Grunderwerbsteuer) exclusive of the tax on transfers of other property than land (Kapitalverkehrsteuer), goes exclusively to the States except for 4 percent, which is withheld by the National Government to cover the costs of administration. This is also the case with the motor-vehicle tax and with the betting tax; 96 percent of the yield from these taxes goes to the States. Some of the excise taxes, which do not appear in the foregoing list, are also distributed to the States; 96 percent of the mineral-water tax (Mineralwassersteuer) and 16⅔ percent of the beer tax

(Biersteuer) go to the States. The remainder of the taxes is retained by the National Government (*260, pp. 11–24*).

State Taxes

The kinds of taxes used by the individual States vary greatly from State to State. In Prussia, for example, the receipts from the various kinds of taxes for 1928 are shown in table 134 (*250, p. 308*).

Table 134.—*Income from taxes levied by Prussia, 1928*

Tax	Receipts	
	Reichsmarks	*Dollars*
Share in National Government taxes (Überweisungen)	1,840,700,000	438,400,000
Currency deflation equalization tax on improved real estate (Hauszins- oder Gebäudeentschuldungsteuer)	937,000,000	223,200,000
Land tax (Grundvermögensteuer)	220,000,000	52,400,000
Stamp tax (Stempelsteuer)	25,000,000	6,000,000
Tax on transient business (Wandergewerbesteuer)	4,700,000	1,100,000
Total	3,027,400,000	721,100,000

The State of Bavaria in 1925–26 received its tax revenues from the sources shown in table 135 (*262, p. 265*).

Table 135.—*Income from taxes levied by Bavaria, 1925–26*

Tax	Receipts	
	Reichsmarks	*Dollars*
Share in National Government taxes (including the stamp tax, which is levied by the State)	194,600,000	46,400,000
Currency deflation equalization tax on improved real estate	86,100,000	20,500,000
Business tax (Gewerbesteuer)	21,000,000	5,000,000
Tax on land and buildings (Grund-und Gebäudesteuer)	15,500,000	3,700,000
Total	317,200,000	75,600,000

It will be noted from the above that the States receive a great deal of their revenues from the National Government in the form of transfers (Überweisungen). The next most important source in Prussia and Bavaria is the currency deflation equalization tax on improved real estate. The land and house taxes have a prominent place in the Prussian budget, and stamp and business taxes a relatively minor place. In Bavaria the business tax is more important than the land and house taxes.

Communal Taxes

The communes and other local units as well as the States receive some of their revenues from the National Government taxes. They also levy additional rates (Zuschläge or Umlagen) on the State land, house, and business taxes. These additional rates are levied directly on the State taxes rather than on the assessed values. The provinces and governmental districts are supported entirely by these transfers and additional rates. The counties (Kreise) may levy additional taxes, like the hunting tax (Jagdsteuer). The individual communes may also levy additional taxes, like amusement taxes (Vergnügungsteuern), beverage taxes (Getränkesteuern), dog taxes (Hundesteuern).

An example of communal taxation is given in table 136, which shows the sources of taxes for the rural county (Landkreis) of Brieg, in Prussia, for 1930 (*249, p. 20*):

TABLE 136.—*Income from taxes levied by Brieg, Prussia, 1930*

Tax	Receipts	
	Reichsmarks	*Dollars*
Land and industry taxes (Grund- und Gewerbesteuern)	398,000	94,800
Land-transfer tax (Grunderwerbsteuer)	55,000	13,100
Share in National Government taxes	41,600	9,900
Dog tax (Hundesteuer)	10,200	2,400
Hunting tax (Jagdsteuer)	8,000	1,900
Alcohol licenses (Schankerlaubnissteuer)	2,000	500
Amusement tax (Vergnügungsteuer)	1,500	400
Value increment tax (Wertzuwachsteuer)	1,000	200
Total	517,300	123,200

THE ECONOMIC IMPORTANCE OF FORESTS

Before the war (1913) the German forests comprised 35.1 million acres. As a result of the Treaty of Versailles they have been reduced in 1927 to 31.4 million acres, being now about 27 percent of the total land area.

The ownership of forests in Germany as of 1927 is shown in table 137.

TABLE 137.—*Area of German forests by ownership, 1927*[1]

Type of ownership	Forest area		
	1,000 hectares	*1,000 acres*	*Percent*
Public forests:			
National forests (Reichsforsten)	32	81	0.3
State forests (Länderforsten)	4,090	10,104	32.3
Communal forests (Gemeindeforsten)	1,966	4,856	15.5
State share forests (Staatsanteilsforsten)	9	23	.1
Total	6,097	15,064	48.2
Quasi-public forests:			
Institution forests (Stiftungsforsten)	205	506	1.6
Cooperative forests (Genossenschaftsforsten)	300	741	2.4
Total	505	1,247	4.0
Private forests (Privatforsten)	6,052	14,952	47.8
Total	12,654	31,263	100.0

[1] Source of data: From (*263, pp. 10–11*).

From the above it may be stated that roughly half of the German forests are publicly owned and the other half privately owned.

The age classes in the public forests are approximately equal up to 80 years of age. There is a deficiency in age classes above 80 years, although there is a larger percentage of these age classes in the public than in the private forests. The private forests have an overabundance of age classes up to 40 years and a great deficiency of the older age classes (*251, pp. 30–31*).

The yield from the German forests in 1926–27 is given in table 138.

TABLE 138.—*Yield of wood products from German forests, 1926–27* [1]

Kind of product	Yield		
	Thousand cubic meters	*Million cubic feet*	*Percent*
Timber (Nutzderbholz):			
Hardwoods (Laubholz)	3,364.8	118.8	6.8
Softwoods (Nadelholz)	21,571.5	761.8	43.4
Total	24,936.3	880.6	50.2
Firewood (Brennderbholz):			
Hardwoods (Laubholz)	8,221.8	290.3	16.6
Softwoods (Nadelholz)	9,027.0	318.8	18.2
Total	17,248.8	609.1	34.8
Root and fagot wood: (Stock- und Reisholz)	7,457.9	263.4	15.0
Total	49,643.0	1,753.1	100.0

[1] Source of data: From (*263, pp. 10–11*).

TAXES THAT AFFECT FOREST PROPERTY

PROPERTY TAX

The most important of this class of taxes in Germany is the national property tax (Vermögensteuer). This is a property tax levied by the National Government on the value of all real and personal property after deduction of debts. The property of all individuals and corporations is subject to this tax, with the exception of that belonging to certain bodies, of which the most important are State banks; undertakings of the National Government, States, or communes; savings banks within certain limitations; land cooperative societies; and charitable and professional associations.

The assessed values for this tax are determined by means of a uniform procedure prescribed in 1925 by the National Government. The values derived by this procedure are called uniform values (Einheitswerte). This system, though very complex, particularly in the case of forest property, is extremely interesting and will be treated at some length in a later part of this section. This uniform assessment is not only used for the national property tax, but it is now obligatory for the land and house taxes of the various States. For the national property tax, a certain exempt minimum and certain deductions for dependents are allowed. The property of a husband and wife is assessed as one property.

The rates of the property tax are progressive and amounted on the total value of the property to the following in 1925:

Reichsmarks	Dollars	Percent
10,000 and under	2,380 and under	0.20
10,000–25,000	2,380–5,950	.30
25,000–50,000	5,950–11,900	.40
50,000–250,000	11,900–59,500	.50
250,000–500,000	59,500–119,000	.55
500,000–1,000,000	119,000–238,000	.60
1,000,000–2,500,000	238,000–595,000	.65
2,500,000–5,000,000	595,000–1,190,000	.70
5,000,000 and above	1,190,000 and above	.75

However, property the income from which is subject to taxation by the States and communes may not be taxed by the National Government at a rate higher than 0.5 percent of the taxable value (*253, pp. 2–13*).

STATE LAND TAXES

The land and house tax (Grundsteuer), in some States separated into land tax (Grundsteuer) and house tax (Haussteuer or Gebäudesteuer), is levied by the States (Länder), communes (Gemeinden), and communal associations (Gemeindeverbände) and is by far the most important State or communal tax from the point of view of farm and forest owners. The land tax is a very ancient tax (*247, p. 65*), though it has been brought up to date in some of the States, and its administration varies from State to State.

In the administration of this tax two systems of assessment have been in use. The ultimate use in all States of the uniform value (Einheitswert) of the National Government valuation has been prescribed. The old method of assessment was by means of the cadastre. This method was in effect in most of the States when this study was made.

These cadastres were very detailed appraisals intended to be effective over a long period. In Bavaria, for instance, the cadastre which was in force as late as 1931 was made during the period from 1818 to 1840. The cadastre gives a separate value for each parcel of land, each building, and each kind of personal property. The total assessed value of any property is the sum of its constituent parts. This system is described in greater detail at a later point. In none of the States is any deduction allowed for debts from the land and house taxes.

As stated above, the communes and communal associations levy additional rates (Zuschläge) on the State land taxes.

INCOME TAXES

The national income tax (Einkommensteuer)[37] is a progressive tax on the incomes of natural persons. Its rates are graduated from 10 percent on the first 8,000 Reichsmarks ($1,906) of taxable income to 40 percent on that part of the taxable income in excess of 80,000 Reichsmarks ($19,060). There is an exempt minimum of 1,300 Reichsmarks ($310), and certain deductions for dependents are allowed. Deductions are also allowed for insurance premiums, education, cost of traveling from home to place of buisness, and, in special cases, business losses or unusual responsibilities.

The determination of taxable income in case of ordinary forest properties which yield a regular annual income presents no special difficulties. The practice is to reduce the gross income from sale of products and other resources during the tax year by the current expenses of the same period, including costs of regeneration and management. In such properties there is no depletion of capital, since the fellings are offset by growth and regeneration.

In connection with determination of income when there are extraordinary cuttings or in the case of very small forests which are cut irregularly, special problems have arisen. It was the practice prior to 1930 to disapprove the inventory method (or deduction of deple-

[37] Income tax law (Einkommensteuergesetz) of Aug. 10, 1925, with amendments through 1929 (*246, pp. 217–271*).

tion) in determining income from extraordinary cuttings. Therefore such cuttings, by bringing so much income into a single tax year, might cause hardship through the effect of the progressive rates. This hardship was mitigated by allowing the income from extraordinary cuttings to be treated for calculation of the tax as a separate income, but without benefit of the ordinary exemptions for family, etc., except to the extent that these exemptions might exceed the ordinary income. This provision lightened the burden of the progressive tax by reducing the amount of income in the higher brackets. Income from salvage operations (so-called "calamity fellings") was given a similar favor, and in addition the tax on this part of the total income was calculated at one-half the regular rates. Salvage operations are those which occur as a result of damage by accident or disease, as, for example, by ice, snow, insects, windfall, or fire. Such operations are placed in a special category on the theory that, although they may increase current income, they involve an ultimate loss to the taxpayer.

The above method of treating income from extraordinary fellings was upset by the National Finance Court in a decision dated December 11, 1929, which established the principles that the amount of taxable gain for extraordinary fellings may be determined by the inventory method, which is equivalent to granting a depletion allowance, and that capitalization of expenses above ordinary current expenses is admissible. This decision, together with a number of others of similar tenor which were handed down a little later, left unsettled numerous questions affecting the calculation of income from forest properties by the inventory or depletion method.

To avoid the administrative difficulties involved in carrying out the principles laid down by these decisions, the minister of finance, with the approval of the Reichsrat, issued a regulation (*258*) dated November 16, 1930, under a provision of the general tax law [38] which gives the minister of finance broad authority to eliminate or reduce taxes in special cases. This regulation (sec. 2) authorizes the taxpayer to request the application of lower than normal rates to income from extraordinary cuttings, namely, 10 to 15 percent if, considering the forest alone, gross income does not exceed expenses by more than 30,000 Reichsmarks ($7,150) and 15 to 20 percent if gross income exceeds expenses by more than 30,000 Reichsmarks. In the case of salvage operations, one-half of the foregoing rates may be applied. If the taxpayer chooses to take advantage of this regulation, he is debarred from claiming the benefit of the inventory method or allowance of depletion. Thus, while the income tax law has been construed to permit the deduction of depletion allowances from income derived from extraordinary cuttings, in practice such deductions are not ordinarily claimed, since a more attractive alternative method of determining the tax is allowed.

The same regulation contains a provision (sec. 3) designed to prevent hardship in the case of farm wood lots and other small properties which are cut intermittently and for which no regular books of account are kept. In such cases, if the forest area does not exceed 150 hectares (370 acres), the taxable income from an extraordinary cutting may be determined by considering 40 percent of the gross income as deductible

[38] Reichsabgabeordnunung vom 13. Dezember 1919, sec. 108, abs. 2 (*246, p. 33*).

in place of the actual cost of production. The owner is also given the benefit of the reduced tax rates provided for in section 2 of the same regulation. This provision also applies only to those cases where the right to use the inventory method is not claimed.

It was also the practice, prior to 1930, to regard gains from sales of agricultural or forest property as exempt from income tax. This practice opened the door to tax avoidance on the part of large landowners. A certain number of such owners adopted the plan of not cutting or selling timber or other products in the ordinary way, but of selling the ground on which such timber stood. In this way the product of a forest could be disposed of without realizing any taxable gain. This practice also was upset by a decision of the National Finance Court dated December 4, 1929, which held that gains from sales of agricultural or forest property were subject to income tax under the same rules that apply to sales of other business properties. This decision appeared to impose undue hardships on agricultural and forest owners and to raise troublesome administrative questions in connnection with determining the amount of the gain from sales. The regulation of the Minister of Finance dated November 16, 1930, previously mentioned, was also directed at this situation. It provides (sec. 1) that the gain from sales of agricultural or forest property sold prior to July 1, 1935, is subject to income tax only to the extent that the property sold had been acquired after December 31, 1924. In such cases, the basis for calculating the gain is comparison between the selling price and the cost. In computing the gain, it is necessary to allocate for separate treatment such part as may be attributed to the land or soil, since that part is exempt from income tax. There is also an additional exemption of 10,000 Reichsmarks ($2,380) if an entire property is sold and a proportionate part of 10,000 Reichsmarks if only a part of a property is involved. To prevent tax avoidance by means of land transfers, this regulation also provides that, if the property sold contains a disproportionate quantity of mature timber or other materials, the gain is calculated as if these had been sold separate from the land and is taxed in the same manner as gain from sales of other business properties. This part of the regulation is not limited to properties acquired since December 31, 1924.

The tax on the yield from capital (Kapitalertragsteuer, formerly called Kapitalrentensteuer) is a part of the national income tax collected at the source. Since January 1931, it has not been in force with respect to the income from securities with fixed interest rates such as bonds, though still in force with respect to shares of stock. The taxpayer claims the benefit of the tax so withheld as a deduction from the income tax on his entire income. There is an income tax on salaries (Lohnabzug) which is also collected at the source.

The corporation tax (Körperschaftsteuer) is collateral with the national income tax, and is levied on the profits of corporations. The rate of this tax is 20 percent, except that certain corporations with a capital not exceeding 50,000RM pay on a graduated scale of from 10 to 30 percent on successive income brackets, but never more than 20 percent of the total taxable income (*159, p. 94*).

The net yield of the personal and corporation income taxes is retained by the National Government to the extent of only 25 percent, the remainder being distributed to the States. Each State distributes at least 50 percent of its share to the communes.

OTHER TAXES

Turn-over Tax

The turn-over or sales tax (Umsatzsteuer) is levied under the law of May 8, 1926 (*254*) and applies to the gross receipts from the sale of goods or services. The rate in 1926 was 0.75 percent but in April 1930, it was changed to from 0.85 percent for small enterprises to 1.35 percent for enterprises with gross incomes of more than 1,000,000RM ($238,000) (*246, pp. 367–368*). It is a very productive tax, as has been shown above. It yields more revenue than any other tax except the income tax and more than twice as much as the property tax. The tax is very inclusive and only certain specified types of transactions, most of which are taxed under some other law, are exempt.

The burden of the turn-over tax on forest enterprises should not be heavy. In forest management the turn-over of capital is very slow and therefore the ratio of the tax to net income is lower than in most enterprises. At the 1930 rate (0.85 percent for small enterprises) the tax would not represent more than 1 to 2 percent on net income for most forest enterprises, which is a small amount compared with the income tax.

Rentenbank Interest Tax

A tax which was of considerable importance to forest owners between 1924 and 1930 is the Rentenbank interest tax (Rentenbankzinsen). This tax was imposed by the law of August 30, 1924, the purpose of which was to redeem and put to an end the Rentenmark. It placed a mortgage (Grundschuld) for this purpose on all land. The mortgage amounted to 5 percent of the value. This value was determined by a valuation (Wehrbeitragswert) made for the whole country in 1913 in connection with the special armaments tax (Wehrbeitrag). The annual charge (Zinsen) on this mortgage is 5 percent. For example, if a property were valued at 100,000RM ($23,800), the mortgage would be 5,000RM ($1,190) and the Rentenbank interest tax would be 250RM ($59.50). This tax has not been paid since April 1930, having been temporarily suspended.

Inheritance Tax

The national inheritance and gift tax (Erbschaftsteuer) is a graduated tax, the rate of which, based on the value of the entire property transferred, rises from 2 to 60 percent (1925–33). Five classes according to the personal relation of the beneficiary to the testator or donor and 22 classes according to the value of the estate are recognized. There are certain exempt minima. The basis of valuation is the national uniform value (Einheitswert) of the assessment immediately preceding the time of tax liability. If this value has changed more than one-tenth or more than 20,000RM ($4,760) in the intervening time, a revaluation is made (*252, pp. 320–329*).

Land-Transfer Tax

The tax on the transfer of landed property (Grunderwerbsteuer) is levied at the time of the sale of property and is payable in equal parts by the purchaser and the seller. The national tax rate is 3 percent of the market value of the property, and the States and communes

may levy an aggregate additional rate (Zuschlag) of 2 percent (*260, p. 21*). The proceeds of the national tax, after deduction of 4 percent for cost of administration, also go to the States and communes. The tax applies to transfers of all landed properties with the exception of transfers which are liable to the inheritance and gift tax, transfers within a family, certain formal transfers which are transfers only in name, and transfers which serve certain charitable ends. The National Government, States, communes, and educational, charitable, religious, and public insurance institutions are exempt. Transactions are also exempt if the market value does not exceed 50RM ($11.90). The rate of the tax is increased by 2 percent if within 3 years from the sale a portion of the property forming an integral part thereof is resold with the obvious end in view of disintegrating wholly or in part an economic unit of property for purposes of speculative gain (*255*).

Church Taxes

Taxes in support of churches (Kirchensteuern) are compulsory and, although the rates are fixed, within certain legal limitations, by the churches themselves, the taxes are collected by the Government. The taxes are paid either to the Evangelical Church or to the Catholic Church, according to the professed faith of the taxpayer. The church taxes are levied as additional rates on the national income tax. In addition, some States levy additional church rates on the national property tax and on the land tax, house tax, and business tax. In Prussia the churches may also levy a poll tax (Kopfsteuer). In Bavaria a differentiation is made between the additional rates of the local churches levied by the local parish and the additional rates of the State church. The latter in recent years have amounted to 4 percent for the Catholic Church and to 5 percent for the Evangelical Church. The additional rates for the local churches vary according to the requirements of the parishes. In the rural parishes rates are applied up to 15 percent, but in general the rates range from 6 to 10 percent (*265, pp. 201–205*).

THE VALUATION OF FORESTS FOR TAX PURPOSES

INTRODUCTION

One of the most important problems of forest taxation is the assessment; that is, the valuation of forests for tax purposes. For this reason, the methods of valuation used in Germany will be studied in some detail in order that these methods may be compared with the practice in the United States.

The capital valuation of forest property is required both for the national property tax (Reichsvermögensteuer) and for the land tax (Grundsteuer) as a substitute for the old cadastre. The valuation for national taxes is known as the uniform value (Einheitswert) for the reason that this valuation has been prescribed as obligatory in all the States of Germany as a uniform basis for all taxes levied on property values, including the land tax. The uniform value is also used as the basis for the national inheritance and gift tax (Erbschaftsteuer). Prior to 1925, the time of the first appraisal under the uniform-value plan, the only national tax valuation of property for all the States was that introduced in 1913 for the purpose of the so-called "defense tax" and known as the defense-tax value (Wehrbeitragswert). The

methods of establishing the old valuations, upon which most of the State taxes were until recently based, vary in the different States, and little information as to these methods is available. Although now (1933) obsolete, the methods which were used in obtaining valuations for the land tax in two large States, Prussia and Bavaria, may be of interest.

VALUATIONS FOR THE LAND TAX

In Bavaria the valuation for the land tax was an appraisal of the annual possible revenue or gross yield from stumpage. This appraisal was made during the period 1818–40 and the work was done in great detail, at a total cost of 70 million marks (17 million dollars). Each parcel was numbered on a cadastral map, and its yield in wood or other products was determined. The yield was multiplied by an average unit value to obtain the gross yield for the parcel. In the case of forests this annual value was the same regardless of the age or condition of the stand and was intended to represent the productivity of the soil.

In Prussia the land tax was based on a valuation of comparatively recent date. This valuation, as ascertained in the supplementary tax assessment of 1917–19, was calculated on the basis of the net yield which the property might earn under sustained-yield management, capitalized at 4 percent. Corrections to remove inequalities caused by the inflation period were made as of February 1, 1927.

THE UNIFORM ASSESSMENT (EINHEITSWERT)

General

The uniform assessment, prescribed in all the States for national taxes and ultimately for local taxes, was first made in 1925, again in 1928, and was repeated with further refinements in 1931. This 3-year interval was made necessary by the rapid changes in the general level of values which have taken place in recent years. It is expected that when normality is restored a revaluation will be made not oftener than every 6 years.

The principle of valuation as applied to forest lands for the purposes of uniform assessment is that the value shall be based on the actual net money income realizable under sustained-yield management from the property following the common and ordinary business practices, this income to be capitalized at a proper interest rate to be fixed from time to time by the minister of finance. The capitalization factor thus far used is 18, making the assumed rate of interest 5.556 percent. An elaborate procedure has been evolved for the purpose of securing uniformity in the application of this valuation throughout Germany.

The law contemplates that all farm and forest property valuations shall be made by comparison with standard valuations of properties carefully selected in each State tax district (Landesfinanzamtsbezirk) and valued by the council as sample of good, medium, and poor properties in that district. There are 26 such districts, and in general their boundaries are the State lines, except that some of the larger States are divided into two or more districts. This plan works well for the appraisal of farms, but the factors entering into the valuation of forest properties are so complicated and variable that the comparison method has not been found entirely practicable. Nevertheless

the sample forests are selected and valued, but more as a check on the general range of values and for the development of suitable methods and valuation instructions rather than as an absolute guide to individual valuations. In fact the law and instructions governing the 1931 valuation make it clear that the assessed value of an irregular forest containing old timber may be outside of the range fixed by the sample properties.

The responsibility for the general direction and supervision of the entire valuation of properties rests in a national valuation council (Reichsbewertungsbeirat). On this council there are experts in public finance, agriculture, and forestry. The section dealing with forest properties includes six foresters. It determines the value of the abovementioned sample properties, and its findings have the force of law. There are similarly constituted committees with advisory functions to assist the tax officials in the 26 State finance districts (Landesfinanzamtsbezirken); these committees value the large and important forests. The smaller individual properties and farm wood lots in each local tax district (Finanzamtsbezirk) are valued by a local land valuation committee (Grundwert-Ausschuss). There are about 16 to 20 local districts to each State finance district. The recommendations of the State district committees and local committees do not have the force of law, though in practice they are followed. Forest-land owners are represented on these committees, and their technical work, so far as it relates to forest properties, is done by foresters.

The following description of the methods of determining the uniform value is based principally on instructions issued by the minister of finance (*259*) in circulars dated August 3 and August 6, 1931, and on a published article by an official who was concerned with the development of these methods (*261, p. 649*).

Normal Forests with Working Plans

In the case of normal sustained-yield forests or of forests approximating such normality, the procedure is to determine first the average annual yield per hectare in cubic meters of solid wood (Derbholz; wood more than 7 cm or 2.76 inches in diameter at the small end). This figure is obtained in the case of large forests directly from data in the working plan, and it will ordinarily be the same as the annual cut provided for in the plan. It may be checked against the actual cutting records, going back as far as 1909 if possible, and against the yield indicated by yield tables, after allowing for loss in felling and correcting for density if necessary. Thus the working plan figure may be modified to express more exactly the average annual yield which would be realized on a sustained yield basis.

The second step is to determine the average stumpage value per cubic meter of wood for the products of the particular forest. Since the quantity of wood is determined on the basis of the marketable solid material or Derbholz only, the value of the accompanying faggots is included in the unit value of the solid wood. Ordinarily this unit value may be determined from the average price actually received over a period of years. For the 1928 valuation, the fiscal years 1924–25 to 1926–27 were used. The basis for average stumpage values in the 1931 valuations was average prices for the fiscal years 1925–26 to 1929–30, with a deduction of 15 percent in view of the poor market since 1930. The data for average selling prices of wood

are readily available in the accounts of the larger forests, though some adjustments may be necessary in case the sales in the basic years differ from the normal in proportion of different products.

If proper accounts are lacking, or if the prices shown by the accounts are abnormal so that they are not applicable, a different method of obtaining the unit stumpage value of the wood must be used. The prices of the major product (Richtsortiment) for the common species in the different regions of Germany are well known or easily ascertainable. If the ratio of the stumpage price of all the marketable solid wood to the stumpage price of the major product were known, the price of the major product could be used to establish the desired value per cubic meter of the solid wood. These ratios vary with the region, species, site quality class, and length of rotation. Such ratios for most of the State finance districts were furnished in appendix 4 of the above-mentioned circular of August 6, 1931, for use in the 1931 valuation. This appendix consists of a table showing, by district, tree species, site quality class, and length of rotation, the ratios of prices per cubic meter of solid wood to prices of the corresponding major product. The unit values of solid wood obtained by applying these ratios to prices of the major product include the value of the incidental faggots. In case of exceptional conditions, judgment may be used to modify the result. The only common species not given in this table is oak, which is so variable as to marketable products that it must be made the object of a special price study in each locality where it is important. The circular of August 6, 1931, includes suggestions as to the procedure which should be followed to determine similar ratios for the State finance districts not included in appendix 4.

The third step is to determine the net yield in money of the forest which is being assessed. The gross yield is obtained by multiplying the yield in wood by the average stumpage value. In order to arrive at net yield, it is also necessary to determine the average annual cost of management. The law requires that this cost be governed not by the actual figures for the individual forest concerned, which might be influenced greatly by the desires and purposes of the owner, but by the common business practice of the region. Thus the costs of management in typical forests in each of the five broad forest regions of Germany have been taken as the basis. The figures have been obtained from the investigations of the valuation council with respect to sample properties and from studies made by the State forest services. It was found that the costs could be related to gross yield, though naturally they are a much greater part of gross yield in the case of low-yield than of high-yield properties. This relationship was smoothed off by curves, from which tables were made showing the corresponding costs for different amounts of gross yield. For example, according to tables prepared in connection with the 1931 valuation, the cost of management in east and north Germany absorbed 81.5 percent of a gross yield of 10RM per hectare (96 cents per acre), 65 percent of a gross yield of 30RM, and 46.6 percent of a gross yield of 80RM per hectare ($2.90 and $7.70 per acre, respectively). The cost as taken from these tables is subtracted from the gross yield to give the net annual yield.

Finally, the assessment value of the forest is found by multiplying the net annual yield by 18, as previously indicated. The work of calculation for each separate assessment is obviated by the use of tables based directly on the gross yield, showing for a wide range of gross

yields the corresponding management costs, net yields, and assessment values. Such tables are available in appendix 1 of the circular of August 6, 1931, for each of the five forest regions.

Irregular Forests With Working Plans

In the case of forests with an irregular distribution of age classes, the procedure is not quite so simple. It involves the appraisal of each age class in accordance with its relation to a stand similar in site quality, species, market conditions, and length of rotation, but with a normal distribution of age classes. The first step, then, is to determine the value of a normal forest in the same region that resembles in these respects the forest being valued. If there is a sufficiently similar forest in the district to serve as a basis of valuation, this forest is used for the purpose. Otherwise the yield of an imaginary forest must be calculated from yield tables, with suitable deductions to allow for loss in cutting and for the difference between the ideal and actual practice. Care is taken to apply to the average yield in wood, prices which correctly reflect the values of the grades which would be realized in a normal forest rather than the values of grades actually realized in the irregular forest, which might be either much higher or much lower. Having the gross yield in money of the corresponding normal forest, the assessment value per hectare of such a forest is determined as previously indicated.

The next step is to determine what part of the value of the similar normal forest is represented by the age classes present in the actual forest which is to be assessed. This step is accomplished by using a set of tables which shows the relative value of each age class. This set of tables is made on the theory that the total yield value of a normal sustained-yield forest may be allocated to the age classes into which it is divided in proportion to the relative market value of each. The values of the single-age classes are added together to give a total, and the value of each age class calculated as a percentage of the whole.

For the purpose of establishing the market value, each age class beginning with 40 years in the normal forest is valued according to the sale price of the timber plus the value of bare land. The value of the forest in age classes younger than 40 years is calculated from the market value at 40 years (A_{40}) by Glaser's formula:

$$A_i=\frac{A_{40}-C}{40^2}i^2+C,$$

in which A_i is the value at a given age, i, and C is the initial cost of planting or of establishing the stand (*248, p. 93*). The results obtained from this formula are checked and corrected by consideration of sales prices. How bare-land value is obtained is not explained in the official documents, but it is understood to be based in part on sales data, assuming that the difference between the selling price of a forest and the value of the timber which it contains equals the bare-land value.

For the 1931 assessment, tables have been prepared showing value relationships of the age classes for each of the common species: Oak, beech, elm, plains spruce, mountain spruce, fir, and pine. These are published as appendix 3 of the circular of August 6, 1931.

Down the side of these tables is the age of the stand by 5-year classes. Across the top there is first a division into three site classes, good, medium, and poor, each of which is further subdivided into the rotation periods, covering the usual range peculiar to each species and site class. Thus, for a stand of any of these species, one may read opposite its age and under the proper site quality and length of rotation the ratio in percent of the value of that particular stand to the average assessment value of a similar sustained-yield forest. The ratio of the value of bare land to the value of a sustained-yield forest of the type to which it is presumably destined is also shown in these tables.

The final step in appraising irregular forests is to sum up the values of each age class, thus determining the total assessment.

Forests Without Working Plans

In the previous discussion of appraisal methods, the availability of the information in regard to a forest ordinarily contained in a working plan has been assumed. However, 89 percent of all private forests, comprising 43 percent of the privately owned forest-land area, is in properties of less than 100 hectares, mostly farm wood lots (*251, pp. 84–89*). As a rule there are no working plans for such woodlands. If a forest materially in excess of 100 hectares (247 acres) is without a working plan, it is contemplated that there will be an expert examination for the purpose of obtaining the necessary information. It is not practicable to provide for such expert examination for the small forests. These are therefore valued on certain general assumptions, which are reasonably accurate in a majority of cases. Ordinarily the species and age are not difficult to ascertain from the owner, even in the case of a small wood lot. The site quality class and density of stocking are less generally known, and in the absence of specific information on these subjects a middle site quality class and a density of 0.7 is assumed. Exceptional cases are likely to be known by local experts who can be consulted by the local finance offices. The calculations for these forests are greatly simplified by tables which are prepared for the purpose by the valuation council for most of the State finance districts. Such tables for the 1931 valuation are attached to the circular of August 3, 1931, issued by the minister of finance. They give directly the assessment value per hectare of forest of each species in the region according to age classes at 10-year intervals. There are values for each species and age class for the 2 or 3 different site quality classes recognized, but uniform rotations consistent with the usual practice in each region, a density of 0.7, and normal wood prices are assumed. The wood prices are averages realized on the State forests for the period 1925–26 to 1929–30, less 15 percent. For business costs, the figures derived for normal forests with working plans are used. It is recognized that because of delivery in small quantities, inferior selling experience, lower quality and less skillful preparation of timber, the prices received by farmers and other small owners are generally lower than those realized by the State forest administration and large private owners. On the other hand, wood used on the farm has at least the value which the large owner could realize, and the cost of administering the small wood lots is less. Lacking trustworthy data for small forests, these differences

are assumed to offset each other, and the figures of the tables, though based on results obtained with large forests, are applied to small properties without correction except to allow for exceptional conditions. Arbitrary application of the tabular values is not contemplated, but local investigations of growth and price relationships are expected to show what modifications may be necessary.

The instructions call attention to the necessity of giving special consideration to forests in mountainous situations, of unusual densities, and in process of conversion from coppice to high forest, so that due allowances may be made in each case.

Results

The above-described assessment procedure has been attacked by individual foresters on various grounds. The most common criticisms appear to be that it promotes use of arbitrary figures based on yield tables and general averages as against actual results reflecting the individual circumstances of particular properties, and that the method of appraising irregular forests is unsound and gives too high results for young stands. Alternative methods of appraising young stands have been proposed, including use of the expectation-value formula, which would give much lower assessments with an interest rate of 5.556 percent (the capitalization rate now in use) and would give about the same assessments with an interest rate of between 2 and 3 percent. It has also been charged that errors are frequently involved in the method of valuing mixed stands by treating them as equivalent to groups of pure stands of the same aggregate areas, especially if the mixture contains a protective understory. The plan of basing average price of the total wood products on the price of the principal product has been called a source of error, especially in the case of small forests with a much lower proportion of saw timber in the product than is the case with the large forests which supplied the data for the valuation council's ratios. The 1928 assessment of a certain large forest was said to have been placed too high because the yield in wood, since it included small material from beech thinnings, contained an unusually high proportion of low grades and therefore had an average value less than the normal figure used in the appraisal, as this figure was based on the average price of a normal assortment of sizes. Whatever foundation there may be for the various criticisms which have been made, it is evident that in spite of the very great effort to evolve a fair and workable plan of valuation, the results thus far attained cannot be said to give entire satisfaction. Further improvement may be looked for, but it is doubtless very difficult to obtain uniformly accurate forest appraisals at the low cost required for assessment purposes.

TAXATION OF PUBLICLY OWNED FORESTS

It was difficult to obtain precise information as to the liability to taxation of publicly owned forests in Germany. The practice generally seems to be very complicated and the laws themselves are not clear in all cases.

The forests of the National Government, States, and communes are apparently exempted by law from the property tax and the land-transfer tax of the National Government. There appear to be exceptions to this rule in practice, for the forest belonging to the city of

Nauen pays the property tax of the National Government, as will be shown at a later point. Public forests are not specifically exempted from the income and corporation tax, nor from the turn-over tax, nor from the Rentenbank interest taxes.

The forests of the National Government, States, and communes which are used principally for public purposes are exempted from the State and and house taxes, and the States can order such exemption in the case of all State and communal forests (*256, pp. 532–533*).

Forests belonging to the National Government and the States are liable to the communal additional land and house tax rates, but the communes do not usually collect these taxes from their own forests. Forests belonging to the National Government, States, and communes are liable to the county (Kreis) and district (Bezirk) additional land and house tax rates.

TAXATION OF SAMPLE PROPERTIES

Tax data were obtained for various forest properties in different sections of Germany for the purpose of illustrating the operation of the tax system and of comparing tax burdens of the German forests with those of other European countries and particularly with those in the United States. Detailed income and expense accounts were available, which made possible the calculation of net income with which to compare taxes. The income data for these forests were obtained for only 1 year, but an effort was made to select a recent year in which forest income appeared to be about normal.

PROPERTY NO. 1

This example is taken from a publication of the Vereinegung der Deutschen Bauernvereine (*265 pp. 230–233*). Each successive step in the calculation of the various taxes is carried through for this one example to illustrate the procedure.

This property is a farm and wood lot located in Westphalia. The farmer is married and has 3 grown and 2 minor children. The total area of the property is 46.5 hectares (115 acres), of which 30 hectares are used for agriculture and 16.5 hectares for forestry. The taxes borne by this property during the fisca year 1927–28 were computed in the following manner, all values being in reichsmarks, except in the summation:

National Government taxes:

1. Income tax:

Income:	*Reichsmarks*	
Income from agricultural land	7, 500	
Income from forest, after deduction of costs of administration, and protection (*Werbungskosten*)	1, 800	
Rental value of residence	400	
		Reichsmarks
Gro s income		9, 700
Expenses:		
Wages	3, 550	
Interest	1, 440	
State and communal taxes	380	
Other expenses	240	
Total		5, 610
Net income		4, 090

National Government taxes—Continued.

1. Income tax—Continued.

	Reichsmarks	Reichsmarks
Deductions:		
Tax-free income	720	
Personal exemption for wife and 2 minor children	809	
Total		1, 529
Net taxable income		2, 561
This is rounded off to		2, 560
Applying tax rate (10 percent) to net taxable income		256
Deduction		12
National income tax		244

2. Turnover tax

Gross sales of agricultural products	13, 200. 00
Gross sales of forest products	2, 580. 00
Total	15, 780. 00
Turnover tax (0.75 percent of 15,780)	118. 35

3. Property tax:

	Reichsmarks	
Assessed value of agricultural property		45, 900. 00
Assessed value of forest property:		
10-year old pine stand (6.5 ha.)	812. 50	
30-year old pine stand (5.0 ha.)	950. 00	
50-year old spruce stand (5.0 ha.)	5, 090. 00	
Total	6, 852. 50	
This is rounded off to		6, 800. 00
Total assessed value (Einheitswert)		52, 700. 00
Less debts		18, 000. 00
Net taxable value		34, 700. 00
Property tax (0.4 percent of 34,700)		138. 80

4. Rentenbank interest tax:

Special armaments valuation (Wehrbeitragswert)	61, 400. 00
5 percent mortgage (Grundschuld) on this	3, 070. 00
Rentenbank interest tax (5 percent interest on mortgage)	153. 50

State land tax:

	Reichsmarks	
Assessed value (Ergänzungssteuerwert)		66, 300. 00
Monthly tax:		
0.01 percent of first 10,000	1. 00	
0.015 percent of next 30,000	4. 50	
0.02 percent of remaining 26,300	5. 26	
Total monthly land tax		10. 76
Total annual State land tax		129. 12
This is rounded off to		129. 00

Communal tax:

200 percent (Zuschlag) of the State land tax (129)	258. 00

Church tax:

10 percent of the income tax (244)	24. 40
5 percent of the State land tax (129)	6. 45
Total church tax	30. 85

Summary of taxes:

Income tax	244. 00 RM	($58. 12)
Property tax	138. 80 RM	($33. 06)
Turnover tax	118. 35 RM	($28. 19)
Rentenbank interest tax	153. 50 RM	($36. 56)
State land tax	129. 00 RM	($30. 73)
Communal tax	258. 00 RM	($61. 46)
Church tax	30. 85 RM	($7. 35)
Total	1, 072. 50 RM	($255. 47)

The taxes therefore amount to 23.10RM per hectare ($2.20 per acre).

For the purpose of comparing the tax burden in Germany with that of other countries it is desirable that the income tax be not considered since it is a personal tax on the owner rather than on the property. The turnover tax varies with the amount of income and is usually not included among taxes on property. The Rentenbank interest tax should also be omitted because of its temporary nature. When these three taxes are not considered, the taxes on this property amount to 556.65RM ($132.60), or 12 RM per hectare ($1.20 per acre).

The net income, before taxes, during the year in question amounted to 4,470RM ($1,065); therefore the taxes corresponding to the American property tax (here and in other similar analyses, excluding the income tax, turnover tax, and Rentenbank interest tax) represented 12 percent of the net income. These taxes were 1.1 percent of the official uniform value of 52,700RM ($12,600). These figures represent the actual experience of only one property in a single year, and together with similar figures which are given later afford only a very rough basis for comparison with taxes in other countries.

PROPERTY NO. 2

The data for property no. 2 and the following five examples of forest taxation were collected in Germany through agents employed for that purpose.

This is a property of 11,400 hectares (28,200 acres) located in southern Germany. Of this total area, 10,800 hectares (26,700 acres) are in forest and 600 hectares (1,500 acres) are in agricultural land. The agricultural areas are for the most part leased.

Conifers, consisting of spruce and fir, occupy 72 percent of the forest area, and hardwoods, mostly beech, occupy 28 percent.

The rotation is established at 100 years.

The condition of the age classes shows a considerable surplus in the higher age classes and a deficiency in the intermediate and younger age classes.

The forest is in very good condition. The market offers no difficulty under normal economic conditions.

The cut according to the management plan amounts to a total of 60,000 m^3 of Derbholz[39] annually; that is, 5.6 m^3 per hectare (about 80 cubic feet per acre). This cut is to be considered as normal. Of this amount, two-thirds is utilized as timber and one-third as firewood.

The taxes on this property in 1928–29 consisted of the following:

Income tax	26, 300 RM ($6, 300)
Property tax	44, 500 RM ($10, 600)
Turnover tax	13, 300 RM ($3, 200)
Rentenbank interest tax	27, 000 RM ($6, 400)
State land tax	29, 000 RM ($6, 900)
Communal tax	87, 300 RM ($20, 800)
Church tax	5, 500 RM ($1, 300)
Total	232, 900 RM ($55, 500)

Based on the total area of the property the taxes were a little over 20RM per hectare ($2 per acre).

When the income tax, turnover tax, and Rentenbank interest tax are not considered, the taxes on this property amount to 166,300RM,

[39] Wood more than 7 cm (2.76 inches) in diameter at the small end.

or 15RM per hectare ($39,600, or $1.40 per acre) on the forest area.

The net income, before taxes, for the fiscal year August 1, 1928, to July 31, 1929, amounted to 468,200RM (about $111,500); therefore the taxes which are comparable with the American property tax represented about 36 percent of this net income. These taxes amounted to about 1.4 percent of the official uniform value of 11,800,000RM ($2,810,000).

PROPERTY NO. 3

Property no. 3 is situated partly in Hessen and partly in Baden and consists of 3,100 hectares (7,660 acres), of which 2,950 hectares (7,290 acres) are in forest. The property is a protection forest, so that the rotations are fixed by State law. Theoretically, they are as follows: Beech, 140 years; pine, 100 years; and spruce, 70 years. In practice some older stands are present, owing to lack of market at this time for the products. The system of silviculture in use is high forest. The distribution of age classes in beech is fairly good, but in spruce there is an excess of the younger age classes. In the year 1929, the cut from the forest was equal to that called for by the working plan.

The taxes for the calendar year 1929 on this property were as follows:

Income tax	5, 290 RM ($1,260)
Property tax	27, 270 RM ($6,496)
Turnover tax	5, 000 RM ($1,191)
Rentenbank interest tax	13, 218 RM ($3,149)
State land and house tax	24, 190 RM ($5,762)
State hunting tax	997 RM ($237)
Communal tax	50, 607 RM ($12,055)
Church tax	4, 400 RM ($1,048)
Total	130, 972 RM ($31,198)

Omitting the income tax, turnover tax, and the Rentenbank interest tax, the taxes were 107,500RM ($25,600), or 36RM per hectare ($3.50 per acre) on the forest area.

The average net income, before taxes, for the 4 years from 1925 to 1928 was approximately 208,000RM ($49,500). The taxes corresponding to the American property tax therefore represented 52 percent of the net income, and 1.7 percent of the officially established assessed value of 6,312,000RM ($1,504,000).

PROPERTY NO. 4

Property no. 4 is located in Württemberg, and it consists of 2,600 hectares (6,400 acres), of which 2,075 hectares (5,130 acres) are in forest. The rest consists of agricultural parcels (meadows and fields) and some vineyards. The vineyards are managed by the owner, as are 120 hectares (300 acres) of agricultural land (poultry farm); 400 hectares (990 acres) of agricultural land are leased.

The forest is 70 percent stocked with conifers (spruce and pine) and 30 percent with hardwoods (beech and oak).

The rotation is established at 100 years.

The age classes are approximately normal; in the higher age classes there exists a slight deficiency, in the intermediate classes a small excess.

The forest is in good condition. Market conditions are favorable. Of the annual cut, two-thirds are used as timber and one-third as firewood.

The cut according to the management plan was 7,500 m^3 (264,900 cu. ft.), or 3.6 m^3 per hectare (51.6 cu. ft. per acre). The actual cut

during the last 5 years was somewhat higher than normal; it fluctuated between 7,500 and 9,000 m^3 (265,000 to 318,000 cu. ft.).

The taxes paid on the forest property during the fiscal year from Ju'y 1, 1929, to June 30, 1930, were as follows:

Income tax	25, 155 RM ($5,992)
Property tax	7, 884 RM ($1,878)
Turnover tax	1, 425 RM ($339)
Rentenbank interest tax	1, 903 RM ($453)
Inheritance tax	14, 393 RM ($3,428)
State and communal tax	16, 706 RM ($3,980)
Church tax	721 RM ($172)
Total	68, 187 RM ($16,242)

If the income tax, turnover tax, Rentenbank interest tax, and, of course, the inheritance tax are omitted, the taxes amount to 25,300RM ($6,030), or 12RM per hectare o forest land ($1.18 per acre).

The net income before taxes during the fiscal year 1929–30 was 81,023RM ($19,300). The burden of these taxes on the property therefore amounted to about 31 percent of the net income. They were 1.6 percent of the official assessed value of 1,577,000RM ($375,600).

PROPERTY NO. 5

Property no. 5 lies for the most part in southern Bavaria, with a small part in Württemberg. It comprises 9 estates and several other properties which, with the exception of several leased areas, are operated by the owner himself. The total area is about 10,000 hectares (25,000 acres), of which 7,900 hectares (19,500 acres) are in forest. On each of 3 of the estates is located a brewery, the taxes on which are not considered in the following calculation of the tax burden on the land.

The taxes on the entire property, including the breweries, were as follows during the calendar year 1925:

Income tax	112, 368 RM ($26, 766)
Property tax	96, 548 RM ($22, 998)
Turnover tax	43, 676 RM ($10, 404)
Rentenbank interest tax	32, 630 RM ($7, 772)
Rent interest tax (Mietzinssteuer)	11, 514 RM ($2, 743)
Home construction tax (Wohnungsbausteuer)	8, 478 RM ($2, 019)
State land and house tax	16, 673 RM ($3, 972)
Bavarian State industry tax	584 RM ($139)
Communal tax	31, 240 RM ($7, 441)
Church tax	28, 617 RM ($6, 817)
Total	382, 328 RM ($91, 071)

The following are the taxes, exclusive of the income tax, turnover tax, and Rentenbank interest tax, which were levied on the nonindustrial portion of the property:

Property tax	88, 913 RM ($21, 179)
Rent interest tax	11, 514 RM ($2, 743)
Home construction tax	8, 478 RM ($2, 019)
State land and house tax	16, 673 RM ($3, 972)
Communal tax	29, 695 RM ($7, 073)
Church tax	13, 722 RM ($3, 269)
Total	168, 995 RM ($40, 255)

These taxes on the nonindustrial portion of the property were 17RM per hectare ($1.60 per acre).

The net income before taxes of the nonindustrial portion of the property for the fiscal year 1924–25 was 239,800RM ($57,100). The above taxes are therefore 70 percent of the net income. They amount to 1.4 percent of the value of the nonindustrial portion of the property, established at 11,855,000RM ($2,824,000) for purposes of taxation.

It should be pointed out that, while the above figures exclude the industrial portions of the property, they nevertheless include quite a large amount of agricultural land which could not be segregated.

PROPERTY NO. 6

Property no. 6 is situated in Saxony. Its area is 975 hectares (2,400 acres), practically all of which is in forest. The forest area is principally in Scotch pine, which covers 88 percent. Spruce covers 7 percent of the area, and hardwoods and blanks the remaining 5 per cent.

The rotation is fixed at 90 years. A sustained annual yield of 2,430 m^3 (85,815 cubic feet), or 2.5 m^3 per hectare (35.8 cubic feet per acre) has been fixed. The age classes are fairly evenly distributed.

The taxes during the fiscal year 1928–29 were as follows:

Turnover tax	440 RM	($105)
Land tax	2,310 RM	($550)
House tax	221 RM	($53)
Dog tax	54 RM	($13)
Rentenbank interest tax	1,500 RM	($357)
Hunting tax	601 RM	($143)
Church and school taxes	290 RM	($69)
Total	5,416 RM	($1,290)

Without considering the turnover tax and the Rentenbank interest tax, the taxes were 3,476RM ($828), or 4RM per hectare ($0.35 per acre).

The net income from this property during the fiscal year 1928–29 was 8,350RM ($1,990), and the taxes represented 42 percent of this income. They were 0.9 percent of the officially established assessed value of about 384,500RM ($91,600).

PROPERTY NO. 7

Property no. 7 is a forest belonging to the city of Nauen in the vicinity of Berlin. It consists of an area of 1,221 hectares (3,017 acres) devoted exclusively to forestry.

The taxes paid on this forest in 1930 are as follows:

Income tax	5,674 RM	($1,352)
Property tax	1,992 RM	($474)
Turnover tax	691 RM	($165)
State land tax	2,816 RM	($671)
Hunting tax	68 RM	($16)
Dog tax	24 RM	($6)
Salary tax (Lohnsummensteuer)	507 RM	($121)
Communal tax	9,011 RM	($2,146)
Church tax	567 RM	($135)
Total	21,350RM	($5,086)

If the income tax and turnover tax are not considered, the taxes were 15,000RM ($3,570), or 12RM per hectare ($1.20 per acre).

The net income before taxes in 1930, presumably abnormally low, was 10,500RM ($2,500). The taxes were therefore 143 percent of the net income for that year. They amounted to 1.3 percent of the officially established assessed value of 1,173,000RM ($279,400).

PURE FOREST PROPERTIES IN 11 STATES

The Reichsverband Deutscher Waldbesitzeverbände (union of forest owners' associations) has collected tax data from samples of pure forest properties in 11 States. The aggregate data from these properties are given here to show the average tax burden on a sample of German forests. The total area of these properties is 147,000 hectares (363,000 acres). The taxes for the year 1929–30 were as follows:

Income tax	399, 839 RM ($95, 241)
Property tax	444, 963 RM ($105, 990)
Turnover tax	103, 684 RM ($24, 698)
Rentenbank interest tax	126, 565 RM ($30, 148)
Inheritance tax	40, 675 RM ($9, 689)
State land tax	466, 248 RM ($111, 060)
House interest tax (Hauszinssteuer)	24, 022 RM ($5, 722)
Hunting tax	31, 023 RM ($7, 390)
Dog tax	725 RM ($173)
Communal tax	445, 224 RM ($106, 052)
Church tax	48, 384 RM ($11, 525)
Road and bridge construction tax	60, 035 RM ($14, 300)
School tax	13, 673 RM ($3, 257)
Drainage tax (Deichlasten)	4, 459 RM ($1, 062)
Total	2, 209, 519 RM ($526, 307)

If the income tax, turnover tax, Rentenbank interest tax, and inheritance tax are not considered, the taxes for all of these properties were 1,539,000RM ($366,600), or 10.5RM per hectare ($1.01 per acre).

The net income from these properties was 3,053,000RM ($727,200) before taxes were paid. The portion taken by taxes was therefore 50 percent. The taxes amounted to 1.5 percent of the total assessed value of these properties, 101,873,000RM ($24,266,000).

FARM-FOREST PROPERTIES IN 10 STATES

The Reichsverband Deutscher Waldbesitzeverbände also collected tax data from samples of farm-forest properties in 10 States. The total forest area of these properties was 141,200 hectares (348,800 acres). The fol owing taxes were paid on the forest portions of the properties:

Income tax	390, 812 RM ($93, 092)
Property tax	307, 051 RM ($73, 140)
Turnover tax	77, 947 RM ($18, 567)
Rentenbank interest tax	99, 519 RM ($23, 705)
Inheritance tax	261, 232 RM ($62, 226)
State land tax	373, 914 RM ($89, 066)
House interest tax	23, 219 RM ($5, 531)
Hunting tax	12, 759 RM ($3, 039)
Dog tax	1, 057 RM ($252)
Communal tax	387, 755 RM ($92, 363)
Church tax	34, 725 RM ($8, 271)
Road and bridge construction tax	25, 350 RM ($6, 038)
School tax	21, 404 RM ($5, 098)
Total	2, 016, 744 RM ($480, 388)

If the income tax, turnover tax, Rentenbank interest tax, and inheritance tax are eliminated, the taxes become 1,187,000RM ($282,700), or 8.4RM per hectare ($0.81 per acre).

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The net income from these properties was 2,430,000RM ($578,800) before taxes were paid. The portion of income taken by taxes was therefore 49 percent. The taxes amounted to 1.3 percent of the total assessed value, 92,012,000 RM ($21,917,000).

PROPERTY NO. 8

For purposes of comparison, several examples are given of the taxation of agricultural properties (*265 pp. 225–235*). This first property is located in Silesia and consists of 120 hectares (300 acres). The following taxes were paid during the fiscal year 1927–28:

Income tax	780 RM	($186)
Turnover tax	315 RM	($75)
Property tax	428 RM	($102)
Rentenbank interest tax	392 RM	($93)
State land tax	456 RM	($109)
Communal tax	821 RM	($196)
Church tax	81 RM	($19)
Total	3,273 RM	($780)

If the income tax, turnover tax, and Rentenbank interest tax are omitted, the taxes amount to 1,786 RM ($426), or 15 RM per hectare ($1.40 per acre).

The net income before taxes amounted to 12,800 RM ($3,050). The taxes were therefore 14 percent of the net income. They amounted to 1.3 percent of the officially established assessed value of 135,000 RM ($32,200).

PROPERTY NO. 9

No. 9 is a farm property of 10 hectares (25 acres) situated in Bavaria. The taxes for 1928 were as follows:

Turnover tax	15.75 RM	($3.75)
Rentenbank interest tax	41.00 RM	($9.77)
State land tax	10.80 RM	($2.57)
State house tax	4.80 RM	($1.14)
Communal tax	49.80 RM	($11.87)
Church tax	1.68 RM	($0.40)
Total	123.83 RM	($29.50)

This property pays no income tax or property tax. If the turnover tax and the Rentenbank interest tax are omitted, the taxes amount to 67 RM ($16), or 6.7 RM per hectare ($0.64 per acre).

The net income, before taxes, amounted to 765 RM ($182). The taxes corresponding to the American property tax were therefore 9 percent of the net income, or 0.5 percent of the assessed value of 12,700 RM ($3,030).

PROPERTY NO. 10

Property no. 10 is a farm of 20 hectares (50 acres) in Brandenburg. The taxes for 1928 were as follows:

Income tax	70.15 RM	($16.71)
Property tax	32.80 RM	($7.81)
Turnover tax	48.75 RM	($11.61)
Rentenbank interest tax	61.50 RM	($14.65)
State land tax	44.00 RM	($10.48)
Communal tax	52.80 RM	($12.58)
Church tax	7.80 RM	($1.86)
Total	317.80 RM	($75.70)

The permanent taxes corresponding to the American property tax amounted to 137 RM ($32.60), or 7 RM per hectare ($0.65 per acre). These taxes were 6 percent of the net income of 2,220 RM ($529), or 0.6 percent of the assessed value of 21,400 RM ($5,100).

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

The tax rate on those individual German forests studied appears to be about the same as the ordinary rate prevalent in the United States; it ranges from 0.9 to 1.7 percent and, if the examples studied by the union of forest owners' associations are any indication of average conditions, the average tax rate is about 1.4 percent. The ratio of taxes to net income before taxes, however, appears to be somewhat lower for the German forests than for those of the United States. Although no direct comparison is possible because of the lack of data on net income from the practice of forestry in the United States the ratios of taxes to net income before taxes throughout complete income cycles (tax ratios) have been calculated for hypothetical examples based on American conditions. (See pt. 7.) Such tax ratios range from 50 to 90 percent. The examples which have been given for privately owned forests of Germany show a range of 31 to 70 percent in ratios of taxes to net income before taxes. These ratios, since they relate to annual sustained-yield forests, and were calculated for periods when the income appeared to be normal, may be considered as roughly comparable with the tax ratios calculated for American conditions. It has also been shown that the average ratio of taxes to net income in 1929–30 for the forest properties studied by the German union of forest owners' associations is about 50 percent. These figures appear to indicate a lower property tax burden on forestry in Germany than in the United States, which may be ascribed to the fact that the German examples are all drawn from the larger forests which are managed on a sustained-yield basis. The American examples are based on deferred-yield conditions, because of the preponderance of that type of management in the United States at the present time. But the ratios of taxes to net income for the German forests studied are much higher than for the agricultural properties in Germany for which data are available and higher than for industries in the United States other than forestry, agriculture, and mining. (See pt. 7.) Thus it appears that the forests of Germany may be adversely affected by taxes which correspond with the American property tax in the same manner, though to a less degree, than American forests. If personal income and turnover taxes are considered, the absolute burden of taxation on forest enterprises has undoubtedly been much greater in recent years in Germany than in the United States.

SWITZERLAND

GOVERNMENTAL AND TAX STRUCTURE

Switzerland in its political structure is more like the United States than the other countries which have been considered in this part since it is a federation (confederation or Bund) of 25 Cantons or States (including 6 demi-Cantons), each of which is to a large extent independent in matters of internal government, with its own tax system and methods of assessment. The Federal Government regulates

external affairs, the army, railways, and postal service and exercises a degree of control over public works, education, and forest administration, partly through the power to grant or withhold subsidies.

The Federal Government normally obtains its revenue entirely from indirect taxes, such as stamp taxes on various business documents, customs duties, and taxes on distilled liquors. The only direct federal taxes on property and income are extraordinary levies of a temporary character, such as the war tax, made necessary by the very heavy expenditures incurred through the mobilization of the army during the World War, and, more recently, the depression tax to meet the needs of the current crisis. The federal war tax was a combination property and income tax on individuals, with an excess-profits tax on corporations, and the depression tax is of a similar character. Individual fortunes are taxed on the basis of their net value determined by comparing assets and liabilities. The rates of the tax are sharply progressive. Net income is also taxed at progressive rates, but the taxpayer is allowed to deduct from taxable income 5 percent of the capital invested in a given enterprise. The exemptions are so high that only a small minority of the citizens is affected by this tax. Corporations are taxed at various rates depending on the ratio of net profits to paid-up capital and reserves.

Each Canton or State is divided into local districts known as communes or Gemeinden. The support of governmental functions is divided in various ways between the Canton and its communes. For example, in some Cantons education is supported largely by the communes, while in others this burden is divided between the communes and the Canton.

The financial systems of the various Cantons exhibit great variety. In general the mainstay of public revenues is a property tax supplemented by an income tax. These taxes are imposed by the Canton, and the communes are usually authorized to make additional levies on the basis of the cantonal tax. The other taxes most commonly used are corporation taxes, based either on profits or capital stock, transfer taxes, inheritance taxes, motor-vehicle, amusement, and various license taxes. In certain Cantons there is a tax on the value increment realized on occasion of the transfer of real property.

THE ECONOMIC IMPORTANCE OF FORESTS

The forests of Switzerland occupy nearly one-quarter (23.6 percent) of the total area of about 16,000 square miles. Since the productive area is only about three-quarters of the total, the forests cover nearly one-third of the productive land (*275, pp. 33–34*). These forests are of the utmost importance in the national economy of Switzerland. They are essential to the protection of mountain slopes and to the preservation of scenic values. They regulate the flow of the waters that supply reservoirs and power plants. Their annual yield in wood products is a substantial contribution to the national income. The timber-cutting and sawmill industries alone, according to a census taken in 1929, employ about 65,000 out of a total population of 4,000,000, while many more are occupied in the culture and protection of the forests (*269, p.128*).

In Switzerland only a little more than one-fourth (27.9 percent) of the forest area is privately owned. The great bulk of the public

forests belongs to the communes (67.5 percent of the total forest area), while a small amount (4.6 percent of the total forest area) belongs to the Cantons. The Federal Government owns practically no forest land (*275, p. 44*). Thus the forests are not only an important source of tax revenue, since public forests in Switzerland are far from tax exempt as will be shown later, but their income apart from taxes contributes in a substantial way to public revenues. During the period 1925–29 the average annual net income from the public forests was 35,329,000 francs ($6,817,000),[40] or 53.8 francs per hectare ($4.20 per acre) (*268, table 5*). In 1930 the net income was 33,636,000 francs (*269, pp. 171–172*), and the more recent figures (1931–33) will undoubtedly be still less on account of the depression. The forests owned by the Cantons are relatively small, but the revenue which they yield is nevertheless valued for its regularity under ordinary conditions. The income from public forests is of much greater importance to the communes than to the Cantons, constituting in many cases a substantial part of their income. In some cases the forest revenues meet all of the local requirements, making the fortunate inhabitants of those districts entirely free from local taxes.

The private forests are very unevenly distributed and are not very heavily represented in the high mountains of the Alps and of the Jura. They are as a rule in very small ownerships, and practically none is over 200 hectares (500 acres). They are less productive than the public forests, the average gross annual revenue from 1921 to 1930 varying between 34 and 43 francs per hectare ($2.70 and $3.40 per acre) (*269, p. 165*), which is generally less than the net annual revenue per hectare from public forests. These private forests are subject to strict governmental control designed to insure maintenance of the forest cover and prevention of excessive cuttings which might endanger their protective value. In the case of the forests classified as "protective", which constitute 63 percent [41] of the private forest area, this control s particularly rigid, and the owners are assisted in meeting the requirements by Government subsidies. Thus all of the forests, both private and public, are managed with a view to continuous production and protection of the public interest.

The product in timber from the Swiss forests is insufficient to meet domestic requirements. There is normally an excess of imports of timber and wood material. The reverse was the case during the years 1915–20 owing to the abnormal trade conditions brought about by the World War (*275, p. 201*).

TAXES THAT AFFECT FOREST PROPERTY

(270, 271)

The principal tax which burdens forest property in Switzerland is the general property or real estate tax, which is employed by the Cantons and their subdivisions, and since the World War by the Federal Government as well. However, forest properties are sometimes subject also to income taxes, transfer and inheritance taxes, as well as to church and other taxes of less fiscal importance. In practice, they escape the Federal tax on income, since income from property up to 5 percent of its value is exempt from this tax. The

[40] In this and subsequent cases where Swiss francs are converted to dollars, the basis is gold parity of 1933, or 1 franc equals $0.19295.

[41] Computed from areas given, see (*269, p.176*).

precise nature and application of the local taxes vary greatly in the different Cantons. Almost all of the Cantons have income taxes, but some do not tax income from real estate and certain others grant exemptions of 4 or 5 percent of the capital value subject to the property tax, thus virtually exempting income from forestry since forests rarely earn more than this rate. In a number of Cantons, forests are subject to both a property and an income tax.

To determine the taxable value of real estate for the property tax the usual rule is to use the "yield value", ordinarily the average net income capitalized at interest rates fixed by law at 4 or 5 percent. In some Cantons the actual value based on sales, or some figure between the actual value and the yield value, is used. With a few exceptions the value of mortgages may be deducted from the total value before the tax rate is applied. In a number of Cantons forests are allowed a deduction from their total assessed value of a fixed portion, ranging from 25 to 50 percent, before the tax rate is applied. Sometimes farm land or land in general is granted the same or a smaller rate of deduction from assessed value. The rates of the property tax are usually progressive, but they are on the whole much lower than those which are common in the United States.

The transfer taxes imposed by the Swiss Cantons, in contrast to those which burden the French forests, are generally at very moderate rates. Transfers between living persons are usually taxed between 2½ percent and 4 percent of the sale value, sometimes with a small addition for the benefit of the communes. Inheritances are ordinarily taxed at progressive rates according to the amount involved and the relationship of the heirs, with moderate or high maximum rates, according to the Canton. Inheritances in direct line are tax exempt in a number of the Cantons.

Further details as to the taxation of forest lands will be given for 6 cantons selected from among the 10 which have more than 10,000 hectares each in privately owned forests.[42]

BERN

The Canton levies a real-estate tax at the rate of 0.3 percent (*159, p. 116*), and there are local rates in addition which vary in the different communes. The base of the tax is the value of the real estate, from which the mortgage indebtedness may be deducted for the purpose of the cantonal tax but not for local taxes. In the case of forests the assessed value takes into consideration the average productivity of the forest. Once established, it is effective for an indefinite period, a general revaluation taking place from time to time as ordered by the council. A forest-valuation committee has charge of this assessment.

The cantonal income tax of 4.5 percent is not levied on real estate and therefore does not affect forests. There is a tax on the transfer of real property, generally 6 percent of the sale price, all of which goes to the Canton. An inheritance tax is levied at rates that vary with the amount of the bequest and the relationship of the heir; 1 to 3 percent for husband, wife, children, or grandchildren; 4 to 8 percent for parents; 6 to 24 percent for more distant relatives; and 15 to 30 percent for other persons. Of this tax 80 percent goes to the Canton and 20 percent to the commune.

[42] For the area of private forests by cantons, refer to La Forestier (*275, p. 45*).

NEUCHATEL

The property tax applies uniformly to all property, real and personal, after deduction of debts. The cantonal rate is progressive, varying from 0.16 percent on taxable capital up to 5,000 francs, to 0.7 percent for that part of the taxable capital above 5,000,000 francs. A fortune of 100,000 francs ($19,300), for example, would bear a tax of 0.278 percent (*273*).

The income tax permits the taxpayer to deduct from his net income an amount equal to the usual return on the capital used in his business up to a maximum of 4 percent.[43] This provision means that practically all forest operations are exempt from this tax.

The communes are permitted to levy additional taxes on property and income on the same base as the Canton. The rates may be either proportional or progressive. If proportional, the total local tax levied cannot exceed 0.4 percent on capital or 4 percent on income. If progressive, the maximum rates for local purposes must not exceed 0.8 percent on capital, or 8 percent on income, and the schedule of rates must be approved by the State council. However, in addition to these taxes on general property and income, the communes may levy supplementary taxes on real estate.[44]

Real estate transfers are also subject to tax at a rate of 4 percent on selling price, and inheritance taxes are levied on collateral heirs at various rates.

Assessments of real estate for the property tax are made by the tax commission of the Canton. The assessment of forests is made with the assistance of the cantonal forest inspector. The general rule for the valuation of real estate for the property tax is that lands are assessed in accordance with intrinsic value, disregarding differences in the skill and industry with which they are cultivated. In the case of forests and wooded pastures, consideration is given to the value of the soil, density of stocking, and productivity under regulated management on silvicultural principles. On the basis established in 1923, both public and private forests are valued at net yield capitalized at 4 percent. Private forests not under management, for which necessary data for a direct appraisal are lacking, are valued by estimating certain factors and relating these to the value by means of established relationships expressed in tables. The productivity of the site and growing stock is estimated in cubic meters of annual yield per hectare, the range being from 3 to 8 cubic meters for a fully stocked stand (43 to 114 cubic feet per acre). These figures are discounted for the density of the growing stock, five different grades being recognized. It is exceptional in Switzerland to give the actual timber on the ground any recognition in determining taxable value. The price to be applied in order to determine the net yield in money is based on a consideration of quality of the stand, logging conditions, and accessibility to market. Each of these 3 factors is divided into 4 grades which are expressed by the ratios 1.0, 0.8, 0.6, and 0.4. The combined effect of these three factors is determined by multiplication, which gives a coefficient applicable to the optimum price for timber stumpage in the Canton, as determined by the cantonal forester. To reduce the work of calculation, a table is supplied giving the value per cubic meter for all of the 64 possible combinations

[43] Law of Apr. 30, 1903, art. 15.
[44] Law of Oct. 29, 1885, arts. 1, 2, 3, and 4; modified by decree of Nov. 29, 1917, and law of Feb. 9, 1921.

of ratings of the different factors. The stumpage value thus determined is multiplied by the yield in cubic meters, and the resulting product, capitalized at 4 percent, is the assessed value.[45]

ST. GALLEN

All real and personal property is taxed on the basis of value less debts, with certain exceptions which will be noted later. The cantonal rate is progressive, varying from 0.1 percent on a total capital between 1,000 and 100,000 francs ($193 and $19,300) to 0.25 percent on a total capital over 2,500,000 francs ($482,400) (*274, art. 8*). The communal taxes are proportional, not progressive, and have no legal maximum limit. The income tax is a supplementary levy, in that income from capital taxed under the property tax is not included in taxable ncome as long as the latest 3-year average does not show an income in excess of 5 percent of the value (*274, art. 12*). Thus forest operations are in practice taxed only under the property tax.

The assessments for the property tax are in the hands of local commissions under the presidency of cantonal officials. The forest officers actively assist in the assessment. The law requires that real estate in general be assessed at market value, with due consideration to the fluctuations experienced in the past and also with regard to average yield. Open lands, such as plowland, pastures, vineyards, and bogs, are taxed on the basis of three-fourths of this value, but without reduction for mortgages. Forests under working plans recognized by the Canton are valued at 12½ times the yield as indicated by the average net income of the preceding 10 years. However, in computing the average net income for this purpose, taxes and costs of constructing new roads are not deductible. Thus the assessment method applied to these forests under working plans would give one-half of the yield value based on a capitalization rate of 4 percent, since such a value would be 25 times the yield. All other forests, that is, those without approved working plans, are assessed at one-half the market value.

All private forests, with one exception covering 45 hectares, are small parcels not managed under working plans. As there are seldom sufficient sales of forest properties to provide a basis for valuation by direct comparison, a system of approximating market values is used, based on the following factors: (1) The average price of stumpage under the felling conditions (2) the average annual increment, and (3) the age of the stand.

In order to facilitate computation, it is the practice to use tables based on the above-mentioned factors. For example, the table in use in 1925 (*270, pp. 56–57*), gives values computed so as to reflect the worth of a stand at various ages if managed on a 100-year rotation, assuming that the interest rate is 3½ percent and that the profits from thinnings offset the expenses of management and protection. By means of this table one may find the assessed value corresponding to any 1 of 5 different age classes for each of 5 different stumpage-price values (making 25 combinations on the side of the table), and to 5 different grades of average annual increment (in 5 different columns). Interpolation is required for forests falling between the classes provided for. This table shows an extreme range of values from 30 to 15,000 francs per hectare ($2.34 to $1,171 per acre). A

[45] For a more complete description of this method of valuation, refer to Biolley (*267, p. 781*).

forest of fairly good annual increment (5 to 6 cubic meters per hectare, or 71.5 to 85.8 cubic feet per acre) with products worth a stumpage value when mature of 23 to 27 francs per cubic meter (12.6 cents to 14.8 cents per cubic foot) is valued at 300 francs per hectare ($23.40 per acre) if the stand is of the lowest age class, 0 to 20 years, and at 5,000 francs per hectare ($390 per acre) if it is of the highest age class, 81 years and over. The values from the table are applied to growing stock only, and in addition land is valued at 50 to 600 francs per hectare, according to the annual increment it yields and the local prices of timber. The land values are from a table showing 9 ranges of stumpage value on the side, with 4 columns for different grades of increment. The land values in this table were made rather low, partly as an offset to the fact that the valuations of growing stock in the official table were estimated rather high, and partly because a profitable return from the forest is considered possible only on the basis of moderate land values. This method of valuation gives relatively higher figures than the method applied to forests under management plans.

TESSIN

Both real estate and personal property, less a reduction for debts, are subject to the property tax. The income tax applies to net income from all sources, including capital taxed under the property tax. Real estate in general is assessed at 50 to 75 percent of market value. Forests and agricultural lands are assessed on the basis of their actual yield capitalized at 5 percent. Formerly technical advice was dispensed with in making these assessments, and woodlands and alpine meadows were assessed so high that many appeals were taken to court. This led to special legislation in 1920 providing for the establishment of yield and capital values of pasture and forest land by a commission of experts, including the cantonal forest inspector. The increasing use of working plans in forest management has made the work of this commission easier.

VAUD

The present method of direct taxation, adopted in 1923, involves a combined tax on property and income (*271, p. 203, no. 9–10*). Income is calculated after a deduction of 5 percent on the capital invested, so that this part of the tax is not important in forest operations. In determining the taxable value of capital, all real estate is included at 80 percent of its assessed value. The rates of both taxes are progressive on a fixed scale by categories of capital and income. The initial rates are fixed annually by law, but the rate on income is always 10 times the rate on capital. The initial rate is usually 0.15 percent on capital and 1.5 percent on income, with maximum rates of 0.85 percent on property and 8.5 percent on income. In some years uniform percentage reductions from the taxes produced by the standard schedules are allowed. Thus there was a 4-percent reduction in the year 1930. In addition the communes may levy rates up to the same maximum limits as the Canton, with or without progression, but the rate of progession may not be steeper than that of the cantonal tax.

There are also transfer, inheritance, and gift taxes, the rates of which are determined annually. Thus in 1930 the transfer tax on sales of real estate was 3 percent, and the inheritance or gift tax

rates on successions or donations in direct line of descent were on a progressive scale varying from 1.6 to 5.2 percent of the different portions of the total value. The communes are entitled to levy in addition 30 percent of the cantonal tax on transfers, up to one-half of the cantonal tax on inheritances in direct line, and up to double the cantonal tax on inheritances in indirect line.

The value of forests and wooded pasture for assessment under the property tax is estimated, as in the case of other real estate, by capitalizing the estimated annual net yield at a rate of 5 percent. In estimating the yield, consideration is given to the fertility of the soil on the one hand and the condition of the growing stock on the other. The volume of the standing timber is not considered; wooded properties in the same condition of fertility, density of stocking, and market situation are taxed at the same value whether the standing timber has reached its maximum development or whether it has just been cut.[46]

ZURICH

The Canton imposes a general property tax (*159, p. 116*) based on the total fortune of the taxpayer less debts, at a progressive scale of rates from 0.15 to 0.25 percent. The local communes may raise up to 250 percent of the cantonal tax for local purposes and may also levy a local real estate tax at a flat rate up to 0.05 percent. There is in addition a cantonal tax on all income, at progressive rates on a scale from 1 to 6 percent. The Canton also levies an inheritance and gift tax at rates from 2 to 15 percent, from which parents, wife, and descendents are exempt. The local authorities levy a tax on real estate transfers, at rates fixed by local act from 0.25 to 2.0 percent, and a tax on increment of real estate value (selling price less purchase price), at rates which may not exceed 25 percent.

Property generally is assessed for the property tax at market value, but farm and forest land are assessed at three-fourths of market value. The total value of a forest is determined from the area, age of stand, site quality, and growth condition. The area is taken from the land register, and investigation must be made as to the other factors. The values are determined from these factors, with the aid of a small table with 5 age classes at 20-year intervals on the left, and 5 columns for different grades of quality and growth conditions considered together (*270, p. 19*). For example, for the age class 41–60, values are found ranging from 180 francs per hectare ($14 per acre) for the poorest site and growth conditions to 5,350 francs per hectare ($418 per acre) for the best. The lowest value for age class 0–20 is 45 francs per hectare ($3.50 per acre), and the highest for age class 80 and over is 22,000 francs per hectare ($1,720 per acre). The relationships of this table are based in part on the more elaborate valuation tables used in St. Gallen.

In this Canton most of the forests owned by semipublic corporations are subject to easements giving the holders, usually local residents, the rights to certain definitely stated forest uses or products. Such a corporation is taxed only on its own equity in the forest. The holder of such an easement is taxed on the sale value of his rights, from which one-fourth is deducted to obtain the assessed value as in the case of fee-simple ownerships in forest land.

[46] For a more complete description of forest valuation for tax purposes in this canton, refer to Moreillon (*272, p. 791*).

TAXATION OF PUBLICLY OWNED FORESTS

The forests owned by the Cantons are as a rule subject to the taxes levied by the communes but are relieved of those levied by the Cantons to which they belong. The exceptions to this rule include the Canton of Vaud where the cantonal forests are exempt from all taxation, both cantonal and communal. However it is reported that the exemption of these forests in Vaud from the taxes levied by the communes is not a serious embarrassment to these local districts, since the Canton is customarily more liberal in its subsidies for roads and other local purposes to those communes which contain cantonal forests. The exceptions to the general rule also include the Canton of Bern, where the cantonal forests are subject to the taxes levied by the Canton. This arrangement is of course only a matter of bookkeeping, as the taxpayer and the tax receiver are the same.

Communal forests are in general subject to taxes of the Canton but ordinarily not to those imposed by the communes to which they belong. There are numerous exceptions to the latter rule, and in some cases the communal forests are subject to local taxes for certain special purposes only, as the church taxes, while exempt from other local levies.

A communal forest located outside of the commune to which it belongs is subject to the communal taxes of the commune in which it is located. Similarly, a cantonal forest located outside of the Canton to which it belongs is subject to the cantonal taxes of the Canton in which it is located.

Information has been compiled for the year 1923 as to the burden of taxes on public forests in many of the Cantons of Switzerland (*270*). The figures obtained by that investigation show fairly wide variation, both as to the average tax per hectare and the ratios of taxes to gross and net income. However they indicate that the total burden of taxation on public forests is moderate. In most cases the average tax on public forests for all purposes is between 2 and 15 francs per hectare ($0.16 and $1.17 per acre). The portion of net income taken by taxes is usually between 4 and 20 percent; of gross income between 2 and 10 percent. The latter figures are comparable to 35 percent in the case of the national forests of the United States, where the Federal Government pays 25 percent of gross income to the States in lieu of State and local taxes (except in Arizona and New Mexico where a different method of reimbursement is used), and spends an additional 10 percent for the construction and maintenance of local roads.

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

The owner of forest property in Switzerland is constrained by law and custom to practice forestry, and he would find it impossible to escape from burdensome taxation by cutting off his timber. The only market value which attaches to forests, since they cannot be treated destructively, is that predicated on the net income which the forest will yield when managed as a continuous enterprise. Therefore the general situation is quite different with respect to the possible effect of taxation on forest management from that which obtains in countries where there is little or no restriction on the use of forest lands.

It has been noted that, leaving out of consideration the temporary taxes imposed by the Federal Government, the principal tax on forests in Switzerland is the property tax levied for cantonal and local purposes. This is an annual tax and must be paid regardless of actual revenues received, just as in the case of the property tax in the United States. Many of the private forests in Switzerland are so small that it is impossible to manage them on an annual sustained-yield basis. Why does this tax not call forth the same complaint as the American property tax?

In the first place, the rates of the Swiss property tax are comparatively low. Based on actual value, they are generally far below the rates commonly imposed in the United States.

Second, the values at which the forests are assessed are based on permanent forestry use and are generally moderate even from this viewpoint. In practice assessed values are ordinarily less than actual values, and much less than the values which the same forests might command if destructive utilization were permitted and the owner could plan to convert his forest when market conditions for the product were favorable. They leave out of consideration the fact that the actual value of a given forest may reflect, in addition to the money income, various intangible incomes in the form of prestige, consciousness of public service, and the like.

Finally, the larger private forests are managed so as to yield income either annually or at fairly short periods, while the very small parcels which cannot be handled in this way are usually owned in connection with farm or other property which yields an annual income. Therefore there is no large scale problem of deferment of income from forest property, as in the United States under present conditions.

It is not intended to imply that there is no complaint at all with respect to the taxation of forest lands in Switzerland, or that the situation there is whol y satisfactory. The large number of independent tax systems of the Cantons, applied in a country that is smaller than the combined States of Massachusetts and Vermont, naturally gives rise to disturbing inequalities of tax burden between neighboring properties in different tax districts. The question of equitable assessment for the annual property tax is by no means entirely solved in all of the Cantons. There are no specific tax concessions designed to lighten the burden on new plantations, as in France. In certain Cantons, such as Vaud, there is uncertainty as to the method of appraisal for transfer and inheritance taxes, the choice of method being left to the discretion of local commissions. The way is open to the use of appraisals which are in effect inventories of the material in the forest, treating all of the standing timber as if available for immediate conversion. The value obtained on this assumption may be double or triple the assessment of the same properties for the property tax based on capitalization of current net income. The use of such appraisals in certain cases according to the ruling of the particular commission concerned is inequitable, and if a property happens to be overvalued in this manner and also subject to high rates on account of inheritance in indirect line, the resulting tax may be confiscatory.

Forests as a class, however, appear to be moderately taxed in relation to income and value, and in a number of Cantons they are accorded special consideration beyond that granted to other real

estate. Thus, while the owner of a forest in Switzerland is much restricted in the free use of his property, the exceptional public benefits from the maintenance of forests are recognized by the public in according the forest owner a generally favorable basis of taxation, although he is subject to regular annual taxes on land and timber similar to those levied on other real estate.

SWEDEN [47]

GOVERNMENTAL AND TAX STRUCTURE

The Kingdom of Sweden is situated in the eastern part of the Scandinavian Peninsula. Its land area comprises 159,000 square miles, and it has a population (1928) of 6,105,000, of which 4,164,000 (68 percent) live in the rural sections (*277, 1929, p. 4*).

The country is divided into 25 provinces (län), each of which is governed by a general council (landsting). The functions of the provinces principally concern public health, education, the general development of agriculture, the construction and maintenance of means of communication, and the upholding of law and order.

There are 2,530 primary communes (kommuner) in Sweden, of which 2,374 are rural. The main activities of these communes are in connection with education, destitute relief, and police. Other civil divisions include units called härad, certain associations of communes called municipalsamhällen, road districts, school districts, judicial districts, and church districts (parishes) (*277, 1929, p. 2*). Unless otherwise specified, the term "communes" will be used to mean all political divisions below the provinces.

The general tax structure may be pictured by showing the importance of the various taxes in the entire tax system of the National Government, the provinces, and the communes. Here, as elsewhere, the amounts in Swedish kronor are converted to American money. The converting factor used is $0.26799, which is the gold parity value (in 1933) of the Swedish krona.

The tax revenues of the National Government for the fiscal year 1927–28 are given in table 139 (*277, 1929, pp. 278–281*).

TABLE 139.—*Income from taxes levied by the Swedish National Government, 1927–28*

Tax	Receipts	
	Kronor	*Dollars*
Capitation tax	1,015,000	272,000
Income, property, and business taxes:		
Old land taxes	2,500,000	670,000
Income and property tax	145,666,000	39,037,000
Bevillning of real estate and of income (now repealed)	3,859,000	1,034,000
Bevillning of special business (fees paid by traveling salesmen)	493,000	132,000
Stamp duties	59,014,000	15,815,000
Shipping duties	671,000	180,000
Total	213,218,000	57,140,000
Motor-vehicle tax	31,883,000	8,545,000
Customs and excises	316,382,000	84,787,000
Grand total	561,483,000	150,472,000

[47] This section, except as otherwise noted, is a condensation of a doctorate dissertation entitled "Methods of Forest Taxation in Norway and Sweden", by Otto Nieuwejaar, professor of economics, St. Lawrence University, formerly assistant professor of forestry, University of Riga, Latvia, and a temporary member of the staff of the Forest Taxation Inquiry.

The tax levies of the provinces for the year 1927 are given in table 140 (*277, 1929, p. 327*).

TABLE 140.—*Taxes levied by the Swedish provinces, 1927*

Tax	Amount of levy	
	Kronor	*Dollars*
Tax on income	50, 455, 000	13, 522, 000
Capitation tax (health service fees)	1, 180, 000	316, 000
Total	51, 635, 000	13, 838, 000

The aggregate tax levy of the Swedish communes for 1925 is given in table 141 (*277, 1929, pp. 326–327*).

TABLE 141.—*Taxes levied by Swedish communes, including the large cities and towns and all districts below provinces, 1925*

Tax	Amount of levy	
	Kronor	*Dollars*
Tax on income and re l estate	261, 577, 000	70, 100, 000
Communal progressive tax	18, 606, 000	4, 986, 000
Road tax	32, 817, 000	8, 794, 000
Capitation tax	1, 107, 000	297, 000
Forest excise tax	3, 258, 000	873, 000
Amusement tax	5, 194, 000	1, 392, 000
Dog tax	2, 055, 000	551, 000
Other taxes	2, 003, 000	537, 000
Total	326, 617, 000	87, 530, 000

THE ECONOMIC IMPORTANCE OF FORESTS

According to the national forest survey of 1923–29, Sweden has a total productive forest area of 57,270,000 acres. This is 56 percent of the total land area. The total stand of timber was estimated at that time at 1,417,000,000 cubic meters (50,000,000,000 cubic feet) of peeled wood, or 61 cubic meters per hectare (874 cubic feet per acre) of productive forest land. Of this total stand, 42 percent consists of spruce, 40 percent of pine, and 13 percent of birch. This volume is very well distributed among the various age classes (*276*).

About 24 percent of the total productive forest area is in public ownership, while the remaining 76 percent is privately owned. The distribution of the Swedish forest area according to ownership classes in 1928, in percent of the total productive forest area, was as follows (*277, 1930, pp. 107–108*):

	Percent
Public forests:	
National forests	20. 0
Other	3. 8
Total	23. 8
Forests in private ownership:	
Corporation forests	27. 1
Estate forests	3. 4
Farm forests	45. 7
Total	76. 2
Total productive forest area	100. 0

Forestry and the principal industries dependent on it gave employment to the following numbers of individuals in 1931 (*240*):

Forestry	99, 313
Sawmills and planing mills	37, 297
Joinery and furniture	16, 674
Wood pulp	18, 711
Paper and pasteboard mills	17, 096
Match factories	4, 985
Total	194, 076

TAXES THAT AFFECT FOREST PROPERTY

Most of the important taxes in Sweden, both national and local, are very intimately connected one with the other. It is therefore difficult to explain the various taxes in logical order. For the sake of simplicity those taxes which use the same tax base will be discussed together, whether they be national or local, income or property taxes. For illustration of the various taxes the reader is referred to the example at the end of this section.

COMMUNAL INCOME-REAL ESTATE TAX [48]

The most important tax on rural property is the communal income-real estate tax. This is actually the basic tax of the entire Swedish system. As its name implies it is a tax on the amount of real estate owned and on the income received from that real estate. The tax base therefore consists of two parts, namely, the real estate tax base and the income tax base.

The first step in arriving at the real estate tax base is the assessment. A general assessment is made every 5 years and the work is performed by local boards. These boards consist of 2 members appointed by a provincial assessment board (1 representative of the province and 1 of the national government) and from 3 to 10 members elected by the people of the local district. The work of these local boards is reviewed by a board of supervisors consisting of from 8 to 15 members appointed by the provincial assessment board.

Real estate is assessed at its market value less debts outstanding against it. In the case of forest property, however, a uniform method of appraisal is used, which more or less disregards market value in individual cases. Forest land is appraised on the basis of its normal productive capacity. The normal productive capacity of each tract of forest land is determined by estimating the average annual volume in cubic meters per hectare of wood produced by the whole forest over a long period of years. This is called the site-quality index. The money value of this normal annual volume is determined by multiplying the volume by the average stumpage price obtained in the particular locality for similar grades of timber during the preceding 5 years. A deduction of 25 percent (as much as 50 percent in the case of the more inaccessible forests) is made from this normal money yield for expenses to arrive at the net money yield per hectare.

In capitalizing the normal annual yield to arrive at the assessed value a multiplication factor of 20 is used. This corresponds to a capitalization rate of 5 percent. For the purpose of giving a separate value to land and to trees this factor is divided into two parts, namely,

[48] Svensk Författningssamling 1927, no. 308, pp. 586–595; 1928, no. 370, pp. 1027–1095.

3.5 for land and 16.5 for trees. Thus the net money yield per hectare is multiplied by 3.5 to get the assessed value per hectare of the forest land.

Before the net money yield is capitalized to get the value of the trees, the yield is adjusted for "relative growing stock." If a forest has a normal distribution of age classes, it has a normal growing stock and no adjustment is necessary. The relative growing stock in this case is 1. If a forest has an excess of the older age classes, its relative growing stock is greater than 1, and if there is a deficiency of the older age classes the relative growing stock is less than 1. After the net money yield per hectare has been multiplied by the relative growing stock factor, the product is multiplied by 16.5. This gives the assessed value per hectare of the trees. The per hectare values, both of land and trees, are multiplied by the area of forest land to get the total assessed value.

In Sweden the assessed value is not the tax base. First, the assessed value is converted arbitrarily to an income basis by applying a specific rate, either 6, 5, or 4 percent, depending on the type of property as explained later. This conversion to an income basis is made for two purposes: (1) It aims to put the property tax base on a common basis with the income tax base thus facilitating their combination into one amount and thereby reducing the computation of the two kinds of taxes to one operation; and (2) to provide for a differential treatment among the different kinds of property and among certain elements of value in the same kind of property. Then this converted assessed value is divided by 100 to obtain the real estate tax base, presumably for ease in computing the tax. If this division were not made, it would be necessary to carry a large number of zeros in some of the tax rates, and this always increases the danger of error. To the real estate tax base is added the income tax base (to be described at a later point) before the tax is computed. If there is no income tax base the owner of the property pays only the real estate tax. This is called the "guarantee" feature of the tax, that is, an annual tax on all forest real estate value is assured, regardless of whether or not any actual income has been received from such property during the year.

As stated above, the first adjustment of the assessed value is made by applying different rates depending on the kind of property. For farm real estate and for the land value of forest property 6 percent of the assessed value is taken. For residential and business properties the rate applied is 5 percent. For forest growing stock (trees), only 4 percent of the assessed value is included in the tax base.

The fundamental basis for the income-tax base is the actual net income received from the property during the year. The net income is determined from the personal declaration of the owner which contains a detailed statement of the gross income received and the expenses incurred in maintaining that gross income. In the case of forests where annual cutting is exceeding the annual growth, a depletion charge is deducted. Net income is determined differently for the various kinds of property—a very complicated procedure, which it is not necessary to go into in this brief description of the system.

From the total net income as determined from the personal declaration of the owner is deducted that part of the net income which is taxed under the real-estate tax. This deduction consists of 100 times the real-estate tax base. In other words, the deduction is the arbi-

trary income figure determined by the first step in the adjustment of the assessed value, as described above. From the residual net income is deducted a personal exemption, which varies with the cost of living in the ocality in which the taxpayer resides (the country is divided into five districts for th s purpose on the basis of the costs of living) and with the number of persons in the family. The amount remaining after the deduction of the personal exemption is the taxable net income. The income tax base is determined by dividing the taxable net income by 100. This is done, of course, to place the income-tax base on the same basis as the real-estate tax base.

The income-tax base is then added to the real-estate tax base and this total tax base is multiplied by a flat tax rate (the sum of the communal, parish, and school-district rates) to determine the communal income-real estate tax.

PROVINCIAL COUNCIL TAX

Several different governmental units are allowed to levy taxes on the communal income-real estate tax base. One of these units is the province. The tax, called the provincial council tax, is determined by applying the provincial council tax rate to the communal income-real estate tax base. This tax is usually much smaller than the communal income-real estate tax.

ASSIZE DIVISION TAX

The assize division (judicial district) also levies a tax on the communal income-real estate tax base. This tax is extremely small.

ROAD TAX

Contributions for road maintenance are made either by actual labor in keeping a certain length of road in good condition or by a tax contribution. Any owner of real estate not contributing in actual labor is subject to the road tax. This tax is principally a real property tax, and income enters into the tax base only to a sma l extent.

The base for the road tax is called the "vägfyrk." The real estate part of the road-tax base in the case of privately owned farm and forest property is determined by dividing the assessed value by 100. In the case of forest property in public ownership the assessed value is divided by 150 and in the case of other real estate the assessed value is divided by 200. In computing the income part of the road-tax base, the taxable net income is divided by 15. The sum of the real estate part and the income part of the road-tax base is the total road-tax base. As stated above, this is expressed in terms of units called "vägfyrk." The road tax is determined by applying the road district tax rate to the road-tax base. This tax is usually quite large. For the ordinary run of rural real estate it usually ranks next in amount to the communal income-real estate tax and the national income-property tax.

FOREST EXCISE TAX

The forest excise tax is intended as a rough offset to the relatively low arbitrary income rate used in computing the tax base in respect to forest growing stock under the communal income-real estate tax. The base for this tax in any 1 year is the stumpage value of timber cut during the year. The communal tax rate on this base is one-

fourth of the average communal income-real estate tax rate of the past 5 years. Other local governmental units may also levy a tax on the same base at the rate of one-fourth of their local rates. In order to secure an equalization of the receipts from year to year, the forest excise tax law provides for the setting aside of a portion of the receipts into a fund and limits the amount to be used in any 1 year.

FOREST CONSERVATION FEE

The forest conservation fee is in the nature of a special assessment levied on owners of forest property for protection purposes. This fee is levied against all property which is subject to the forest excise tax; in fact, the same tax base is used, i. e., the stumpage value of timber cut. The rate, according to the ordinance of September 28, 1928, no. 275, is 1.3 percent of the stumpage value of timber cut during the year. This special assessment is levied by the National Government but the receipts are placed at the disposal of the various forest conservation boards.

NATIONAL INCOME-PROPERTY TAX

As previously noted, this is the most important tax of the National Government from the standpoint of yield.[49] The base of this tax for any given taxpayer is his net income plus one-sixtieth of the assessed value of tangible and intangible property owned by him. The net income is determined in the same manner, with minor differences, as for the communal income-real estate tax. The assessed value of the property as determined for the communal income-real estate tax is also used for the national income-property tax.

The property part of the tax is included for the purpose of placing an extra tax burden upon income from property. It is assumed (1) that such income is able to carry a one-third greater tax burden than income from other sources, and (2) that the income from a property is equivalent to one-twentieth of its assessed value. The product of one-third and one-twentieth (one-sixtieth) is the factor used to reduce the property value to the income basis. The amount so derived is added to the net income. From this sum is deducted the personal exemption, which is equal to twice the personal exemption under the communal income-real estate tax. The amount left after these deductions is called the "taxable amount." The tax base is determined by applying progressive rates (not tax rates) to the taxable amount. For individual persons and undivided estates of deceased persons, these rates range from 3 percent on that portion of the taxable amount up to 10,000 kronor ($2,680) to 15 percent on that portion above 1,000,000 kronor ($268,000), but the tax base must in no case exceed 12 percent of the total taxable amount. For Swedish corporations the tax base constitutes from 1.5 to 12 percent of the taxable amount, depending on the ratio of the taxable amount to the capital and surplus of the company. The tax of each taxpayer is determined by applying a flat tax rate to the tax base. This tax rate varies from year to year in accordance with the revenue needs of the National Government. In 1928 the tax rate was 145 percent. It should be remembered that the tax base is only 1.5 to 12 percent of the taxable amount (adjusted income).

[49] Svensk Författningssamling, 1928, no. 373, pp. 1097-1114.

COMMUNAL PROGRESSIVE TAX

The communal progressive tax is supplemental to the communal income-real estate tax and is payable to the communes, parishes, and school districts. The tax base is determined by applying progressive rates to the "taxable amount" as determined for the national income-property tax. For individuals these rates vary from 0.5 percent on that part of the taxable amount above 3,000 kronor ($804) but not more than 9,000 kronor ($2,412), up to 5 percent on that part above 100,000 kronor ($26,800); but the tax base is limited to a maximum of 4.5 percent of the total taxable amount. For corporations the rates are somewhat different, and the total tax base must not exceed 3.75 percent of the total taxable amount. The tax rate to be applied to the tax base is the sum of communal, parish, and school district rates.

EQUALIZATION TAX

The equalization tax is payable by any person who is subject to the communal progressive tax. The tax base is one-third of the tax base of the communal progressive tax, and the rate is determined annually. The tax is levied by the National Government, and the proceeds are used to equalize the tax burden among the individual communes or other local jurisdictions. This tax is generally very small.

INHERITANCE AND GIFT TAXES

The Swedish National Government levies inheritance and gift taxes on all property inherited or obtained by gift. The rates of these taxes are progressive, increasing with the amount of the legacy and as the degree of relationship between the testator and beneficiary becomes more remote. These taxes, of course, affect forest property only occasionally.

TAXATION OF PUBLIC FORESTS [50]

National forests, church forests, and other public forests pay, on the basis of assessed value, the communal real estate tax, the provincial council tax, the road tax, and the assize division tax. On the basis of income they also pay the communal progressive tax and the equalization tax. These forests and the income derived from them are exempt from all National Government taxes.

TAXATION OF A SAMPLE FOREST

In order to illustrate the amount and character of the various kinds of taxes levied on a forest property, the following example of the taxation of an actual forest is given. This forest formed the basis of a paper by Toumey and Lindeberg (*278*) from which most of the data were taken. Additional first-hand information was also given by Mr. Lindeberg.

The property is a large farm in the central part of the wooded district of the province of Södermanland, not far from Stockholm. It consists of a total of 540 hectares (1,334 acres), of which 400 hectares (988 acres) are productive forest land. The forest consists principally of spruce and pine, while birch is the chief hardwood species. The growing stock is approximately normal.

[50] Obtained by correspondence from Erik Lindeberg, tax expert of the Swedish Forest Service, Nov. 11, 1931.

The taxes on the forest portion of the property for 1928 were computed in the following manner:

COMMUNAL INCOME-REAL ESTATE TAX

This is actually the basic tax of the Swedish system and is usually the heaviest tax which the ordinary forest owner has to pay. It was computed as follows for this property:

Basic information:	
Soil quality (annual growth per hectare)—cubic meters	3. 50
Normal stumpage value per cubic meter—kronor	6. 50
Relative growing stock (normal)	1. 0
Normal money yield per hectare, 3.50 times 6.50 equal—kronor	22. 75
Computation of assessed value:	
To obtain normal net money yield, the money yield is reduced by 25 percent for expenses, 22.75 times 0.75 equal—kronor	17. 0625
The capitalization factor (20) is applied to net money yield in two parts—3.5 to soil and 16.5 to trees.	
Value of forest soil, 17.0625 times 3.5 equal (rounded)—kronor	60
Value of trees, adjusted for relative growing stock, 17.0625 times 1.0 times 16.5 equal (rounded)—kronor	282
Area of forest—hectares	400
Total assessed value of forest soil, 60 times 400 equal—kronor	24, 000
Total assessed value of trees, 282 times 400 equal—kronor	112, 800
Total assessed value—kronor	136, 800
Computation of real-estate-tax base:	
$\frac{24{,}000 \times 0.06}{100}$ equal	14. 40
$\frac{112{,}800 \times 0.04}{100}$ equal	45. 12
Total, real-estate-tax base	59. 52

Computation of income-tax base:		*Kronor*
Net income (including 952 Kr. from grazing and other uses than timber)		8, 952
Net income taxed under real-estate tax:		
24,000 times 0.06 equal	1, 440	
112,800 times 0.04 equal	4, 512	
		5, 952
		3, 000
Less personal exemption		1, 500
Taxable net income		1, 500
Income-tax base, $\frac{1{,}500}{100}$ equal		15. 0

Computation of Tax

The tax is determined by applying the sum of the communal, parish, and school-district rates, or 8.0, to the real-estate and income-tax bases combined.

	Kronor
Real-estate-tax base	59. 52
Income-tax base	15. 00
Total tax base	74. 52

74.52 times 8.0=596.16 kronor communal income-real estate tax.

PROVINCIAL COUNCIL TAX

This tax is computed by applying the provincial council tax rate of 1.7 to the tax base of the communal income-real estate tax.

74.52 times 1.7 equal 126.68 kronor provincial council tax.

ASSIZE DIVISION TAX

This tax is determined by applying the assize division tax rate of 0.008 to the tax base of the communal income-real estate tax.

74.52 times 0.008 equal 0.60 kronor assize division tax.

ROAD TAX

This tax is determined by applying the road tax rate of 0.20 to the vägfyrk.

	Vägfyrk
Real-estate part of road-tax base, $\frac{24{,}000+112{,}800}{100}$ equal	1, 368
Income part of road-tax base, $\frac{1{,}500}{15}$ equal	100
Total road-tax base	1, 468

1,468 times 0.20 equal 293.60 kronor road tax.

FOREST EXCISE TAX

This tax is computed by applying the forest excise tax rate of 2.0 to the tax base, which is the stumpage value of timber cut divided by 100. Since the actual stumpage value is not available, it is assumed to be 9,100 kronor, which is the normal gross yield of the property.

$\frac{9{,}100}{100}$ times 2.0 equal 182.00 kronor forest excise tax.

FOREST CONSERVATION FEE

This fee is computed by applying the forest conservation fee rate of 1.3 to the tax base of the forest excise tax.

$\frac{9{,}100}{100}$ times 1.3 equal 118.30 kronor forest conservation fee.

NATIONAL INCOME-PROPERTY TAX

Computation of Taxable Amount

	Kronor
Net income from sale of timber	8, 000
One-sixtieth of assessed value of forest land and growing forest, $\frac{136{,}800}{60}$	2, 280
	10, 280
Less personal exemption (double exemption for communal tax)	3, 000
Taxable amount	7, 280

Computation of Tax

Progression is secured by applying progressive rates to the taxable amount to arrive at the tax base. The tax is computed by applying a flat rate, 1.45, to the tax base.

Tax base, 7,280 times 0.03 equal 218. 40

218.40 times 1.45 equal 316.68 kronor national income-property tax.

COMMUNAL PROGRESSIVE TAX

The base for this tax is likewise determined by applying progressive rates (in this case 0.005) to that part of the taxable amount (for the national income-property tax) above 3,000 kronor and dividing this result by 100. The tax is computed by applying the sum of the communal, parish, and school-district tax rates, or 8.0, to the tax base so computed.

	Kronor
Taxable amount	7, 280
Less exempt minimum	3, 000
Net taxable amount	4, 280
Tax base, $\frac{4{,}280 \text{ times } 0.005}{100}$ equal	0. 214

0.214 times 8.0 equal 1.71 kronor communal progressive tax.

EQUALIZATION TAX

The base for this tax is one-third of the tax base for the communal progressive tax. The tax is determined by applying a flat rate for the entire country to this equalization tax base. This tax has been eliminated from this example because its amount is very small.

The total amount of the taxes paid by the owner of this property in 1928 were as follows:

Communal income-real estate tax	596. 16 kr.	($159.77)
National income-property tax	316. 68 kr.	($84.87)
Road tax	293. 60 kr.	($78.68)
Forest excise tax	182. 00 kr.	($48.77)
Provincial council tax	126. 68 kr.	($33.95)
Forest conservation fee	118. 30 kr.	($31.70)
Communal progressive tax	1. 71 kr.	($0.46)
Assize division tax	0. 60 kr.	($0.16)
Total	1, 635. 73 kr.	($438.36)

The total taxes on the forest part of the property were thus 4 kronor per hectare ($0.44 per acre) of productive forest land.

In order to place this example on a comparable basis with others in this part, it is necessary to deduct the income taxes and the forest conservation fee (a special assessment) from the above amount. These amount to the following:

National income tax (assuming exemption distributed proportionately between income and property parts of tax base)	246. 43 kr.	($66.04)
Communal income tax	165. 62 kr.	($44.39)
Forest conservation fee	118. 30 kr.	($31.70)
Total	530. 35 kr.	($142.13)

Subtracting this amount from the total taxes leaves 1,105.38 kronor ($296.23) as the total property taxes (including the forest excise, which is actually levied for the purpose of making up a deficiency in the property tax). These taxes amount to 2.8 kronor per hectare ($0.30 per acre) of productive forest land. These property taxes amount to about 12 percent of the net income of 8,952 kr. ($2,400), which income is fairly indicative of the normal net income from this forest, and to about 0.8 percent of the assessed value of 136,800 kronor ($36,700).

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

There appears to be general satisfaction with the Swedish tax system as applied to forests, in spite of the complicated method of determining income and value, and of calculating the various taxes. The deferred nature of forest income is recognized in the communal income-real estate tax. The law stipulates that the tax base for forest growing stock be a smaller portion of the assessed value than for other property. For most other kinds of property, including forest land, the tax base is 0.06 percent of the assessed value, but for forest growing stock the tax base is 0.04 percent of the assessed value. In order to compensate for this reduced annual taxation of the growing stock, a forest excise tax is levied on the stumpage value of timber cut. The excise tax rate amounts to one-fourth of the current 5-year average communal income-real estate tax rate. This tax favors the building up of an adequate growing stock since it is relatively lightest in respect to forests with the lowest ratios of volume cut to volume on hand.

NORWAY [51]

GOVERNMENTAL AND TAX STRUCTURE

The Kingdom of Norway is located in the western portion of the Scandinavian Peninsula. It covers a land area of 120,000 square miles, and has a population (1928) of 2,811,000, of which approximately 2,000,000 (72 percent) live in the rural districts (*280, pp. 3–4*).

For purposes of civil administration the country is divided into 20 provinces or districts (fylke), of which 2 are city provinces (Oslo and Bergen). The rural section is divided into 675 rural communes (herreder) and 65 urban communes (bykommuner). There are also 753 districts for purposes of tax collection which are superimposed upon the communes. The communes include within their boundaries 1,016 parishes, 766 school districts, and 800 districts for the care of the poor (*280, p. 1*).

The tax structure may best be described by showing the place of the various kinds of taxes in the entire tax system of the National Government, the provinces (districts), and the communes. The taxes levied by the Norwegian National Government for the fiscal year 1927–28 were as shown in table 142 (*280, pp. 206–207*).

TABLE 142.—*Taxes levied by the Norwegian National Government, 1927–28*

Tax	Amount of levy	
	Kroner [1]	Dollars
Income and property taxes:		
Ordinary income and property tax	89, 988, 000	24, 117, 000
Extraordinary property tax	12, 538, 000	3, 360, 000
Total	102, 526, 000	27, 477, 000
Consumption taxes:		
Customs	118, 376, 000	31, 725, 000
Other consumption taxes	92, 350, 000	24, 750, 000
Total	210, 726, 000	56, 475, 000
Other taxes and dues (including inheritance tax and departmental and legal fees)	22, 675, 000	6, 077, 000
Grand total	335, 927, 000	90, 029, 000

[1] The converting factor used is $0.26799, which is the gold parity value (in 1933) of the Norwegian krone.

[51] See footnote 47 on p. 493.

The tax levies of the Norwegian Provinces (districts) in 1927–28 are given in table 143 (*280, pp. 206–207*).

TABLE 143.—*Taxes levied by the Norwegian Provinces, 1927–28*

Tax	Amount of levy	
	Kroner	Dollars
Real estate tax	3,400,000	911,000
Repartition tax levied on communes	30,132,000	8,075,000
Total	33,532,000	8,986,000

In the same year the rural communes levied the following taxes (table 144) (*280, pp. 206–207*).

TABLE 144.—*Taxes levied by Norwegian rural communes, 1927–28*

Tax	Amount of levy	
	Kroner	Dollars
Real-estate tax	1,559,000	418,000
Property tax	18,131,000	4,859,000
Income tax	120,009,000	32,162,000
Dues and fees	2,168,000	581,000
Repartition payments by school districts	522,000	140,000
Contributions by industrial enterprises:		
School administration	124,000	33,000
Poor relief	64,000	17,000
Total	142,577,000	38,210,000

THE ECONOMIC IMPORTANCE OF FORESTS

Norway has 18,500,000 acres of productive forest land. This is 24 percent of the total land area of the country, 77,000,000 acres. Approximately 70 percent of the forest land is in conifers and the remainder in hardwoods (*280, p. 49*). The distribution of the forest area with respect to ownership is given in table 145.

TABLE 145.—*Area of Norwegian forests by type of ownership* [1]

Type of ownership	Area		
	1,000 hectares	1,000 acres	Percent
Public forests:			
National forests	764	1,890	10.2
National public forests	227	560	3.0
Forests of the educational fund	71	176	.9
Communal forests	223	550	3.0
Communal public forests	178	438	2.4
Joint-ownership forests	69	171	.9
Total	1,532	3,785	20.4
Private forests:			
Owned by individuals	5,321	13,150	71.0
Owned by corporations	632	1,561	8.4
Owned by institutions	15	37	.2
Total	5,968	14,748	79.6
Grand total	7,500	18,533	100.0

[1] Source of data: From (*280, p. 49*).

By the terms "national public forests", "communal public forests", and "joint-ownership forests" are meant the forest and grazing lands which, owing to their desolate character, had not been settled. After the country became united under one king, the Crown took possession of these lands and they later became known as "national public forests." The people of the surrounding countryside were granted easements in the forests, and when several national public forests were sold to the communes (communal public forests) and to private persons, the easement holders still retained their rights. A forest law of 1863 provided that the ownership rights to all former national public forests then in private ownership were to be divided between the nominal owner and the holders of easements, and such forests were to be known as "joint-ownership forests." The public owner of these forests is now generally a commune.

The average forest property in Norway is only 153 acres (62 hectares) in area (*280, p. 50*). The distribution of the total number of properties by size is given in table 146.

TABLE 146.—*Norwegian forest properties distributed according to area* [1]

Area class		Forest properties	
Hectares	Acres	Number	Percent
Less than 2.5	Less than 6.2	17,451	14.5
2.5 to 10	6.2 to 25	31,252	25.9
10 to 25	25 to 62	27,327	22.6
25 to 50	62 to 124	18,499	15.3
50 to 100	124 to 247	13,679	11.3
100 to 200	247 to 494	7,281	6.0
200 to 500	494 to 1,236	3,756	3.1
500 to 1,000	1,236 to 2,471	843	.7
1,000 to 2,000	2,471 to 4,942	329	.3
More than 2,000	More than 4,942	327	.3
Total		120,744	100.0

[1] Source of data: From (*280, p. 50*).

Forestry gave employment to 34,070 people in 1920, while the wood-using industries employed 36,307, and the paper-manufacturing industries, 19,244, a total of 89,621.

TAXES THAT AFFECT FOREST PROPERTY

PROPERTY TAXES

The Norwegian national property tax is based upon the actual sale value of the tangible and intangible property, less debts, as of January 1 of the year in which the tax is to be paid. The assessments are made by assessment boards on information from the owners.

There are different rates for the various groups of taxpayers. All corporations, domestic and foreign, pay a property tax at a flat rate of 0.2 percent. Other taxpayers pay at progressive rates, varying from 0.03 percent for the first 10,000 kroner ($2,680) of property value to 0.6 percent for the value above 2,000,000 kroner ($536,000). Since the base for this tax includes the value of shares of stock in corporations, there is to this extent double taxation of corporate property. Property less than 5,000 kroner ($1,340) in value is exempt from this tax. Under certain conditions the property of a

citizen may be tax free if it is less than 20,000 kroner ($5,360) in value.

The National Government also levies a temporary extraordinary tax on property above 125,000 kroner ($33,500) in value, if it belongs to a natural person or a decedent's estate (rates from 0.4 to 3 percent), and on all property of any value if it is located in Norway and is owned by a oreign corporation (rate 0.5 percent). The receipts from this tax are to be set aside in a fund to be used for special purposes, such as repayment of certain debts, relief of unemployment, and loans to communes for emergency work.

The greater part of the provincial revenues is derived from a levy on the various rural communes located within the province, or district, called the repartitional tax. This tax is proportionately distributed on the basis of the assessed value of real estate and other property, as well as on the basis of population and is to be met as an ordinary communal expenditure. The rest of the provincial revenues come from the real-estate taxes. The real-estate taxes on farm, forest, and grazing properties are based upon the land register (cadastral) values determined in 1863. These values have not been brought up-to-date and, since the tax rates must be kept within certain limits, the tax burden is very light. The tax base for all other real estate is determined from assessments made every 5 years, and the burden is therefore greater.

The rural communes also levy real-estate taxes. These are on the same basis as the provincial real-estate taxes just described.

An additional property tax is also levied by the rural communes. This is based upon the property value after deduction of debts. The assessment is similar to that made for the national property tax. Small properties are usually tax exempt. The rates are proportional and are limited by law to a minimum of 0.1 percent and a maximum of 0.3 percent, but under exceptional conditions the upper limit may be raised to 0.4 percent. Although the property tax was intended merely to be supplementary to the income tax to secure a steady flow of revenues, the comparatively high present rates are a heavy burden upon property yielding a low return, such as forest property.

The minor communes, such as parishes, school districts, poor administration districts, and road districts, may also add a levy to the ordinary communal real-estate and property taxes, but the increased tax rates must be kept within the limits mentioned above.

INCOME TAXES

The Norwegian national income tax is, in principle, a levy based on net income. Gross income generally includes all receipts during the tax year, except proceeds from bequests, gifts, life insurance, or contributions received from the National Government or from an institution distributing public funds for defraying costs of cultivating new land and erecting new farm buildings, etc. Profits from the sale of real estate or other property, except securities and all personal property belonging to the taxpayer's dwelling or household, are included in gross income. If the transferred property was acquired as a gift, the value increment is the profit. If the property was acquired as a bequest within the previous 5 years, there is no taxable profit.

The income tax law contains certain important special provisions concerning the determination of income from certain sources, such as trading and similar enterprises, corporations, fisheries, and farm and forest enterprises.

Income from a corporation is the average net return for the last 3 years. Corporate income is taxed both to the corporation and to the shareholders; to the former at a flat rate and to the latter at progressive rates.

Income from farming is fixed at an assumed average for the last 3 years.

Income from a forest property is taken as an assumed annual return on the sale value of the property, except when the forest is bought for clear cutting, in which case the net return for the year is taxed (with a proportionate deduction for depletion of the part of the purchase price which is represented by the value of the timber felled during the year). In reality, therefore, the Norwegian tax on income from going forest properties is a property tax rather than a pure income tax.

The law permits certain deductions from gross income to cover expenditures incurred for the determination, safeguarding, and maintenance of the income, together with interest on debts, taxes, and certain losses and compulsory contributions.

A citizen and resident of Norway is allowed to deduct for personal exemptions, depending on the number of persons whom he supports. If his income is less than 2,000 kroner ($536), he is not required to pay a tax. All other persons are subject to taxation on an income of 1,000 kroner ($268) or more.

The rates of the income tax are variable. For domestic corporations there is a flat rate of 6 percent; for mutual insurance companies, 15 percent; for foreign corporations, 25 percent; and for shareholders living abroad, 20 percent. Savings banks and cooperative associations pay at progressive rates ranging from 2 to 30 percent, while the rates for other taxpayers range from 1.8 to 45 percent. Corporations are subject also to an income tax on that portion of their income which is not distributed among the shareholders as dividends. The rate is 10 percent.

The rural communes also levy an income tax. This tax is based on net income, which is ascertained in the same manner as for the national income tax. Similar deductions for dependents are allowed as for the national income tax, and usually there is an exempt minimum. The tax rate is limited to a maximum of 12 percent, but may, under certain conditions, be increased to 15 percent or more.

Those communes which levy an ordinary income tax at a rate of 10 percent or more may levy an extraordinary progressive tax on large incomes. Progression is achieved, not by increasing the tax rates, but by increasing the tax base of the ordinary tax for large incomes. For incomes above 12,000 kroner and not more than 20,000 kroner ($3,220 to $5,360) the tax base is increased by 1 percent. This rate is increased progressively to 5 percent on incomes above 150,000 kroner ($40,200).

The minor communes, such as parishes, school districts, poor administration districts, and road districts, may also add a levy to the ordinary communal income tax, but the increased tax rates must be kept within the limits given above.

DEATH TAXES

The Norwegian inheritance tax is payable on bequests and on gifts made in lieu of bequests. The rates are determined each year by the parliament (storting) and are progressive both with respect to the amount and to the degree of relationship between the testator and beneficiary.

TAXATION OF PUBLICLY OWNED FORESTS

Forests belonging to the national government and to the educational fund are not exempt from communal taxes. The same applie to national waterpowers, factories, and other plants which are unders taken for profit in excess of what serves the purpose of public utility. Forests belonging to a commune are not exempt from national taxes, and forests belonging to the Norges Bank are not exempt from communal taxes.

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

The provision of the Norwegian income tax dealing with the taxation of an assumed income from a forest property is of particular interest to the student of forest taxation. The clear cutting of forests is the exception rather than the rule in Norway; therefore most of the forests come under this provision. From the standpoint of the government, the main advantage claimed for the method of assumed income taxation is that it assures a fairly even and regular flow of revenue to the local governments in densely forested localities where forest property is the most important element in the tax base. The chief advantage to the forest owner is that he avoids the progression in rates which would pertain in certain years if the net income were taxed when it is actually received. His taxes are also fairly uniform from year to year, so that he may base his calculations for the near future on present taxes, giving a practical basis for the calculations necessary for the purchase or sale of forest properties. The assessment also serves as a guide in settling estates.

In spite of the apparent advantages of this system, both to the governments and to the owner, it has not been a success in recent years. The reason is that obscurely written laws with vague definitions of vital concepts, such as what constitutes taxable income, leave full opportunity for the application of widely divergent interpretations by the various tax boards.

The main requisite for the success of tax methods based on assumed income is that the assessment be properly made. In Norway the tax boards which do the assessing are usually made up of political appointees having but little or no knowledge or experience in forest valuation. The boards are given wide powers under the law and, since they are not always unbiased or well informed in making their assessments, there is a lack of uniformity in the tax burden resting on forest properties, not only as between individual taxpayers, but also as between districts. The wide choice of interest rates at which assumed income may be calculated (2 to 7 percent), coupled with the high tax rates levied by numerous districts, serve to increase these differences.

A change was made in the tax law in 1930, the purpose of which was to improve assessments. It provides that a forest be assessed

at the value it has as a sustained source of income under efficient management. Prior to the passage of this provision, it was claimed that forest assessments were often made on the basis of immediate realization of the timber value rather than on the basis of sustained production. This same section of the law also provides for regulations concerning the valuation of forest property, which have for their objective the securing of better assessments (*279, p. 228*).

It is generally conceded in Norway, by State authorities, professional foresters, and private individuals, that the taxation of income from forest property is best accomplished by means of a tax on income when actually realized. Yet the majority of the tax law committee of 1929, although stating that they agreed to that principle, recommended a tax law based, as in the existing law, on assumed income, but with the improvements passed in 1930 in the matter of assessments.

The reason for the retention of the assumed-income principle is that the present precarious position of many communes prohibits any change in the tax system which may interrupt the steady flow of revenues from which to meet their heavy expenditures connected with the payment of interest on loans, repayment of debts, and other heavy costs. In Norway the welfare of the communes must take precedence over the welfare of the forest owner, just as generally the public interest in stable tax revenues takes precedence over the interest of any individual class of taxpayers.

FINLAND[52]

GOVERNMENTAL AND TAX STRUCTURE

Finland is a sovereign republic with a central government, which is financed very largely by indirect taxes—principally customs duties—and by profits from State enterprises. Its ordinary receipts in recent years are given in table 147. As indicated in this table, direct taxes, practically all levied on either income or property, were about one-eighth of the ordinary gross revenue in 1928 and about one-seventh in 1930. They are undoubtedly a much greater part of the net revenue. It should be noted that the income from national properties, which is a large item in the table, and the income from public services as well, represent the gross receipts and are consequently offset by corresponding expenditures. Therefore these items do not, like the other items in this table, represent revenues available for meeting the direct functions of the national government.

TABLE 147.—*Ordinary revenue receipts by sources, national government of Finland,*[1] *1928 and 1930* [2]

Source	1928		1930	
	1,000 markkaa	*1,000 dollars*	*1,000 markkaa*	*1,000 dollars*
National properties (lands, forests, railroads, buildings, canals, etc.)	1, 655, 559	41, 720	1, 458, 183	36, 746
Direct taxes (chiefly on income and property)	566, 463	14, 275	604, 571	15, 235
Indirect taxes (customs and excise)	1, 604, 655	40, 437	1, 615, 518	40, 711
Miscellaneous taxes (stamps, etc.)	306, 356	7, 720	212, 485	5, 355
Public services	209, 950	5, 291	230, 313	5, 804
Miscellaneous revenues	132, 708	3, 344	154, 377	3, 890
Total	4, 475, 691	112, 787	4, 275, 447	107, 741

[1] All conversions of the Finnish markka (SMK) in this section are at the 1933 par value in gold of $0.0252.
[2] Source of data: From (*282, p. 247*).

[52] The information in regard to forest taxation in Finland, unless otherwise mentioned, was obtained from Eino Saari, professor of forest economics, University of Helsingfors.

Finland is divided into nine administrative districts or Provinces (lääni) which correspond somewhat to the New England counties. These Provinces are only administrative units of the Nation. They have no self-government nor any independent taxes or other sources of revenue. They have their expenditures, which are covered by contributions from state revenues.

Local government in Finland is conducted by the communes (kunta) into which each Province is divided. These communes are self-governing and independent in finance. There are 533 country communes in addition to the city communes. These local units of government derive their tax revenues mainly from an income tax. Their revenues are sometimes supplemented by earnings of communal utilities. They own some farms and some forests, which also afford revenue. They also levy a sales tax on forest products used or sold commercially, which tax is being gradually abolished.

Tax administration in Finland is largely in the hands of local boards. In each commune there are two separate taxing boards, communal and national. The members of the communal board are chosen by the communes; the members of the national board are chosen partly by the communes and partly by the governor of the Province. Both boards assess incomes, but the national board alone assesses properties.

The boards mostly work independently, but the national board generally gets some information from the communal board, such as lists of persons subject to taxation. Many communes have employed forest and agricultural experts to classify their lands. The national boards demanded this information and it has now been settled that the communal boards must give it, but the national boards must share the cost.

Theoretically, the two boards can arrive at different assessments upon the same incomes; actually they are tending to use the same data and to arrive at consistent results. In some places, especially the cities, the two boards may have the same president. Sometimes also the two boards have the same offices and the same clerks, as in Helsingfors. There is a movement to consolidate the two boards in the interest of economy and efficiency.

There is no centralized control of the several national tax boards. However, in each Province there is a board of appeals. The national boards have the advantage of experts in tax accounting, who travel about and give advice but have no control.

In every commune there is also an appeal board for communal taxes. From this board there is an appeal to the governor

THE ECONOMIC IMPORTANCE OF FORESTS

Forests are of utmost importance in the economic life of Finland. They cover nearly three-fourths of the land area of 132,500 square miles and are made accessible to commerce through the cheap and easy transportation afforded by the numerous lakes and rivers. According to a forest survey completed in 1923, the total forest area is divided by ownership as follows: Private owners (individuals), 51 percent; ordinary national lands, 38.9 percent; joint-stock companies, 7.5 percent; national fief lands, 0.9 percent; ecclesiastical fief lands, 1 percent; communes, 0.7 percent. For the productive forest land the corresponding proportions are 54.9, 34.3, 8, 1, 1.1, and 0.7 percent.

Consequently more than a half of the forest area is in the possession of individual owners, and of the productive forest land an even greater portion. The same survey showed a total growing stock of 1,620,000,000 cubic meters (57,200,000,000 cubic feet) solid measure, bark included. The annual cut and consumption was estimated at about 40,000,000 cubic meters (1,400,000,000 cubic feet) (*281*). More recent studies have shown that increment and annual cut are fairly well balanced.

In recent years exports of the forest industries, including pulp and paper, have amounted in value to about 85 percent of the total exports of the country (*283, pp. 5–6*). In 1927 these industries employed 47 percent of all industrial workers and the output was valued at 5,357,000,000 markkaa ($135,000,000).

TAXES THAT AFFECT FOREST PROPERTY

PROPERTY TAX

The property tax is used for national revenue only. The law requires that the assessment shall be based on current prices, and the intention appears to be that market value as indicated by actual sales should govern. The national tax board in each commune is charged with making the assessment. In practice the assessments are difficult to determine and the results are generally unsatisfactory. The assessed values are likely to be low relative to actual values. They are reported to be very unequal as between communes, and to be influenced by the political complexion of the tax boards. A socialist majority on the board is likely to mean high assessments, while if landowners control the board the assessments are low.

The tax rates are progressive, depending on the assessed value of the property owned by the individual taxpayer. In general, they are rather low, ranging from about 0.015 percent on small fortunes to a maximum of about 0.8 percent on large ownerships.[53]

GENERAL INCOME TAXES

Taxes on income are levied both by the communes and by the National Government. The administration of these taxes is handled by local tax boards, both communal and national, as previously described. The principles governing the determination of income are the same for both the communal and the national income taxes.

The income tax is applied to forests not according to the actual income realized from the particular properties, but according to the general average net return of the Province from properties of the same soil quality. It is quite independent of the actual income obtained in any particular year.

The first step in assessing the annual income of a forest property is the determination of its annual yield in wood volume based on the area of each site-quality class in the property being valued. This is done for each commune by a qualified forester using a general scheme of classification, in which five different site qualities are ordinarily recognized. To the area in each site-quality class is applied the appropriate average annual yield in cubic meters of solid wood volume

[53] Rates of 1926, calculated from a property tax table by property categories (*282, p. 257*).

(exclusive of bark), as fixed by law for the different broad forest regions. These yield figures are based on actual average experience rather than on normal possibility. The figures for southern Finland, the most productive forest region, range from 0.5 cubic meters per hectare (7 cubic feet per acre) for the poorest quality site, to 4.0 cubic meters per hectare (57 cubic feet per acre) for the best quality site. The results obtained by multiplying the area in each site-quality class by the appropriate average annual yield are added to obtain the total annual yield of the forest in wood volume. This figure is independent of the condition or density of the particular forest, and does not necessarily represent the actual growth. It represents the growth that might be expected of a reasonably well stocked and managed forest on the site in question.

The next step in assessing the income is to determine the average stumpage value, which is fixed by the communal taxation board, usually by zones. The zone prices reflect accessiblity and market conditions.

Finally, the average stumpage value for the zone in which the property in question is located is applied to the yield in cubic meters to produce the gross yie d in money. Overhead and maintenance costs in accordance with the usual practice, estimated at an average figure per hectare for the district, are deducted in order to obtain the net annual yield in money. It is ev dent that this figure represents the return which might be expected from the soil in question under average conditions of management. If the owner by negligence or bad management fails to obtain this amount, his taxes are not reduced; but, on the other hand, if by diligence and good management he realizes a greater income, his taxes are not thereby increased.

The owners of forest lands as well as all others submit declarations of income on official forms. So far as forest lands are concerned, the only information required on these forms is the area by the several soil classes. One such personal declaration is required by the communal tax board and another by the national tax board in each commune, but there is little difference between them. The communal tax board examines the personal declaration and makes the assessment. The national tax board does likewise, but instead of making an independent calculation it usually accepts the assessment of the communal tax board.

Checking the classification of the forest soils is not an easy task for these local boards, and some of them have therefore employed professional foresters to make the classifications. Since 1932 an amendment to the law has required the communal taxation boards to send their findings in regard to the tax base to the governor of the Province, who is charged with making changes when necessary in order to make taxation more uniform. It is the duty of the Forest Research Institute of the National Government to give advice to the governors in this connection.

The assessed income from the forest is combined with the other income of the taxpayer from all sources as the base of the communal income tax. Certain exemptions are allowed, which vary in different communes, but after giving effect to these exemptions the rates of taxation are not progressive. The rates are devised to meet the community budget and vary rather widely in the different communes In the country communes they were mostly from 2 to 10 percent in

1927. Using the same year as an example, the total taxable income of the country communes was 6,332,000,000 markkaa ($160,000,000), and the tax was 417,000,000 markkaa ($11,000,000), an average rate of about 6.6 percent (*282, p. 233*).

The national income tax rates are progressive, ranging from about 0.5 percent to a maximum of 20 percent.[54]

SPECIAL COMMUNAL INCOME TAX

Besides the regular communal income tax, there is a special tax on proceeds from disposition of forest products, including money receipts from the sale of such products, and the value of products used by the owner in connection with a separate enterprise, but not including the value of material used on the forest or farm. This tax is a transitional measure, leading to the time when the communal taxation will be based entirely on normal net yield. It is being gradual y abandoned, by taking as the tax base each year a smaller part of the actual proceeds. In 1923, 60 percent of the net proceeds was the base, and this percentage is being reduced 5 percent each year. Thus in 1930 the tax base was 25 percent of the net proceeds, and in 1935 it will disappear. The rate of this tax is the same as the regular communal income-tax rate. The gradual elimination of this tax means a real reduction in the tax burden on forests, though the communal tax rate on al taxable income may have to be increased somewhat to make up the loss in revenue.

TAXATION OF PUBLICLY OWNED FORESTS

Practically all of the publicly owned forests are held by the National Government. Communal income taxes are paid on such forests to the rural communes in which they are located. Through 1932 these taxes were levied on only one-half of the income, and the income figure used for this purpose was the actual income from sale of products and from other sources and not the normal average income as in the case of private forests. The costs directly connected with the realization of income, as the expenses connected with making a timber sale, were deducted in determining the amount of the income subject to taxation, but the genera administrative expenses of the forest were not deducted. The law on this subject was amended in 1932, and since that year the actual income from sales is used as the basis for taxation of public forests in only three of the northernmost communes, and here the total actual income instead of one-half of that sum is taxable. In all other communes, the average net annual income is now assessed in the same manner as a ready described for privately owned forests. However, only three-fourths of this assessed income is taxable, except that the National Government is authorized at its discretion to permit the communes to tax a higher portion or all of this assessed income.

The national forests are largely in the northern part of the country and are very unevenly distributed among the communes. Therefore some communes get substantial revenue from taxes on national forests while others get little or nothing. In recent years taxes on national forests have amounted to about 5,000,000 SMK ($126,000) per year.

[54] Rates of 1926, calculated from an income tax tabulation by income categories (*282, p. 257*).

TAXATION OF A FARM WOODLOT

The following is a hypothetical example of the application of the tax system to a farm woodlot located in the southern part of Finland.

Assume that the farm in question includes a woodlot of 100 hectares, which has been classified by a forester according to the general classification of the forest lands in the commune, as follows:

	Hectares		*Hectares*
Class 1	10	Class 5	10
Class 2	30		
Class 3	40	Total	100
Class 4	10		

The above classification is based wholly on the quality of the soil and is independent of the actual stand.

The average net return in quantity of timber (solid measure without bark) from the different soil qualities in this part of Finland is determined by law (regardless of the actual growth in the individual case) as follows:

	Cubic meters per hectare		*Cubic meters per hectare*
Class 1	4. 0	Class 4	1. 0
Class 2	3. 0	Class 5	. 5
Class 3	2. 0		

The communal tax board is supposed to have determined the average stumpage price per cubic meter for the zone in which this farm is located at 25 markkaa. Overhead and maintenance costs are also assumed to have been estimated by the board at 10 markkaa per hectare. Thus the net return in markkaa per hectare is determined for the different soil classes as in table 148. The net return of the whole woodlot is then calculated as in table 149.

TABLE 148.—*Determination of net return per hectare, by soil classes* [1]

Soil class	Growth	Stumpage price per cubic meter	Total yield per hectare	Overhead costs and maintenance cost per hectare	Net return per hectare
	Cubic meter	*Markkaa*	*Markkaa*	*Markkaa*	*Markkaa*
1	4. 0	25	100. 0	10	90. 0
2	3. 0	25	75. 0	10	65. 0
3	2. 0	25	50. 0	10	40. 0
4	1. 0	25	25. 0	10	15. 0
5	. 5	25	12. 5	10	2. 5

[1] Hypothetical example of forest taxation in Finland.

TABLE 149.—*Determination of total net return, by soil classes* [1]

Soil class	Area of each class	Net return per hectare	Net return for each soil class
	Hectare	*Markkaa*	*Markkaa*
1	10	90. 0	900
2	30	65. 0	1, 950
3	40	40. 0	1, 600
4	10	15. 0	150
5	10	2. 5	25
Total	100		4, 625

[1] Hypothetical example of forest taxation in Finland.

It may also be assumed that in the year in question the owner of the farm sold timber on the stump for 5,000 SMK. If this happened, say in 1930, then 25 percent of this sum must be added to the net return of the forest as calculated in table 149. This addition is made only for the purpose of communal taxation, not for national taxation, and is a temporary measure even for communal taxation.

If the net return from agriculture for the entire farm is 20,000 markka and the taxable income from all other sources 5,000 markkaa, the total taxable income for communal purposes may then be summarized as follows:

	Markkaa
Net return from forestry	4, 625
25 percent of the stumpage value of timber fellings	1, 125
Net return from agriculture	20, 000
Other taxable income	5, 000
Total	30, 750
Specific exemptions allowed for communal taxation	4, 000
Taxable amount	26, 750

If the tax rate in the commune is 8 percent, the communal income tax payable by the farm owner will be 2,140 markkaa.

Under the same assumptions the taxable income for purposes of the national income tax would be calculated as follows:

	Markkaa
Net return from forestry	4, 625
Net return from agriculture	20, 000
Other taxable income	5, 000
Total	29, 625
Specific exemptions allowed for national taxation	5, 000
Taxable amount	24, 625

The tax corresponding to this income is 439 markkaa, calculated according to the progressive rates in effect in 1930.

The property tax which the owner of the above farm must pay may be calculated on the basis of assumed values and debts as follows:

	Markkaa
Value of the forest land and standing timber	200, 000
Value of other farming capital	300, 000
Other taxable property	50, 000
Total	550, 000
Reduction for debts	50, 000
Taxable amount	500, 000

The property tax in the above case would be 360 markkaa, calculated according to the progressive rates in effect in 1930.

To summarize, the total taxes paid on account of the farm woodlot of 100 hectares (247 acres) having a capital value of 200,000 markkaa ($5,040) and a hypothetical annual net return based on the quality of the soi of 4,625 markkaa ($117), plus an extraordinary income from timber cutting of 5,000 markkaa ($126) is as follows, assuming that the wood lot is taxed at the same rate as the owner's

entire property and income, and that specific deductions from the tax base are applied proportionately:

	Markkaa
Regular communal income tax $\frac{4,625}{30,750} \times 2,140$	322 ($8)
Special communal income tax $\frac{1,125}{30,750} \times 2,140$	78 ($2)
National income tax $\frac{439}{29,625} \times 4,625$	69 ($2)
National property tax $\frac{360}{550,000} \times 200,000$	131 ($3)
Total	600 ($15)

On account of the progressive rates and specific deductions allowed in computing the above taxes, the result is open to considerable variation for the same wood lot, depending on the circumstances of the owner. If the special communal tax on property, a temporary device, be eliminated, the sum of the other taxes under the above assumptions would be 522 markkaa ($13), which is 11 percent of the net return from forestry.

EFFECT OF TAXATION ON THE PRACTICE OF FORESTRY

The property tax as applied in Finland is subject to the same theoretical disadvantage in the case of deferred-yield forests which has been demonstrated generally for this form of taxation (pt. 3). However, this tax is not a serious deterrent to forestry in Finland, partly because the rates are relatively low, being usually much less than 0.5 percent as against 1 to 3 percent in the United States. Furthermore, destructive cutting of private forest lands has been prevented by governmental control, so that in general private forests are in a productive state and excessive deferment of income is not necessary.

The income tax, also, as it is based not on actual but on theoretical income and is payable annually like the property tax, might be a hardship to forests not yielding a regular income. However, the rates appear to be moderate, and the organization of forests and farm woodlots is such that this form of taxation is not unduly burdensome to forestry.

The chief difficulties in connection with the taxation of forest lands in Finland come from defects in administration that affect all types of property. The difficulties in the determination of normal income and of property values have been only partly overcome. The local tax boards do not always rely on expert assistants but are influenced by the economic interests of the dominant political group. There is unnecessary duplication in tax administration on account of the requirement of separate returns for the communal and national income taxes and separate determination of the same facts by the two independent boards. There is considerable variation in rates because of the different expenditures required in the several local districts to maintain necessary governmental services. Although these problems are similar to those attending tax administration in the United States, there appears to be no forest-tax problem that is peculiar to forests alone, owing largely to the way in which private forest lands are owned and managed.

EUROPEAN EXPERIENCE AND ITS APPLICATION TO THE UNITED STATES

It is evident that the tax situation in Europe has changed materially in recent years and that in most of the countries studied it is still undergoing more frequent alterations than normally occur. Every nation is laboring to carry a crushing load of public expenditures, and taxation is reacting adversely on industries of all kinds. The difficulties are aggravated by the exceptional pressure of the economic crisis, the effect of which was just beginning to be felt during the period when the field studies of European conditions were conducted. The precise nature of the difficulties which particularly relate to forestry vary in the different countries, and in general they are of a different nature from those encountered in the United States.

The ordinary annual taxes in the European countries studied are based either on capital value or on an average or hypothetical income, taxes on actual income from forests not being generally employed, except as minor supplementary taxes or as progressive taxes on personal incomes. Contrary to the situation in the United States, these ordinary annual taxes on forests, prior to the recent economic crisis, were not regarded as a serious obstacle to forestry. There are three reasons for this favorable condition:

(1) The forests in the countries studied are generally so organized and managed that income may be realized annually or at short intervals. This is particularly true of the large forests where the payment of taxes in advance of income would be most burdensome.

(2) The methods of evaluating the tax base where real estate is involved are generally more favorable to forests than in the United States. Selling price is displaced by average money income or income capacity as the usual criterion of taxable value. There are, it is true, some exceptions. Where valuations are still made by local assessors without technical knowledge, there is complaint of inequality and uncertainty. As a rule, however, forests are assessed with a reasonable degree of accuracy according to their earning power as going enterprises, disregarding speculative possibilities and such value as may arise from prestige which their ownership confers or from any other satisfactions than money income.

(3) There is relatively less dependence on annual real estate taxes than in the United States, and consequently the regular annual taxes on forest property as such have in general been at lower rates in proportion to income and value than are applied in this country. Therefore, the effect of any tendency to discriminate against forestry as a land use in cases where a degree of income deferment is necessary on account of the character and ownership of the forests is less serious than in the United States.

As indicated before, the total weight of taxation in the European countries studied is anything but light. There is generally greater dependence than in the United States on the progressive personal income tax and on sales taxes. The tendency to rest heavily on these forms of taxation is favorable to forestry, since taxes based on net money income are automatically adjusted to the peculiarities of the forestry enterprise, and sales taxes, if applicable at all, are not burdensome because of the slow turn-over of capital in forestry. Heavy personal income taxes may have had the effect of altering or breaking

down the management policy in the case of estates containing extensive forest areas which have in the past been managed largely for private pleasure parks. Otherwise they have not had any important adverse effect on the practice of forestry. In Great Britain the arbitrary character of income tax assessments and the insignificant place of forests in the tax base has facilitated the adoption of measures very favorable to forestry.

The problems of forest taxation which were found to be most troublesome in some of the European countries relate to transfer and inheritance taxes. The continuity of private forest management, never too secure for reasons outside of taxation, is threatened by the necessity of raising substantial sums in cash to discharge tax liabilities arising out of transfer or inheritance of forest property. It is only since the World War that the rates of these taxes have been sufficiently high to create these problems, and some progress has already been made toward mitigating the severity of these taxes in respect to forests.

The tax systems of the countries studied generally recognize, in one way or another, the public interest in the maintenance of private forests. In the case of property taxes, this recognition often takes the form of favorable rules for tax valuation. In the case of taxes based on somewhat arbitrarily determined bases, the regulations generally are at least not unfavorable to forestry, and in Great Britain they were found to be favorable to the point of subsidizing forest plantations. The situation in respect to transfer and inheritance taxes, as pointed out above, is generally adverse to forestry, but is being improved. Again the most favorable treatment is accorded in Great Britain where the insignificant place of forests in the tax base permits adjustments which could not be granted in more heavily forested countries without serious loss to public revenues.

None of the special forest-tax plans commonly advocated for application in the United States has been tried on a substantial scale in Europe. Immature-timber exemption is allowed only as a temporary and exceptional measure, as in France, for the purpose of encouraging the establishment of new forests. In Sweden a minor adjustment for the excess burden of property taxes on deferred-yield forests is made by means of a reduction in annual taxes in combination with a severance tax. This reduction in annual taxes is accomplished by reducing the base for the communal income-property tax and certain other local taxes by lowering the assessed value of the growing stock by one-third. The severance tax, by means of which the owners of operating properties are made to recompense the public for this reduction, is known as "the forest excise tax." It is imposed at a rate equal to one-fourth of a 5-year average of the local income tax rates. In Finland there is a temporary increase in the communal income tax based on the stumpage value of products cut during the current year. Nowhere among the countries studied is yield or stumpage value of forest products harvested used as the principal base for taxation except indirectly as it affects value or average annual net income. So far as known, severance or yield taxes are not used as a major part of the tax system in any country of the world where forests are of large commercial importance. In all of the countries studied forests must bear substantial annual taxes regardless of when income is realized.

None of the special forest tax plans which are recommended in part 12 of this report has any counterpart in European tax practice, with the exception of the differential timber tax. In certain Cantons of Switzerland, as already explained, forest property is assessed at a lower ratio to actual value than other rural real estate. The reduction factor in these cases, so far as known, is not based specifically on the degree of income deferment which attaches to the very small private holdings. It appears to be rather an allowance in recognition of the legal and social obligations attached to forest ownership in Switzerland. However, the differentials used in these Cantons fall within the same range proposed for adoption in the United States, and the method tends to remove whatever tax disadvantages may be involved in maintaining these small forest holdings.

European experience indicates clearly that the payment of substantial annual taxes on forest property, regardless of the time when income is realized, is not of itself a serious obstacle to forestry. On the other hand, the tax systems of all the countries studied in one way or another recognize and make some allowance for the peculiar nature of forest property.

PART 12. THE FOREST-TAX PROBLEM AND ITS SOLUTION

CONTENTS

THE PROBLEM—CONDITIONS TO BE CORRECTED

INTRODUCTION

The preceding parts have dealt with the principal phases of taxation as it affects forest property and the forest-growing enterprise and have presented the forest-tax problem in detail. Before proceeding to a discussion of recommendations looking toward the solution of this problem, it may be helpful to review in summary form the various conditions which need correction.

The American tax system has proved a serious obstacle in the way of progressive forest management. Although income taxes, death taxes, and certain other taxes have some slight bearing on the forest-tax problem in this country, the property tax is the chief offender. This situation is in part the result of the destructive forest policies of the past. Skillfully organized forest properties yield annual or short-period incomes; but it takes time to develop such properties from badly overcut forests. The property tax, even assuming perfect administration in accordance with the law, places a disproportionate burden on property that does not yield a current income, and therefore on the heavily depleted forest lands that prevail in the older forest

regions of the United States. This burden is one of the obstacles that stand in the way of organizing these cut-over and second-growth forests and of bringing them again to the point of yielding regular returns. Furthermore, the property tax is very far from perfectly administered, and the very great inequalities brought about by faulty assessment are especially discouraging. The uncertainty of the application of this tax casts a shadow on investment in a long-range enterprise like forestry, where practically all of the capital is in real estate. In the regions where large reserves of old-growth timber still remain, the opportunities for immediate establishment of annual sustained-yield forests are the best, and the inherent disadvantages of the property tax the least. But even where the situation is thus most favorable, the uncertainty as to future treatment of growing forests under this system places a premium on escape by destructive cutting of the timber and abandonment of the land.

The unsuitability of the American property tax to the business of forest growing has been recognized for a generation or more. Various attempts to solve the problem have been made by a considerable number of State legislatures. These attempts have been directed towards (1) tax rebates or bounties, (2) tax exemptions, or (3) tax exemptions plus yield taxes. None of these lines of attack has proved successful. The reasons for the discouraging results of the special forest-tax laws include the limited or optional application of these laws, red tape, lack of economic incentive to use land in the way required, and hesitation on the part of the owner to invite the special attention of the assessor by classification of certain property.

Being predominantly concerned with the property tax, the problem of forest taxation in the United States is chiefly a matter of State and local, rather than Federal, taxation. In the following discussion, therefore, reference to other forms of State taxation, such as the income tax, death taxes, and the severance tax, and to the taxes imposed by the Federal Government will occupy a distinctly minor place; they will be discussed at the close of the treatment of the property tax.

IMPERFECT OPERATION OF THE PROPERTY TAX

The property tax, as it is found in every-day operation in the United States, is a very different thing from the ideal property tax contemplated by the spirit of our tax legislation. In studying its effects upon the American forests, it is the tax as it actually operates, rather than the theoretical ideal, that is of chief concern. As regards the adverse effects of taxation, it makes little difference whether these are due to the inherent nature of the property tax or are the results of imperfect administration, contrary to the spirit of the law and in violation of its letter.

When, on the other hand, the solution of the problem is sought and the task of suggesting reform is faced, it becomes essential to distinguish clearly between those conditions which are the consequences of imperfect or illegal administration and those which would follow even though the law were perfectly administered. So far as faulty administration appears to be the culprit, it becomes necessary to inquire to what extent such faulty administration is remediable. If the adverse effects prove to be due in part to the nature of the property tax rather than to its faulty administration, or if it appears

that a reasonable approach to perfection of administration is hopeless, attention must perforce be turned either to modification of the property tax or to other methods of taxation.

For example, in connection with complaint against the excessive burden of taxation it is frequently claimed—and in many cases demonstrated—that forest property (especially cut-over land) is assessed for more than it is worth. Now this situation is no part of the theory of property taxation. It is not countenanced by either the spirit or the letter of the tax law. It is clearly illegal. The taxpayer is presumed always to have legal remedy against such illegal taxation; the courts must reduce an assessment that can be shown to be in excess of the value of the property. No change in the law is required to meet this condition. Question may still remain, however, whether in actual practice the recourse to the courts is sufficient protection. The taxpayer may be ignorant; the legal processes may be too cumbersome or expensive; values may be hard to prove. Submission to the overassessment may appear the lesser of evils or may follow mere inertia. This may raise the question whether the struggle for a correct enforcement may after all be hopeless—whether the only escape is in some fundamental modification of the property tax or the substitution of a different tax method that offers hope of honest administration. This question applies, not only to forest property, but to all other taxable property as well.

There is another situation more common than the foregoing and more difficult to correct. As a general rule, most property is assessed at less than its true value. Very often it is found that forest property, especially cut-over land, while not assessed for more than its true value, is nevertheless assessed at a higher ratio to true value than other classes of property. The result is, of course, an inequitable burden of taxation, which is clearly due to incorrect assessment rather than to any inherent weakness in the theory of the property tax. The remedy, however, is not so obvious as where property is actually assessed for more than its value. All assessments at less than true value are contrary to law, and the taxpayer who, being assessed at a higher level than his neighbor, takes his own assessment to court, may prove in the first instance only that he is himself assessed at less than the law requires. To prove that he is, nevertheless, assessed more heavily than others and hence entitled to legal redress is a difficult and often hopeless task. There can be no doubt that just and equal assessment can be obtained only when assessments are at full value, as the law requires. Enforcement of such legal assessment would go a long way to remove the adverse effects of the property tax. At the same time there may be question as to whether full-value assessment can ever be attained and, if not, whether it is worth while to seek to reform the administration of the property tax or whether the remedy must be found through substitution of other tax methods. Again this question affects, not only forest property, but all other taxable property as well.

To cite still another example: The exploitation of mature timber is sometimes hastened by the action of assessors seeking to get all possible revenue for their county or town before the timber is removed. Timber owners frequently complain that it is a race between themselves and the assessors, and that the owner's only salvation is to remove his timber as rapidly as possible. Now it should be clear

enough that the theory of the property tax contemplates no such race between assessor and taxpayer to secure the maximum share of timber values. It is true that, in some cases, what amounts to the same result may come from a perfectly legal operation of the property tax. For example, in a district in which timber forms a predominant part of the tax base, the steady reduction of the tax base due to removal of timber may compel the local authorities to strive to meet public expenditures by constantly raising the tax rate upon the remaining taxable property. Provided all property were assessed at its true value, this operation would be quite legal and might nevertheless furnish inducement to the timber owners to liquidate as rapidly as possible. In most cases the race between the assessor and the owner is evidence of improper assessment; either the assessor is overvaluing the timber or he is pushing up its assessment out of proportion to the assessment of other classes of property. In general, the remedy for this situation lies in correct assessment under the property tax or, where this still leaves a burden of taxation greater than can be borne, reduction in the cost of local government.

The imperfections of the property tax have been disclosed by the evidence presented in previous parts of this report. In particular it has been shown that assessment—the heart of the property tax—falls short of the legal requirements. The pressure to reduce assessments seems to be too great for the local assessors to resist. They feel that assessment at less than true value reduces the number of complaints, since many taxpayers believe that because their assessments are below the legal level they are obtaining an advantage over their neighbors. These local assessors often either set minimum assessed values, or attempt to maintain a certain total valuation for a district, or make horizontal increases or decreases in the assessment for all property in a district or for some one class of property. These are all illegal devices serving to base the property tax on something other than value and to avoid the equitable distribution of the tax burden by means of the tax rate. The agencies for review and equalization are in most States ineffective.

Not only is departure from the legal standard of assessment the general custom, but this departure is accompanied by erratic assessment of individual properties relative to the average assessment ratio [55] of the taxing district. In fact, it has been found that in general the greater the departure from the legal standard of assessment, the greater the degree of variation among the assessment ratios of individual properties. Timberlands are assessed at decidedly different ratios of actual value in different taxing districts, sometimes being treated favorably and sometimes unfavorably. Wherever it is possible to segregate definitely a cut-over forest-land class, it was found to be heavily overassessed in comparison with other real estate. This overassessment of cut-over land is consistent with the general tendency, discovered by other investigators and confirmed by this study, to overassess properties of low price relative to those of high price. All of these inequalities in assessment, whether among individuals, classes of property, or political subdivisions, result in corresponding inequalities in the distribution of the tax burden, except that differences between political subdivisions are sometimes mitigated by equalization.

[55] The assessment ratio is the ratio, expressed as a percentage, of the assessed value to the true value (or whatever fraction of true value is the statutory basis of assessment).

While all property is subject to the hazard of unequal assessment, investment in forest growing, where it is necessary to start with a forest in which there is a preponderance of recently cut-over land, is in a peculiarly dangerous position, because of the high proportion of the growing cost which is represented by taxes and because of the difficulty of withdrawing from the investment without loss until such times as the individual stands or trees reach sizes for which there is a profitable market. It is true that uncertainty as to the burden of future taxes arises in part from inability to predict what may be the future costs of government and what contributions may be obtained from other classes of property and other sources of revenue, but it results also from the arbitrary powers assumed by the assessors and the possibility—or even probability—of faulty or unlawful assessments. It is in the case of cut-over land or young timber that the opportunities for arbitrary and illegal assessment are greatest, and it is here that one finds, as a matter of fact, the most numerous and conspicuous examples of arbitrary discrimination and actual or relative overassessment. As timber becomes older, its value is more easily checked. Thus the chance of overassessment gradually diminishes and the opportunity for arbitrary action by the assessor becomes less.

INHERENT NATURE OF THE PROPERTY TAX

Forests suffer not only from the property tax administration, but also from the inherent nature of the property tax itself. They are thus doubly hit. Even a perfect administration would not remove the inherent defects. This matter has been developed previously in part 3. It is sufficient at this point merely to summarize this theoretical analysis. The reader is reminded that, in this theoretical analysis, the technical terms employed (such as capital, income, net income, value, etc.) relate to the concepts of economic theory, which in certain cases are different from the terminology of business accounting. These terms have been precisely defined in part 3, pages 39 and 48.

It has been demonstrated that the property tax takes a larger portion of the capitalized future net income from an investment whose income is deferred than from a capital instrument yielding a regular annual income equal to the interest on the capital. Thus a deferred-yield forest is overburdened under the property tax as compared with property yielding such regular annual income. The excess burden is greater the longer the period of deferment. This applies in particular to second-growth forests not yielding a current income and to old-growth forests held for future disposition. Periodic sustained-yield forests, in which the income cycle (period between receipt of principal incomes) is longer than 1 year, are overburdened, but the amount of excess burden is not serious if the income cycle is relatively short, say up to 4 or 5 years.

It has also been demonstrated that the property tax takes a smaller portion of the capitalized future net income from a capital instrument whose net income after taxes is greater than the interest, so that the capital is being exhausted, than from an investment yielding a regular annual net income after taxes equal to the interest on the capital. Thus an old-growth forest which is either being converted to sustained yield, necessitating a reduction in timber value, or which is being destructively exploited, receives favorable treatment from the property tax.

If taxes are wholly capitalized at the time of making the investment, all of the above-mentioned inequalities are taken into account in the initial value of the capital for each type of investment. Thus, under this assumption, no injustice between the several owners could be charged. Nevertheless, the tax burden in the case of a deferred-yield investment is far more uncertain. The higher governmental equity in the deferred-yield property means that unforeseen changes in the tax rate have a greater effect on the equity remaining in private ownership. Also the value of land for the deferred-yield use becomes lower by reason of the higher tax burden. Therefore, land which would be used in deferred-yield forest enterprises might be more profitably employed at some other use. Forestry might have been the more profitable use had there been no property tax. In other words the property tax tends to increase the area of land that cannot be economically used, under private ownership, for growing forests.

As stated before, skillfully organized forests yield annual or short-period incomes. A forest yielding an annual net income after taxes equal to the interest on the capital is treated by the property tax on a basis of equality with property generally. Also it is no more heavily burdened by the property tax than by an income, or net-yield tax (on both tangible and intangible incomes), at an equivalent rate, that is, a rate equal to the property tax rate divided by the sum of the interest rate and the property tax rate. However, the ordinary income tax is applied only to money income or other tangible income with a definite money value. To the extent that the value of an annual sustained-yield forest reflects intangible income in addition to money and other tangible income, the property tax would be in excess of the ordinary income tax.

The above-mentioned situation is found in certain countries of Europe, where sustained-yield forestry is widely practiced under private ownership. There, forests are frequently valued not only for their money income, but for certain intangible benefits such as maintenance of social prestige and consciousness of public service through protecting watersheds, making the landscape more attractive, and supplying the raw materials for permanent local industries. This intangible income would be reached by a property tax based on market value, but not by the usual income tax based on money income nor by any tax based on capitalization of money income at a rate established for property in general. The property tax is thus less favorable to sustained-yield forestry than any tax based directly or indirectly on money yield, if there are elements of intangible income. It may be argued that intangible income of this character ought to be taxed, since it is a part of the real income received by the owner; or that it ought not to be taxed, because the public derives peculiar benefits from private forestry, which it should accept as equivalent to a tax on the owner's share of the intangible income. Seeking an answer to this question may well be deferred until sustained-yield forestry under private ownership is in effect on a substantial scale and the extent to which intangible income is received from such forests is determinable.

The general principle that a deferred-yield forest is overburdened under the perfectly administered property tax, as compared with an annual sustained-yield forest or with other property yielding a regular

annual income, applies to all speculatively held capital, such as mineral reserves and vacant city lots. The extra burden of the property tax, over that of an income (net-yield) tax, depresses the value of speculatively held land. In this way the property tax discourages holding land out of use, and promotes the improvement of property so that it will give an annual income. This result, since it operates as a check on speculation in vacant city real estate, is generally considered a desirable feature of the property tax. The same is not true with respect to the effect of the property tax on forest land. Under the existing conditions, the use of forest land which is most desirable from the public viewpoint usually involves deferment of income through withholding virgin timber from oversupplied markets or through developing an adequate growing stock in second-growth forests. The property tax, by its depressing effect on the value of land not yielding a current income, discourages these desirable uses and favors the use of land for purposes other than forestry. Accordingly, public interest may dictate relief to the growing forest to the extent that deferment of yield is necessary, or to the old-growth forest withheld from cutting, while denying corresponding relief to the vacant city lot.

LIMITED BASE OF THE PROPERTY TAX

It is common knowledge that the property tax in modern times has broken down as regards intangible property and many, if not most, forms of tangible personal property. This situation is basic in all discussions of property tax reform. There is a considerable body of opinion which sees in this situation an unjust discrimination against real property and which assumes, as an obvious corollary, that justice requires bringing under the effective operation of the property tax all forms of property, intangible as well as tangible, personal as well as real. The investigation of the theoretical and practical aspects of this question does not fall within the scope of this investigation, and this topic requires only brief mention at this point. It is sufficient for the present to note that so far as there may be soundness in this charge against the property tax, forest property is a party at interest. If, because of the failure of the property tax to reach intangibles and many forms of tangible personalty, real estate is bearing a disproportionate share of the cost of government, then forest property is a sufferer and has just cause to demand relief. As a matter of fact, the case against the property tax as thus stated is by no means established beyond question. Even if it were, the possibility of remedy along the lines suggested is extremely limited, and the historical precedent runs all the other way. This aspect of the matter will be discussed briefly in a later section of this part.

The limited base of the property tax is due not only to its failure to reach intangibles and certain forms of tangible personalty, but also to its failure to reach many forms of real estate. Exemption from taxation of public property, the property of churches, schools, hospitals, burying grounds, eleemosynary and social institutions of various kinds, portions of the property of ex-soldiers, new industries, and a host of other forms of real estate, or of real estate and personalty mixed, has raised an acute problem in many localities. It has been estimated that of the 176 billion dollars worth of real estate in the

United States in 1922, 20 billion, or 11 percent, was tax-exempt (*213, p. 18*). Moreover, the amount of exempt real estate has, during the past 50 years, been steadily increasing both absolutely and relatively.

The exemption from the property tax of so large a part of the Nation's real estate has become a problem of importance, affecting the revenues of the taxing jurisdictions and the weight of the burden upon such property as is not exempt. This is a problem which of course touches all classes of property, including the forests. There does not appear to have developed any very clear theory of tax exemption in the United States. Whatever the theory may be, there can be little doubt that much of the present exemption is without justification. To the extent that property now exempt could be restored to the tax list, there would be the possibility, at least, of reducing the burden upon property now taxed. So far as the forests are concerned, the effect of such change would of course be adverse in the case of forest property which is now exempt but would be favorable to forests in general, which are now subject to the property tax. On the whole, there can be no doubt that the forests suffer along with other property generally through the exemption from taxation of so large a part of the total real estate of the United States.

PREDOMINANCE OF THE PROPERTY TAX

The property tax occupies a unique position in American State and local finance—a position which it has held with remarkable tenacity during all the changes, economic and fiscal, which have taken place since colonial days. In spite of all these changes, and in spite of the recent development of a number of other sources of revenue, the property tax still remains the most important single source of State revenue, producing about one-fifth of the total revenues of all the States, and almost the sole reliance of the local governments, producing more than three-quarters of their total revenues. The property tax in the United States is a heritage of colonial days, and there can be no doubt that this form of taxation was better suited to social and economic conditions in the eighteenth and early nineteenth centuries than to those which prevail today. A considerable body of opinion holds that the American tax system is defective in thus leaning so heavily upon the property tax. If this is a defect, it follows that those forms of property which are subject to the property tax may be bearing an unjust burden, which would be relieved if the demands of government were met by wider use of other forms of taxation. Whether this reliance on the property tax actually is a defect in the American tax system, and precisely what would be the effect upon taxable property of a readjustment which would place greater reliance on other forms of taxation, are broad questions whose investigation is outside the scope of this inquiry. It need only be pointed out here that just so far as present reliance on the property tax places an unjust burden on property, to that extent forest property along with other property has ground for complaint. Obviously, it would be quite impossible to measure the extent to which forest property is today overburdened on this account. The possibilities of relief to forest property through development of other forms of revenue which might diminish the relative importance of the property tax will be discussed in a later section.

THE ABSOLUTE BURDEN OF TAXATION ON FORESTS

The heavy burden of taxation which rests upon forests may be the result, not only of defects in the property tax, both inherent and administrative, but of causes which produce a heavy tax burden in general. In other words, it is conceivable that, even if the property tax were perfectly adjusted to the peculiarities of forestry and perfectly adm nistered and the tax burden were equitably distributed, the taxes on forest property might in some places be greater than the traffic could bear. Where this has proved to be the case, the causes must be sought in the structure and functioning of local government.

The high cost of government in many rural districts can be attributed to a needless multiplicity of local governmental units, an ill-advised distribution of functions among the several jurisdictions, and inefficient administration. The existence of a multitude of counties, townships, school districts, and numerous special districts of one kind or another creates an army of public officials, multiplies overhead costs, and results in duplication of effort and diffusion of responsibility.

The lack of balance between governmental obligations and the economic resources with which to support them introduces very great inequalities in tax burden. The distribution of functions frequently bears no relation to scope of benefit, ability to support, or economy of administration. Finally, the operation of government is largely in the hands of untrained officials using obsolete tools and working without supervision and without unity of purpose. Rural local government is, in the main, archaic and irresponsible and, as a consequence, inefficient and wasteful. There results a cost of government greater than is necessary to provide the service which government is rendering, with a correspondingly excessive burden of taxation—upon all taxpayers.

There is also the question whether many State and local governments are furnishing functions which, however desirable they may be, are beyond the public's means. A governmental service, no less than any enjoyment which people purchase directly, may be beyond what the public can afford under present conditions. Even though the service be intrinsically useful, and even though it be furnished economically at the lowest possible cost, it may still not be worth what it costs. In such case, the resulting tax burden is excessive, to the extent that the people might obtain greater utility through spending their money directly rather than paying it to government in the form of taxes. The resulting burden of taxation lacks the justification of corresponding public benefit. Here again all taxpayers are affected.

In brief, forest enterprise may suffer adverse effects from a tax burden which is absolutely excessive, either because public functions are costing more than they should or because public functions are being furnished which the people cannot afford.

OTHER TAXES

It has by now been made sufficiently clear that the forest-taxation problem arises from the property tax almost exclusively. Certain other forms of taxation were dismissed in the introductory part of this report (p. 11) as having obviously no substantial bearing upon the subject of this investigation; these included business taxes, corporation

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taxes, sales taxes, etc., and the Federal Government's excise taxes and customs tariff. There remain only three types of taxation requiring brief treatment at this point. These are the general income tax, the death taxes, and the severance tax.

GENERAL INCOME TAX

By general income tax is meant an income tax levied upon income from substantially all sources, as distinguished from any form of income tax levied upon forest income exclusively. General personal income taxes are imposed (Jan. 1, 1933) by the Federal Government and by 20 States, of which 19 are sufficiently broad to include income from forestry. A few States tax incomes of corporations only.

These income taxes are generally levied upon incomes only when actually realized in cash or its equivalent. This feature makes the income tax most appropriate to the business of forestry, since the amount of the tax and the time of its payment are automatically adjusted to the irregular character of the income which the unorganized forest properties of this country afford. There is no problem of tax payments in advance of a deferred income, no burden of interest upon taxes paid in absence of current income. The income tax in general involves no serious problem of forest taxation.

It has been shown in an earlier part of this report (p. 406) that the provisions of the Federal income tax dealing with depletion of forest investments are not entirely correct from the viewpoint of strict logic. However, insistence upon a theoretically correct treatment would require difficult and burdensome accounting and would not generally be favorable to conservative forest management. The present treatment of depletion is satisfactory as a temporary arrangement during the period in which the chief money income from forests is either from destructive cutting or from more conservative operations which nevertheless involve material reduction in the existing wood capital. Whenever annual sustained-yield forests become more generally established, the Federal income tax should recognize methods of accounting for depletion more suitable to such forests. One such method would be to establish a depletion account for each part of the forest which constitutes a management unit. This account would be built up and depleted much as under the present regulations, except that it would be obligatory to treat all expenses of growing timber as capital. Another suitable method would dispense with the usual depletion deduction on the theory that an annual sustained-yield forest, on the whole, does not suffer depletion of capital. In that case, the normal expenses of regeneration and culture would be regarded as maintenance and written off annually. Either one of these two methods might be required, or the taxpayer might be given a choice between the two.

The State income taxes present no new principles. Their rates are quite low. Their purpose has generally been to relieve the burden of the property tax, and, while any absolute accomplishment in this direction may seldom be evident, so far as any such effect has been accomplished, either absolutely or through avoiding further increase in the property tax burden, the result has been entirely favorable to forestry. In 11 of the 20 States with personal income tax laws, the receipts from this tax contribute directly to the support of local units of government or of the public-school system.

It should be noted that, from the public viewpoint, the irregularities in yield of income taxes between different years make them ill-adapted as a principal source of income for meeting public revenue requirements. In years of depression revenues fall rapidly, and it is a hardship on the public to make up the losses by sharply increasing rates just when additional taxes are most burdensome. If income taxes are relied upon as the chief source of revenue for any unit of government, some plan is called for by which the sum available from this source each year may be stabilized by building up a reserve in years when the yield is heavy to be drawn upon in years when the yield is light. Such plans have been proposed but have never been tried (*221*). There may be no insuperable obstacle to the satisfactory solution of this problem for the larger units of government, but it is generally agreed that the income tax is not well adapted to the use of units smaller than the nation or a state of a federal government. However, there is nothing to prevent a state from using income tax revenues to relieve the local government units of some part of the burden of providing schools, roads, or other public services. The present tendency seems to be toward increased use of income taxes. This tendency is favorable to forestry so far as these taxes serve to reduce the property tax.

DEATH TAXES

Forest properties are, of course, subject to estate and inheritance taxes on the same basis as all other property making up the total estate of the decedent. The United States Government levies an estate tax, with progressive rates dependent on the amount of the entire estate. Death taxes are imposed in 47 States. In all but 3 of these States they take the form of inheritance taxes, generally with progressive rates depending both on the amount of each distributive share and on the degree of relationship of the several beneficiaries to the decedent.

So far as concerns the obligation to contribute and the amount of the tax, forestry can have no grievance against any reasonable system of estate or inheritance taxation which treats forest property the same as other property in the estate. This is the case with all the American death taxes. There is, however, one feature of death taxation which may present a serious special problem to forest properties. The death tax is a ta on capital, at rates much heavier than would be endurable under a property tax. On the other hand, the tax falls due, not annually, but only occasionally. This justifies relatively heavy rates, which may run quite high, especially when the estate is a large one. It frequently happens that the amount of tax due is in excess of the available cash held by the estate, thus necessitating sale of some part of the property of the estate. This necessity may present a serious situation, sometimes forcing sale on an unfavorable market and frequently causing disruption of a business enterprise or loss of its control by the family or associates of the decedent. To these hazards forest estates are peculiarly liable. In the first place, not generally enjoying a regular annual income, there is difficulty in raising cash for payment of the tax. In the second place, the sale of part of the forest property, especially when it is on a sustained-yield basis or is being converted to such basis through growth of the young stands, may have quite serious effects. Should

it happen that, through successive deaths, estate or inheritance taxes are exacted at comparatively close intervals, the effect upon the continuation of a forest enterprise may be disastrous.

It should be noted that these results will generally occur only when the forest is closely held by one individual, or by a family, or by a small group of owners acting in close harmony. In such circumstances, if the enterprise is unincorporated, there may be no way of raising the money to pay the tax except by selling a part of the forest. There may thus be loss from forcing the property on an unfavorable market, or—what is of more importance from the public viewpoint—the forest as a complete going enterprise may be dismembered. If the enterprise is incorporated, the death tax falls, of course, not on the corporation, but on the estate of the decedent stockholder. It may be necessary to sell some of the stock in order to pay the tax. While this may not cause a physical breaking up of the forest enterprise, it may result in loss of control by those who formerly planned and managed the enterprise and so lead to material change in management. Of course in the case of a forest enterprise that is incorporated with stock widely scattered, death taxes on the separate stockholders will generally have a negligible effect on the management of the property.

In short, while death taxation does not actually impose an unreasonable burden on forest property or seriously affect the development of forestry in the ordinary run of cases, it does carry the potential power to cause dismemberment of a going forest enterprise. To that extent, the death taxes present a problem of real public concern.

SEVERANCE TAXES

The term "severance tax" is a collective one embracing any one of several types of tax applied specifically to natural resources, such as minerals, gas, oil, timber, and the like, at the time of their severance from the state of nature. Whatever the form of tax it will fall into one or the other and sometimes both of two general categories,namely, those levied, in whole or in part, in lieu of the ordinary property tax and those levied in addition to it. The forest-yield tax, so called, belongs to the first class and is elsewhere discussed in detail. Accordingly, only those of the second class, which are levied in addition to the property tax, need notice here. While there are several States which levy this kind of severance tax on their natural resources, only two include timber—Arkansas and Louisiana.

The chief weakness of the severance tax as an addition to the property tax is that the conditions which appear to justify this form of taxation are not universally present, at least not in the case of forests. In an undeveloped region where the property tax burden is well under that which property in general is normally called upon to bear, the additional contribution of the severance tax may be reasonable. If the resource is being destructively exploited, regardless of location, this tax may be justified on the grounds that the resource is being removed from the property tax base and that the depletion of the capital automatically lightens the burden of the property tax. No exception to this justification seems to be called for in the case of timber, either old or second-growth, simply because it is a renewable resource. The fact that it is being cut destructively means that any renewal that takes place will be fortuitous and almost inevitably of

inferior quality and of slow development. For a long time, therefore, the property will be able to contribute little or nothing in taxes to the support of community functions, if, indeed, it does not involve the community in heavy protection expenses in order to prevent it from becoming a menace to other property. However it hardly seems practicable from the administrative viewpoint to distinguish, in levying a severance tax, between undeveloped regions with abnormally low property tax and developed regions where the property tax burden is normal, or between forests which are being operated destructively and those where a satisfactory degree of productivity is being maintained. The severance tax laws in the two States which have been mentioned do not attempt to make such a distinction and consequently impose an unjustifiable added burden on those forests which are being conservatively managed and which are subject to a normal property tax.

TAXATION IN THE BROAD FORESTRY PROBLEM

INTRODUCTION

In the foregoing sections the forest-tax problem has been outlined by showing the adverse effects of the existing tax system upon forest property and forest-growing enterprise. Progress toward the correction of these adverse conditions requires at the outset a clear understanding of the place of taxation in the entire forestry problem. Clearly there is an American forestry problem—of which taxation is an important part. Just as clearly, taxation is not the whole problem. To set forth the actual place of taxation in this problem is the purpose of the present section of this report.

Since the property tax has been shown to be inherently unfavorable to deferred-yield property, this report is especially concerned with forests which do not promise an immediate annual yield. This phase of the problem is important because of the large area of forest land in the United States which has been so heavily cut over that normal productivity cannot be restored without a period of income deferment. There is no intention to minimize the desirability, from all viewpoints, of so organizing forests that they will produce a regular annual income wherever that is practicable.

The forest problem naturally divides itself into two main parts, concerning respectively old-growth forests and second-growth forests together with denuded or other lands that are available for reforestation.

OLD-GROWTH FORESTS

Old-growth forests present to their owners the choice of three principal management policies. (1) The forest may be cut without any effort to get regeneration or to maintain a forest-growing enterprise; that is, it may be operated destructively. (2) The forest may be cut in such a way as to insure its continued productiveness. Such conservative operation may involve conversion to sustained yield, either annual or periodic. (3) The forest may be merely held intact for future sale or cutting. The public has a vital interest in the treatment of the Nation's resources of old-growth forests and is concerned with taxation insofar as it is an influence in determining that treatment. It is therefore essential to analyze the factors which determine an owner's decisions regarding forest management and to put taxation

in its proper place among such factors. In the earlier discussions (pt. 7), opinion, evidence, and theory have been presented bearing upon this matter.

It may be assumed that the timber owner will generally be guided by the desire to make the maximum profit or suffer the minimum loss. Setting aside, for the moment, the possibility of management for continuous production, the decision whether to cut now or at some future time will depend upon whether the future yield is expected to be greater or less than the sum of the present realizable yield plus all carrying charges to such future date. As a general proposition, all carrying charges are alike in their effect upon the policy of the timber owner. It is the total of the carrying charges which, in relation to the present realizable value and the value to be realized at some future time, determine whether timber should be cut now or later. In this total, the several items are of relative importance simply in proportion to their respective amounts. Among the important carrying charges, interest ordinarily stands first. Then comes taxation. Other items, such as protection and admininistration, are generally of distinctly minor importance. Data already presented (p. 262), from a good sample of timber properties in Oregon and Washington, show interest as 64 percent of the total carrying charges, taxes as 32 percent, and all other carrying charges as 4 percent. It should be clearly understood that, as a carrying charge affecting cutting policy, interest is not the interest which must be paid for borrowed capital, nor even the interest on the investment which the owner has made in the property; it is the total interest which might be earned on the present realizable value. The interest rate used here, as in other parts of this report, is 3 percent, an approximation to the tax-free, risk-free rate. It is assumed that risk, which is so often allowed for in business calculations by an addition to the interest rate, will be taken care of by reducing the estimated net returns from the enterprise to a risk-free basis.

This analysis may be clarified by a simple mathematical example. Suppose the owner estimates that, by immediate destructive cutting, a given forest might yield a present return of $100,000. By postponing the exploitation to a future date, say 10 years hence; the owner will sacrifice (1) interest, compounded annually on $100,000 for 10 years, say at 3 percent, being $34,392; (2) taxes, perhaps at the rate of 1.5 percent a year on the value of $100,000, amounting with interest at 3 percent in 10 years to $17,196; and (3) other carrying charges of, say, $500 per year, which amount, likewise with interest, to $5,732 at the time of future cutting. If the owner believes that the value to be realized by cutting 10 years hence will be more than $157,320 ($100,000+$34,392+$17,196+$5,732), he will decide to postpone cutting. If the expected value is less than $157,320, he will decide to cut. If the assessed value, and consequently the taxes, increased as the value of the property increased, as required under a correct application of the property tax, the tax charge would be $21,317 rather than $17,196. In this case, the value at the end of the period must be more than $161,441 in order to justify postponing the cut.

The several carrying charges may be expressed as percentages of the value of the forest from year to year. Thus, suppose interest is 3 percent, taxes 1.5 percent, and all other carrying charges 0.5 percent, total, 5 percent. Then if it is expected that the realizable value will increase from year to year at a rate greater than 5 percent, it will be

unprofitable to cut, otherwise the decision will be for immediate exploitation.

It is an obvious corollary from the foregoing principles that what controls the owner's decision as to the time of cutting is future carrying charges, not costs already incurred. Past costs—original purchase price, interest on the investment, taxes already paid—have nothing to do with the question. All that is water over the dam. In the example just assumed, it may be that the original cost of the forest, with all carrying charges to date, is $125,000. The venture has thus been a losing one. But whichever cutting date is the more profitable, as determined by future carrying charges, will still be the one chosen. There will be a loss, of course, but a different decision would simply mean a larger loss. On the other hand, if the total cost to date were only $50,000, the choice of when to cut would be the same. A profit is to be obtained in any event; the cutting date chosen will be that which offers the maximum profit.

The foregoing analysis may be given a special application by assuming that all other carrying charges, such as interest, protection, and administration are fixed, as to a considerable extent they actually are—interest at the prevailing market rate, and the other charges by conditions not subject to much control. Inquiry may then be made as to the effect of changes in taxation. Referring again to the above mathematical example, suppose that all available information indicates a probable increase in the realizable value at the rate of 4.8 percent. The owner will choose to cut at once. But if the tax rate were reduced from 1.5 percent to 1 percent, making the total carrying charges only 4.5 percent, the decision would be reversed. Again, if the expected rate of increase in realizable value were 5.2 percent, it would be profitable to postpone cutting. If now the tax rate were increased to 2 percent, making the total carrying charges 5.5 percent, the owner would decide upon immediate cutting. Taxation may thus, under certain circumstances, be the controlling factor in determining the time of cutting. But its influence operates only within definite limits. If (returning to the mathematical example) the forest property is not expected to increase in value at a rate faster than 3 percent, the choice will obviously be for immediate cutting, and that would still be the choice even were the forest entirely relieved of taxation.

The validity of the principles thus developed would scarcely seem open to question. In their application, however, there may occasionally arise counteracting influences that will prevent the owner arriving at the decision that would normally be to his best interest. Thus taxation may sometimes, as in periods of extreme depression, force cutting which the owner would not otherwise find advisable, as the only possible source of money with which to pay the annual taxes. Of course, if the owner has no other resource, he must realize on part of his timber to pay his taxes, whether light or heavy, unless he is to be excused from taxes altogether. So far as the speculative holding of timber is concerned, this is not a condition peculiar to timberland owners. Ordinarily if timber values are expected to increase at a rate faster than the sum of interest, taxes, and other carrying charges, most owners would find some means of raising the annual carrying charges rather than to lose money by premature cutting. Failure of timber values to promise an increase at a rate greater than interest and other carrying charges (not including taxation) will thus be recognized as the cause of cutting, rather than the burden of taxes.

In this connection it should also be recognized that the owner in financial straits is more powerfully influenced by demands which must be paid, such as interest on bonds and other debts and taxes, than by calculated interest which might be earned on his own capital. The owner, in desperation to meet the demands of his creditors and the tax collector and so to save his property, may for the time have little thought to give to the loss of interest on the realizable value of his timber. The present may be a state of extreme depression. The future may be uncertain, but yet hold out some hope of better things. The owner might be willing to hang on a while longer, if he could only meet current charges. To such a one, taxation may be the chief consideration. The psychological effect of having to provide substantial payments every year may give taxes greater weight in influencing the decisions of timber owners than strictly economic considerations would warrant. An adequate return on the investor's own capital may be lost because appreciation in timber value does not keep pace with interest, but it is the additional money that must be put in each year to hold timber property that demands attention, and usually more than half of this additional sum is required for taxes. In times of economic depression taxation may thus come to exert on certain owners a very substantial influence toward cutting.

Summing up the foregoing analysis, it is clear that taxation is one of the important carrying charges which in the aggregate, in conjunction with present and expected future realizable values, determine the time of cutting of mature timber. In some border-line cases, where the expected increase of value is greater than the sum of all carrying charges other than taxation but less than the carrying charges with taxes included, taxation may be the controlling cause of cutting. In prosperous times for the lumber industry, such as existed during most of the period 1917 to 1923, when values are rising rapidly and are expected so to continue, taxation is not generally a controlling influence, since it is easily offset, along with all the other carrying charges, by the increase in values. If, at other times, values are generally not increasing fast enough to cover even the interest, then again taxation has no compelling influence, since it would then be advantageous to cut even if there were no taxes at all. With the exceptions which have been noted, taxation cannot be the chief factor in the decision to cut, since it is usually superseded in magnitude by interest on the present realizable value.

The conclusions thus reached through theoretical analysis are confirmed by the judgment of representative timber operators and owners, the evidence in regard to which is presented at length in part seven of this report. Statements of such judgment were ascertained in 1931 on behalf of the Timber Conservation Board by means of a questionnaire which was circulated among timber owners and operators with the cooperation of the regional associations of the lumber industry throughout the United States. Out of the 124 returns to the general questionnaire, 31 made no answer to the question "What are the principal causes of overproduction?" Of the 93 who answered this question, only 17 mentioned taxation. Of the 17 who mentioned taxation, 2 gave no other cause, 9 put it first among various causes, and 6 gave it a place following other causes.

Evidence leading to this same conclusion was obtained in an earlier study made in 1909 by the Forest Service. In answer to a question

as to the influence of taxation on the cutting of timber, only 125 timber operators out of about 500 admitted that taxation had any appreciable effect on cutting. This included a number of doubtful cases. The number that clearly testified to an undoubted influence was only about 100. Over 200 operators stated absolutely that taxation had no influence, or very little (*101, p. 607*).

That timber values have since 1923 failed to come up to the expectations of many who made purchases prior to that time is so well-known that it is unnecessary to rehearse the evidence here. Especially during the last few years has distress fallen upon the lumber industry, with heavy losses and threat of bankruptcy in many cases on account of failure of timber values to increase as was anticipated. There is an overwhelming mass of evidence indicating that, whereas in the past the increase in stumpage prices was usually sufficient to cover the carrying charges involved in holding of mature timber, that condition no longer prevails. At the present time in the virgin-timber region, timber values, when not actually declining, are commonly offering no promise of increase in the near future at a rate sufficient to meet the carrying charges involved in holding mature timber. This condition fits perfectly with the preceding theoretical analysis and indicates that while there may be certain border-line cases in which taxation is the controlling cause of cutting, the major cause almost everywhere predominant is the failure of values to rise fast enough to meet the total of carrying charges, among which interest far exceeds all others.

In the light of general principles and all the evidence, it appears that, although taxation may in certain cases have been the chief cause of cutting, taxation has not up to the present time had any widespread controlling effect upon the time and rate of cutting of the American forests or upon the overproduction of lumber. As to conversion of old-growth forests to annual sustained yield, where this may be accomplished without deferment of income, there is no inherent disadvantage in the property tax; although uncertainty as to the amount of future tax charges may be a factor in the hesitancy to adopt this type of management.

SECOND-GROWTH FORESTS

Without doubt the most serious part of the problem of forest taxation concerns the future of the immature forests and the cut-over forest lands of the United States. There is here involved not only the management of existing cut-over land, but also the treatment of mature stands, since the prospect of profit in second-growth timber is an important incentive to cease destructive cutting of old growth. Sufficient theory and evidence have been presented in earlier parts of this report (especially pts. 3 and 7) to show that the American property tax discriminates against young forests and cut-over forest lands and thus tends to discourage investment in forest growing and the holding of immature timber.

Even more serious than its inherent discrimination is the uncertainty as to future tax obligations which results from the nature of the property tax and the character of its administration. It is this uncertainty that more than anything else makes the property tax a menace to forestry. The fact that past taxation has generally not

been excessive is no comfort in view of the ever-present threat of excessive taxation in the future. The forest investor has no possible means of determining in advance what his tax obligation will be, and here is his chief indictment of the property tax. What he requires is a method of taxation under which he can calculate his future payments, not of course with absolute certainty (nothing in the future can be certain), but with a degree of certainty approaching that of his other costs and with the assurance that his tax contribution will be, not arbitrary but in harmony with the needs of the taxing jurisdiction and the contributions of other taxable interests. Here is the real heart of the problem of the general property tax in its relation to forestry. The tax presents a very substantial obstacle in the eyes of the careful investor who may be contemplating the development of a timber-growing enterprise from immature second-growth stands. The importance of this obstacle arises from the very large area of forest land in the United States where the mature timber has been so heavily depleted that timber growing must start there largely with very young stands.

Here also it is necessary to recognize that the past slow development of forestry in the United States is due to a complex of factors, of which taxation is only one. Prerequisite to search for the solution of the problem, it is necessary to analyze these factors and find precisely the place of taxation among them, thus dispelling exaggerated notions as to the influence of taxation upon American forestry and extravagant hopes of the benefits to flow from forest tax reform, while at the same time paving the way for constructive remedies.

There can be no doubt that the majority of timber owners and of investors generally are not now interested in investing capital in forest growing on cut-over and second-growth lands. The hazards of such investments are regarded by most men as too great. Among these hazards, taxation is one. But here again it is not generally the chief one. Risks of fire and windfall and insect depredations and—perhaps most important of all—uncertainty as to future prices of forest products, all stare the investor in the face. The mere time element is enough to deter most investors. Even though taxation were made perfectly equitable, these other hazards would still be controlling to the majority of owners of cut-over land and young growth, in their present state of mind. Especially baseless is the idea that forest tax reform should make possible the employment for timber growing of all idle lands, in regions sufficiently humid to grow trees, that are not more valuable for agriculture or some other use. The simple fact is that there are in the United States large areas of land on which conditions are so unfavorable that complete exemption from taxation would not make it profitable for private owners to use such land for growing timber.

SUMMARY

Putting taxation in its true place in the picture, both of the old-growth forests and of the immature forests and cut-over forest lands, should serve to dispel false and exaggerated hopes of the magic results to be expected from forest tax reform. But if tax reform is not capable of ushering in the millenium in American forestry, it does not follow that there is no problem of forest taxation.

As regards the mature forests, though taxation may not have been the controlling factor in past operations, it is one among the considerations that determine cutting policy. Again, although many forest owners may have little or no interest in investment of capital in timber growing, there is a small group that is interested, and this group appears to be growing. A sound tax system would be of tremendous encouragement to all such. Moreover, among those who are not now interested, there are certainly some—perhaps many—who are deterred by the hazards of taxation. It has been shown, in a previous section (pp. 254–276), that, even though all other conditions might be favorable, the present property tax involves such discriminations and such ruinous possibilities as to present generally a serious obstacle to investment in forest growing on cut-over lands. Whatever may be the other difficulties, it is certain that general interest in forest growing in the cut-over and second-growth regions cannot be expected so long as the unmodified property tax prevails. And even though reform of the tax system will not alone bring realization of the forestry ideal, it will at least remove one obstacle. Thereafter all those who see a future in forest investment under conditions as they otherwise exist will not be held back by an unsound tax system.

A brief summary of the essential features of the forest-tax problem, the conditions which need to be corrected, has been presented. The goal of forest tax reform is to correct these adverse conditions, so far as that may be possible within the limitations set by sound principles of taxation and public finance. Such principles require, as has been pointed out in the introduction (p. 9), that the tax system must, first of all, be workable. A tax system difficult to administer without bringing in its train evasion, uncertainty as to the amount of liability, and outright fraud is barred at once. The operation of the system must not be too expensive in comparison with the revenue received. The system must accomplish an equitable distribution of the cost of government. An equitable distribution is secured when the current general conscience of the community approves of such distribution as being fair and just, after careful consideration of the relative abilities of the taxpayers, the special benefits which they receive from government, and all other pertinent factors. Finally, contributions to the cost of government must be made by all persons who have an interest in the government—in general, by all citizens and by those foreigners who receive protection to person or property from the government in question. As regards the forests in particular, tax reform should seek to arrive at a system of taxation which will require a just contribution from forest owners, while being of such form as will not place a special obstacle (beyond what any just tax must impose) in the way of the best use of the forests and forest lands from the viewpoint of the public interest.

IMPROVING THE OPERATION OF THE PROPERTY TAX

The preceding discussion has undertaken to analyze the problem of forest taxation. It was there shown that the problem arises almost wholly from the property tax and further that to a very great extent the adverse effects of the property tax, so far as they

relate to forest properties, are the result of imperfect administration. The obvious first step in seeking a solution of the problem is to investigate the possibilities of reform in the operation of the property tax. To what extent would the special problem of forest taxation disappear if the property tax were perfectly administered? What approximation to perfect administration is it reasonable to hope for? And what are the practicable measures which would bring the administration of the property tax as near as possible to the ideal? It is the purpose of the present section to seek an answer to these questions.

THE PERFECT ASSESSMENT

Assessment is the heart of the property tax system, and faulty assessment is in part responsible for the problem of forest taxation. Assessment is simply the appraisal or finding of value for purposes of taxation. The property tax system provides that, when assessment has been completed, the amount of revenue required be levied by means of a tax rate which will produce the required amount. The assessment, according to the spirit of the property tax, thus determines the *share* of the tax burden to be borne by each property owner.

The laws of 42 States require assessment to be at full value, and the laws of the other 6 States require the assessor to find the full value of each property in order that he may apply the legal percentage to this value to obtain the assessed value. Therefore the improved operation of the property tax would require that the assessor determine the full value of property and then assess as he is required to by law. Any solution of the problem of forest taxation which involves the property tax or any modification of it requires the determination of the full, true value. The value of anything is the amount of money which would be given in exchange for it. The language of the statutes and numerous court decisions establish the fact that the legal definition of value is not different from this economic definition of value.

That as a general rule the assessors fail conspicuously to carry out the legal requirement of true value assessment was demonstrated in an earlier part of this report (pt. 4). That, on the other hand, the task is not entirely an impossible one is shown by the experience of a number of American cities. In New York, Cleveland, and Duluth, to mention only three examples, there has been developed a scientific method of assessment. Very complete records are kept, covering each parcel of property, and a staff of full-time experts is employed in the assessors' department. The methods of scientific city assessment are not entirely applicable to the assessment of rural real estate, with which forest taxation is concerned. The assessment of rural property is probably at its best in the agricultural counties of Wisconsin and in New Hampshire, although even here it is far from perfect. Local assessors in Wisconsin are subject to intensive supervision by the State tax commission through its district representatives.

In New Hampshire, State-employed assessors make a careful assessment of each property in several towns each year. Rural properties are thus reassessed periodically. Although the assessed values established annually by the locally elected assessors often depart greatly from the values found by the State experts in their reassessments, the periodic return to full-value assessment aids in maintaining a comparatively high standard.

DEVICES FOR IMPROVING ASSESSMENT

MAPS, SURVEYS, AND SALES DATA

The first essential to correct assessment of real estate is an accurate map of the assessment district. Every American city which makes a success of assessment maintains such a map, upon which are shown the unit values found to relate to the various blocks or sections of the city. In addition to these maps, there must also be tax maps, on which are shown the boundaries of each parcel of real estate and the assessed value. Constant labor is required to keep these maps up to date, by taking account of changes in unit values, changes in ownership, and changes in assessed values of particular parcels. In determining unit values, the assessor is bound to place great reliance on sales. The assessor's office must have a complete record of all bona fide sales of property which have taken place in his district (and perhaps in neighboring districts) within recent years. All pertinent facts in connection with the sale, as well as a description of the property sold, should be filed by the assessors with each sale record.

These devices have been developed to a high degree of perfection in certain cities. There has as yet been little such development in the rural taxing districts, although there are some notable exceptions to this generalization. The problem of rural land assessment offers certain complications and difficulties not encountered in the cities. Thus the rural assessor must take account of the topography, character of the soil, nature of the forest cover, and other features, whereas city values are almost entirely a function of location. On the other hand, he does not encounter anything like the variety of buildings that the city assessor must deal with. There is no reason why the methods employed by the best city assessors should not be used, with appropriate modifications, to produce a better rural assessment. Certainly every rural assessor should have an accurate land map and an accurate tax map of his district. He should have complete data on sales in his own and neighboring districts and should have all information necessary to keep his maps and valuation records up to date.

THE PROCESS OF ACCURATE ASSESSMENT

The following hypothetical example illustrates, on a very small and simplified scale, how sales may be combined with surveys to obtain an equitable assessment.

1. Survey of properties to be assessed:
   - A. Farm, 300 acres, 40 acres grade B crop land, 100 acres rocky and hilly pasture, 160 acres woodland with 500 cords of wood, with no prospect of saw logs for 50 years, buildings worth $3,000, good road, and near small market.
   - B. Forest property, 1,000 acres, 700 acres merchantable timber with 3,500,000 feet of saw logs, 300 acres cut over with 150 cords of wood.
   - C. Lake-shore property, 10 acres, 1,000 feet grade A shore line, 500 feet grade C shore line, 5 acres upland, 5 acres swamp, 20 cords of wood.
2. Recent bona fide, unbiased, sales in the vicinity:
   - A. Cut-over forest, 200 acres, grade B soil and topography, 100 cords of wood, good road, and 10 miles from small market—$600.

B. Farm, 60 acres, 30 acres grade A crop land, 30 acres swamp, buildings worth $2,500, good road, and near small market—$5,500.

C. Timber-cutting rights, 1,000,000 feet board measure for 3 years, and 9 miles from wood-products plant—$4 per 1,000 feet board measure, payable as cut, with a stated advance to protect the vendor.

D. Resort lot, 1 acre upland, and 100 feet grade A shore line—$200.

E. Pasture right, 20 acres, rented for $20 a year.

3. Assessment:

A. Sale B shows grade A crop land to be worth slightly under $100 per acre. Sales evidence over a long period indicates that grade A crop land is worth about one-half more than grade B. Setting grade B at $65 per acre, therefore, 40 acres are worth $2,600. Pasture rents for $1 per acre per year (sale E), or 50 cents net to the owner after deducting taxes and other expenses. Using a capitalization rate of 5 percent, 100 acres of pasture are worth $1,000. Forest land appears from sale A to be worth something less than $3 an acre in a comparatively remote location, and such land is probably worth $3 in the case of property A, or $480 for the entire 160 acres. Firewood is known not to have much value, due to competition from oil. The possibility of saw logs is very remote. The assessor's best judgment can assign no more than $200 to firewood and the possibility of saw logs. The total value of the property is, hence, crop land $2,600, pasture $1,000, woodland $680, buildings $3,000, total $7,280.

B. The forest land is worth $3,000, which includes whatever slight value may attach to the 150 cords of wood. Sale C shows that timber stumpage is worth $4 per 1,000 feet board measure, 9 miles from market. Only one trip per day can be made with a man and team at this distance, and since a man and team are worth $6 per day and can carry 1,000 feet at a trip, the current realization will be increased by $3 per thousand if two trips a day can be made rather than one. Property B is a two trip a day property, and stumpage is hence worth $7 per thousand or $24,500 for the present stand of 3,500,000 feet. From this amount 25 percent is deducted for various risks and carrying charges, leaving a net worth of about $18,400. The total value of the property is, hence, land $3,000, present stand of merchantable timber $18,400, total $21,400.

C. Grade A shore line is worth, in small quantities, $2 per foot (sale D). In large quantities it might be worth 25 percent less than this, due to carrying charges while awaiting sales to ultimate users. The grade A shore line of property C might, then, be worth $1.50 per foot, or $1,500 for 1,000 feet. Experience has indicated that grade C shore line is worth practically nothing. With the 10 acres of land, it may be set down at $100. The total value of the property is $1,600.

The process of assessment roughly outlined above is, no doubt, much the same process as that through which many conscientious assessors go at the present time, although usually with inadequate information. Competent and conscientious employment of such a method would generally result in a reasonably accurate assessment of real property.

ASSESSMENT BY MULTIPLE CORRELATION AND GRAPHICAL CORRELATION

The process of assessment could be further refined by the use of multiple correlation, provided there were sufficient sales and not too many variable factors affecting value to warrant the use of this statistical tool. The use of multiple correlation in valuing property may be described as the process of averaging values added by different factors to properties in a certain sample to determine the most probable values which would be added by these factors to any property in the district from which the sample was chosen. This method has been used to a limited extent by investigators, and it was applied in this study in an extensive appraisal of properties in the town of Loudon, N. H., as described in part 4, page 112. It would seldom, if ever, be practicable in view of actual assessment conditions.

A more useful device is found in the graphical method of correlation, which has the advantage of not requiring any knowledge of higher mathematics. This graphical method is merely a method of checking and improving tentative estimates. Assume, for instance, that an assessor estimates from his general knowledge that crop land in his town is worth, on the average, $40 per acre. He applies this unit value, together with estimated unit values for other factors, to those properties for which there are bona fide sales. He subtracts from his estimated total value of each property the actual sale value of that property to obtain a "residual." He then plots this residual against the percentage of area in crop land in that property. After all residuals are thus plotted, he draws that line which his eye judges to be an average of the various points established on the graph. If this line has an upward slope as the percentage of area in crop land increases, he then knows that his $40 per acre estimate for crop land is too high, or, in other words, that the nearer the property is to being all crop land, the greater is the difference (the residual) between the $40 unit value and the actual unit value as determined by sales. He then lowers his crop land unit value, calculates new total values for the different properties, and plots the residuals between these new values and sale values against some other value factor, such as distance from market, for instance. As a result of the new graph he may find he has to change the unit value for distance from market. He then checks other unit values, and when through, starts all over again with crop land. He proceeds in this way until the residuals plotted against his various value factors average approximately zero for all combinations of these value factors, and the average line drawn through the points is a horizontal straight line. It should not require more than two or three sets of graphs to come to this approximate result.

Irrespective of the use of formal surveys, the rural assessor needs to handle his pencil much more than he now does in building up his valuations. Even those who are able to guess values with a fair degree of accuracy would be able to make their guesses still more accurate if they would set down on paper the various factors involved

and the weight to be attached to each. A standardized form to be supplied by the State would be useful in this connection.

THE DISCOUNT FORMULA AS AN AID TO ASSESSMENT

Where evidence supplied by sales is extremely erratic and unreliable as it often is with respect to immature timber, a discount process may be useful as an aid to consistent assessment. This method of valuation involves an estimate of the volume of mature timber likely to develop within a given number of years from the present stand of immature timber, and in addition an assumption as to the price of timber at the date of maturity. Such a valuation should also take into account expected carrying charges. This method is of little direct use to the assessor, but may be used together with such sales data as may be applicable, by an expert in the State tax commission office, as an aid to establishing standard tables for appraising second-growth stands of different types and average sizes. These tables can then be applied by assessors on the basis of the condition of each stand.

The formula method, however, is inherently weak, on account of the obvious difficulty of estimating future yields, future prices, and future tax rates, of taking proper account of risk, and of choosing the proper interest rate. It would appear that determination of these factors would ordinarily be at least as difficult as estimating the value of the property directly. Moderate errors in one or more of these factors would result in great differences in the calculated value. It should be clearly understood that a single property has only one value at any given moment. If the discount process gives a result which is different from the value as determined by more competent evidence, the formula result must give way.

The formula for finding the value of an immature even-aged forest at the end of the mth year of the rotation is as follows:

$$(1)\quad V_m=\frac{(Y-C)\ (1+p+r)^m+T_q(1+p+r)^{n+m-q}}{(1+p+r)^n-1}-\frac{e}{p+r},$$

where:

V_m=value at end of mth year in a rotation.
Y=yield expected at end of nth year (end of rotation).
C=cost of regeneration at end of nth year.
$p+r$=interest rate plus tax rate.
T_q=intermediated income expected at the end of the qth year between mth and nth years.

If intermediate income occurs after nth year, in the next rotation, expression is $T_q\ (1+p+r)^{m-q}$ rather than $T_q(1+p+r)^{n+m-q}$.

$\frac{e}{p+r}$=capitalized annual expenses other than taxes and interest.
n=rotation.

If no rotation is known, the following formula should be used in place of that above:

$$(2)\quad V=\frac{T}{(1+p+r)^t}+\frac{Y+L}{(1+p+r)^y}-\frac{e}{p+r}\frac{(1+p+r)^y-1}{(1+p+r)^y},$$

where:

V=present value.
T and Y=value of timber to be cut from property t and y years hence, respectively, bare land only to be left at end of y years.
t and y=years of waiting before incomes T and Y, respectively, are received.
L=bare land value at end of y years.
$p+r$=interest rate plus tax rate.
$\frac{e}{p+r}$=capitalized annual expenses other than taxes and interest.

Formula (1) would apply to a second-growth forest where the rotation has been established; while formula (2) would be applicable to other cases, and notably to the case of an old-growth forest which had not yet become financially mature. If, for instance, an old-growth forest in the Pacific Northwest is composed of stands of Douglas fir and hemlock, of which the Douglas fir is expected to become financially mature in 10 years and the hemlock in 30 years, formula (2) applies rather than formula (1).

Suppose Y (the hemlock) $=\$200{,}000$, T (the Douglas fir) $=\$200{,}000$, $L=\$2{,}000-\frac{e}{p+r}$, $=\$50{,}000$ and $p+r=4$ percent. Substituting these figures, $V=\frac{\$200{,}000}{(1.04)^{10}}+\frac{\$200{,}000+\$2{,}000}{(1.04)^{30}}-\$50{,}000\ \frac{(1.04)^{30}-1}{(1.04)^{30}}$, or $V=\$135{,}100+\$62{,}300-\$34{,}600$, or $V=\$162{,}800$.

Both formulas can be expanded to cover as many prospective incomes as data may warrant in any particular case. For each additional income an additional term must be inserted. Formula (2) applies to selection forests which are being managed with a view to developing sustained yield. In such cases, however, y represents the years of waiting until the forest is on an annual sustained-yield basis, and $Y+S$ is its value at that time determined by capitalizing the expected net yield at the $p+r$ rate.

The rate $p+r$ is, in both formulas, a complex rate, that is, it includes the tax rate r as well as the risk-free interest rate p. If the tax rate is 1 percent and $p+r$ is 4 percent, the interest rate is 3 percent. The term e includes all annual carrying charges other than taxes and interest. Risk, which is something allowed for in similar calculations by an addition to the interest rate, is better provided for by estimating the expected money yield sufficiently low to take care of this element.

A MINIMUM PROPERTY TAX

It has been pointed out that the overassessment of cheap cut-over land has been an important factor in the very large portion of tax delinquency in this type of property. Assessors have been hesitant in reducing assessed values toward zero even though the full market value approaches this figure. A 20-acre cut-over property assessed at $5 per acre will bear a tax of $1 if the rate is 1 percent. It may be obvious to all that the property is not worth $5 per acre, but the tax levy can hardly be much less than $1 without making the cost of collection excessive in proportion to the revenue. If the $5 per acre value becomes an established minimum for small properties, the assessor feels that he must adopt the same minimum for properties of larger area in order to avoid the charge of discrimination.

In order to avoid this situation it is proposed that a minimum annual property tax of $1 be imposed on the property of any one owner in each local tax district. This proposal would enable an assessor to assess any property at its true value without any possibility of creating an absurdity in tax administration. A ½-acre parcel might have an assessed value of $0.50 per acre as well as a 5,000-acre parcel. The $1 minimum tax would discourage excessive subdivision of very cheap lands and would make legal assessment of such lands practical. A minimum property tax is now in force in the wild-land districts of Ontario, Canada (*159, p. 80*).

COOPERATION BETWEEN ASSESSORS AND TAXPAYERS

Cooperation with taxpayers to obtain more accurate and satisfactory assessment calls for tact, judgment, and courage on the part of assessors. They should be willing and anxious to explain to the public just how they do their work. Public meetings of property owners and assessors have proved successful in obtaining public opinion as to unit values of property in the various localities and as to the best

method of obtaining full-value assessment. It is generally agreed, however, that such meetings must be in control of especially skilled and tactful assessors in order to avoid the accordance of undue weight to unintelligent or designing expressions of opinion (*284*).

As has been stated above in this section, the assessor should prepare a map showing in outline every piece of real estate in his local district, together with its assessed value. This map should always be kept up to date and on display in his office, in order that any taxpayer may readily examine the map for the assessment of his own property and make an easy comparison with that of neighboring property with which he is familiar. Such publicity would instill confidence in the assessor and promote a spirit of helpful cooperation.

ASSESSMENT ORGANIZATION AND PERSONNEL

RESULTS UNDER PRESENT CONDITIONS

The conditions under which present-day assessing officers are chosen and must work make it exceedingly difficult, if not impossible, to obtain good results. The method of choosing assessors does not tend to procure the services of competent men; the compensation allowed and the time allotted for the work are usually inadequate; and the district to be covered by one man is often larger than can be examined in the allotted period.

The rural assessing personnel as at present composed may be classified somewhat as follows: (1) Men of good judgment and character who have been assessors for many years, take pride in their work, and develop a knack for getting at values, although without much system; (2) men of good or fair judgment, but without much experience in values, who are elected to the job of assessor because of the general respect in which they are held by their fellow citizens; (3) men of inferior judgment who obtain the job of assessor because no one else wants it or because they must have the work or become a charity charge on the township or county; (4) men who obtain the job of assessor because their employers, friends, or political allies wish them to do so for selfish reasons.

Of these classes only the first is truly satisfactory. There are a number of these experienced and conscientious assessors, and it has been found that they do unusually good work insofar as substantial equality between taxpayers is concerned. Their assessment system takes account of the most important elements of value and avoids the stultifying flat-rate system in vogue among inexperienced and incompetent assessors.

The second and third classes are those ordinarily found. The second class attempts to secure some degree of equality as between taxpayers but relies mainly on the preceding year's assessment. With time and adequate compensation this class might do fairly good work, but the conditions of the office are against such a result.

The third class relies almost exclusively on the preceding year's assessment. Such changes as are made follow fires, timber cutting, new buildings, or new paint.

The fourth class is, fortunately, found but seldom. Where a company or an individual has a strangle hold on the economic life of a given assessment district through the employment of many of the voters or otherwise, the assessor is sometimes the tool of this powerful

company or individual. An equally bad situation exists where a corrupt political organization controls the district and uses its power over assessment to reward its friends and punish its enemies.

The results of assessment under these conditions have in general been unsatisfactory. County assessment has proved subject to some of the same difficulties as township assessment, and self-assessment by the taxpayer has proved far from successful. There is still a great deal of assessment done merely by copying previous rolls, thereby perpetuating errors and ignoring changes. Arbitrary adjustments in specific cases are not uncommon. The function of the assessor is frequently misconstrued, leading to attempts to raise the necessary tax revenues by juggling assessments rather than by leaving the matter to be handled by the proper authorities through readjusting tax rates. This is a very common practice. In the cut-over regions of the Lake States, for instance, the assessments have been raised to a point where in many cases assessed value greatly exceeds actual value.

All in all, it must be concluded that the present assessment organization is inadequate and antiquated. It served its purpose in pioneer days when the possessions of the members of society were simple and quite readily evaluated. But the modern industrial community, with the diverse character of its make-up and the resultant complicated problems of valuation, does not lend itself to assessment by local personnel, especially where no help or supervision is given. There is little hope of sound assessment with perpetuation of the present assessing organization. Certainly assessment could be improved through the devices suggested above, but the general adoption of these improvements under present conditions of organization is almost too much to hope for.

CENTRALIZED ASSESSMENT

Assessment is an expert job. To appraise values intelligently requires (1) accurate information, (2) experience and method, and (3) freedom from political pressure. The local assessor usually does not have accurate information because he lacks time and facilities for acquiring, analyzing, and recording it. Too often he is not expected to exert himself to obtain such information. His constituents may expect him to produce an assessment which will please, not one which is necessarily in accordance with the legal standard. To produce an assessment which will please requires, no doubt, political sense and a knowledge of human nature, but hardly any detailed information regarding values.

As previously indicated, the local assessor is usually without experience or a satisfactory method. He is, in most States, an elected officer, and even where he is appointed, the appointment is usually made for reasons other than the candidate's qualifications as an appraisal expert.

A centralized assessment by State experts employed under civil service rules is recommended as an avenue of escape from the defects of the present assessment system. The supervision of this assessment would be in the hands of the State tax commission or commissioner or corresponding State authority. The administrative head of this body, the "commissioner", as he may for convenience be called, would appoint and control the various deputies and experts

necessary to assess all taxable property in the State. These subordinates would work on a full-time year-round basis and would be paid in accordance with their ability and training.

Each deputy might be assigned a district, composed of a number of counties in thinly populated regions and perhaps a city or 1 or 2 towns in more thickly populated regions. The deputy would be responsible, under the close supervision of the commissioner, for the assessment of all taxable property within his district at the full legal standard of value. He would be aided in this assessment by experts in various lines of valuation and possibly by an advisory committee of local citizens appointed by the authorities of the several towns or counties composing his district. The experts would be men chosen by the commissioner for their fitness in specialized fields of valuation—such as timber appraisal, factory appraisal, appraisal of minerals and mines, and the like. These experts would travel from one district to another, giving help to the deputies in charge. The deputies would, of course, have on file up-to-date assessment maps and records of real estate sales.

The completed assessment roll would be open to public inspection, and any taxpayer whose assessment had been changed from what it was the preceding year would be notified, by mail, of the change. Anyone aggrieved could appeal to the deputy, from him to the commissioner, and from him, as a final resort, to the courts.

The purpose in all of this is to put the assessment on a scientific, nonpartisan plane. When the job of assessment is passed from local hands to the centralized body, there is not relinquished with it one iota of local self-government as now permitted by law. The local governments have now no legal authority whatever over the character of assessment; that is all determined by the legislature and prescribed by statute. The local assessor has no questions of policy to determine; he has no legal discretion as to the character of assessment; he merely performs, as required by the law, an administrative function for the State, the function of determining the true value of all taxable property in his district. All that the local government has is the power to choose the assessor. The State may take over the job of assessment without answering to the indictment that it has removed any essential function of local self-government.

It should be self-evident that this recommendation of a centralized assessment is meant to be applied to all property and not only to forest property. It is obvious that a great injustice would be done to forest property if it were assessed by the State at true value and other types of property were assessed locally at less than true value.

STATE CONTROL AND ASSISTANCE

In many States it may be impractical to put assessment entirely in the hands of State officials, and in others this result may come about slowly. In such States efforts should be made to approach as nearly as may be to the ideal of centralized assessment. In States where assessment is now in the hands of hundreds of towns, county-assessment districts or assessment districts composed of several towns would be a forward step. In States where the county is the assessing unit, larger assessment districts might be created by uniting, for this purpose, several small or thinly settled counties.

In the meantime, the State should offer assistance to the local assessors in the preparation of assessment maps, the collection of sales data, and in other essential activities. The services of State-employed experts in the valuation of certain types of property which involve unusual or complex features, such as ore reserves, factories and machinery, merchantable timber, and the like, should be furnished. To make such assistance effective, a degree of State supervision and control is required. The State tax commission, or similar body, should have the right to remove a local assessor who refuses to cooperate with the State authorities and to appoint another in his place to serve until the next election. The legislature should provide that no one may be eligible for election to the office of assessor who has not passed a civil-service examination in the technic of valuation. If there were no resident of a certain assessment district who had so qualified himself for election to the office of assessor, the State tax commission should have authority to appoint some qualified resident of the State to hold the vacant office until a local resident could qualify as a candidate.

IMPROVED TAX-COLLECTION PROCEDURE

Next in importance to the assessment of all property at full value is the revision of the tax-collection procedure so as to curb tax delinquency. The effects of tax delinquency on forest property have been discussed in part 5, where it was shown that in certain regions tax delinquency has assumed alarming proportions and has caused the imposition of an exaggerated tax burden on much of the forest property that continues to pay taxes. Although illegally excessive assessment has probably brought about much of the delinquency, by causing confiscatory taxes to be imposed, delinquency in its turn has been an encouragement to illegal assessment. This is especially true in the cut-over regions of the Lake States, where the increasing volume of tax-delinquent lands has led to assessments far beyond the legal standard on those properties paying taxes. Although delinquency presents a problem, not only to forests but to all classes of taxable property, its widespread effects on the forests and forest lands of the United States warrant its investigation and the consideration of practical means of improving tax-collection procedure. Improvement may be expected only from measures that have regard to the interests of all taxpayers and of the taxing governments. If the adoption of such measures leads to improved collection of taxes, the owners of forest properties will be among the chief gainers.

In the interest of economy, justice, and a higher respect for government on the part of the citizens, as well as for the purpose of making possible the orderly conduct of government through prompt receipt of revenue, the procedure for the collection of taxes should be made as simple, regular, and undeviating as possible. It is unfair to those taxpayers who pay promptly and without coercion to be compelled to pay for the delinquency of others. It is unfair to those who are negligent to be encouraged in their negligence or to those in adverse circumstances to be falsely reassured by lenient practice. Taxes are burdensome to most people. They would be less burdensome if it were universally recognized that they were being collected at the lowest possible cost and that no one was receiving favored treatment,

and if the time of collection, while reasonably adjusted to fit the income flow of the taxpayer, were nevertheless fixed and certain.

Barring extreme circumstances such as loss of income through crop failure or similar causes, kindness is rarely done to a negligent or distressed taxpayer by permitting his taxes to accumulate. The practice only intensifies his difficulties, and at the same time creates embarrassing problems for the government. The taxes must eventually be paid, and if the taxpayer is solvent he should obtain credit from other sources than the government. If he is really insolvent, the government should know that fact, and failure to sell his property will not save him from foreclosure to meet his obligations.[56]

There are of course times when a solvent taxpayer is temporarily without liquid assets and would be willing to pay a high rate of interest to get his tax payment deferred. Ordinarily other avenues of credit should be open to him, but to meet all possibilities the government should probably permit some extension in the payment of the tax on real estate. Under conditions prevailing in most States, the extension should not exceed 1 year. In other States economic conditions may necessitate a redemption period longer than 1 year, in order not to impose unreasonable hardships on taxpayers subjected to hazards likely to occur from time to time. In any event, the period should not be unduly long; nothing should interfere with the central purpose in view, namely, the setting up of a clearly defined procedure leading to ultimate loss of title because of tax delinquency, with specific time limits definitely enforced. Neither the taxing jurisdiction nor the taxpayer should be led into the practice of substituting tax liens for tax payments. It is true that in the case of landowners, the land stands as security, but so does it if the credit is obtained from other sources. The taxing authority should not pursue an indefinite and lax policy of tax collection that would lead the taxpayer to take it for granted that the government will in effect act as a credit agency to carry him over a period of temporary inability to pay his taxes or to serve his convenience when he may want to use his funds or credit for some purpose other than the payment of taxes due.

The cause of good government would be served and benefit would accrue to all groups of taxpayers, and especially to the owners of forest property, if a procedure could be adopted that would cut through the maze of tradition, historic safeguards, and legal technicalities that now confuse and delay tax collections and that would provide a single course that is short and clear and certain.

This question has recently been studied by a committee of the National Tax Association, two members of which committee are members of the research staff which has made the present investigation of forest taxation. This committee, in a preliminary report presented to the twenty-fifth National Tax Conference at Columbus, Ohio, September 15, 1932, suggested a model plan of tax collection which is clearly based on sound principles. The plan is not meant to take the place of other nonconflicting collection machinery which has been found highly satisfactory, like the alias tax warrant in Connecticut and Massachusetts. The plan is meant to supplement, not to supplant, such local collection methods as have achieved a fair measure of success. This plan is mentioned herewith as illustrative of the

[56] For tax-collection practices which are directed especially to the reduction of delinquency in times of economic depression, refer to (*285*).

sort of tax-collection procedure which, with suitable adaptations to local conditions, might meet the problem in most of the States.

Ten basic principles which, according to the committee, should be embodied in an improved tax-collection procedure are as follows:

(1) The whole business of tax payment should be promptly brought to definite termination, by payment or foreclosure and transfer of clear title, rather than allowed to drag on by sale of liens, certificates, deeds, etc., with long and indefinite periods for redemption. The sale should be a sale of the property itself and not a sale of a tax certificate or lien. (2) The law should specifically state that there shall be no extensions. (3) Collection should be concentrated in the county, city, or corresponding jurisdiction. (4) The collecting officer should be appointed, not elected. The fee system should be abolished. (5) A local bank or some other local agency should be appointed as local receiver where required by the convenience of the taxpayers. (6) Tax bills should be sent to every taxpayer. (7) A tax bill should be prepared for each piece of real estate and one for the personal property of each owner. Where convenient, the bills of each taxpayer should then be combined. (8) The taxes of all jurisdictions should be combined in one bill. If the bill is unpaid within the allotted time and the taxpayer is a resident, the bill might well be collected by an alias tax warrant. (9) Taxes and special assessments on real estate should be a lien on the particular parcels of real estate. Seizure of personal property to satisfy real-estate taxes should not be permitted, except where the real-estate security is being impaired, as by logging operations. (10) Payment of taxes in installments (either semi-annually or quarterly) should be permitted in the case of real estate.

RESULTS TO BE EXPECTED

A more accurate assessment will reduce the tax uncertainty which now discourages many investors from putting their money into real estate. This uncertainty has been shown to be particularly prominent in the case of an investment in a deferred-yield property, such, for instance, as second-growth forest property in which the growing stock is subnormal for sustained yield. The uncertainty is most acute of all in the case of a cut-over land forest investment, where the owner must suffer the vicissitudes of the local assessment for a number of decades before he begins to receive a substantial income. To remove these vicissitudes would remove one important tax obstacle in the way of the forest-growing business.

Since cut-over land is generally overassessed with relation to other property under the present system, the reform of assessment under that system will remove still another important tax obstacle in the way of practicing forestry on such land. Cut-over land assessments will be reduced relatively to other assessments. On the other hand, since timber, either mature or immature, is sometimes under-assessed with relation to other property, timber assessments may sometimes be increased by an improved system. This latter effect will be of chief importance in the case of old-growth forests, where a large share of the total forest value is in timber. When such forests are being operated, an increase in assessment will be endurable even if it results in an increase in taxes, for such properties are yielding current income and have in consequence comparatively low tax ratios. Old-growth

timber not under operation is inherently at a disadvantage under a perfectly administered property tax, as has been shown.

For those forests, the value of which resides largely in immature timber not yet ripe for cutting, an improved system of assessment might, in many cases, increase the tax burden. Where this is the case, and there is no current income to relieve the additional burden, the inherent adverse effects of the property tax against deferred-yield properties is brought prominently into the open. This is thoroughly desirable and should bring action to relieve these inherent adverse effects by the adoption of changes in the property tax itself, as suggested in the succeeding section of this part. At present the inherent adverse effects are camouflaged by the favors usually granted by local assessors to immature timber. Many owners, because of these favors, do not have any just complaint against the present system. The progress of forest-tax reform in the past has been halted by the attitude of those owners who are quite well satisfied with things as they are and who do not care to interfere with established favors by advocating changes in the property tax. This attitude is understandable, but it is hardly just to those forest owners who do suffer under the present system and who do intensely desire some relief. And from the point of view of the public as a whole, it is only right that relief should be granted openly and impartially to all who deserve it rather than in a hidden and erratic manner to those who happen to benefit from faulty assessment.

As for reforms in collection procedure, the desirable results will apply to all property generally, not especially to deferred-yield forest property. Reduction in delinquency and less expensive administration will make possible a somewhat lower tax rate, which will relieve all taxable property. Delinquent property will find its way quickly into the hands of those who are financially able and willing to bear the responsibilities of ownership. Clear titles to delinquent property will be available and the costs of litigation reduced. Finally, the whole process from the assessment and tax levy to the final collection will be so shortened in time and so simplified in procedure that taxpayers will understand more clearly than before the calculation of their tax obligations and the relation of these obligations to the original assessment and levy.

CHANGES IN THE TAX SYSTEM RELATING ESPECIALLY TO FORESTS

GENERAL CONSIDERATIONS

It has been shown that the adverse effects of taxation upon the forests are due both to faulty or illegal administration of the property tax and to its inherent nature. Measures have already been suggested that are designed to bring about a better administration. These measures alone, however, will not solve the forest-tax problem, since a part of that problem arises from defects in the inherent nature of the property tax which would still operate even though a perfect administration should be accomplished. It is pertinent, therefore, to consider changes in the structure of the property tax system which may remove or alleviate those unfavorable consequences which arise from the inherent nature of the property tax rather than from its faulty

administration. Before discussing specific plans of forest taxation, attention will be directed to some general questions which arise in connection with such plans.

UNIFORM FIXED ASSESSMENT AND SPECIFIC TAXES

It has been shown that the adverse effects of the property tax are in part the consequences of the impossibility of predicting even remotely what its future burden will be. So far as this fault comes from uncertainty regarding the assessment or the tax rate, it could be removed, in whole or in part, (1) by a fixed assessment, i. e., by fixing the assessed value at so many dollars per acre in the tax law, or (2) by a fixed tax rate in the statute, or (3) by a specific tax per acre determined by law. This last method would remove the uncertainty both of assessment and of tax rate. Legislation definitely prescribing a fixed tax rate for forest property has been attempted only once; in 1927 by Minnesota, where it was superseded by a specific tax 2 years later. The idea of fixed assessment or specific tax has received no little favorable consideration. Among the more conspicuous examples are the recent laws of Wisconsin, Michigan, Oregon, and Washington, which are described in part 9.

The two chief arguments in favor of a uniform fixed assessment or a specific tax are (1) that tax administration is simplified and (2) that the uncertainty of the tax burden is largely or entirely removed. That tax administration would thus tend to be simplified is obvious. This tendency is, however, counteracted to the extent that the fixed assessment or the specific tax requires land classification or too greatly complicates the assessment machinery by setting off certain property in a compartment of its own, upon which the assessor must take care not to intrude.

The argument that the uncertainty of the tax burden is largely removed is valid to a certain extent. But here also there is a counteracting tendency in that prospective changes in the general price level of all commodities or in the special price level of forest products may make a fixed assessment or a specific tax a highly hazardous risk. If the price level of forest products should drop, for instance, the owner might quite reasonably anticipate that the costs of producing forest products would also drop. If the tax is specific, however, this very important cost cannot drop. If the assessment is fixed, the tax cost cannot drop as rapidly as it otherwise might; only a lower tax rate can bring about a reduction in tax cost under a fixed assessment. Of course it is always possible to make adjustments by legislation amending the law as to the fixed assessment or the amount of the specific tax. But if such amendments are to be counted upon, the essential character of fixity is lost. Frequent determination of assessed values or of taxes per acre by act of legislature would generally present hazards even greater than those which inhere in the ordinary operation of the property tax.

Under a system of uniform fixed assessment of, or a specific tax on, forest land, the less valuable land suffers a heavier burden in proportion to its value than does the more valuable land. Forest land varies in value all the way from almost nothing up to $10 an acre or even more on certain very favorable sites. An annual tax of $0.05 or $0.10 per acre at the lower extreme imposes a severe burden, while at the other extreme the same tax requires only a very light contribution.

The same situation holds in the case of a fixed assessment. An assessment of $2 an acre obviously means something quite different to the owner of $0.50 land than to the owner of $10 land. From the point of view of the private owner, therefore, the fixed assessment or the specific tax is inherently arbitrary and inelastic and not proportioned either to ability to pay or to benefit rece ved.

The uniform fixed assessment or the specific tax is arbitrary and inelastic not only with respect to the private owner but with respect to the local taxing bodies as well. Suppose that the purchasing power of money falls, or that the field of governmental expenditures continues to widen. In such event, an assessment of $2 per acre or a tax of $0.10 might be entirely inadequate to provide for the needs of government. On the other hand, if conditions were reversed such an assessment or such a tax might well be excessive.

Fixed assessments and specific taxes are too arbitrary and rigid to offer the foundation for a sound solution of the problem of forest taxation.

CLASSIFICATION ACCORDING TO THE OWNER'S INTENTION

Classifications dependent on the intentions of the owner are undesirable. If a given tax system is satisfactory for some forest property, it would ordinarily be satisfactory for all forest property. To make the tax system dependent upon the intentions of the owner as officially sworn to by him is to substitute, to a certain extent, intentions for property as an element of the tax base. Property is one measure of ability to pay, but intentions can never be a measure of ability to pay. Only insofar as intentions are materialized in acts, and acts, in turn, result in a different income or a different property value, can ability to pay be affected.

Neither are intentions a measure of benefit received, nor have they anything to do with the principles of public finance whatsoever. A tax system which depends upon them must frankly be considered to be of a regulatory character, either restricting or subsidizing, as the case may be, the performance of certain acts or the intention of performing certain acts.

In addition to these theoretical objections against classifiying property on the basis of the intentions of the owner, the administrative problems involved are generally insuperable. The determination of the intentions of the owner and the testing of their good faith by administrative processes present problems which should be avoided, not invited.

Were it practicable to do so, forests being transformed to sustained yield might well be separated from those being destructively cut and a different tax system applied. A forest being destructively cut receives favorable treatment from the property tax, while one under transformation from a condition of understocking to sustained yield receives unfavorable treatment. But it is only by the results of the management that one type can positively be distinguished from the other, and the results of the management are too slow in appearing to justify much present tax relief to a sustained-yield enterprise. To make tax relief retroactive is in general against public policy, since the errors and burdens of the past do not influence the present management of a property, and if the present owner bought the property since they were committed and incurred, they do not rest on his

shoulders. The forest under transformation to sustained yield can be granted substantial relief through a reform in the tax system applicable to forest lands generally rather than to this special class.

LAWS OF GENERAL APPLICATION

An ideal forest-tax system will apply generally to all forest property, and forest owners will not be given an option as to what tax system shall be employed in connection with their properties.

Most of the special forest-tax laws of the States are optional, the classification under the laws being initiated by application of the owner. If, under such conditions, all the properties eligible or the bulk of them are brought under the law, there may be reason to suspect that the law is granting special favors to this class of property. If only a few properties come in, it is evident that owners generally think they are better off under the ordinary tax system or do not intend to hold the cut-over land under either system. This appears to be the situation with respect to most of the optional forest-tax laws that have been enacted in this country thus far. In no State which has a forest-tax option is there more than a negligible portion of privately owned forest land classified under the optional system.

A method of taxation which, as a result of its optional character, is actually in effect on only a small portion of the properties to which it applies can scarcely be presumed to have secured an equitable result or to have accomplished the purposes for which it was intended. Some owners may be ignorant of the option, others may prefer not to invite an invidious comparison with other owners by asking for special tax treatment, while still others may shy at the red tape involved. Certain other owners may use the option as a club over the assessor's head, telling him, in effect, that if he does not reduce the assessment the property in question will be put under the alternative tax system. As a general principle, it would seem that if a certain tax system is worthy of adoption at all it should apply to all owners alike, without requiring them to take any unusual initiative. Only thus would it appear possible to accomplish any fundamental public purpose. The legislature should accept the responsibility for determining the best method of taxing forest property, in consideration of the public interest as a whole, and should then make its enactment of general application. This principle, however, should not be construed as opposed to every minor option which may arise incidental to the administration of such a tax law.

CONTRACTS

The great advantage of certainty as to the future burden of taxes upon forest property has caused efforts to be made in a number of States to deprive future legislatures of the power to amend existing tax provisions.

It is a general rule that no legislature can bind future legislatures so as to deprive them of the right to amend or repeal any act of a previous legislature. The courts have, however, established the general principle that when a statute embodies a contract with another party, the State may not violate its part of the contract by subsequent legislation. This has appeared to offer a means by which existing forest-tax measures might be given immunity from change by later legislation, and in a number of States provisions have been embodied in forest-tax

legislation stating or implying that the law constitutes a contract between the State and the taxpayer.

It should be noted at the outset that these "contracts" often do not provide for any valuable consideration to be given by the owner in return for the special tax status offered, and thus a question may well be raised whether they are really contracts at all. Often the only consideration demanded is that the owner shall keep his land in a forested condition. Whether or not this restriction on the owner's acts is actually a valuable consideration given by the owner to the State has never been submitted to the courts. Suspicion as to the bona fides of the conventional contract provision is awakened when one observes that these so-called "contracts" may generally be terminated at the will of the taxpayer, without very serious penalty, whereas, so long as the taxpayer lives up to his obligations, the State is not free to terminate the contract. It is doubtful whether such a one-sided arrangement is a real contract.

The Connecticut Supreme Court of Errors has held that in order to give a tax-exemption act the force of a contract it is necessary (1) that there be a clear intent to create something more than a mere privilege or bounty; (2) that the tax exemption be in the nature of a contractual obligation; and (3) that the contractual relationship be supported by a real and not a speculative consideration. The court then went on to say that a tax-exemption statute will not be construed as an irrevocable surrender of the power of taxation if it can be otherwise reasonably interpreted.[57]

In answer to a question from the New Hampshire Senate, the supreme court of that State delivered the following opinion, January 7, 1930:

> House Bill No. 5 provides for the exemption of standing wood and timber from taxation upon the owner's entering into a contract with the State to pay 10 percent of the stumpage value at the time of severance. It is entirely clear that the act is not within the limits fixed by the constitution. It undertakes to make tax liability a matter of bargain and sale at the option of a certain class of property owners, others having no such option. It seems unnecessary to say more upon this subject. The plan is so at variance with the whole theory of taxation in this State that its invalidity is not open to doubt.

To these judicial decisions may be added the hard fact that in one State the legislature has already seen fit to amend the rates of a special forest-tax law which the enacting legislature had sought to make inviolate under the protection of a contract provision. The Michigan act of 1925 introduced a specific property tax and a yield tax and provided that amendments to the law should apply to all lands classified after such amendments became effective; owners of classified lands might apply, without prejudice, for classification under such amending laws. This proviso has usually been understood to imply a contract under which the State, in case of amendments to the law, would not undertake to impose on property already classified provisions less favorable to the owner than those under which the property had been classified, while at the same time giving him opportunity voluntarily to take advantage of more favorable provisions. However, in the opinion of the attorney general,[58] such understanding is in error insofar at least as concerns the terms of taxation. He held that "specific taxes or taxation, or exemption

[57] *State ex. rel. Foote* v. *Bartholomew et al.*, 108 Conn. 252.

[58] This opinion was given to the acting director of the State department of conservation under date of Feb. 21, 1928.

from taxation, are not a contract between the landowner and the State, and specific taxes may be changed at any time." This opinion was occasioned by the 1927 amending act, increasing the specific tax on softwood land from 5 to 10 cents per acre, which tax the attorney general holds must be paid upon all land, whether classified prior to the amending act or not.

Irrespective of constitutionality, forest-tax contracts are inadvisable on general grounds, especially if they run for a long term of years. No one at the present time knows what conditions will be during whatever period the contract may cover, and to tie up the State to a certain line of action for that period of time may work grave injustice, either to the owner or to the State. During the period of the contract our monetary system, for but one instance, might be quite different from what it is now, and a 10-cent-per-acre tax or a $2 assessment at that future date might not be at all what was contemplated when the statute was enacted and made rigid by contract.

In order that private owners may be persuaded to accept the contract, a means is usually offered them of declassifying their land at any time they wish to do so. The State, on the other hand, is usually bound to abide by the contract for as long as the owner complies with the modest restrictions placed upon him in regard to the management of his land. A State should certainly be wary of such one-sided arrangements.

SPECIAL CONCESSIONS TO FORESTRY

Many forest properties are so burdened by costs that they cannot be operated as commercially profitable enterprises. It is sometimes urged that the State remedy this condition by offering a special tax concession to forestry; tax exemptions, tax rebates, taxation at especially low rates, and other favors of this sort have been often proposed and, in a limited way, have been frequently granted.

As was pointed out in part 1 (p. 9) of this report, all such favors are repugnant to the general theory of taxation, which presumes that all elements of the community will contribute toward the cost of government according to some equitable rule of apportionment. A tax concession granted to one interest necessitates an increased tax burden upon all other interests. Moreover, such special favors, if they accomplish the desired result, tend to direct industry into uneconomic channels. Any industry which does not bear its fair share of the costs of government has a heavy burden of proof to show that it is not a parasite upon the other industries of the community. It is no defense to show that the industry seeking special consideration is meritorious—has great public value—since the same may be said of all other legitimate industries. For example, it may be urged that forestry is of great service to the public. But so is agriculture and manufacturing and transportation. There is here no sound or workable basis for the granting of tax favors.

The foregoing conclusion is in no sense contradicted by the fact that the Government may be compelled in the public interest to take cognizance of the necessity of preserving some sort of vegetative cover on mountain lands for the protection of property at lower elevations against soil erosion and destructive floods in periods of heavy rainfall and against the drying up of springs, streams, and wells in periods of

light rainfall. The Government performs a proper function in seeing to it that a thrifty forest or other suitable vegetative cover is maintained for this purpose. To this end the Government may have to regulate the use of private land, in return for which appropriate compensation may be due the owner. Such compensation is not to be regarded as a special concession. It is a proper compensation for a service rendered to the State by the forest owner. But it should be made by means of a direct payment as reimbursement for damages rather than by means of a reduction in taxation. There is no possible way, under a general statute, to make the tax concession agree with the amount of the damages due to any particular owner. Under such a procedure, some would receive too great a reward, others too little. Moreover the method of direct payments has the advantage that the payments are out in the open, they have to be authorized by the legislature, their amount is known, and it is possible to determine whether the public advantage acquired is worth the cost. All this is likely to be concealed under the plan of tax concessions.

Special tax concessions in behalf of forestry are therefore not recommended. This point might perhaps warrant further elaboration were it not for the fact that in any case little aid toward the solution of the forest-tax problem is to be looked for from this direction. It is significant that, of the many States which have sought to promote forestry by special-tax favors, none has accomplished any result of importance. It is recommended that, whatever may be the solution of the problem of forest taxation, it should involve a tax contribution from forest owners substantially on a par with that of other taxable interests.

SEPARATION OF LAND AND TIMBER VALUE

A number of the plans for changing the tax system with special relation to forests, which will be considered later, as well as the special forest-tax laws now in effect in several States, require that forest properties be assessed separately for land and timber. There is obviously need for a precise definition of what is ordinarily meant by the land value of a forest property for use both in connection with a theoretical study of forest-tax plans involving separate valuation of the land element and in the formulation of forest-tax laws.

It appears that the most useful concept of land value is that value which would remain in a forest property if the forest were replaced with cut-over land such as would result from cutting the merchantable timber from a forest similar to that under consideration as to site and species, but composed entirely of a mature, even-aged stand. It is assumed that if there are any recreational or scenic values, they will be included in full with the land value even though they would be impaired by the hypothetical cutting. It is understood that if the land derives its value from some prospective nonforest use, a reasonable discount is taken from the cut-over land value to allow for whatever time may be required for the economical removal of the forest cover.

The above method of analyzing forest value into timber and land value is generally familiar to assessors and appraisers in the forest regions of this country. In the case of relatively unproductive or inaccessible lands, the value of cut-over land is often a nominal amount based on the general advantages of land ownership rather than on

definite prospects for specific uses. When based on prospective use of the land for forestry, forest-land value is identical with the "soil-expectation value" of forest finance, provided that the cost of regeneration in the customary formula is interpreted to mean the usual cost actually incurred in the management of forests of the kind under consideration, rather than a theoretical cost starting with land that has been denuded. The formula referred to is as follows:

$$L=\frac{Y-C-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1}-C$$

in which L is the land value; Y, the gross yield or stumpage value realized at the end of each rotation; C, the cost of regeneration incurred at the beginning of each rotation; X, the total amount of the taxes accumulated to the end of the rotation at the established rate of pure interest, p; e, the average annual expense incurred each year for administration, protection, and cultural operations; and n, the number of years of the rotation.

A more usual form of the soil expectation value formula is:

$$L=\frac{Y-C\,(1+p)^n-e\,\frac{(1+p)^n-1}{p}}{(1+p)^n-1}$$

where e includes taxes as well as other annual expenses. This is the same as the preceding formula except that here taxes are treated as an average annual sum, and the term $-C$ is transferred to the numerator of the fraction. The form used in this report is preferred because it permits taking proper account of the property tax, because the numerator of the fraction is an expression of the entire net income from the forest investment, and because it indicates directly that the value of the land is the capitalization of that income received every n years less the cost of regeneration incurred every n years.

If forest-land value is defined in accordance with the above-described concept, it is equivalent to bare land (in the strictest sense of land without possibility of natural regeneration) only when applied to a forest in which it is usual to clear-cut the mature trees and replace them by planting. When applied to forests which are ordinarily regenerated by natural means, the kind that prevail in this country, land value measures the value of the site together with the capacity of the forest to reproduce itself. It is equivalent to the value of the forest property in its existing condition less the value of the trees, if the value of the trees is taken to include only merchantable timber and any smaller trees that have passed the regeneration stage and are therefore not included in the reproductive capacity of the forest.

By ascribing to the land the entire value that a property would have in a cut-over condition, all nonforest possibilities, such as prospective mineral or agricultural use, are regarded as contributing to the land value. The same is true of uses which are compatible with timber growing, such as hunting and fishing and enjoyment of recreation and scenery.

FIVE PLANS CONSIDERED

Five plans based upon modification of the tax system with special reference to forests have been considered worthy of investigation and of treatment in this report. The first plan discussed is the yield tax,

which in its usual form is a substitute for the property tax upon all of the forest value except that which is contained in the land. The other four plans to be treated are modifications of the property tax, and will be called respectively, "adjusted property tax", "deferred timber tax", "differential timber tax", and "immature timber exemption."

Of these five plans, the yield tax and the immature timber-exemption plan are not regarded as capable of solving in a satisfactory way this phase of the forest-tax problem. Nevertheless, in consideration of the wide public attention which these plans have attracted and of their adoption in a limited way in State legislation, they will be considered in detail at a later point.

Three plans are thought worthy of recommendation as offering sound measures for the solution of the forest-tax problem. The first, or adjusted property-tax plan, retains the forms of the property tax, but with reductions in the tax that are so adjusted to the deferment of income that the resulting tax burden approximates that which would be imposed by an income or net-yield tax substituted at an equivalent rate for the property tax. This plan best avoids under all circumstances the inherent disadvantages of the property tax with respect to forest property. The second, or deferred timber tax, permits the owners to defer the payment of property taxes on timber until income from timber or other forest products is realized. This plan also approximates, but in general less accurately than the adjusted-property tax, the tax burden which would be imposed by an income tax. It offers the maximum immediate relief to timber-holding taxpayers, since it would transfer the entire burden of financing taxes on timber in advance of income from the owners of the timber to the public. The third, or differential timber tax, retains both the forms and the essential characteristics of the property tax, but with the timber value in part relieved from taxation as an offset to the inherent disadvantages of the property tax. This plan offers a more simple way of meeting the special forest-tax problem than the other two recommended plans but imposes a tax burden less closely adjusted to that of an income tax. These plans will be treated in detail later.

Throughout the following discussion of plans for modification of the tax system with special reference to forests, the reader should keep in mind the great importance which this report attaches to improvement of the administration of the property tax as set forth in an earlier section of this part and should remember that no special tax plan can be guaranteed against nullification by faulty administration. Nevertheless under ordinary conditions the adoption of any one of the recommended plans would improve the forest-tax situation, and its adoption need not be delayed until the process of reforming the rural tax situation is completed.

THE YIELD TAX

PURPOSE

The apparent difficulties in the way of so modifying the property tax as to make it appropriate to the business of forestry have given occasion for the opinion that the solution of the forest-tax problem is the complete, or nearly complete, removal of forests from the property tax base and the imposition of a different kind of tax. There is precedent for this action in the changes in taxation which have

resulted from the breakdown of the property tax as applied to the public utilities.

In the case of the public utilities, local assessments for property taxation have been found generally unsatisfactory because of the difficulty of ascertaining the value of properties such as railroads, power lines, and telephone systems, by individual taxing districts. As a result, where the property tax has been retained, assessment and equalization by a central State authority are usually provided. In other cases, the property tax has been abandoned, entirely or in part, and a tax on earnings substituted. Gross rather than net earnings are the usual base, on account of the need of regularity of income, as well as of certain difficulties in determining real net earnings. The conclusions of this investigation, pointing to the necessity of centralized assessment of the property tax and recommending modifications of the property tax to adjust it more satisfactorily to the nature of forest property, are in harmony with the first line of attack upon the problem of taxing the public-utility companies.

On the other hand, the substitution by certain States of earnings for property as the basis for the taxation of the public utilities may be taken as a precedent for considering the possibility of removing forests from the property tax, although this would be a new departure for landed property on a large scale. The natural substitute for the property tax would be some form of income tax, since the chief theoretical objection to the property tax as applied to forests arises out of the necessity of paying taxes in advance of income. As net income of a forest could be determined only if proper accounts extending over a long period had been kept, and most owners would not have such records, the gross income is the only readily available base for an income tax. Such a tax is known as a forest-yield tax. It is generally limited in application to the stumpage value of forest products when severed from the land and, when so limited, is a form of the severance tax. The forest-yield tax has been widely advocated in the United States and, as has been shown (pt. 9), has been applied in a limited way in a number of States.

The purpose of the yield tax, as above indicated, is to escape from both the administrative and the inherent disadvantages of the property tax and to make the payment of taxes coincide with receipt of income.

PURE AND MODIFIED FORMS

The essential feature of the yield-tax plan is the substitution for the property tax of a tax based on income. If this substitution involves the entire property, land and timber, it is proper that all current income be subject to the yield tax, not only the stumpage value of forest products when cut, but also all other receipts such as those from hunting or grazing. This form of the plan is called the pure yield tax. There is also a modified form, which involves only the timber element of the forest property, leaving the land subject to an annual tax. In this case the yield tax applies only to timber or other products of the trees.

The pure yield tax has certain obvious advantages of directness and simplicity. It would go the whole way in relieving the grower of forest products from the problem of financing tax payments in advance of income and from the uncertainties inherent in property tax assess-

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ment. On the other hand there are objections—both theoretical and practical—to the entire exemption of forest-land values from the property tax which compel attention to the alternative modified yield tax.

In the first place, the retention of the property tax on land seems to be the best way of taxing certain elements of value that occur in many forest properties which are managed only in part for the production of forest products. Forest lands may be subject to other uses compatible with timber growing, such as grazing, recreation, and production of game and fish. Benefits from these and other sources would be difficult to evaluate in cash for the purpose of levying a yield tax. Forest lands may also be managed for wood production while held speculatively for an eventual use that is incompatible with continued forestry, as for agriculture or residence sites. The added value arising from these other prospective uses would escape taxation under a pure yield tax, for as soon as the time were ripe for the conversion to the more profitable use, the property would fall out of the forest-land category. In the meantime the speculative holders would have been unduly favored, unless an "unearned increment" tax were imposed on the increase in value for the higher use. It is preferable to leave whatever value the land has for all uses, present and prospective, subject to taxation in the same manner as real estate in general. Otherwise it would be necessary either to attempt segregation of that part of the value of the land in excess of the value which it would have were forestry the most profitable use and tax this excess value under the property tax, which in practice would be very difficult, or to exclude entirely forest properties with recognized land values based on prospective uses other than forestry, which would greatly narrow the application of the plan and reduce its benefits.

Another reason for leaving the land subject to annual taxation is to relieve in some degree the local revenue situation in counties where forest land predominates. Obviously this relief is relatively small in counties with a substantial quantity of valuable timber in the tax base. In cut-over communities, on the other hand, it permits the application of the yield-tax plan with very little change in current revenues.

Finally the proposal to exempt forest land entirely from the property tax would run counter to the most fundamental tradition of property taxation. Of the entire property tax structure, the tax on land is the heart and center. Historically, land was the foundation of the first property taxes—they were indeed scarcely more than land taxes. In the evolution of the property tax throughout the world, various other classes of property were added from time to time. As experience taught the difficulties of taxing personal property, most classes of such property were gradually eliminated, so that among modern countries generally (outside of the United States) the property tax has pretty much gone back to its original state—a tax on real estate. While the United States has been reluctant to go thus far in giving up the taxation of personal property, it is scarcely conceivable that this country will ever consent to the exemption from property taxation of any considerable part of its land resources. Moreover the general case—economic, political, and social—against such exemption would appear to be conclusive.

The land tax may be an unmodified property tax on the assessed value of land apart from timber, or it may be limited. The limitation may be made in one of three ways: (1) by fixing either a constant or a maximum assessment, (2) by imposing a specific annual tax per acre,

or (3) by applying a specified fraction of the property tax rate to the regular assessment. The first two limitations have been shown to lead to such serious inequalities between taxpayers that they are undesirable and, if adopted, not likely to be permanent. The third, besides introducing an inequality without theoretical justification, is not generally advocated for use in connection with the yield tax since it affords no protection from arbitrary assessment.

It appears, therefore, that the modified yield tax with land value remaining subject to the regular annual property tax is the only form of the yield tax that deserves serious consideration.

DETERMINATION OF THE RATE

One of the weaknesses of the modified yield-tax plan is the difficulty of determining a yield-tax rate which would impose a tax burden on deferred-yield forest properties comparable to the burden of the property tax on real estate which produces a regular annual income. Taking the income or net-yield tax (at a rate that would make this tax equal the property tax for property producing sustained annual income) as the measure of a just tax that is appropriate to forests, it is theoretically possible to determine for a second-growth property under a given plan of management a yield-tax rate that would, under the particular conditions assumed, impose a burden equal to that of such a net yield tax. A formula for this purpose has already been developed (p. 74, formula 23). It is based on the expected yield, property tax rate, interest rate, length of income cycle, number of income cycles to the rotation, cost of regeneration, and annual expense. This formula has been applied to a number of hypothetical examples assumed to cover the range of ordinary relationships between the governing factors. The range of yield-tax rates thus indicated is shown in table 150. The averages of these results for cases where the income cycle is one-half or some smaller fraction of the rotation are shown in table 151. Both of these tables are based on a fixed rate of pure interest, assumed to be 3 percent. With a 4-percent interest rate, the yield-tax rates would have been in each case about 1 percent lower.

TABLE 150.—*Ranges of yield-tax rates*[1]

INCOME CYCLE EQUAL TO ONE-HALF AND SMALLER FRACTIONS OF THE ROTATION (FORESTS WITH MORE THAN ONE AGE CLASS)

Rotation	Yield-tax rates based on a property tax rate of—					
	0.5 percent	1 percent	1.5 percent	2 percent	2.5 percent	3 percent
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
30 years	4–7	8–13	12–18	15–23	18–27	20–30
40 years	5–8	10–15	15–21	18–26	22–31	25–35
50 years	7–9	12–17	17–24	22–29	26–34	29–38
60 years	8–10	14–19	19–26	24–31	29–36	32–41
80 years	9–12	17–21	23–28	29–35	33–40	37–44
INCOME CYCLE EQUAL TO ROTATION (EVEN-AGED FORESTS)						
30-years	2–6	4–10	5–14	6–18	7–21	7–23
40 years	2–6	4–12	6–16	7–20	8–23	9–26
50 years	3–7	5–13	7–18	8–22	10–25	11–28
60 years	3–8	6–14	8–19	10–23	11–27	12–30
80 years	4–9	7–15	9–21	11–25	13–29	14–32

[1] Formula 23 (pt. 3) was used in computing the above rates.

TABLE 151.—*Average yield-tax rates*[1]

Rotation	Yield-tax rates based on a property tax rate of—					
	0.5 percent	1 percent	1.5 percent	2 percent	2.5 percent	3 percent
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
30 years	6	11	15	19	23	26
40 years	7	13	18	23	27	31
50 years	8	15	21	26	31	35
60 years	9	17	23	29	34	38
80 years	11	20	27	33	38	42

[1] This table is based on managed second-growth forests where the income cycle is equal to ½ and smaller fractions of the rotation forests with more than one age class). Formula 23, pt. 3, was used in computing the rates represented by the above averages.

It is evident that under the conditions represented in tables 150 and 151 there are two factors which would have pronounced influence on the determination of the yield-tax rate; namely, the property-tax rate and the rotation. If cases where the income cycle is the same as the rotation (even-aged forests) are eliminated from consideration, the influence of all other factors that would affect the yield-tax rate is slight.

Attention is directed to the wide variations in yield-tax rates corresponding to the conditions represented in table 151. For example, if the rotation is 50 years, a change in the property-tax rate from 1 to 2.5 percent raises the yield-tax rate from 15 to 31 percent. If the property-tax rate is constant at 1.5 percent, there is a range of variation in yield-tax rates from 15 to 27 percent as the rotation is increased from 30 to 80 years.

Since the formulas for yield-tax rates applicable to second growth give such different results under different conditions, and since these conditions are far from uniform within States and their subdivisions, these formulas could be applied directly to determine uniform yield-tax rates applicable to States or counties only by ignoring the differences between individual properties. If a uniform constant property-tax rate and a single rotation could be ascribed to the second-growth forests of the State or county for which a uniform yield-tax rate were desired, a close approximation to the correct rate could be read from table 151, provided that even-aged forest properties were sufficiently exceptional so that they could be disregraded for practical purposes.

In practice, property-tax rates may vary widely, both among different local taxing districts in the same year, and within a single district from year to year. It is impracticable to adjust yield-tax rates to current local property-tax rates. Methods by which property-tax rates might be averaged for the determination of uniform State or local yield-tax rates will be mentioned at a later point.

There is, of course, no uniform rotation within a State, county, or town. The only way to meet this difficulty would be to determine an average or typical rotation as the basis for the yield-tax rate, in which case properties managed on a shorter rotation than this average would be overburdened, and those managed on a longer rotation would be favored. Suppose, for example, that in the State or district concerned it was found that rotations of 30 to 50 years were the rule. The average or typical rotation might then be considered to be 40 years. From table 151 the yield-tax rate could be determined according to

the average property-tax rate, interpolated, if necessary, for rates not shown. If the property-tax rate were 1 percent or 2 percent, the corresponding yield-tax rate would be 13 percent or 23 percent, respectively. This method has the disadvantage of being rather complicated for incorporation in a law, since a schedule of yield-tax rates to fit all possible property-tax rates would have to be adopted.

A simpler method of providing for a yield-tax rate which would vary with an average property-tax rate would be to establish by law a constant ratio of one to the other. For example, assume rotations and tax rates as described in the preceding paragraph. Since rotations from 30 to 50 years would be the rule, it may be seen from the first part of table 150 that the yield-tax rate corresponding to a property-tax rate of 1 percent would vary from 8 to 17 percent, while that corresponding to a property-tax rate of 2 percent, would vary from 15 to 29 percent. The law would then require that the yield-tax rate be determined by multiplying the property-tax rate by a given constant, which might be placed at any figure between 9 and 14 in order to give results well within the range of variation indicated by table 150. The particular constant could be determined by averaging the extremes, or it could be set arbitrarily nearer either extreme, at the discretion of the legislature. In view of the wide margin of uncertainty in determining the average or typical rotation on the basis of objective facts, any loss in accuracy from this modification is more apparent than real. Only a very rough determination of the equivalent yield-tax rate is possible, whether taken from table 151 or computed directly from the property-tax rate by means of a ratio based on table 150 in the manner described.

While these methods would determine a yield-tax rate that might be considered roughly appropriate to second-growth forests, this rate would have no particular validity for old-growth forests. Where such forests are not an important element in the tax base, administrative convenience would suggest the extension of the second-growth rate to old growth. Under other conditions, it would seem necessary from the revenue viewpoint to make the rate high enough not too sharply to reduce the taxes on timber as a class. The effect on the tax burden of the individual property would depend on the length of time the timber was held before cutting. Timber subject to immediate or early operation would be more heavily burdened than under the property tax; timber held in reserve for sufficiently long periods, more lightly. For example, if a yield-tax rate of 10 times the property tax rate were adopted, the owner of an old-growth forest would have to plan the holding of his timber for a period greater than 11 to 13 years in order to expect a tax burden below what it would be under the property tax, assuming that a net annual increase in value of 3 percent and moderate costs of protection and administration were anticipated.

STATE OR LOCAL RATES

The yield-tax rate might be determined either at a uniform figure for the entire State, or at independent figures for each county or town. Convenience of administration would dictate a single State rate, while a more exact correspondence to the property tax basis would suggest separate county or town rates. Separate rates would carry the further advantage of giving the benefit of a lower yield-tax rate to timber located in jurisdictions where tax rates had been kept

lower than the average by efficient administration, thus enlisting the interest of the forest owner in the quality of local government. The single State rate, on the other hand, has, in addition to the administrative advantage of simplicity, the merits of stability and territorial uniformity, which would be most helpful to the owner in making his long-range plans for the management of his property. If the single State rate were used, sufficient stability might be obtained by using a property-tax rate equal to the average total rate for all purposes throughout the State, excluding urban and other nonforest districts, and corrected so that it would be a ratio of actual rather than of assessed value. If individual county or town rates were used, the property-tax rates from which they were calculated should be averages for a period of years, perhaps for the past decade, in order to avoid sharp fluctuations in the yield-tax rates resulting from temporary or local abnormalities in the property-tax rates. Even so, there would still be considerable variations from year to year in each town or county, as well as the inevitable differences between the rates of different towns and counties.

DISPOSITION OF THE REVENUE

Since it would be essential that the State administer the yield tax on forest products, it is necessary to consider the disposition of the revenue. If a State were willing to take over support of functions to a degree that would render its subdivisions independent of timber taxes, it would be appropriate for it to retain the entire amount as State revenue. Such a disposition might be suitable for example in North Carolina, because here the State has taken over support of all roads and of the minimum school term. Otherwise some means of distribution of the yield-tax revenue would be required. There has been no experience adequate to serve as a guide. The following three alternatives have been suggested:

1. Distribution on the basis of average annual receipts. A rough estimate would be made of the probable average annual yield of the forests in each county, town, or other district in the near future. The State would pay the proper share of the tax on this yield to each district annually and charge each such payment to an account with the particular district. Whenever any timber was cut in any district, the district's share of the tax would be credited on its account. The balance at the end of each year would be carried forward with interest to the end of the next year. A large balance on either side would be avoided by changing the amount of the annual payments from time to time as experience showed they were too high or too low. This plan would give to each district the exact share to which it was entitled on account of timber cut within its borders, the State acting as a sort of banker in order to equalize the annual flow of revenue to the districts.

2. Distribution in accordance with local needs. The State would allocate the receipts of the yield tax to school and road funds, which would be used to assist in supporting schools and roads in districts the tax revenues of which were seriously affected by removal of timber from the property-tax base. The exact method of arriving at the amounts of such aid would have to be worked out on some equitable basis, which would, of course, require careful study of the situation in the particular State. This plan is subject to the danger

of controversy over the definite guides for use of these funds, and political considerations would be likely to enter. It might also have a tendency to perpetuate uneconomic local units.

3. Distribution in proportion to forest value. The yield-tax receipts would be divided annually in proportion to forest value on the basis of an impartial periodic appraisal of forest property in the several counties or other districts. If land were retained under the property tax, the land value should be excluded from the appraisal. This plan involves the difficult and expensive administrative task of making the appraisals.

EFFECT ON PUBLIC REVENUES

The initial effect on public revenues of the modified yield-tax plan would depend primarily on the ratio of the value of the current annual cut to the total value of the standing timber, exclusive of tax-exempt property, compared with the reciprocal of the ratio of the yield-tax rate to the property tax rate. If, for example, a yield tax were applied at a rate 10 times the property tax rate, the value of the annual cut to which the yield tax was applied would have to be one-tenth of the total value of taxable standing timber in order to produce an equal revenue. If under these conditions the value of the annual cut were less than one-tenth of the total value of the timber, the application of the yield tax would result in a deficit in public revenues compared with the property tax; if more than one-tenth, a surplus.

The approximate ratios, based on the average cut and value for the years 1925–29, are given in table 152 for all of the States where reasonably satisfactory figures are available. As the estimates from which these ratios are computed are in some respects very rough, no claim is made for accuracy as to the results. However some indication is given by this table of the immediate effect on the total tax revenues of any particular yield-tax rate. For example, if the yield-tax rate were 10 times the property tax rate, 24 out of 39 States would show a gain in tax revenues through the substitution of the yield tax for the property tax, and 15 States would show a loss, in all cases considering the State as a whole. In many of the States where there might be considerable proportionate loss in tax revenues from timber, the value of timber is not a sufficiently large item in the tax base to make the loss serious. This condition exists in all of the Middle Atlantic States and in Montana, Colorado, and California. It appears that in normal years the revenue loss on a State-wide basis resulting from the adoption of the yield-tax plan at a rate of about 10 or 12 times the property tax rate would not be important except in a few States where the annual cut is unusually small relative to the supply of standing timber and standing timber is a large element in the tax base, as in Maine, Vermont, Idaho, and Oregon.

TABLE 152.—*Relation between values of annual cut and total stand of privately owned timber,*[1] *selected States, by regions*

Region and State	Value of annual cut subject to yield tax	Value of standing timber	Ratio of value of annual cut to value of standing timber	Region and State	Value of annual cut subject to yield tax	Value of standing timber	Ratio of value o annual cut to value o standing timber
	1,000 dollars	*1,000 dollars*	*Percent*		*1,000 dollars*	*1,000 dollars*	*Percent*
New England:				South:			
Maine	4,610	139,878	3.3	Virginia	8,140	59,948	13.6
New Hampshire	4,120	35,598	11.6	North Carolina	11,500	98,338	11.7
Vermont	1,650	46,016	3.6	South Carolina	7,370	66,766	11.0
Massachusetts	1,390	12,840	10.8	Georgia	9,890	90,492	10.9
Connecticut	558	8,289	6.7	Florida	6,560	43,726	15.0
Rhode Island	106	558	19.0	Alabama	12,700	49,058	25.9
Middle Atlantic:				Mississippi	24,200	76,065	31.8
New York	2,410	111,749	2.2	Louisiana	19,400	94,288	20.6
Pennsylvania	3,840	56,944	6.7	Arkansas	13,600	96,832	14.0
New Jersey	208	5,416	3.8	Oklahoma	1,320	5,456	24.2
Delaware	166	2,506	6.6	Texas	13,800	67,405	20.5
Maryland	862	12,785	6.7	North Rocky Mountain:			
Lake:				Montana	774	17,088	4.5
Michigan	5,670	100,991	5.6	Idaho	3,420	58,265	5.9
Wisconsin	7,740	65,068	11.9	South Rocky Mountain:			
Minnesota	2,930	15,818	18.5	Colorado	74	1,457	5.1
Central:				New Mexico	329	2,345	14.0
Ohio	3,200	21,882	14.6	Pacific coast:			
Indiana	3,740	10,208	36.6	Washington	24,500	301,079	8.1
Illinois	1,370	11,820	11.6	Oregon	12,400	280,777	4.4
Missouri	3,250	24,046	13.5	California	[2] 5,090	256,778	2.0
Tennessee	7,530	48,202	15.6				
Kentucky	4,910	26,918	18.2				
West Virginia	4,940	29,539	16.7				

[1] Sources of data: Column 2, average timber cut times unit values. Timber cut based on estimate of total saw timber cut covering the period 1925 to 1929, less national-forest timber cut. Unit values based on stumpage prices reported to the Forest Service, averaged for the same period; column 3, estimated stand of privately owned timber multiplied by the same unit values used for column 2 with a percentage deduction to allow for carrying charges up to the time of cutting; column 4, by computation.

[2] Includes Nevada, separate figures not being available.

For certain States, representing different regions of the United States, more complete information than that of table 152 is available. The effect on public revenues of the application of the yield-tax plan in these States is indicated in table 153. In all of these States except Oregon and Washington it would appear that a yield tax with a rate assumed to be 10 times the average property tax rate would give as much tax revenue from the timber as the property tax, or more. This yield-tax rate would vary from 10.8 percent for Tennessee to 23.2 percent for Wisconsin.

TABLE 153.—*Estimated initial gain or loss in tax revenue by substitution of a yield tax for the property tax on timber,*[1] *selected States*

State	Property taxes on timber	Total tax collections, State and local, 1929	Value of annual cut subject to yield tax	Average property tax rate	Yield tax		Gain or loss			Rate of yield tax at which yield tax and property tax receipts are equal
					Rate	Amount	Amount	Ratio to taxes on timber	Ratio to total tax collections	
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*Per cent*	*Per cent*	*1,000 dollars*	*1,000 dollars*	*Percent*	*Percent*	*Percent*
New Hampshire	758	26,360	4,120	2.13	21.3	878	120	15.8	0.5	18.4
Wisconsin	1,510	175,147	7,740	2.32	23.2	1,800	290	19.2	.2	19.5
Tennessee	521	66,490	7,530	1.08	10.8	813	292	56.0	.4	6.9
North Carolina	1,180	97,299	11,500	1.20	12.0	1,380	200	16.9	.2	10.3
Louisiana	1,670	75,520	19,400	1.77	17.7	3,430	1,760	105.0	2.3	8.6
Oregon	4,690	65,466	12,400	1.67	16.7	2,070	−2,620	−55.9	−4.0	37.8
Washington	5,720	95,319	24,500	1.90	19.0	4,660	−1,060	−18.5	−1.1	23.3

[1] Sources of data: Column 2, estimated assessed values of timber times average tax rates. Estimated assessed values of timber computed by applying ratios of assessed to actual value to rough estimates of the actual value of privately owned timber, and checked by State tax commission reports where possible. These ratios are figures of the U. S. Bureau of the Census (*213, p. 5*) except in New Hampshire and Wisconsin, where they were derived from local studies. Average tax rates computed from State tax commission reports eliminating wherever possible urban and nontimbered counties. Column 3 (*3, p. 80*). Column 4, average timber cut times unit values. Timber cut based on estimates of total saw timber cut covering the period 1925 to 1929, less national-forest timber cut. Unit values based on stumpage prices reported to the Forest Service, averaged for the same period. Column 5, average property tax rates computed from State tax commission reports were converted to the actual value basis by applying ratios of assessed to actual value, both rates and ratios calculated as for column 2. Column 6, yield tax rate $=10r$, where r is the average property tax rate. Column 7, by applying yield tax rates, column 6, to stumpage values, column 4. Columns 8, 9, 10, and 11 by computation.

In table 154 corresponding data are given for typical forest counties in five selected States. From the facts here presented, it would appear that the application of a yield tax at a rate based on 10 times the property-tax rate for the forest regions would usually result in a loss compared with the property tax. However in a normal year the deficiencies on a county-wide basis would apparently not be serious in most of the counties represented in the table, always on the assumption of the rates indicated.

TABLE 154.—*Estimated initial gain or loss in tax revenue by substitution of a yield tax for the property tax on timber,*[1] *selected counties*

State, year, and county	Total property taxes levied	Property taxes levied on timber	Total stumpage value of timber	Ratio of assumed value of annual cut to total stumpage value	Yield tax rate	Yield tax	Gain or loss		Rate of yield tax at which yield tax and property tax receipts are equal
							Amount	Ratio to total property tax levied	
	Dollars	*Dollars*	*1,000 dollars*	*Percent*	*Per cent*	*Dollars*	*Dollars*	*Percent*	*Percent*
Minnesota, 1926: [2]									
Cook	223,239	134,803	5,408	8	26.2	113,000	−22,000	−9.9	31
Koochiching	748,077	182,309	8,484	8	26.2	178,000	−4,000	−.5	27
Lake	408,321	94,981	5,012	8	26.2	105,000	10,000	2.5	24
North Carolina, 1928:									
Beaufort	562,526	36,960	2,458	6	12.0	17,700	−19,300	−3.4	25
Chatham	300,242	25,114	1,864	3	12.0	6,710	−18,400	−6.1	45
Macon	166,137	30,093	2,466	5	12.0	14,800	−15,300	−9.2	24
Oregon, 1928: [2]									
Clatsop	1,630,329	541,275	29,250	8	16.7	391,000	−150,000	−9.2	23
Coos	1,304,042	254,509	21,000	5	16.7	175,000	−80,000	−6.1	24
Tillamook	1,073,497	507,399	42,500	3	16.7	213,000	−294,000	−27.4	40

[1] Sources of data: Column 2 from State tax commission reports, except North Carolina where the figures were computed by applying district tax rates to assessed values as shown by county records; columns 3 and 4 are estimates based on all the available information in State tax commission reports, in county records, and from field observations; column 5 by arbitrary assumptions in Minnesota and Wisconsin, elsewhere based on rough estimates of the value of the average annual cut in the years immediately prior to 1928; column 6, yield-tax rate $=10r$, where r is the State average property-tax rate; columns 7 to 10 by computation.

[2] Exclusive of money and credits.

TABLE 154.—*Estimated initial gain or loss in tax revenue by substitution of a yield tax for the property tax on timber, selected counties*—Continued

State, year and county	Total property taxes levied	Property taxes levied on timber	Total stumpage value of timber	Ratio of assumed value of annual cut to total stumpage value	Yield tax rate	Yield tax	Gain or loss		Rata of yield tax at which yield tax and property tax receipts are equal
							Amount	Ratio to total property tax levied	
			1,000		*Per-*				
Washington, 1927:	*Dollars*	*Dollars*	*dollars*	*Percent*	*cent*	*Dollars*	*Dollars*	*Percent*	*Percent*
Clallam	896,384	333,145	28,350	5	19.0	269,000	−64,000	−7.1	24
Grays Harbor	2,375,751	488,018	33,750	10	19.0	641,000	153,000	6.4	14
Lewis	1,619,448	363,884	38,250	3	19.0	218,000	−146,000	−9.0	32
Wisconsin, 1929: [3]									
Ashland	686,074	34,440	2,519	8	23.2	46,800	12,400	1.8	17
Forest	489,606	147,974	10,128	8	23.2	188,000	40,000	8.2	18
Lincoln [4]	854,182	114,824	9,861	8	23.2	183,000	68,000	8.0	15
Oneida	725,316	32,059	1,756	8	23.2	32,600	500	.1	23
Taylor	571,703	17,043	992	8	23.2	18,400	1,400	.2	21

[3] All city and village taxes included.

[4] 1925.

The reader is again reminded of the roughness of the estimates upon which the above calculations (tables 152, 153, and 154) are based and is warned that the conclusions drawn from them are subject to a wide margin of error. However, these figures may serve to give a useful factual basis for the discussion of the revenue problems involved in the yield tax.

It is to be noted, first of all, that the revenue dislocation that would be caused by introduction of the yield tax is local, affecting particular counties and towns. Average figures for a whole State (as in tables 152 and 153) throw little light on this local situation. To say, for example, that the State of Wisconsin might substitute the yield tax for the property tax on timber without apparent loss of revenue is not getting very close to the real problem. Since the functions supported by the existing property tax are chiefly local, attention must be given to the counties where forest property is a substantial part of the tax base. Here fiscal equilibrium can be maintained only if the State either (1) relieves the counties of responsibility for those functions now supported by the property tax or (2) distributes the yield-tax revenues to the counties in proportion to their respective losses of property-tax income. The difficulties of the first course—relieving some counties of responsibility for governmental functions which must continue to be borne by the other counties—are obvious and very serious. The second course presents difficulties scarcely less serious, as already pointed out. In short, data such as those presented in tables 152 and 153 go no further than to show whether the respective States would be likely in an average year to receive enough revenue from the yield tax, with rates as assumed, to make good the losses from exempting timber from property taxation. The vital problem of how local revenues are to be harmonized with local needs would still remain.

The data by counties in table 154 go further but are still of limited significance. They show what may be presumed to be the approximate results in certain counties of a yield tax imposed at a uniform

rate for the whole State but with each county receiving the proceeds of the tax on the timber cut within its own borders. Such a plan would produce great inequalities among the counties, helping some and injuring others, and it would tend to cause extreme irregularity of revenue from year to year in each county, unless modified by some plan of equalization through a revolving fund administered by the State, as has been suggested in a previous section of this part.

Finally it will be observed that the relations between yield-tax revenues and property-tax losses as discussed in the foregoing analysis (based on tables 152, 153, and 154) rest upon yield-tax rates which are generally far higher than those which are to be found in existing yield-tax laws (which, as has been shown, have seldom led to any actual collection of yield taxes) and probably far higher than would be accepted without strong resistance by owners who would have to pay them under a general nonoptional tax. As shown in part 9, the forest yield-tax rates now in effect vary from 5 to 12½ percent. Only three States have rates in excess of 10 percent. In current yield-tax discussion rates above 12½ percent are seldom considered, and any such rate is looked upon as a serious burden by any owner who contemplates cutting in the near future.

Yet the rates of yield tax that would apparently be required to equalize revenues, according to the foregoing analysis, are in many States far higher than this. Of the seven selected States for which such rates have been calculated (table 153) the two lowest rates are 6.9 percent, in Tennessee, and 8.6 percent, in Louisiana. The highest rate is 37.8 percent, in Oregon. The rates shown for the other States are: North Carolina, 10.3 percent; New Hampshire, 18.4 percent; Wisconsin, 19.5 percent; and Washington, 23.3 percent. If the yield tax is not to cause serious shortage of revenue on a State-wide basis, it would appear that the owners must be prepared to face rates that may exact as much as a fifth of the yield and that in any event will probably be far heavier than any that are to be found in existing laws or that are being seriously considered in current discussion.

It should be remembered that results of the calculations that have been employed in this analysis relate to an average year. Even though the probability of an adequate yield might be shown for normal years, serious revenue dangers would threaten in times of business depression, when there would be a falling off both in quantity of timber cut and in current stumpage values, thus causing a heavy decrease in the base to which the yield-tax rates would apply. Some plan of equalizing revenues would seem essential. An important reason why the State-wide rather than the county-wide basis for collection and distribution of the yield tax is essential is that State governments are better equipped than county governments to set up and administer reserves for the lean years from taxes collected in the fat years. Even as to the States, past history is anything but encouraging as to their competence to administer such reserves.

In connection with tables 152, 153, and 154, the reader should note that the estimates of the timber quantities and values should be used, not to make minute comparisons between States or predictions of definite financial results, but only as rough general guides. In actual practice, a number of factors would in any case be likely to change the results somewhat in ways that could not be definitely predicted even

if more accurate stumpage estimates were available. The determination of the average property tax rate on actual value would be in the hands of the State tax commission. In the absence of comprehensive sales data such as only a few States collect, the State tax commission would naturally be conservative in figuring the ratio of assessed to actual value and would be likely to determine a higher ratio than the actual. This would raise the average property tax rate on actual value higher than it should be and thus give too high a yield-tax rate. On the other hand, the determination of stumpage values, to which the yield-tax rates would apply, would probably be low. In normal times the prevailing idea of stumpage values is likely to be unduly influenced by prices paid in large transactions, where unit values are low because of the long period required for orderly liquidation, and also by prices paid for small tracts of timber that are low because the tracts involved are inaccessible except to a single operator. The more exceptional cases, in which the timber is available for immediate operation and so located that there is real competition between different buyers, would be likely to be overlooked. These conditions seem to indicate the probability of a high tax rate but a low base, and it is impossible to predict which, in general, would be of the greater effect.

POSSIBLE MODIFICATIONS

A method of introducing a yield-tax plan applicable to old-growth as well as to second-growth timber would be to graduate both the exemption from the property tax and the substitution of the yield tax, the property tax to be eliminated over the same period that the yield tax was being stepped up by granting each year an exemption of an increasing share of the assessed value of the timber. If, for example, the period were 8 years, the share of the property tax on timber exempted each year during such transition period would be one-eighth times the number of years which had elapsed since the adoption of the plan, and the yield-tax rate each year would be one-eighth of the full rate times the same number of years. As a result the same year that the timber value became entirely exempt from the property tax, the full yield-tax rate would become effective. Such a transition period would make it easier for the governmental units affected to become adjusted to the change in public revenues. However, this period should not be too long, on account of the extra expense involved in collecting two different kinds of taxes on timber at the same time. This method of making the change is only a little less unfavorable to the short-term operator than a direct change all in 1 year. Even with graduated application of the yield-tax plan, the owner who had nearly completed an operation, so that his remaining timber supply must be cut within a few years, would suffer an increase in tax burden. The reduction in his property tax would fall short of equaling the new yield tax on his production. If possible from the fiscal viewpoint, it would be desirable to avoid a transition period altogether.

In those States in which old-growth or virgin forests are a large element in the tax base, the difficulties inherent in applying a yield tax to such forests might be avoided by excluding them from the operation of the plan. In fact, all forests that were merchantable when the plan was adopted might be excluded until a given percentage of the stand was cut and removed. Incidentally, such a modification

of the yield-tax plan would find favor with those who would prefer not to disturb the favorable tax situation (as compared with a theoretically equivalent income tax or yield tax) which virgin forests enjoy under the property tax while being either destructively cut or converted to a sustained-yield basis through the reduction of wood capital. Against this modification is the consideration that a yield-tax plan applicable to old-growth and other merchantable forests would make it less costly for owners to withhold timber from untimely liquidation and maintain a reserve for future needs.

CONCLUSIONS

The yield-tax plan would attack directly the major defects of the property tax system as applied to forests. It would apply the income tax principle, modified so as to be of practical application, to the taxation of forest properties. It would permit reduction of the tax cost of establishing sustained-yield forests, either from bare land or from young stands, materially below the cost under the property tax. Furthermore, its application would relieve the owner of a deferred-yield forest from the necessity of financing tax payments in advance of income, so far as taxes on the timber were concerned. The directness with which these important objectives would be accomplished constitutes the chief merit of the plan.

An incidental advantage of the yield-tax plan is that the owner would be relieved of carrying the entire risk of loss by fire or other causes, which is an especially serious item during the process of building up a sustained-yield forest. The owner and the government would share the actual risk in each case in proportion to their respective equities, and the tax would be automatically adjusted to experience in each forest. There would be no yield tax to pay on timber that was destroyed by fire or other causes.

The yield-tax plan, while enjoying the above-mentioned advantages, is subject to serious drawbacks. One of the most important is that the yield tax, like all taxes based on receipt of income, would be variable in the amount of revenue which it would produce. In counties or smaller districts where operated forest properties predominate in the tax base, the irregularity of public revenues from a mere substitution of this tax for the property tax without other changes in the revenue system would be likely to be embarrassing at any time and would be very serious in years of abnormally low cut. In counties where the proportion of old-growth timber not under operation was exceptionally high, the immediate loss in tax revenue would be material. The same would be true of those timbered counties where the property-tax rate was exceptionally high, provided the yield-tax rate was uniform for the State based on a State-wide average property tax rate. Conceivably, years of abnormally low cut and consequent deficiency in revenue might be provided for by reserves laid aside from excess revenues in more favorable years, but common experience with county governments does not inspire confidence that county officials could be relied upon to build up and administer such reserves so that the desired stability in public income would be achieved.

The substitution of the yield tax for the present property tax on timber would cause, even in normal years, an immediate dislocation of local finance in those communities where timber formed an impor-

tant part of the tax base, unless the change was accompanied by radical changes in the division of public functions between the State and the counties or towns or by a complicated plan of distributing the proceeds of the yield tax to the local governments. The practical difficulties that would confront the development of either of these remedies are extremely serious.

The revenue difficulties that would be caused by introduction of the yield-tax plan have been discussed upon the assumption that the yield-tax rate would be fixed high enough to produce, on the average, a revenue approximately equivalent to what would be sacrified by exempting the trees from the property tax. While it is impossible to determine precisely what this rate would be in any State or county, sufficient evidence has been presented to indicate that it would generally have to be decidedly heavy, being in many States probably far higher than any of the rates in existing yield-tax laws or the rates that have been considered in current discussion of yield-tax plans. In such States any yield-tax plan containing adequate rates (on this basis) would almost certainly encounter strenuous opposition on the part of timber owners, especially those engaged in present operations or contemplating cutting in the near future. On the other hand, a yield-tax plan with inadequate rates would intensify the revenue difficulties that have been pointed out and would in addition either reduce the amount of State or local revenue or else place an added tax burden upon other elements of the community.

Another disadvantage of the yield-tax plan is the difficulty of adjusting the rate to correspond to the contributions exacted from owners of other real estate and to the various circumstances of different forest properties in the same taxing district. This is a disadvantage, not only from the standpoint of a fair distribution of public expenditures, but also from the standpoint of public policy. Timber would necessarily be separated from the local property tax base. If the yield tax were applied at a uniform rate over the entire State, as administrative considerations would appear to dictate, the effect of expenditures in any one locality would obviously have very little influence on the State rate, and timber owners who had no other local property would be in large measure relieved from any financial incentive to use their influence in favor of the efficient and economical operation of local government. Even if the yield-tax rates were local and related to the local property-tax rates, this difficulty would be only mitigated—not removed. If the yield-tax rate were determined annually in relation to the property tax of the current year, it is evident that only those forest owners who were marketing their product at the time would ordinarily have any great interest in economy of local government. If the rate were based upon an average of property-tax rates over a number of past years, those owners only would be interested who were currently cutting or expected to cut within a period measured by the number of years employed in the calculation. Owners of immature timber would generally have no interest in local governmental economy, so far as their forest properties were concerned. They might even find it to their advantage to encourage heavy immediate expenditures upon public works in the hope that less expenditure might be required at the time when they contemplated cutting.

Furthermore, the separation of timber from the local property tax base would involve a grave danger from the viewpoint of the timber owners themselves. This danger would result from loss of that protection against unequal tax treatment as compared with other taxable property in the same tax district which is enjoyed under the general property tax. A future legislature, hard pressed for funds and dominated by other than timber interests, might raise the yield-tax rate to a point that would make this tax more burdensome than the property tax. It is pertinent to note that it is this consideration which impels the national banks to cling so tenaciously to that provision of the Federal statutes which ties up their taxation with the taxes which the States may apply to other classes of property and income.

Another seldom-considered difficulty in connection with the yield tax, is the heavy task of determining stumpage values and of checking the quantities of forest products reported. In view of the variations in actual current stumpage values as between different properties, it would be necessary to maintain an adequate force of experts to determine these values. Otherwise the only alternative would be to resort to general average figures over wide zones, resulting in material inequalities among different properties. The temptation to misrepresent quantities cut would be great, and it would be difficult, without a burdensome administrative check, to prevent tax evasion through this means by small operators. The cost of administering the yield tax might be offset in some small part by the savings to be realized in the administration of the property tax through the elimination of the timber element from the property tax base.

The practical experience with yield-tax laws in the United States offers nothing to offset the force of these considerations against the yield tax. Although, as has been shown, there has been a fairly long legislative history, with 15 yield-tax laws today in effect in 14 States, there has been virtually no experience of real yield taxation. The laws, with only two very recent exceptions, have been optional with the owners. The amount of forest property that has come under these laws is relatively insignificant. Although under the recent Oregon (nonoptional) law, about 5 percent of the privately owned forest area has been enrolled up to this time (1933), no other State has more than 2.1 percent of its private forest lands subject to the yield-tax law, and in 7 of the 14 States the area enrolled is less than 1 percent of the private forest area.

The actual effect of the existing laws, so far as experience in taxation of yield is concerned, is even less than these trifling percentages would indicate. Practically all the forests enrolled under the laws are cut-over lands or those containing young growth. Practically nothing in the way of yield tax has ever been paid in any State. Under the optional laws, owners have not enrolled lands from which they expected to cut timbe in the near future; the nonoptional laws apply only to cut-over lands. There has been no yield-tax revenue to dispose of. Since the forests subject to the laws have contained practically no timber of taxable value, the laws have had no effect upon the property tax revenues.

It is thus—by limiting the laws so that they have been of practically no effect, as yield-tax laws—that American so-called "yield-tax legislation" has thus far avoided the difficulties inherent in a real

yield tax of general application. In particular the ready acceptance of the yield-tax principle in certain States has without doubt been impelled by the belief that no substantial yield tax would have to be paid on second-growth stands for a long time to come. If ever the adoption of a yield-tax plan of broad application—compulsory like other tax laws, and relating to both growing and mature timber—is seriously considered, it is certain that its adverse effects upon certain forest owners, its lack of any definitely indicated uniform rate, its disturbance of local revenues, and its administrative difficulties and costs will demand careful attention. In view of the availability of other plans which in large measure avoid these difficulties, the yield tax cannot be recommended.

ADJUSTING THE PROPERTY TAX TO THE NATURE OF FOREST PROPERTY

It has been made clear that forest property suffers under the property tax, not only on account of its faulty administration, but also because of its inherent nature, which produces discriminatory results that would persist even though the tax were perfectly administered. These results are the consequence of a lack of conformity between the sequence of required tax payments and the flow of income from certain types of forest property. The property tax adapts itself to forest property only when the income is regular and annual. When all or any portion of the expected flow of income is deferred, the property tax is unduly burdensome in proportion to the amount deferred and the length of deferment. When the flow of income is greater than can be sustained without depletion of the capital, the property tax is unduly light. In thus characterizing the property tax, the standard referred to is the ordinary tax on net income, being that form of taxation under which tax payments obviously conform most closely to the flow of income. It should be remembered that, as pointed out in part 3, the income tax thus used as a standard in this discussion is not the existing United States Federal income tax. It is, on the contrary, to be regarded as a substitute for the property tax and as applied to properties rather than to persons. It is consequently assumed that each property is taxed as a separate entity and that the tax is calculated with respect to that property alone regardless of the financial situation of the owner or of any limitation on his equity in the property. It is therefore necessarily assumed that this tax is levied at a flat rate and is not a progressive income tax. Such an income tax might be termed a "net-yield tax." These are principles which have been fully demonstrated in part 3.

The solution of the problem of so modifying the property tax as to correct its inherent lack of conformity with the several types of forest property depends on certain adjustments which will vary with the character of the income stream flowing from the several types of forest. For forests that yield a regular annual flow of income and expense no adjustment is required, except that, as intangible benefits might come to be reflected in the value, the question of special consideration for the forests in question would be raised, as has been pointed out. (See p. 526.) Where the income is deferred, the annual tax payments should be less than required under the property tax in proportion to the amount deferred and the length of deferment. If the income is so large that the capital is being depleted, the annual

tax payments should be more than required under the property tax. With such adjustments, the property tax form is maintained, in that the tax is due annually and is based upon property value, but at the same time the tax is brought into conformity with the flow of income from the property. It is important to note that a property tax so adjusted would normally exert no influence on the rate of cutting or the flow of income. No advantage, so far as taxes are concerned, would be gained from either increasing the cut or deferring the yield.

Before proceeding to the task of formulating the specific adjustments required to bring the property tax into harmony with forest property, it will be helpful to rehearse briefly certain fundamental economic principles upon which the value of capital depends.

The value of an instrument of capital is the result of discounting—capitalizing—all its expected future incomes and costs. The present worth of the expected incomes must be greater than the present worth of the expected costs; otherwise the instrument would have no value and would not be capital at all.

Being in the future, these expected incomes and costs are, with the lapse of time, constantly coming nearer and from time to time materializing in actual events. The passage of time thus brings changes in the value of a capital instrument in two principal ways, as follows:

(1) Due to the approach of expected incomes and costs, the value of the capital tends to increase, at a rate equal to the market rate of pure interest upon the present worth of the capital. This is an obvious corollary of the general principle of capitalization.

It will, of course, be realized that this tendency will not ordinarily cause the capital to increase steadily at this rate. This is because the appraisal of expected incomes and costs is itself subject to constant change. Everything in the future is uncertain. In determining the value of a capital instrument it is necessary, first of all, to form an idea of the series of incomes and costs which may possibly occur. It is next necessary to estimate the actuarial chances of the occurrence of each of these events. If, for instance, a yield of $100 from sale of stumpage is expected 5 years hence, it must be recognized that this yield is not absolutely certain. If it appears that the chance of obtaining this yield is about 9 out of 10, its value would be put at $90 before discounting to determine its present worth. Again, there may be the possibility that a conflagration will cause a loss of $1,000, but if the chance of such conflagration occurring is only 1 to 50 the loss actually discounted should be reduced to one-fiftieth, or $20. Having thus appraised all future incomes and costs on the basis of the probability of their occurrence, the present worth of the capital is obtained by the process of discount.

From this point, as time goes on, anticipated events come closer, and it will generally be possible to revise the estimates as to their probability. Thus, as the years pass, the chance of actually obtaining any expected yield may become greater. On the other hand, a series of dry seasons might increase the chance of the conflagration. Thus the values of expected incomes and costs are subject to constant revision, with corresponding effects upon the capital value.

(2) As the expected incomes and costs materialize in actual events, these changes occur: (*a*) Upon the receipt of an expected income, the value of the capital falls by the amount of such income. This is clearly illustrated by the market value of an ordinary bond, which, having gradually increased as the interest date approached, drops by the amount of the interest received immediately after such receipt; and (*b*) upon the payment of an expected cost, the value of the capital rises by the amount of such cost. This principle is the exact converse of the preceding. The present value of a capital instrument bur-

dened by expected future costs is less than it would be, if not so burdened, by the present worth of the series of expected costs. As each cost is paid, the capital is to that extent relieved of its obligation and rises in value accordingly. For example, if a $10 tax is due on June 1, a purchaser would be willing to give $10 more for the property, accompanied by a tax receipt, on June 2 than he would on May 31. Thus as time goes on, the value tends to rise on account of the progressive liquidation of expected obligations.

This principle may be stated in slightly different form, by noting that each annual cost payment is a fresh investment of capital. No one would purchase any capital instrument carrying the obigation to pay costs unless he expected its future income to be sufficient to reimburse him for his future annual investments in costs. The present worth of the capital is thus reduced by the present worth of the future investments that must be made in costs. And, as each cost payment is made, the value of the capital rises. Thus as time goes on, the value tends to rise on account of the increasing investment represented by cost payments.

The analysis thus far has dealt with future events which are *expected.* Future events which are *not expected* can obviously not be capitalized and do not influence present value. They are for the present nonexistent. As regards their effect on value these unexpected events are of two sorts. First are those which will cause a revision of the expected incomes and costs. Examples of such events in the field of forestry are the discovery of mineral values, a fire loss, an unexpected rise in stumpage prices which will probably affect future income, and an unexpected rise in wage rates or in the tax rate which will probably affect future wage and tax payments. These events are completely unanticipated and therefore can have no influence on the capital until they occur. They then produce their effects on value once and for all by increasing or decreasing the expected incomes or costs, which are then capitalized to give a revised capital value.

The second class of unexpected future events consists of those which give all at once an unexpected income or require all at once an unexpected cost. For example, a power company might require and pay for a right of way for a transmission line, or the breaking of a dam on the property might occasion loss on neighboring property for which damages would have to be paid. Such an event can have no effect on the value of the capital either before or after the event. It could not have affected the value before it occurred, since it was entirely unforeseen. It cannot affect the value after it occurs, since the value of capital is affected only by expected future events.

The same principle governs when an expected cost or income occurs but of an amount different from what was at any time anticipated. For example, a given anticipated yield may be sold at higher prices than were thought of until the sale was actually made, or a given cost may, when it actually occurs, be greater than was ever anticipated. Such a variation from the anticipated amount merely affects the net income actually received or the net loss actually incurred. Unless a repetition of a similar variation is expected, it can obviously have no effect on the value of the capital.

ADJUSTED PROPERTY TAX

THEORETICAL FOUNDATION

As has been previously shown, the theoretical defect of the property tax is that, in advance of the receipt of income, it includes in the tax base the expected increase in value which comes with the passage of time. Other value increments—those that are the result of unexpected events, such as a rise in stumpage prices—present no tax

problem. There is every reason why, under the ordinary property tax, the owner should be taxed upon such unanticipated increases in the value of his forest, just as he should have a reduced assessment on the occasion of a corresponding loss of value. The problem is confined to what may be called the "expected value increment", which accrues with the lapse of time.

In accordance with the general principles already set forth, the expected value increment of a forest is, at any given time, the resultant of the following events: (1) The approach of the time of expected incomes, which tends to produce a continuous increase in value at the market rate of pure interest on the present value of the forest; (2) the payment of expected costs, which causes on each occasion an immediate increase in the value by the amount of the payment; and (3) the receipt of expected incomes, which causes on each occasion an immediate decrease in the value by the amount of the receipt. The term "expected incomes" includes incomes from any source whatever.

During any period of time the expected value increment resulting from these three causes may of course be either positive, negative, or zero, depending on the relative magnitudes of the positive and negative items.

The adjustment of the property tax to the peculiar character of deferred-yield forests may be accomplished by exempting from taxation this expected value increment. Such exemption would remove the adverse effects inherent in the property tax when applied to deferred-yield forests and would place such forests on an equality with annual sustained-yield forests. This adjustment, however, requires modification to meet the case of the deferred-yield forest which is later converted to a shorter income cycle or finally to an annual sustained-yield basis. Otherwise such a forest, after having been converted to a shorter income cycle, would continue to enjoy a perpetual advantage as compared with a forest which had been on that particular income cycle continuously from the time when the adjusted property tax was introduced. This would happen because a part of the exemption of the value increment accumulated while the growing stock was being built up to that which was required for the shorter income cycle would be continued indefinitely as long as the property remained on the shorter income cycle, as will be apparent later when the details of the proposed plan are presented. The extreme discrepancy would occur when a deferred-yield forest was finally converted to annual sustained yield.

It is not desirable that identical properties should permanently bear different burdens of taxation on account of the accident of a difference in condition at some past time. On the other hand, it is not desirable that the tax burden upon a forest should be suddenly increased at the time when the income cycle is shortened. Beside the serious administrative difficulties involved, there is the conclusive objection that such provision would operate to discourage conversion of deferred-yield forests to annual sustained yield or to a shorter income cycle. In order therefore to make the adjusted property tax universally applicable, it is necessary to introduce some modification which, while not sacrificing the essential adjustment in the interest of the deferred-yield forest, will provide a gradual and automatic stepping-up of the tax toward the level of the regular property tax when

a forest is converted to a shorter income cycle, ultimately reaching the regular property tax level for an annual sustained-yield forest.

This end might be accomplished by any one of several possible means. As the simplest and most practicable device, it is proposed that this result be accomplished by merely omitting the expected costs other than taxes from the expected value increment. Thus, item (2) above may be subdivided into (2, *a*) taxes and (2, *b*) other costs. The expected value increment less item (2, *b*) may for convenience be called the "adjusted value increment." It is proposed that this adjusted value increment (rather than the entire value increment) be exempted from the property tax. Under a property tax thus adjusted, the adjusted value increment would be gradually eliminated and the full property tax burden restored as the forest passed from deferred yield to annual sustained yield.

It must be recognized that this proposed adjustment of the property tax is in the nature of a compromise, in that it does not completely counteract (as would the exemption of the entire expected value increment) the tax disability under which a deferred-yield forest suffers as compared with one on an annual sustained-yield basis. In the latter type of forest each year's expenses are met by the year's income, and expenses do not therefore involve investment which must be carried forward with compound interest. In the case of the deferred-yield forest, on the other hand, expenses must be incurred in advance of the receipt of income, requiring investment which must be carried forward with compound interest until income is received. The adjustment of the property tax as composed includes no adjustment on account of such advance payment of expenses other than taxes and so fails to equalize completely between the deferred-yield forest and the annual sustained-yield forest.

It should be clearly understood that the income or net-yield tax also fails in precisely the same way to make a perfect adjustment of the tax burden of the deferred-yield forest. When expenses are incurred in advance of the receipt of income, the expenses themselves are of course deducted from the income when later received, but no deduction is allowed on account of the (constructive) interest accumulated on such advance payments.

The fact that existing personal income taxes permit deduction of interest actually paid by the taxpayer to others is beside the present point. The owner of a property pays interest because his property has been obtained in part by means of borrowed money. In other words, the equity in the property is divided between the nominal owner and his creditor. While the nominal owner is permitted to deduct interest paid, the creditor is required to pay income tax on the interest received. Considering the property as a whole, there is therefore allowed no deduction on account of interest, any more than would be the case if the entire property were in one undivided ownership. The income tax which is being considered in the present analysis, as has been emphasized heretofore, is a tax upon the income or net yield from the property as a substitute for the property tax. Under such an income tax no deduction for interest paid would be permissible.

Conformity to such a widely accepted standard of taxation as the income tax is a decided advantage of the adjusted property tax here suggested and goes a long way to justify the failure to equalize perfectly the tax burden between deferred-yield and annual sustained-yield forests.

Finally, a positive advantage of the modification proposed is that serious administrative difficulties are avoided by eliminating costs

other than taxes from the calculation of the tax base. It would be impossible to determine these costs for different forests by any method applicable in actual tax administration.

The exemption of the adjusted value increment is theoretically applicable to all types of forest. Thus it has been stated that where the income is deferred, the annual property-tax payments should be reduced in proportion to the amount deferred and the length of deferment. If this reduction is accomplished by exempting the adjusted value increment from the property tax, a burden will result which is exactly equivalent to that produced by a net-income tax. This principle is proved mathematically in part 3.

It has also been stated that where the income is regular and annual, as in an annual sustained-yield forest, no adjustment in property tax is required. In a property of this character there is no adjusted value increment, and obviously the general exemption for all forests, including annual sustained-yield forests, of the adjusted increment will not alter the tax burden of such sustained-yield forests.

Finally, it has been stated that if the income is so large that the capital is being depleted, the annual property tax payments require to be increased. In this case the adjusted value increment is a negative quantity, and the exemption of a negative quantity would result in an addition to the taxable value and hence a tax higher than would be occasioned by the unmodified property tax.

If a negative deduction were recognized under this plan and a corresponding additional tax imposed, it would be necessary to provide that, for the purpose of calculating the negative deduction, all current costs should be deducted from the yield. The reason for this provision will be apparent from consideration of the situation of an annual sustained-yield forest in case effect were given to the negative deduction. The annual yield in such a forest necessarily exceeds the adjusted value increment, as above defined, by the amount of the annual expenses other than taxes. In other words, the yield must be sufficient exactly to balance interest and taxes on the current value and all other current expenses as well. Thus, unless these other expenses were deducted from the yield, contrary to the practice in calculating positive deductions, a negative value increment would always appear in the case of an annual sustained-yield forest, and there would always be an additional tax on such a forest above that imposed by the unmodified property tax. A similar difficulty would occur in the case of forests where the income was so large that the capital was being depleted, since in such forests it is proper to consider that there has been no depletion of the existing capital unless the yield exceeds the interest on the capital plus taxes and other current expenses. It is evident, then, that giving effect to negative deductions would involve the serious administrative difficulty of determining current expenses, other than taxes, for the forests affected.

Such additional tax, when there is a value decrement instead of a value increment, might serve to carry out, to logical completeness, the principle of adjustment of the property tax to all types of forest, producing in this case the extra burden theoretically indicated for the forest whose value is being depleted by cutting. However, the application of this extra burden would be highly impractical if the property tax form is to be maintained. It would result in requiring the payment of an annual tax never less than the property tax of the year in which the proposed adjustment of the property-tax plan was first in effect. This extra tax, higher than the property tax, would continue to be levied until the original value had been restored, or until the forest was entirely dissipated. The extra tax could not be collected as is the property tax, for in the case of destructive cutting the bare land would not be sufficient security for the tax. There

would be perpetuated a tax differential between owners of practically identical properties which would depend upon whether the time of depletion was just prior to or after the initial imposition of the plan. It is questionable whether the advantage given by the property tax to a forest being depleted is a sufficient inducement to cutting to justify the attempt to counteract it by the imposition of an additional tax burden at this time. Furthermore, giving effect to a negative deduction in the case of a property which closely approached financial maturity would have the same effect as changing the property tax to an income tax without any allowance for the fact that the property tax had been paid while the capital realized as income had been in process of accumulation. For these reasons it is considered advisable to limit the adjusted value increment to positive amounts, never permitting an increase of the ordinary property tax through application of a negative deduction.

No complication is caused by unanticipated increases in the value of a forest, which have not entered into the calculation upon which the value was based. An unexpected increase in stumpage prices, for example, will cause an immediate increase in the present worth of the forest, which would theoretically be reflected in the assessed value at the next assessment date. Since the adjusted property tax starts each year with the actual assessed value, all value increases due to fortuitous causes are automatically made completely subject to taxation—to the extent that the assessment is correct.

In case of an unanticipated fall in value of the forest, however, an adjustment must be made. (An anticipated fall in value can be the result only of the receipt of income, which has been taken into account in the adjusted value increment.) For example, whenever fire, wind, or insect attack causes a loss, the value of the forest is at once reduced. Similarly, a decrease in probable future stumpage prices or an increase in probable future costs causes an immediate loss in the value of the forest. The same result follows after any unexpected event which reduces the amount of expected future incomes or increases the amount of expected future costs. When a forest, the value of which contains a value increment accumulated during some past years thus suffers an unanticipated loss of value, the increment is reduced in the same ratio as the reduction in the total value. The theory of the adjusted property tax is to exempt the adjusted value increment. From then on this forest would not, even under the ordinary property tax, be taxed on that part of its value increment which has been lost, and there is no justification for giving the owner any additional reduction of his taxable value on account of a value increment upon which he will not be assessed hereafter because it has ceased to exist. Of course he will continue from then on to be exempted on all adjusted value increments that are still present plus those that may accrue in the future. The theory of the adjusted property tax therefore requires that, following any such loss, the total adjusted value increment accumulated to date should be correspondingly reduced before being applied to arrive at the adjusted tax base.

There are localities where privately owned cut-over land is not being reforested, either naturally or artificially, and has not increased in value over the past 30 or 40 years. From the viewpoint of forest-tax reform, there would appear to be no ground for exempting any part of the land value of these properties, and in case these conditions

be found in the future, properties should continue to be assessed and taxed on their land value. There are also localities in which forest properties contain considerable elements of value not arising from their timber-producing capacity, such as recreational, residential, or mineral uses. These elements of value should naturally be included in the land value and taxed like other property in general. To meet these and other similar conditions the adjustment of the tax base brought about by deducting each year the accumulated adjusted value increment should not be permitted to bring the tax base below the land value. The application of this method of taxation therefore requires that the land value be distinguished from the timber value in the assessment of all forest property.

In seeking a modification of the property tax which will adjust it to the peculiarities of forest property, it is not necessary to attempt any correction of past maladjustments. The adjusted property tax should commence with things as they are when it goes legally into effect, seeking only to correct the future inequalities that would otherwise result from the operation of the property tax. This principle is theoretically sound, and in addition it recognizes the obvious fact that compensation for past inequalities is impracticable.

THE PLAN, STATED AND ILLUSTRATED

A practical plan for accomplishing this adjustment—which may be called the "adjusted property tax"—is proposed, as follows:

The forest will continue to be assessed in the usual manner, but from the assessed value there will be deducted the calculated adjusted value increment accumulated from the taking effect of the plan to date. It will be assumed that during any given year such increment is destined to accrue. Its constructive amount will be determined by (1) calculating 1 year's interest on the value of the forest at the beginning of the year, (2) adding the taxes paid during the year, and (3) subtracting the income received during the year. The value at the beginning of the year will be assumed to be the assessed value. The rate of interest will be set in the law, being the closest approximation to the market rate of pure interest. The risk element, commonly called upon in business calculations to justify a higher rate, should have been allowed for in the estimate of the expected yields and costs, upon which the present value is based. The determination of the interest rate is a question for the judgment of economists. They would be guided by the interest rates paid by the most stable governments on long-term borrowings through the medium of bonds or other securities which are exempt from all taxes except inheritance taxes and which carry no other special privilege. This rate would be subject to change if there should be a material change from the rate then currently in use under the plan. For the purpose of illustration, it is assumed that the rate set will be 3 percent. In any given year the deduction will be the accumulated adjusted value increment up to the end of the next preceding year. Whenever the calculation produces a negative deduction, such deduction will be disregarded, thus leaving the regular assessed value unchanged.

For example, suppose the proposed plan goes into effect on January 1, 1933. A given forest was assessed on January 1, 1932, for $1,000. The taxes on this valuation, paid in 1932, were $25. During the year a yield of $10 was realized. On January 1, 1933, the forest was

assessed at $1,000 (barring unknown factors, there presumably was an actual increase in value during 1932, which is assumed to have been overlooked by the assessor). The tax rate for 1933 is 2 percent. Under the proposed plan, the tax for 1933 would be calculated as follows:

Assessed value, 1933		$1,000.00
Deduction:		
Adjusted value increment of 1932:		
Interest on assessed value of 1932	$30.00	
Taxes in 1932	25.00	
	55.00	
Less yield in 1932	10.00	
Total, being the adjusted value increment accumulated through 1932		45.00
Adjusted tax base of 1933		955.00
1933 tax at 2 percent		19.10

Thus is accomplished the desired result; i. e., exempting the forest from taxation on the increment of value resulting from interest accumulation and taxes paid, less yield realized.

In the next year there will again be a constructive value increment, and thus, year after year, the adjusted value increment accumulates. This cumulative increment should always be exempt from taxation. Continuing the example through the second year, it may be assumed that the assessed value as of January 1, 1934, has increased to $1,100. The tax rate is 1.5 percent. There was no yield during 1933. The tax payable in 1934 is calculated as follows:

Assessed value, 1934		$1,100.00
Deduction:		
Adjusted value increment accumulated to the beginning of 1933		45.00
Adjusted value increment of 1933:		
Interest on assessed value of 1933 ($1,000)	$30.00	
Taxes in 1933	19.10	
	49.10	
Less yield in 1933	0.00	
		49.10
Total, being the adjusted value increment accumulated to the beginning of 1934		94.10
Adjusted tax base of 1934		1,005.90
Tax in 1934 at 1.5 percent		15.09

In case of an unanticipated fall in value, whether caused by fire, decline in stumpage prices, or any other cause whatever, the total accumulated adjusted value increment must be reduced by an amount which has the same ratio to its total as the ratio of the fall in value to the assessed value at the beginning of the year in which the fall occurred. Strict theory would require that each fall in value (as well as each increase in value) be separately treated. In practice, however, it would be impracticable to make adjustment for losses in value except in connection with the annual assessment. An unanticipated loss in value therefore would be assumed to have occurred whenever the assessed value had declined by more than the amount of the yield and would be measured by the amount of the decline which was in excess of the yield, even though this decline might have been the net result of a loss and a gain in the same year. The amount of the tax discrepancies introduced because of this departure from the theory of

the plan would be small and may be disregarded in view of the difficulty of separately measuring unanticipated gains and losses when they occur in the same year.

Strict theory would require also the recognition of the fact that failure to realize the normal expected value increment is really a loss, which would require that the loss, as determined above, be augmented by the amount of the normal expected value increment. Here also the amount involved is probably not sufficient to warrant the administrative complications involved in the theoretical adjustment.

The practical operation of this feature of the plan may be illustrated by continuing the mathematical example for a third year.

There was no yield in this year. Fire destroyed timber, as a result of which the assessed value on January 1, 1935, was $850. The loss is the difference between $1,100 (the 1934 assessed value) and $850, or $250. The adjusted value increment must therefore be reduced by $\frac{250}{1,100}$. The tax rate in 1935 is 2 percent.

The tax payable in 1935 is calculated as follows:

Assessed value, 1935		$850.00
Deduction:		
Adjusted value increment accumulated to the beginning of 1934		94.10
Adjusted value increment of 1934:		
Interest on assessed value of 1934 ($1,100)	$33.00	
Taxes in 1934	15.09	
	48.09	
Less yield in 1934	0.00	
		48.09
Total		142.19
Less 250/1100 of the total		32.32
Difference, being the adjusted value increment accumulated to the beginning of 1935		109.87
Adjusted tax base of 1935		740.13
Tax in 1935 at 2 percent		14.80

To illustrate the limitation of the total deduction to a quantity not less than 0 in case of a negative increment, the example may be continued for a fourth year. Let it be assumed that there was a yield of $250 in 1935. The assessed value on January 1, 1936, was $650. The tax rate in 1936 is 2.5 percent. The tax payable in 1936 is calculated as follows:

Assessed value, 1936		$650.00
Deduction:		
Adjusted value increment accumulated to the beginning of 1935		109.87
Adjusted value increment of 1935:		
Interest on assessed value of 1935 ($850)	$25.50	
Taxes in 1935	14.80	
	40.30	
Less yield in 1935	250.00	
		−209.70
Total, being the adjusted value increment accumulated to the beginning of 1936		0.00
Adjusted tax base, 1936		650.00
Tax in 1936 at 2.5 percent		16.25

The concrete illustration given above may be expressed in general terms, where T is the taxes, V the assessed value, Y the gross yield, L the loss, r the tax rate, p the interest rate, and D the total accumulated adjusted value increment to date or the difference between the assessed value and the adjusted tax base. The subscripts indicate the year to which the above symbols refer; for example, 0 is the year prior to the adoption of the plan (corresponding to 1932 in the illustration); 1 is the first year (corresponding to 1933 in the illustration); 2 the second year (corresponding to 1934); and 3 the third year (corresponding to 1935).

Formula (1) $$T_0=r_0V_0.$$

Formula (2) $$T_1=r_1[V_1-(pV_0+T_0-Y_0)].$$

$(pV_0+T_0-Y_0)$ is the adjusted value increment before the first year or the deduction from the assessed value of the first year. It is always a positive amount, and is designated at D_1.

Formula (3) $$T_2=r_2[V_2-(D_1+pV_1+T_1-Y_1)].$$

$(D_1+pV_1+T_1-Y_1)$ is the adjusted value increment before the second year and is designated as D_2.

Formula (4) $$T_3=r_3\left[V_3-(D_2+pV_2+T_2-Y_2)\ \frac{V_2-L_2}{V_2}\right].$$

Of the above, $$(D_2+pV_2+T_2-Y_2)\ \frac{V_2-L_2}{V_2}$$

is the adjusted value increment before the third year, or D_3. This adjusted value increment is computed in the same way as in formula (3) and then reduced by the ratio of the loss, L_2, occurring in the second year, to the value of the second year, V_2.

A general formula, where n is any year and $n-1$ is the year preceding the nth year, may now be written:

Formula (5) $$T_n=r_n\left[V_n-(D_{n-1}+pV_{n-1}+T_{n-1}-Y_{n-1})\ \frac{V_{n-1}-L_{n-1}}{V_{n-1}}\right],$$

where $(D_{n-1}+pV_{n-1}+T_{n-1}-Y_{n-1})$ is never less than 0, and obviously L_{n-1} can never be greater than V_{n-1}.

To guard against evasion on the part of a taxpayer through the concentration of cutting on one parcel and the consequent retention of cumulative adjusted value increments on other parcels, all property in one ownership should be considered as a unit for the computation of the gross income, regardless of the manner in which the property is subdivided into parcels for purposes of assessment and levy. The total income from all forest property of one ownership for the preceding year should be divided among the different parcels of that ownership in proportion to the adjusted value increment which in absence of this income would have accumulated to the credit of each. Logically, the income from all forest property in one ownership in the entire State should be treated as a whole. It would have to be reported to the State tax commission and be used to cause a proportional reduction of the adjusted value increment for each parcel of forest property in that ownership. However, the administrative readjustments required would, in most States, probably be too cumbersome to

warrant such attempt at logical perfection. The least variation from present procedure would result if the yield from all forest property on one tax roll were reported by ownerships to the officials preparing the tax roll. In this way all property in one ownership in the tax billing district, be it township, county, or State, would be considered as a unit for the proportionate reduction in the adjusted value increment on account of the receipt of a yield. However, the smaller the district chosen, the greater is the chance of unwarranted concessions to the owner.

Transfer of ownership of a parcel of timber should not affect the adjusted value increment of that parcel. However, the market value of the parcel sold or transferred should be considered as gross income, to be divided among the different parcels of the ownership of which it had been a part in the same manner as other gross income. In this way no tax advantage would be secured by transferring to another party a parcel of timber which was to be cut in the near future. Upon such a transfer the cumulative adjusted value increment on the remaining property in the ownership would be reduced by the value of the parcel transferred.

ADMINISTRATIVE DETAILS

Every taxpayer having forest property should be invited to furnish the assessor with a sworn statement of the stumpage value of the timber or other forest products harvested or sold and all other income from the property, or else a sworn statement that no income was received. This statement should cover 1 year ending at the time of assessment and should be filed at any time after the assessment date within a prescribed period sufficiently limited in length to allow time for checking and for computation of the adjusted tax base. As a penalty for failure to furnish the assessor with a statement of income, the tax rate would be applied to the assessed value rather than to the adjusted tax base to determine the current year's taxes, and the cumulative adjusted value increment from prior years would not be carried over and used in computing the adjusted tax base for subsequent years; provided that if the taxpayer should, within a limited time, file an income statement covering the year or years during which he failed to file, his accumulated adjusted value increment might be restored from that date. In farm wood-lot regions where very small forest yields are received in varying amounts but quite regularly, the farmer might not consider it worth the effort to file an annual income statement. Under such conditions this plan would automatically be inoperative.

The assessor should ordinarily be able to check the filed statements during the progress of his regular valuation work. However, so far as the adjusted property tax is concerned, precise check of the reports of income would ordinarily not be very important. Failure of the owner to make any report as to his income would, under the procedure outlined in the preceding paragraph, be all to the owner's disadvantage. He would lose all the advantage of the increment deduction, plus whatever influence his report of cut might have had in causing a reduced initial assessment of his property. Should the owner report less than the actual income, he would gain by making his increment deduction larger than it should be, provided the reported income were not sufficient to wipe out the deduction entirely; beyond that, under-

statement of the income would have no effect on the deduction. On the other hand, he would lose, to the extent of the under-statement of income from timber cutting, the full effect of his reported cut in causing a reduced assessment of the property. It is true that the gain in the increment deduction would be cumulative and more or less permanent, while the loss on the assessment might be corrected in a later assessment. Still, the net result would ordinarily offer little or no inducement to understate the income. Finally, should the owner exaggerate his income, he would injure himself by decreasing his increment deduction, up to the point where it was wiped out entirely; after that the effect on the deduction would be nil. But he would gain through the effect of his report on the assessment of the property. In most cases the adverse and favorable effects on the taxpayer would about neutralize each other.

On the other hand, statements showing a yield sufficient to more than cancel all accumulated adjusted value increments—i. e., showing that that forest was being depleted by cutting—would need to be checked carefully, on account of the effect on the assessment. Also, where conditions made income possible from thinnings, turpentine leases, recreational privileges, grazing, or other uses that might not have any appreciable effect in reducing the assessed value, special care in checking would be necessary.

Where uses compatible with timber growing, such as grazing, hunting and fishing, or camping, were common and had a recognized value, it would be necessary to take account of income from such uses whether realized by the owner in cash or not. If the owner used his forest land to graze his own animals, or to meet his own needs for hunting and fishing or other recreation, the annual value of this use should be appraised by the assessor in accordance with what is received when similar privileges are disposed of on a rental basis, and the amount included in income for the purpose of calculating the adjusted value increment.

In certain States an assessment of property is not made annually when there has been no sudden change in value, such as would be caused by the cutting of timber. The adjusted property tax base need be computed only when an assessment is made, as, under the property tax, the value increments are not taxed in the interim between assessment dates. When an assessment is made following an interval of 2 or more years, the adjusted tax base must again be computed in the usual manner, except that, in place of the adjusted value increment for the preceding year, the adjusted value increment for the interval between assessments will be employed, being computed by multiplying the previous assessed value by the interest rate by the number of years, adding the taxes paid during the interval, and subtracting the sum of all incomes received during the interval. The compounding of the interest for this short interval may be neglected for the sake of administrative simplicity.

The property tax rate is at present determined by dividing the property tax portion of the local budget by the total assessed value of the district. Under the adjusted property tax plan, the property tax portion of the local budget would be divided by the sum of the adjusted tax base for forest property and the assessed value of all other property in the district. The resulting tax rate would be applicable to all property in the district.

The steps necessary to compute the adjusted property tax require the addition of seven extra columns in the tax roll. Such a tax roll would require column headings somewhat as in sample in table 155. It is obvious that the computation of the deduction is a simple clerical matter and need involve no complications. The additional columns need be added to the tax roll only for forest properties, which might well be segregated from other properties for this purpose. There should be a permanent auxiliary record of the incomes from the several ownerships.

A further refinement could be added in the form of another extra column between columns 7 and 8, in which the sum of columns 5, 6, and 7 would be entered for convenience in distributing the gross income or yield from an ownership among its constituent descriptions.

TABLE 155.—*Portion of sample tax roll, 1936* [1]

(Adjusted property tax)

Owner	Description	1936 value	Extra columns							Adjusted property tax 0.025 (tax rate) × column (10)
			1935 value	Adjusted value increment accumulated through 1934	Interest 0.03 × column (4)	1935 taxes	1935 gross yield	Adjusted value increment accumulated before 1936, columns (5)+(6)+(7)−(8)	Adjusted tax base column (3)− column (9)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
John Jones	Sec. 1 SE of SE.	$840	$850	$109.87	$25.50	$14.80	$50	$100.17	$739.83	$18.50

[1] This table agrees with the example in the text for 1936, except that the yield is here $50 instead of $250, and the 1936 value is $840 instead of $650.

APPLICATION TO OLD-GROWTH FORESTS

In the case of an old-growth forest being converted to sustained yield, this plan might or might not result in a tax different from that levied under the unmodified property tax. This would depend on the method of conversion. During those years in which the conversion was resulting in a cut sufficient to make the adjusted value increment zero, the usual property tax would be levied; and during those years in which the cut were less than this, the tax would be less than the usual property tax.

Old-growth forests which were being destructively cut at the time of the introduction of this plan would thus not be affected, for the adjusted value increment would be zero. If, on that part of a property located in any one district, the liquidation were postponed for a year or more, the adjusted value increment would accumulate. Whenever the liquidation were resumed, the accumulated adjusted value increment would be reduced each year by the amount by which the yield exceeded the adjusted value increment of the previous year until an unmodified property tax was reached.

Old-growth forests held for future disposition, and on which expenses other than taxes are a small item, would reap substantial advantage under the operation of this plan. If the property were

increasing in value at a rate just equal to the rate of interest plus the tax rate—and were correspondingly assessed—the annual tax payable, while subject to changes in the tax rate, would not increase on account of the increase in value of the forest. In other words, the situation would be the same as though the property had been given a fixed assessment. If the property were increasing in value at a rate in excess of the sum of the interest rate and the tax rate, the tax under the proposed plan would be the same as would result from the ordinary property tax if, in assessing the property, no account were taken of the increase in value due to the expected deferred yield, the assessment being increased only on account of value increases due to other causes—such as an added element of land value or an unexpected rise in stumpage prices. Whether the tax decreased or increased or remained constant would, of course, under those assumptions depend on the tax rate. Should the tax rate not decline, the tax would increase. The tax would always be less than it would have been under the unmodified property tax. If, on the other hand, the property were increasing in value at a rate less than the sum of interest rate and tax rate, or were declining in value, the proposed plan would produce a result equivalent to that which would follow an annual reduction in the assessed value. If this condition were to continue long enough, the tax would be reduced to a tax on the land value. The amount of the tax would again depend on the tax rate. Should the tax rate not increase, the tax would decline. In any event it would be lighter than under the unmodified property tax. In every case greater tax relief is given the longer the timber is held uncut.

APPLICATION TO SECOND-GROWTH FORESTS

A second-growth forest not under sustained-yield management, but nevertheless being held for forest growing, would obtain the full benefit of the adjusted property-tax plan if no supplementary annual income were received from the property. The effect of the plan would be exactly the same on an unorganized second-growth forest held for future disposition. The amount of taxes payable annually would fluctuate with the annual tax rate and with circumstances that caused a change in the assessed value, but with the fundamental restriction that the adjusted tax base would not be increased on account of the approach of the expected deferred yield. The annual taxes in ordinary cases would thus be fairly constant.

The sustained-yield forest, the income from which was received in periods of a length greater than 1 year, would obtain a concession under the plan, which would tend to place it on an equality with the annual sustained-yield forest. A cumulative deduction from taxes would be allowed during the years between the periodic yields, but this deduction would be wiped out when the accumulated growth was harvested.

Ordinarily an annual sustained-yield forest entirely within one assessment district would not be affected by the operation of the adjusted property-tax plan. The deductions would be reduced to zero each year as a result of the previous year's income received. The annual tax payments would fluctuate with changes in forest values and changes in the tax rate, as in the case of property in general under the unmodified property tax.

Figure 10 is illustrative of the operation of this plan on a forest property having an initial value of $2,483 and consisting of land with trees of various age classes. The owner is converting the property into an annual sustained-yield forest. In the fourth year of this management he secures a better distribution of age classes by cutting out trees which have a total stumpage value of $200. In the eighth year of this management he obtains another yield amounting to $200. In the twelfth year he finds that he has a surplus of growing stock for a sustained-yield forest and so makes a cutting which has a stumpage value of $800. After waiting 4 more years, or in the sixteenth year after the inauguration of this management the owner attains an annual ustained yield, and finds that he can begin his new program calling or an annual cut yielding a constant annual net income equal to the

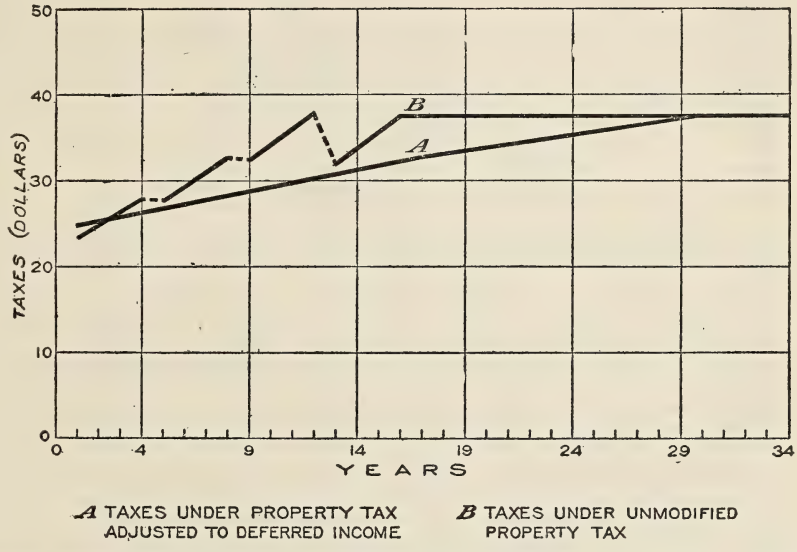

FIGURE 10.—Comparison of adjusted property tax with unmodified property tax on a forest being converted to sustained yield. (Yield of $200 every year beginning with the sixteenth year, with intermediate yields of $200 in fourth year, $200 in eighth year, and $800 in twelfth year. Interest rate 3 percent, tax rate 1 percent, annual administrative expense $50.)

annual value increment. The owner incurs an annual administrative expense of $50. The district tax rate remains constant at 1 percent, and the rate of interest earned on the investment is assumed to be 3 percent. Under the adjusted property tax plan, the annual taxes are almost unchanged in amount. They increase only by the amount of the property tax on the added investment in the property consisting of administrative expense until such time as the property is recapitalized as a sustained-yield forest. After the sixteenth year of this illustration, when an income is received each year equal to the increment in value, the taxes increase annually due to the decreasing cumulative adjusted value increment until they equal the tax which would be levied under the unmodified property tax.

As a contrast it is interesting to trace the effect of the application of the unmodified property tax on this same property. Assuming the same yields, tax rate, and interest rate, the property could not have an initial value of $2,483. The adverse effects of the property tax on this

property, the income from which must be deferred for several years, would reduce its initial value to $2,343. The unmodified property tax would increase quite rapidly except in the years immediately following the receipt of income. After the receipt of the $800 yield in the twelfth year, there would be a sudden large decrease in taxes in contrast to the slight increase under the adjusted property tax plan. Subsequent taxes would again increase under the property tax until

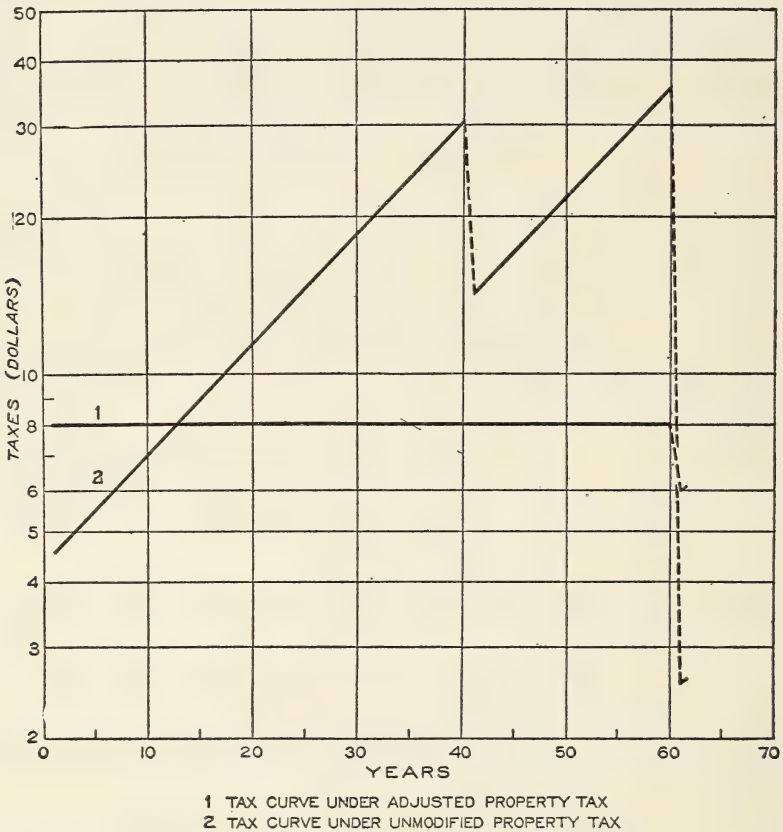

FIGURE 11.—Comparison of adjusted property tax with unmodified property tax on a deferred yield forest starting from bare land. (Yield $1,736 at end of sixtieth year with intermediate yield $900 in fortieth year. Interest rate 3 percent, tax rate 2 percent, cost of planting $100.)

sustained annual yield were attained, when they would become a constant amount each year.

It will be seen from an examination of this graph (fig. 10) that the receipt of income brings the taxes, as under this plan and as under the unmodified property tax, closer together; and the greater the part of the total cumulative increment received in any 1 year, the closer the 2 tax levies approach each other.

Figure 11 is illustrative of the operation of this plan on a forest property, planted to trees at a cost of $100, where the tax rate is 2 percent and the interest rate 3 percent. No income whatever is received until the intermediate yield, having a stumpage value of

$900, is realized during the fortieth year after planting. No further income is then received until the end of the sixtieth year after planting, at which time the remaining timber is cut, when the entire process is repeated. The value of the timber cut at this time is $1,736. Considering the yields which are expected, the land has a value of $300 before the planting is done. The returns from this forest are equal to the interest on the investment in land and planting and the annual tax payments, both compounded to the end of the 60-year period. The net annual tax continues to be $8 until the end of the rotation.

As a contrast to this tax burden, if this property were to be taxed under the unmodified property tax, the annual taxes would increase from $4.56 to $30.58 in the fortieth year, when the intermediate yield would be received. In the forty-first year the taxes would decrease to $14.10 and then gradually mount to $35.50 in the sixtieth year. The owner could not afford to pay more than $128 for this property before planting, as the interest and taxes, if it had a larger initial value, would be more than the expected yield. The adverse effects of the unmodified property tax on a property such as illustrated in figure 11 depreciate the value of the land from $300 to $128 and increase the ratio of tax costs to yield from 40 percent to 66 percent.

EFFECTS ON DISTRIBUTION OF TAX BURDENS

The operation of the adjusted property tax would have a stabilizing influence on the tax revenues of a tax district containing a substantial amount of forest property. The normal growth of the forest property under the unmodified property tax tends toward an increased tax base for the district and a consequent shifting of some of the tax burden onto forest property from the other classes of property. Under the adjusted property tax, on the contrary, such growth would not tend to cause any change or shift in the tax burden. The cutting of timber in excess of the annual growth under the unmodified property tax tends to result in a decreased tax base and a shiftng of the district tax burden, thus increasing the share borne by other than forest property. Under the adjusted property tax, however, cutting, even in excess of the annual growth, or the receipt of income would not tend to cause a change in the tax base or a shifting of tax burden, unless the cutting were heavier than could be sustained without depletion of the original capital.

By comparison with the unmodified property tax, the adjusted property tax would result in a progressive lowering of the tax as the period of deferred income were lengthened. This lowering of the tax below that of the unmodified property tax would never be at a rate greater than the sum of the pure interest rate as fixed in the statute and the tax rate. For example, if a rate of interest of 3 percent and a tax rate of 2 percent are assumed, the maximum total rate of decrease would be 5 percent. This decrease in the tax burden below what the unmodified property tax would produce would require a tax rate higher than if all property were taxed under the unmodified property tax, assuming that the same revenue were to be produced. The receipt of income, whether intermittent or regular, would tend to reduce the differences between the adjusted property tax and the unmodified property tax. Finally, the maintenance of a regular annual yield would wipe out these differences entirely.

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CONCLUSIONS

The actual burden of the adjusted property tax plan would be not far from that of an income or net-yield tax at an equivalent rate—a rate that gives the same tax as the property tax when applied to a property with sustained annual income. The only important advantage of the income tax not granted by this plan is relief from the necessity of financing tax payments when taxes are due in advance of income.

The small amount of the immediate tax reduction provided for by this plan may, of course, be disappointing from the viewpoint of forest owners who, hard pressed by the current (1932–33) depression, are hoping for substantial immediate relief from high taxes on their timber holdings. This disadvantage is inherent in any plan which has the merit of avoiding the accumulation of tax liabilities against forest properties. It may be presumed, moreover, that as times grow more nearly normal, sound enterprises could borrow money to pay taxes under this plan.

The adjusted property tax plan possesses a number of outstanding advantages. It comes as close as practicable to giving forest property the benefits of an income tax and thus removes the principal disabilities of the property tax. It is applicable to all kinds of forest property in all regions of the United States. It is peculiarly fitted for States where there are large bodies of old-growth timber. By retaining the forms of the property tax it provides a stable revenue, requires no change in assessment, and necessitates no radical departure from the customary methods of levying and collecting taxes. Its adoption, without change in the property tax rate, would involve no sharp decrease in tax receipts.

DEFERRED TIMBER TAX

THE NATURE OF THE PLAN

The equivalent of an income or net-yield tax may be approached also by a plan which provides for the deferment of the entire property tax on timber. This plan involves dividing the assessed value of forest property into land value and timber value. The annual property taxes, determined in the ordinary manner, would be paid on the land value. Payment of the annual taxes on the timber value, also determined in the ordinary manner, would be deferred so far as the owner of the timber is concerned until income was realized through the cutting or sale of timber and other forest products.

An amount equal to the annual taxes levied on the timber value would be paid by the State to the various units of government which levied them. A special fund, known as the State timber-tax fund, would be set up and drawn upon for this purpose. In this way disturbance to local government revenues would be avoided.

Upon receipt of income from timber and forest products, the owner would be required to pay to the State timber-tax fund the deferred timber taxes, accumulated without interest, the amount of which had been paid by the State on his property, together with the taxes of the current year. The amount of this payment in any one year would be limited to a fixed portion, stated in the law, of the stumpage value of the products cut or sold. Any deferred and current timber taxes in excess of this amount would be carried forward as a charge against the income of succeeding years. The principles governing the choice of the limiting rate will be discussed at a later point. It is assumed

in the following elaboration of the plan that this rate will be 30 percent.

The essentials of this plan may be made clear by the following detailed account, in which is included a description of the official bookkeeping procedure involved. All forest properties would be assessed annually at their market value, the same as other properties, and would be subject to the same State and local tax rates as other properties. Six additional columns would be added to that part of the tax roll where forest properties are listed. These are indicated in table 156 by columns 4, 5, and 7 to 10, columns 1 to 3 and 6 corresponding to those of an ordinary property-tax roll. The first additional column (column 4) would contain the timber value, and the second additional column (column 5) the land value of each parcel. The land tax would be computed by multiplying the land value (as defined in this part, p. 558 by the total local property tax rate. This amount would appear in column 6, taking the place of the total tax in the present roll. This tax would be due and payable annually by the owner to the local tax collector, in the same manner as any other property tax.

TABLE 156.—*Portion of sample tax roll, 1936*

(Deferred timber tax)

Owner	Description	Total value	Extra columns		Land tax: Land value ×tax rate	Extra columns			
			Timber value	Land value		Timber tax: Timber value ×tax rate	Deferred timber tax (net payment from timber tax fund) through 1935: From 1935 tax roll	Timber-tax payment due from owner: (7)+(8) but not more than 30 percent of yield	Deferred timber tax (net payment from timber-tax fund) through 1936: (7)+(8) −(9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
John Jones	Sec. 1, SE of SE---	$840	$720	$120	$3	$18	$72	$20	$70

The timber tax would be computed by multiplying the timber value by the total local property tax rate. This would be entered in column 7. The tax collector would total the timber tax of parcels and properties in his jurisdiction annually and bill the State treasurer for the same. The State treasurer would pay the amount of these timber taxes to the local tax collector on or before the usual tax due date. Payment would be made from a State timber-tax fund set up for that purpose. This fund would receive all taxes paid on timber and would be further supplemented to the extent necessary by State-wide taxation.

Column 8 on the tax roll (table 156) would contain the net total of all payments from the State timber-tax fund toward the taxes on the property through the preceding tax year, with a possible exception in the year following a severe loss. The amount in this column would be obtained from the tax roll of the preceding year and entered on the current tax roll at the same time as the amounts in the preceding columns were entered.

Upon the receipt of income from timber and forest products, the owner would be required to pay a tax as a reimbursement to the State timber-tax fund for payments previously made by the fund on account of this property. This tax would be equal, except for the limitation previously mentioned, to the net total amount, without interest, which had been paid by the State on account of the timber tax. This amount would be the total of the amounts given in columns 7 and 8. The limitation is that the current payment would not exceed a fixed portion, assumed to be 30 percent, of the current gross yield, based on the selling price or value of the products on the stump. This current payment to the State timber-tax fund made by the owner would be entered in column 9 at the end of the tax year, and would be payable directly to the State treasurer to be deposited by him in the State timber-tax fund. Any deferred timber tax to be carried over to succeeding years, calculated by adding the amounts in columns 7 and 8 and subtracting the amount in column 9, would be entered in column 10. Where the ownership consists of a number of parcels, the total payment recorded in column 9 would be allocated to the different parcels in proportion to the accumulated timber taxes charged against each (column 7 plus column 8), except that where all the merchantable timber on any parcel is removed the deferred tax liability against that parcel would be discharged before any allocation to the other parcels.

An alternative procedure giving precisely the same results as that described above would require the payment of all timber taxes due from owners to the local tax collector who would then receive from the State timber-tax fund only the deferred portion of the timber tax levy of the current year. Accordingly, the State timber-tax fund would be entitled to receive only payments on account of taxes deferred in previous years. Thus the local tax collector would retain the smaller of the amounts in columns (7) and (9); any deficit in column (9) under column (7) would be paid by the State timber-tax fund to the local tax collector, and any surplus in column (9) over column (7) would go to the State timber-tax fund as a reimbursement for previous payments.

The limiting rate, which would regulate the rapidity with which deferred taxes would be paid on receipt of income, should be high enough to cover the accumulated property taxes on timber (deferred timber taxes) under all but the most unfavorable conditions. This rate would vary in different States. It is believed that a proper rate would fall within a range of 20 to 40 percent.

The above statement in regard to the range of the limiting rate is founded on two separate calculations, one for second-growth and one for old-growth timber. When the limiting rate becomes applicable, it obviously has the same effect as a yield tax under the ordinary yield-tax plan. The range of yield-tax rates which would impose the same tax burden as an income or net-yield tax at a rate equivalent to the property tax rate has been shown for second-growth forests managed on regular rotations and income cycles in table 150, page 563. If property-tax rates do not exceed 1.5 percent, the largest corresponding yield-tax rate would be 28 percent. Taking the exceptional property tax rate of 2.5 percent as a maximum, the corresponding maximum yield-tax rate under the conditions assumed in table 150 would be 40 percent. If the maximum property tax rate in any State were 1 percent, based on actual value, the highest corresponding yield-tax rate, under the same conditions, would be 21 percent. Therefore it seems that in the case of second-growth forests, limiting rates of 20 to 40 percent, depending upon the maximum tax rates based on actual value, could safely be applied to the yield in order to regulate the rate of repayment of deferred property taxes on timber.

In the case of irregular second-growth forests, where income is realized at uncertain intervals, the degree of income deferment will change from time to time, but is likely to be within the extreme assumptions for forests under regular management illustrated in table 150. Therefore the range of limiting rates of from 20 to 40 percent may be considered applicable to irregular as well as to regular second-growth forests.

In the case of old-growth forests, it is theoretically possible to withhold timber from cutting long enough under the deferred timber-tax plan to make the accumulated timber taxes more than any stated percentage of the yield. The number of years required for a property tax at a number of different rates to equal a yield tax at rates of 20, 30, and 40 percent are shown in table 157. With a moderate property tax rate of 1 percent and a normal interest rate (net rate of interest after taxes) of 3 percent, the shortest period under the conditions assumed in table 157 required for the deferred timber tax to accumulate to 20 percent of the yield would be 32 years. With an exceptionally high property tax rate of 2.5 percent and a normal interest rate of 3 percent, the shortest period required under the same conditions for the deferred timber taxes to accumulate to 40 percent of the yield would be 23 years. With a moderately high property tax rate of 1½ percent and the same interest rate, the shortest period required for the deferred timber tax to accumulate to 30 percent of the yield would be 32 years. It is evident that in States with very moderate tax rates, where 1 percent of the actual value would be considered the maximum, timber would have to be withheld from cutting for a longer period than is ordinarily contemplated for private investment in order that the accumulated timber taxes should exceed a 20-percent limitation. Also it is clear that in States with a high tax rate up to an extreme of 2.5 percent of actual value, the same would be true for a 40-percent limitation. If the rate of return on the investment, based on its value at the beginning of the period with the addition of the assumed costs, should turn out to be only 2 percent, the shortest periods during which the timber taxes would accumulate to the limiting rate applied to the yield would be somewhat less. However, these figures indicate that a range for the limiting rate applied to current gross yield in order to regulate payment of deferred taxes should be from 20 to 40 percent, depending on circumstances. The average figure of 30 percent would seem to be sufficient to protect the public interests in States where the property taxes are moderate, not exceeding 1½ percent of actual value.

TABLE 157.—*Number of years required for a property tax on old-growth timber, accumulated without interest, to equal 20, 30, and 40 percent of the timber value* [1]

Interest rate	Timber value	Property tax rate, 1 percent		Property tax rate, 1.5 percent		Property tax rate, 2 percent		Property tax rate, 2.5 percent	
		Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Percent	*Percent*	*Years*	*Years*	*Years*	*Years*	*Years*	*Years*	*Years*	*Years*
2	20	26	23	16	17	11	12	9	9
2	30	48	44	26	28	18	19	14	15
2	40	84	81	39	43	26	28	20	21
3	20	32	34	18	19	12	14	9	10
3	30	81	90	32	34	21	22	15	16
3	40	[2]	[2]	56	62	32	35	23	24
4	20	42	46	20	21	13	14	10	10
4	30	[2]	[2]	42	46	24	25	17	18
4	40	[2]	[2]	[2]	[2]	42	46	27	29

[1] Assumptions:

	Case 1	*Case 2*
Initial timber value, C	$100.00	$20.00
Land value, L	2.00	2.00
Annual expense, e	.10	.10

Interest rate, p; property tax rate, r; number of years, n; percent of timber value, q.

Formula:

$$\left[\frac{rC}{p}+\frac{r}{p}\cdot\frac{e+(p+r)L}{p}-q\left(L+C+\frac{e+rL}{p}\right)\right](1+p)^n-r\left[\frac{e+(p+r)L}{p}\right]n=\frac{rC}{p}+\frac{r}{p}\cdot\frac{e+(p+r)L}{p}-q\cdot\frac{e+(p+r)L}{p}.$$

The above formula was derived from the following:

$$q\left[(L+C)(1+p)^n+(e+rL)\frac{(1+p)^n-1}{p}-L\right]=rC\frac{(1+p)^n-1}{p}+\frac{r}{p}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right].$$

The left member of this equation is q times the expression for the total timber value at the end of n years, assuming deferment to the nth year of taxes on the timber; the right member is the expression for taxes under the deferred timber tax (pt. 3, formula 13) less the tax on the land value.

[2] Accumulated property tax will never equal the indicated percentage of timber value.

Since the limiting rate would occasionally operate to reduce taxes to an amount insufficient to pay all deferred timber taxes, there would be some losses to the State timber-tax fund to be made up from general State revenues. Obviously these losses would be greater the lower the limiting rate. In order to give the State adequate protection against such losses, it is believed that a proper limiting rate, when the total property tax rates run from 1 to 1½ percent of actual value, would be 30 percent, and where higher property tax rates are common this limiting rate should be increased to 40 percent. Where property tax rates are not over 1 percent, a limiting rate of 20 percent might be admissible. However, the lower the limiting rate, the greater the risk to the State of losing part of the deferred taxes on properties which suffer extraordinary losses, as will be explained later.

In the case of extraordinary losses through fire or other casualty or through changes in economic conditions, it would be possible that the value of the timber might be so greatly reduced in comparison to the liability for deferred taxes that, if this liability were not also reduced, continued private ownership of the property would be rendered unattractive and abandonment would be invited. Therefore it is proposed that in case such a loss occurs, the deferred taxes carried over from the preceding year should not exceed the current assessed value of the timber. In other words, the amount set down in column 8, table 156, if greater than the amount of the timber value in column 4, should be reduced to that amount. The total of such reductions, if any, should be reported each year to the State treasurer, who would be charged with keeping a record of these amounts, so that the loss to the State timber-tax fund on account of this provision would be known. Under this provision, the public would have to assume a part of the extraordinary losses from fire and other causes, but a smaller part than in the case of an income tax. So far as fire is concerned, efficient protection measures would reduce losses from that cause to an insignificant total. The amount of the losses borne by the State would be affected by the limiting rate of repayment to the State timber-tax fund. The lower this rate, the greater the chance, if an extraordinary loss should occur, that the deferred taxes carried over from the preceding year might exceed the current assessed value of the timber.

It would be necessary to guard against evasion on the part of the taxpayer through the concentration of cutting on one parcel and the consequent restriction of the repayment to the State timber-tax fund to the amount of the deferred timber tax on the current cutting unit. This would permit further postponement of repayment to the fund on account of taxes on other parcels and thus allow a greater concession to operating properties than would be justified. Logically all forest property in one ownership in the entire State should be treated as a unit so far as deferment of income is concerned, but the administrative readjustments required would in most States be too cumbersome to warrant such treatment. However, a sufficient and more convenient safeguard would be to treat as a unit all property in one ownership in a tax-billing district. Thus the deferred timber taxes collected on account of income from any part of the entire ownership within the tax-billing district would be credited to the individual parcels comprising the ownership in proportion to the amount of deferred timber taxes charged against each. As previously indicated, an exception to this rule would be made in case all the merchantable timber has been removed from a given area comprising one or more separate parcels. In that case the deferred timber taxes collected would first be applied to the payment of deferred taxes

charged against these cut-over parcels. Ownerships differing in form but the same in fact would be treated as the same ownership.

Transfer of ownership of a parcel of timber should not affect the tax computations so far as they pertain to the parcel transferred. The liability for deferred taxes would go with the parcel and have to be assumed by the purchaser. However, the market value of the parcel sold or transferred should be treated the same as gross income from sale of stumpage. In this way no tax advantage would be obtained by transferring to another party a parcel of timber which was to be cut in the near future. Upon such a transfer the payment would be made to the State timber-tax fund of deferred taxes on the remaining forest property in the ownership. This payment would be limited to the same extent as the payment required upon the harvesting of forest products.

There is an especial danger in any plan of taxation containing machinery through which local governments can obtain money from the State. Under the deferred timber-tax plan overassessment and extravagant public expenditures might be encouraged in local districts having timber as a large part of the local tax base, since the receipts from the State on account of the deferred timber tax would be assured. To avoid such raid upon the State treasury, State supervision of local expenditures and State control of property value assessments would be desirable in connection with this tax plan. Furthermore, in order to insure the full benefit of this plan to forest property, it is essential that in assessing forest property the assessor recognize the tax obligation which accrues because of payments from the State fund on account of deferred timber taxes.

The administration and collection of the timber tax payable when yield is realized should be entirely in the hands of State officials, or under their strict supervision. Special measures might be required to guard against the escape of small operators from the payment of the deferred tax due.

A large measure of State control of the administration of the deferred timber tax is in harmony with the earlier recommendation in this report of increased State participation in the administration of the property tax.

EFFECT ON PUBLIC REVENUES

This plan involves the transfer of the entire burden of financing property taxes on timber in advance of income, which has hitherto rested on the timber owner alone, to the taxpayers of the State at large. This result would be accomplished by means of the State timber-tax fund established and maintained by a State-wide tax. It will be assumed in the following discussion that this State-wide tax would take the form of a property tax at a uniform rate, but this is not an essential part of the plan, as it would be practicable, if desired, to use some other kind of tax.

Table 158 is presented to indicate roughly the greatest cost to the property taxpayers of establishing the timber-tax fund in all of those States in which forest property constitutes a significant part of the property tax base. In preparing this table estimated market values were used in place of assessed or equalized values. These values, although secured from the best available sources, can be considered only as approximations. A tax rate of 2 percent on full market value

of timber was assumed for all States in preparing this table. Since the tax burden on timber is rarely as heavy as this in any State, the last column in this table may be considered as indicative of the maximum State-wide tax rate on full value which might possibly be needed to establish and maintain the State timber-tax fund. In most cases the timber tax actually deferred in the initial year would be very much less than the amount given in column 5.

TABLE 158.—*Maximum initial cost of establishing a State timber-tax fund,*[1] *selected States*

State	Value of forest			Annual timber tax, rate 2 percent	Value of all property	Additional State-wide tax rate to establish timber-tax fund without borrowing
	Total	Land	Timber			
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*Percent*
Maine	182,058	28,120	153,938	3,079	1,919,000	0.17
New Hampshire	53,364	11,844	41,520	830	1,283,000	.07
Vermont	60,362	9,564	50,798	1,016	799,000	.14
New York	154,616	28,578	126,038	2,521	33,019,000	.01
Delaware	3,946	960	2,986	60	588,000	.01
Maryland	22,406	6,414	15,992	320	3,742,000	.01
Michigan	151,112	33,414	117,698	2,354	10,890,000	.02
Wisconsin	109,954	29,924	80,030	1,601	7,545,000	.02
Minnesota	66,588	33,848	32,740	655	8,237,000	.01
Missouri	73,408	32,908	40,500	810	9,612,000	.01
Tennessee	109,910	41,139	68,771	1,375	3,975,000	.04
Kentucky	73,164	30,831	42,333	847	3,401,000	.03
West Virginia	72,190	28,434	43,756	875	4,446,000	.02
Virginia	123,893	42,630	81,263	1,625	4,542,000	.04
North Carolina	187,510	59,448	128,062	2,561	4,381,000	.06
South Carolina	122,440	37,116	85,324	1,706	2,289,000	.08
Georgia	192,206	67,809	124,397	2,488	3,726,000	.07
Florida	147,248	69,015	78,233	1,565	2,329,000	.07
Alabama	144,966	63,939	81,027	1,621	2,891,000	.06
Mississippi	158,285	54,813	103,472	2,069	2,081,000	.10
Louisiana	176,085	53,550	122,535	2,451	3,237,000	.08
Arkansas	191,251	62,946	128,305	2,566	2,520,000	.11
Oklahoma	24,464	12,672	11,792	236	3,627,000	.01
Texas	124,186	37,854	86,332	1,727	9,453,000	.02
Montana	26,541	6,302	20,239	405	1,990,000	.02
Idaho	70,826	8,374	62,452	1,249	1,258,000	.10
Wyoming	3,862	1,176	2,686	54	650,000	.01
New Mexico	5,621	2,184	3,437	69	737,000	.01
Washington	332,585	21,004	311,581	6,232	4,696,000	.14
Oregon	321,940	27,442	294,498	5,890	3,059,000	.21
California	283,219	17,628	265,591	5,312	14,050,000	.04

[1] Sources of data: Column 2, from table 67, column 2 in part 6; column 3 by computation from table 68 using columns 2 and 3; column 6 from Statistical Abstract of the United States, 1931, p. 298; columns 4, 5, and 7 by computation, column $7=\frac{\text{column } 5}{\text{column } 6-\text{column } 4}$.

Table 158 indicates that the State timber-tax fund could probably be established in all forest States, with the exception of Maine, Vermont, Arkansas, Washington, and Oregon, by a tax of 1 mill or less on the market value of all taxable property, taking into account the fact that part of the additional tax on timber would also be deferred. In Washington the fund could probably be established by a tax rate of 1 mill or less, because in this State the annual yield is relatively large in proportion to the value of all timber and the fund would be augmented to a considerable extent by the tax payments upon receipt of a yield. The receipt of yields from timber in other States also would tend to make possible the establishment of the fund with a State-wide tax rate lower than the rate shown.

In Oregon the initial size of the State timber-tax fund needed might be so great as to preclude its establishment by a State tax levy only. In this case the fund might be established by borrowings extending over a period of 5 or 6 years. The manner of establishing and maintaining the fund would have to be considered and decided upon in the case of each individual State, but the cost must be borne eventually by all taxpayers.

Immediately after the adoption of this plan, the receipts of the State timber-tax fund from timber operators and others would be expected to increase from year to year, since there would be an annual increase in the amount of deferred timber taxes payable when timber was cut or sold. There might be years in which such receipts would be sufficient or more than sufficient, to meet the payments, which would be the amount of the total property tax levy on timber, together with interest and sinking fund requirements if any part of the State timber-tax fund had been borrowed. In such years no State-wide tax would have to be levied in support of the timber-tax fund. Any excess of these receipts over payments should be accumulated as a reserve to eliminate or reduce State-wide taxes for the fund in future years when the receipts might again fail to balance payments. The cost of the plan to the taxpayers of the State at large would be reduced by wider application of sound forest management through decreasing the deferment of income from timber. It would be automatically eliminated if annual sustained-yield forestry became universal.

ADMINISTRATIVE DETAILS

Certain administrative details would enhance the workability of this plan of forest taxation. These are similar to those mentioned in connection with the adjusted property tax.

Every taxpayer having forest property should be invited to furnish the assessor with a sworn statement of the stumpage value of the timber or other forest products harvested or sold and all other income from the property, together with a list of descriptions or parcels from which removal of the merchantable timber had been completed during the year, or else a sworn statement that no income was received. This statement should cover 1 year ending at the time of assessment and should be filed at any time after the assessment date within a prescribed period sufficiently limited in length to allow time for computation of the timber taxes. As a penalty for failure to furnish the assessor with a statement of income, the current timber tax would not be paid from the State timber-tax fund but would be due and payable to the local collector at the same time and in the same manner as the land tax, and, in addition, all deferred timber taxes charged against the taxpayer would be declared delinquent and would be henceforth subject to the same interest charges and penalties as delinquent land taxes; provided that if the taxpayer should, within a limited time, file an income statement covering the year or years during which he failed to file, the payments on account of timber taxes from the State timber tax fund would again be resumed and no further interest and penalties would accrue to deferred timber taxes, and the property would be removed from the delinquency rolls. In farm-woodlot regions where very small forest yields are received in varying amounts but quite regularly, the farmer might not consider

it worth the effort to file an annual income statement. Under such conditions this plan would automatically be inoperative.

Yield statements from small timber operators without a large reserve of taxable timber would ordinarily not have to be checked, as the required payment (20 to 40 percent of the value of the yield) would easily exceed the total amount paid on their property from the State timber-tax fund. If such an operator admitted a yield sufficiently large to require him to make a complete payment of his deferred timber taxes, no check on the yield would be necessary further than what would be required in order to make the proper assessment under the property-tax laws.

CONCLUSIONS

The deferred timber tax differs from the adjusted property tax plan in that both the cost and responsibility for financing the plan would rest on the State as a whole. Under the adjusted property tax, the cost of the plan would be shared by the local units of government in proportion to the extent of income deferment in respect to forest lands within their boundaries, while the responsibility for financing the adjusted taxes would remain upon the owners. Accordingly the deferred timber tax plan is advantageous from the viewpoint of the holder of timber, since it would give him complete and immediate relief from all taxes on timber, together with the assurance that the amount of the tax payments due upon receipt of income would never exceed an amount that would be fair in comparison with the property taxes paid on property yielding a regular annual income held in the same tax district over the same period. This plan also has the advantage of making no disturbance in local public revenues. Its disadvantages consist in the necessity of State financing, which should, however, generally be not very burdensome, and in the administrative responsibility of collecting a substantial percentage of the yield until the deferred timber tax has in each case been paid.

The public under this plan also shares the risk of timber destruction from fire and other causes to the extent that an ownership might be so nearly wiped out, as far as timber is concerned, that the full amount of the deferred property taxes imposed before the date of the loss would never be collected. On the other hand, the land tax, which should theoretically be deferred in the same manner as the timber tax in case of a forest property with no other prospect of income than from forest products, is for practical reasons collected annually, and this fact in a measure offsets the risk which the public would assume on account of possible losses.

This plan would retain the essential advantages of the property tax in that the tax on the timber, while limited to a portion of the gross yield, would be actually fixed in total amount by the market value of the property and the property-tax rate during the years in which the income had been deferred. Thus, the amount of the tax payment would be determined by the fiscal needs of the government during the period of income deferment and would be in proportion to the tax burden on other property in the tax district. Furthermore any value due to the expectation of income from sources other than forest products would be automatically taxed by retaining the property tax on the land value.

DIFFERENTIAL TIMBER TAX

THE PLAN IN GENERAL

To meet the situation in States where there might appear to be obstacles to the acceptance of the preceding plans, there is offered a third plan, which has the outstanding merit of extreme simplicity. The object of the differential timber tax is to lower the tax on timber which is being grown or held in reserve to a point which would make proper allowance for the necessary deferment of income in the typical case and would remove the tax incentive to nonforestry use. Owing to the extent to which the conditions vary from the typical within a given State, the adjustment offered by this plan would in most cases depart more or less from the standard of an income or net-yield tax. However, this adjustment could be accomplished with only a slight modification of the property-tax system.

In brief, the plan leaves the land subject to the ordinary property tax but classifies the timber for differential assessment. Separate assessment of land and timber values would of course be necessary. A fixed percentage, definitely stated in the law, would be deducted from the assessed value of the timber, determined in the ordinary way, in order to obtain the taxable value to which the regularly determined tax rates would be applied. The determination of this percentage, which may for convenience be called the "reduction factor", would be the principal problem confronting the legislature in enacting a law to carry out this plan. In developing the detailed aspects of the differential timber tax, it will be convenient to treat separately the second-growth and the old-growth forests.

SECOND-GROWTH FORESTS

The reduction factor for all second-growth timber within a State would be a uniform percentage of the assessed value. It should be obvious that no such reduction could result in a perfect adjustment for every individual property. The most that could be accomplished would be a fair adjustment for the general run of typical forests without too great discrepancies in the more exceptional cases. Even for the general run of forests, there is no way of determining exactly what the reduction factor should be. Precise determination would require exact information as to a number of controlling factors. These factors are value of land, property tax rate, interest rate, rotation, cost of regeneration, annual expense, intermediate income, and income cycle. If the property tax rate is assumed to be constant, it is possible to construct a formula which would give, under specified conditions as to all of these factors, the precise reduction factor which, if applied to timber only, would result in the same tax burden as an equivalent income or net yield tax. Such a formula has been developed and is presented in part 3 (formula 17).

It would be quite impracticable, however, to use such a formula in the actual operation of this plan. Ascertaining the values of the several factors required would be a very difficult task, requiring laborious investigation of present facts and more or less arbitrary assumptions as to future trends. The complexity of the formula itself is a serious obstacle. Moreover the use of such a formula in the application of the plan is not necessary.

The most influential variable in the formula is the length of income cycle. By making the reduction factor dependent on this variable alone, rounded figures corresponding to length of income cycle may be obtained with sufficient accuracy to give the rough results sought by this plan. No greater precision could be expected from the use of reduction factors determined directly by the formula. The precise results obtained by the formula would fit perfectly only those forests—if any such should exist—whose conditions were continuously the same as those assumed in applying the formula, and practically all forests would be sure to depart in some measure from the assumptions. Accordingly it is proposed to apply the following reduction factors for given ranges of income cycles, these rates being the rounded figures produced by the formula:

Income cycle:	*Reduction factor, percent*
1 to 4 years	0
5 to 9 years	10
10 to 14 years	20
15 to 19 years	30
20 to 24 years	40
25 years and over	50

As indicated above, the reduction factor for second-growth forests in any State would be governed only by the standard income cycle. This cycle should be set long enough so that it could be readily attained at once or within a few years over large areas of second-growth forest land. Its determination would be a question for the judgment of foresters familiar with conditions in the State in question. No hard and fast rules could be laid down. The actual income cycles found to be in most general use would carry great weight. Other facts which should be considered are the average age and condition of second-growth stands, rates of growth of the principal species, the character of local markets, and the most profitable rotations under different conditions.

In order to reduce the chance that this plan might be used to grant an unjustifiably large concession to forest property, it would be desirable to regard 50 percent as the maximum reduction factor. This figure is suggested because it would correspond roughly to an income cycle of 25 to 30 years. If the actual cycle should be moderately longer, say 35 years, the excess burden with a 50 percent reduction factor would not generally be great. No differential taxation would appear necessary in any State where the prevailing income cycle was as low as 4 years.

The reduction factor should be subject to readjustment from time to time as the conditions on which its calculation had been predicated might change. It is probable that such changes would be necessary only at long intervals—possibly 20 years or longer. Finally, when sustained-yield forestry with annual or very short period income shall have become established as the usual practice, the differential taxation should be discontinued unless it should appear that such forests were entitled to consideration because of the reflection in value of intangible benefits which would not be reached under an ordinary income tax. (See p. 526.)

There is nothing to prevent, if deemed advisable, the application at the same time of two or more different reduction factors in a State which embraces distinct forest regions or distinct and readily defined

classes of forest property, to which materially different rates would be appropriate. Under ordinary conditions, however, it is believed preferable to keep the plan as simple as possible by use of a uniform reduction factor for an entire State.

The retention of land value in the property assessment, undiminished by any reduction, besides having a tendency to stabilize the tax burden, would insure the taxation in full of any elements of value in the property that are not entitled to any tax concession in the interest of forestry because they arise from other possible uses than the production of forest crops. It would also exact a proper tax contribution from the owner who is holding cut-over lands for speculative purposes and is doing nothing to protect and improve the forest growth. Such an owner would receive a concession only in case fortuitous forest growth occurred in spite of his indifference, and then only to the extent of the tax on a portion of the timber value.

OLD-GROWTH FORESTS

Two methods are proposed for old-growth timber, depending on the conditions. Old-growth forests would be so defined as to include not only virgin forests but also culled forests on which there had been cutting of selected species and qualities of trees, provided that at the time of adopting the plan such culled forests should have contained sufficient volume of merchantable timber to form a basis for commercial logging or lumbering operations.

In those States where such timber is not a sufficiently important element in the tax base to warrant different treatment from that accorded second-growth, old-growth forests should be given the benefit of differential taxation using the same reduction factor which had been determined for second-growth timber. In such States the few remaining old-growth stands, if they were being depleted, would be partially relieved of the usual property tax. This relief, though without theoretical justification, would under such conditions be permissible for the sake of administrative simplicity.

Where old-growth timber is an important element in the tax base, a transition period of 20 years or longer should be provided before the general differential would apply to such timber. During this transition period, old-growth timber would be classified apart from second-growth.

Operated forests would be taxed under the ordinary property tax. It has been shown that old-growth or virgin forests which are under operation so that their capital value is being reduced are favored under the unmodified property tax as against properties yielding a regular annual income. Where these forests occur in substantial volume, there appears to be no reason why this advantage should be increased by differential taxation.

On the other hand, old-growth timber which is held for future sale or as a reserve supply for future operation is overburdened by the property tax. There is adequate reason to encourage the continued holding of such timber through some modification in the tax system. Encouragement of reserve timber holdings without favoring of timber which is under operation may be accomplished by applying a graduated reduction factor to old-growth forest properties which are being kept intact. Any owner who filed with the designated county official a

statement setting forth by legal descriptions the location and area of all of the old-growth timberlands owned by him within the county on the basic date when the plan became effective, certifying that these included all such lands owned by him in that county at that time and that no commercial cuttings had taken place on these lands since the basic date and prior to the last assessment date next preceding the time of the statement, would be allowed to compute the taxable value of the timber which he then owned by applying a reduction factor to its current assessed value. This reduction factor would be in any year 5 percent times the number of years which had elapsed since the basic date when the plan became effective, with a maximum equal to the second-growth reduction factor. This 5-percent rate is a conservative estimate of the theoretical expected rate of value increment in a forest (pure interest plus taxes plus other annual expense).

Properties acquired since the basic date should also be given the benefit of this reduction factor upon a similar showing that they also had been held free from commercial cutting subsequent to acquisition. Salvage operations on account of fire, insect, or other damage, where such operations were necessary to the conservation of the property, should not operate to prevent the allowance of the reduction factor.

The limitation of the reduction factor to the fixed second-growth rate has the appearance of being arbitrary but would be desirable both to maintain the tax revenues and to provide ultimate uniformity in the reduction factor. After a virgin timber property had been held intact long enough to profit by the maximum reduction factor—10 years if that factor should be 50 percent—there should be no great hardship in continued payment of taxes on this reduced basis. If there were such hardship, it should be possible to begin cutting or to merge with an operating property, thus providing an income. In any case, this relief from the unmodified property tax would be all that would be justified for the sake of removing the property-tax handicap to the holding of timber for a period of years and should be immediately effective in reducing the tax incentive to overproduction of forest products.

Old-growth properties receiving some income from cuttings, but not enough to pay carrying charges, would theoretically be entitled to some relief from the property tax. There would be no way of providing for such cases under this plan without destroying its simplicity. Such cases would be very rare, and the degree of discrimination would be so small that it could well be ignored.

Under most conditions a transition period of 20 years would be sufficient. If, however, after such period so much of the old-growth timber remained that the revenue loss would be embarrassing to many communities, the transition period could be extended.

It is necessary to make provision against evasion which might be accomplished by transferring the nonoperating parts of a forest to dummy ownership, which might then claim differential assessment while operations were being conducted on the part retained in the original ownership. To this end, corporations, trusts, and other legal entities claiming the benefit of this plan, would be required to report actual ownership, and all properties under substantially the same ownership would be treated as a unit for the purpose of determining the right to differential assessment.

EFFECT ON PUBLIC REVENUES

The adoption of the differential timber tax plan would cause no sharp change in public revenues. In States where there is a large amount of old-growth timber, second growth is either not valued at all or is assessed at a very low figure. Therefore in those States the proposed change in taxing second-growth timber would have little immediate effect in changing the amount of tax revenue derived from that class of property. The loss in revenue from old-growth timber below what would have been provided by the unmodified property tax is limited to 5 percent per year by the gradual application of this plan during a transition period, as recommended. The actual loss would be at a lower rate than 5 percent in all districts where part or all of the timber was being cut or where old-growth timber was increasing in value.

In States where old-growth timber is not an important element in the tax base, it is also generally the rule that whatever value second-growth timber may have is mostly overlooked by the assessor. The adoption of this plan might have no immediate adverse effect on local revenues, especially if it were accompanied by the improvements in assessment recommended in another section of this part.

It is conceivable that, in some States where the use of this plan with a uniform reduction factor for second-growth and the remaining old-growth forests might be contemplated, this reduction in taxable value coming all at once would result in embarrassment to local revenues in certain communities. To avoid this result, the differential could be applied gradually, both to young growth and old growth, by increasing the reduction factor each year at the rate of 5 percent. This ratio has been selected for the same reason as in the case of the gradual application of the plan to old-growth forests during a transition period. It is an approximation to the expected rate of value increment. This method of application would prevent any financial embarrassment. The loss in revenue, if any, would be gradual and would tend to be offset by the increase in the value of the growing forests. Such a graduated application would, of course, postpone giving full relief from the present tax system and should not be adopted except under the above-mentioned conditions.

It is not anticipated that there would be any serious embarrassment to local public finances at the end of the transition period when the separate classification of old-growth timber would cease, since timber so classified would no longer be likely to form an important part of the tax base. However, if there were danger of such financial embarrassment, it could be overcome by making the change to the second-growth reduction factor gradually at a rate increasing 5 percent a year. Here again the rate of graduation is the rough approximation to the expected rate of value increment.

The precise ultimate effects of this plan on public revenues are difficult to forecast. It is reasonable to anticipate, however, that progress in sound forest management on private lands, partly as a result of the encouragement which this plan would offer, might eventually result in sufficient increase in taxable growing stock on forest lands to afford more tax revenue than if the property tax had been retained.

CONCLUSIONS

The principal advantage of the differential timber tax plan is its simplicity. It requires but little change in the existing tax system in that it involves no new kind of taxation, no material change in tax machinery and records, no new concept or method of determining value, and no carrying forward from year to year of tax liabilities or allowances. Nevertheless, it has most of the important features desired in a special forest-tax plan. It would reduce the obstacle imposed by the property tax to the development of timber-growing enterprises from cut-over land or immature stands by either materially reducing or entirely eliminating the excess burden of the property tax. It would also permit the retention of old-growth timber for future disposition without incurring any excess tax burden if the postponement of cutting were not too long deferred. It would afford substantial relief from the ordinary property tax no matter how long cutting were deferred.

The adoption of this plan would cause no immediate loss in local tax revenues that would be serious, and its ultimate effect on tax revenues in forest districts should be favorable.

In view of the above considerations, the differential timber tax is offered as a simple method of so modifying the property tax system as to make it appropriate to the peculiar conditions that characterize forest properties in this country.

IMMATURE-TIMBER EXEMPTION

THE PLAN AS PROPOSED

Search for a remedy for the defects of the property tax as related to forests has led to consideration of another plan for adjusting the property tax, which proposes that the disadvantage to the deferred-yield forest inherent in the perfectly administered property tax, which was pointed out in an earlier section of this part (p. 525), be offset by exempting from taxation the value of immature timber. This plan was formally endorsed by a committee on forest taxation of the National Tax Association in 1922 (*286, pp. 133–134*). The plan was described by this committee as follows:

> The only problem remaining is to find a modification of the property tax which shall be suited to the peculiarities of forest enterprise. The weaknesses of the ordinary property tax as applied to growing forests have been carefully studied * * * Reference has * * * been made to the generally accepted remedy, namely, the combination of an annual tax on the land and a yield tax. As has been pointed out, the annual tax on the land, at the rate of the ordinary property tax, is all the burden that can fairly be placed upon the growing forest. To impose an additional yield tax is excessive. Those who have proposed this have apparently had the feeling that to grant entire exemption of growing timber, without any compensation, was too great a concession or else have had in mind the mature forests, which as we shall show must be called upon for more than the land tax. As regards growing forests there is no principle either to justify a yield tax or to measure its amount, if the land is already subject to annual taxation like other property. Such an additional yield tax is justified only in consideration of a reduced rate of the land tax. * * *
>
> * * * The simple solution becomes practicable and not unduly burdensome; i. e., the annual tax on the land only, at the regular rate of the property tax, with entire exemption of growing trees. No additional yield tax is required so far as the property tax is concerned.

This plan was adopted by California in 1926 through a constitutional amendment (State constitution of California, art. 13, sec. 12¾)

which has been described in part 9. This amendment provides for a universal exemption of all immature timber, whereas the land and the mature timber are taxable in the same way as is other property.

THEORETICAL AND PRACTICAL DEFECTS

It has been pointed out above in the discussion of the adjusted property tax plan that, when all or any portion of the expected flow of income from a forest is deferred, the property tax is unduly burdensome, in comparison with an income or net-yield tax, in proportion to the amount deferred and the length of deferment. The immature-timber exemption has been advocated as a remedy for this condition.

The theoretical basis for exemption of a portion of the forest value for the purpose of offsetting the adverse effects inherent in the property tax was set forth in the section of this part dealing with the adjusted property tax. It was there demonstrated that what is required is the exemption of the "expected value increment" that appears as a consequence of (1) the passing of time bringing expected incomes and costs nearer, (2) the payment of taxes, and (3) the receipt of expected incomes; with an adjustment on account of unanticipated losses. It was also shown that the theoretical modification of the property tax requires that no exemption be given the owner on account of the values present at the time the modification of the property tax goes into effect. In other words, the expected value increment under consideration is that which accrues after the new plan goes into effect. No attempt need be made to make adjustment for taxes paid in the past.

Now it is clear that the entire exemption of all immature timber would ordinarily go a good deal farther than this. Like the adjusted property tax, this plan would theoretically grant the exemption of the value increment due to the mere passage of time (pure interest). It would likewise grant exemption of the value increment resulting from payment of taxes. And, since it holds the taxable value always down to the land value, it gives full recognition to the reduction in value increment that results from receipt of expected incomes (which obviously could never reduce the value below the value of the land). But it would go further, in exempting also all value increments reflecting payment of other expenses, as well as value increases due to unexpected events except such as increased only the land value apart from the trees. This is because, having defined the land value of a forest as the value of similar land without tree growth, any such value increments would fail of assessment except as they increased the value of similar land without timber in the neighborhood; increments in forest value generally would not be reflected in the value of the land. There would thus be granted an exemption of values beyond what the theory justifies.

Furthermore, the immature-timber exemption would immediately remove from taxation all young-timber value present at the time the plan went into effect.

Finally, if at any future time a forest which was without tree growth at the time of the initiation of the plan should come to be so managed, by shortening the income cycle, as to contain a permanent investment in forest stand, the exemption of all the immature

timber in such forest would not be justified. This would be at the extreme in the case of an annual sustained-yield forest.

The circumstances under which this plan would be properly applicable are seldom encountered and are always temporary. The plan would generally give forest owners a greater tax advantage than is their due.

This tax advantage would obviously be excessive when the development of forestry had advanced to the point of annual sustained-yield management. In a sustained-yield forest most of the value resides in a fixed investment in growing stock—the immature timber of different age classes up to, but exclusive of, a very small quantity of timber approaching maturity and comprising the oldest age class, due to be cut during the current year. The land usually amounts to no more than from 15 to 20 percent of the total value of the forest. Assume, for example, that the forest is worth $10,000 and is producing an annual income of $400. The value of the land, assuming a maximum of 20 percent of the total value, would, then, be $2,000. A tax at the relatively high rate of 2 percent on this value amounts to only $40. A tax of $40 on a property worth $10,000 and yielding an income of $400, indicating a tax ratio of only 10 percent as compared with 40 percent for other property yielding an annual income, would rightly appear to most people to be a rank discrimination in favor of one property over others.

The above example serves to demonstrate the theoretical weakness of the plan of exempting immature timber. As soon as forestry develops beyond the most primitive stage wherein young growth has little or no value (and it has already emerged from that stage in many parts of the United States), this plan would certainly have to be replaced by a more comprehensive plan.

In addition to its theoretical weakness, the plan of exempting immature timber presents other difficulties. Most important of these is that it requires the fixing of a date of maturity—a point at which the trees become taxable. Maturity may be either physical or financial. Physical maturity in a forest, by analogy from animals, may be said to occur when the losses in the forest begin to exceed or equal growth; financial maturity occurs when the costs of holding begin to exceed or equal value increment. These definitions are by no means generally accepted. Sometimes maturity is considered synonymous with merchantability, sometimes it is taken as describing that portion of the life of a forest during which growth begins to fall off, and sometimes it simply designates "big trees." None of these definitions is practical for use in a tax law unless some board is established for the interpretation and application of the definition to individual cases. Each individual case presents a problem in itself, as the factors affecting maturity are quite variable. The board would be deluged with work and in the end would probably have to adopt rule-of-thumb methods, involving considerable injustice.

The plan of exempting immature timber has certain advantages; it is simple and readily adaptable to a universal application. However, it imposes a fair tax burden only if its application is limited to forests being grown without cost on land that was cut-over land at the time the plan went into operation. To limit the plan to such forests, besides being impracticable, would be unjust to the vast majority of forests, which would be left without any tax relief what-

soever. Without this limitation, the plan can be justified only on grounds of a subsidy to encourage forestry. Therefore, it cannot be recommended as a satisfactory solution of the forest-tax problem.

APPLICATION OF FOREST-TAX PLANS TO SECOND-GROWTH FORESTS

The character and effects of the suggested plans for making changes in the tax system relating especially to forests will be better understood if the application of these plans to certain hypothetical second-growth forests is studied. Such applications are shown in tables 159–162. Tables 159 and 160 have been derived by the use of certain formulas. Tables 161 and 162 are exactly similar to tables 159 and 160 except that the taxes, land values, and items of income and expense used in tables 159 and 160 were divided by 2,500 in order to give corresponding tables which may be interpreted as relating to areas of one acre.

TABLE 159.—*Special forest-tax plans compared with the property tax and income tax, for even-aged forests managed on various rotations, and yielding a net return of 3 percent;*[1] *land value, under the income tax, $7,500*

PROPERTY-TAX RATE, 1 PERCENT; INCOME-TAX RATE, 25 PERCENT

Plan	Forest A rotation 30 years; yield, $37,560			Forest C, rotation 45 years; yield, $72,176			Forest E, rotation 60 years; yield, $126,943		
	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value
	Dollars	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*
Property tax	9,186	44	5,629	22,690	54	4,392	48,270	64	3,072
Income (net yield) tax	6,515	31	7,500	14,040	34	7,500	26,610	35	7,500
Special forest tax:									
Adjusted property tax	6,515	31	7,500	14,040	34	7,500	26,610	35	7,500
Deferred timber tax	7,688	37	6,677	17,100	41	6,402	33,000	44	6,195
Differential timber tax, reduction factor 50 percent	6,812	33	7,291	16,050	36	6,779	33,250	44	6,144
Immature-timber exemption	4,305	21	9,048	8,727	21	9,412	15,820	21	9,705
Yield tax, rate 10 times property tax rate	7,122	34	7,075	14,140	34	7,465	25,350	34	7,759

PROPERTY-TAX RATE, 2 PERCENT; INCOME-TAX RATE, 40 PERCENT

Plan	Forest B rotation 30 years; yield, $44,075			Forest D rotation 45 years; yield, $86,220			Forest F, rotation 60 years; yield, $153,553		
	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value
	Dollars	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*
Property tax	18,000	66	4,015	43,430	78	1,985	89,690	88	44
Income (net yield) tax	13,030	48	7,500	28,090	50	7,500	53,220	52	7,500
Special forest tax:									
Adjusted property tax	13,030	48	7,500	28,090	50	7,500	53,220	52	7,500
Deferred timber tax	15,150	55	6,018	33,420	60	5,584	64,100	63	5,277
Differential timber tax, reduction factor 50 percent	13,990	51	6,826	32,720	59	5,835	66,950	66	4,694
Immature-timber exemption	9,493	35	9,977	19,580	35	10,560	35,960	35	11,030
Yield tax, rate 10 times property tax rate	14,780	54	6,272	29,930	54	6,839	54,390	53	7,261

[1] Assumptions and formulas are described in the text.

TABLE 160.—*Special forest-tax plans compared with the property tax and income tax, for 60-year rotation forests, with various income cycles, and yielding a net return of 3 percent;*[1] *land value, under the income tax, $7,500*

PROPERTY-TAX RATE, 1 PERCENT; INCOME-TAX RATE, 25 PERCENT

Plan	Forest E-1, income cycle, 5 years; yield, $10,579			Forest E-2, income cycle, 10 years; yield, $21,157			Forest E-3, income cycle, 15 years; yield, $31,736		
	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value
	Dollars	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*
Property tax	2,349	27	40,360	5,028	29	35,690	8,043	32	31,340
Income (net yield) tax	2,218	25	41,190	4,435	26	37,410	6,653	26	33,830
Special forest tax:									
Adjusted property tax	2,218	25	41,190	4,435	26	37,410	6,653	26	33,830
Deferred timber tax	2,237	25	41,060	4,526	26	37,150	6,875	27	33,430
Differential timber tax:									
Reduction factor, 10 percent	2,192	25	41,350	4,698	27	36,650	7,514	29	32,290
Reduction factor, 20 percent	2,028	23	42,370	4,348	25	37,670	6,961	27	33,280
Reduction factor, 30 percent	1,855	21	43,460	3,981	23	38,730	6,375	25	34,330
Immature-timber exemption	515	6	51,880	1,113	6	47,070	1,805	7	42,520
Yield tax, rate 10 times property tax rate	1,470	17	45,880	3,005	17	41,570	4,617	18	37,480

PROPERTY-TAX RATE, 2 PERCENT; INCOME-TAX RATE, 40 PERCENT

Plan	Forest F-1, income cycle, 5 years; yield, $12,796			Forest F-2, income cycle, 10 years; yield, $25,592			Forest F-3, income cycle, 15 years; yield, $38,388		
	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value
	Dollars	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*
Property tax	4,694	43	39,560	10,030	46	34,030	16,000	50	29,000
Income (net yield) tax	4,435	40	41,190	8,870	41	37,410	13,310	41	33,830
Special forest tax:									
Adjusted property tax	4,435	40	41,190	8,870	41	37,410	13,310	41	33,830
Deferred timber tax	4,467	41	40,980	9,024	42	36,960	13,680	43	33,150
Differential timber tax:									
Reduction factor, 10 percent	4,432	40	41,200	9,477	44	35,650	15,130	47	30,570
Reduction factor, 20 percent	4,148	38	42,980	8,874	41	37,400	14,170	44	32,280
Reduction factor, 30 percent	3,834	35	44,950	8,214	38	39,320	13,130	41	34,150
Immature-timber exemption	1,171	11	61,680	2,528	12	55,850	4,102	13	50,330
Yield tax, rate 10 times property tax rate	3,330	30	48,130	6,783	31	43,480	10,380	32	39,080

[1] Assumptions and formulas are described in the text.

TABLE 161.—*Special forest-tax plans compared with the property tax and income tax, for even-aged forests managed on various rotations, and yielding a net return of 3 percent;*[1] *land value, under the income tax, $3*

PROPERTY-TAX RATE, 1 PERCENT; INCOME-TAX RATE, 25 PERCENT

Plan	Forest A, rotation 30 years; yield, $15.02			Forest C, rotation 45 years; yield, $28.87			Forest E, rotation 60 years; yield, $50.78		
	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value
	Dollars	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*	*Dollars*	*Percent*	*Dollars*
Property tax	3.67	44	2.25	9.08	54	1.76	19.31	64	1.23
Income (net yield) tax	2.61	31	3.00	5.62	34	3.00	10.64	35	3.00
Special forest tax:									
Adjusted property tax	2.61	31	3.00	5.62	34	3.00	10.64	35	3.00
Deferred timber tax	3.08	37	2.67	6.84	41	2.56	13.20	44	2.48
Differential timber tax, reduction factor 50 percent	2.72	33	2.92	6.42	38	2.71	13.30	44	2.46
Immature-timber exemption	1.72	21	3.62	3.49	21	3.76	6.33	21	3.88
Yield tax, rate 10 times property-tax rate	2.85	34	2.83	5.66	34	2.99	10.14	34	3.10

[1] For assumptions and formulas refer to table 159, from which this table is calculated. Columns 2, 4, 5, and 7 are computed by dividing corresponding figures in table 159 by 2,500; columns 3 and 6 are the same as in table 159.

TABLE 161.—*Special forest-tax plans compared with the property tax and income tax, for even-aged forests managed on various rotations, and yielding a net return of 3 percent; land value, under the income tax, $3*—Continued

PROPERTY-TAX RATE, 2 PERCENT; INCOME-TAX RATE, 40 PERCENT

Plan	Forest B, rotation 30 years; yield, $17.63			Forest D, rotation 45 years; yield, $34.49			Forest F, rotation 60 years; yield, $61.42		
	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value	Taxes	Tax ratio	Land value
	Dollars	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*
Property tax	7.20	66	1.61	17.37	78	0.79	35.88	88	0.02
Income (net yield) tax	5.21	48	3.00	11.24	50	3.00	21.29	52	3.00
Special forest tax:									
Adjusted property tax	5.21	48	3.00	11.24	50	3.00	21.29	52	3.00
Deferred timber tax	6.06	55	2.41	13.37	60	2.23	25.64	63	2.11
Differential timber tax, reduction factor 50 percent	5.60	51	2.73	13.09	59	2.33	26.78	66	1.88
Immature-timber exemption	3.80	35	3.99	7.83	35	4.22	14.39	35	4.41
Yield tax, rate 10 times property-tax rate	5.91	54	2.51	11.97	54	2.74	21.76	53	2.90

TABLE 162.—*Special forest-tax plans compared with the property tax and income tax, for 60-year rotation forests, with various income cycles, and yielding a net return of 3 percent;*[1] *land value, under the income tax, $3*

PROPERTY-TAX RATE, 1 PERCENT; INCOME-TAX RATE, 25 PERCENT

Plan	Forest E-1, income cycle, 5 years; yield, $4.23			Forest E-2, income cycle, 10 years; yield, $8.46			Forest E-3, income cycle, 15 years; yield, $12.69		
	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value
	Dollars	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*
Property tax	0.94	27	16.14	2.01	29	14.28	3.22	32	12.54
Income (net yield) tax	.89	25	16.48	1.77	26	14.96	2.66	26	13.53
Special forest tax:									
Adjusted property tax	.89	25	16.48	1.77	26	14.96	2.66	26	13.53
Deferred timber tax	.89	25	16.42	1.81	26	14.86	2.75	27	13.37
Differential timber tax:									
Reduction factor, 10 percent	.88	25	16.54	1.88	27	14.66	3.01	29	12.92
Reduction factor, 20 percent	.81	23	16.95	1.74	25	15.07	2.78	27	13.31
Reduction factor, 30 percent	.74	21	17.38	1.59	23	15.49	2.55	25	13.73
Immature-timber exemption	.21	6	20.75	.45	6	18.83	.72	7	17.01
Yield tax, rate 10 times property-tax rate	.59	17	18.35	1.20	17	16.63	1.85	18	14.99

PROPERTY-TAX RATE, 2 PERCENT; INCOME-TAX RATE, 40 PERCENT

Plan	Forest F-1, income cycle, 5 years; yield, $5.12			Forest F-2, income cycle, 10 years; yield, $10.24			Forest F-3, income cycle, 15 years; yield, $15.36		
	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value	Taxes	Tax ratio	Initial forest value
	Dollars	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*	*Dollars*	*Per-cent*	*Dollars*
Property tax	1.88	43	15.82	4.01	46	13.61	6.40	50	11.60
Income (net yield) tax	1.77	40	16.48	3.55	41	14.96	5.32	41	13.53
Special forest tax:									
Adjusted property tax	1.77	40	16.48	3.55	41	14.96	5.32	41	13.53
Deferred timber tax	1.79	41	16.39	3.61	42	14.78	5.47	43	13.26
Differential timber tax:									
Reduction factor, 10 percent	1.77	40	16.48	3.79	44	14.26	6.05	47	12.23
Reduction factor, 20 percent	1.66	38	17.19	3.55	41	14.96	5.67	44	12.91
Reduction factor, 30 percent	1.53	35	17.98	3.29	38	15.73	5.25	41	13.66
Immature-timber exemption	.47	11	24.67	1.01	12	22.34	1.64	13	20.13
Yield tax, rate 10 times property-tax rate	1.33	30	19.25	2.71	31	17.39	4.15	32	15.63

[1] For assumptions and formulas refer to table 160, from which this table is calculated. Columns 2, 4, 5, and 7 are computed by dividing corresponding figures in table 160 by 2,500; columns 3 and 6 are the same as in table 160.

The formulas used in tables 159 and 160 were proved and discussed at length in part 3. They will be briefly reviewed at this point.

The formula for the initial forest value (value at the beginning of the income cycle), V_0, is as follows:

$$V_0=\frac{Y-C-X-e\frac{(1+p)^n-1}{p}}{(1+p)^n-1}, \text{ where}$$

Y=yield, C=cost of regeneration, X=cost of taxes, e=annual expense, p=interest rate, and n=length of income cycle. (See p. 59.)

For an even-aged forest (table 159) the land value, L, is the initial forest value less the regeneration cost, $L=V_0-C$. For an uneven-aged forest (table 160), L, the land value, is the land value of the corresponding even-aged forest as given in table 159.

The formula for X under either the income (net yield) tax or the adjusted property tax (pp. 51 and 66) is:

$$X=\frac{r}{p+r}(Y-C-ne),$$

where $\frac{r}{p+r}$ is the income tax rate, r being the property tax rate. According to the assumptions made, this formula and the one stated above for V_0 will contain two unknowns, Y and X, for each forest indicated in table 159 (all are even-aged) and hence are solved simultaneously for these unknowns. In table 160 the yield for the uneven-aged forest is $\frac{1}{k}$ times the yield for the corresponding even-aged forest in table 159 where k is the number of income cycles in a complete rotation.

The yields as computed in the preceding paragraph for the income tax and the adjusted property tax will be the same for each forest under the other tax plans enumerated. This means that not only will X be different for each plan, but L and V_0, the land value and initial forest value, will also be different.

The other formulas for X are as follows:

Property tax, $$X=(Y-C)\left[1-\frac{(1+p)^n-1}{(1+p+r)^n-1}\right]-\frac{re}{p+r}\left[\frac{(1+p)^n-1}{p}\right],$$

(See p. 58, formula 6.)

Deferred timber tax (formula 13),

$$X=rV_0\frac{(1+p)^n-1}{p}+\frac{r}{p}[e+(p+r)L]\left[\frac{(1+p)^n-1}{p}-n\right].$$

Differential timber tax (formula 16),

$$X=V_0[(1+p+r')^n-(1+p)^n]+[e+(r-r')L]\frac{(1+p+r')^n-1}{p+r'}-e\frac{(1+p)^n-1}{p},$$

where r'=tax rate on timber. This rate is determined by the following relation: $r'=r(1-w)$, w being the reduction factor applicable to timber.

Immature-timber exemption (p. 66),

$$X=rL\frac{(1+p)^n-1}{p},$$

Yield tax, (p. 72)

$$X=Ys+rL\frac{(1+p)^n-1}{p},$$

where s, the yield tax rate, is assumed for the purposes of illustration to be 10 times the property tax rate, or $10r$.

With Y constant for each forest, substitutions are made in the above tax formulas and the initial value formulas, and the resulting equations are solved simultaneously for V_0 and X.

For any tax system the tax ratio is, by definition, $\frac{X}{Y-C-e\frac{(1+p)^n-1}{p}}$.

The essential features of the various plans suggested are sufficiently illustrated by a few hypothetical forests constructed on the basis of assumptions limited to a small number of combinations. Low rotations and but a few of the possible income cycles have been chosen.

The rotation is the predetermined, approximate felling age of stands or trees. For an even-aged forest, it is the period between two successive final yields; for an uneven-aged forest it is a similar period from the standpoint of a single age class. The income cycle is the planned interval between the final yields of the successive age classes of an uneven-aged forest; in an even-aged forest it is the same length as the rotation. In all cases it is the interval between major yields. It is assumed that each final yield is the same as the prior final yield. Forests A and B (tables 159 and 161) have 30-year rotations; forests C and D, 45-year; forests E and F, 60-year. Each of these forests is even-aged. The forests represented in tables 160 and 162 have a rotation of 60 years, but each is composed of 12, 6, or 4 age classes. Accordingly, their income cycles are 5, 10, and 15 years, respectively. An uneven-aged forest in these examples may be regarded as a selection forest, in which case the series of age classes is represented by regular gradation of ages among individual trees, or it may be regarded as composed of a regular series of even-aged stands.

Each forest in tables 159 and 160 has a land value of $7,500 under an income (net yield) tax and annual expenses of $300. In table 159 the regeneration cost is $2,500 while in table 160 it is

$$\frac{\$2,500}{k},$$

k being the number of income cycles in a complete rotation. The yield in all cases is calculated to equal the exact amount necessary to return all costs, including taxes, and interest on the capital at a rate of 3 percent. The property tax rates (based on full value) are 1 and 2 percent; the corresponding income tax rates are 25 and 40 percent; and the yield-tax rates (10 times the corresponding property tax rates) are 10 and 20 percent. The legal interest rate under the adjusted property tax plan is taken to be 3 percent. The reduction factor for use under the differential timber-tax plan is 50 percent in tables 159 and 161, where the shortest income cycle is 30 years. In tables 160 and 162, this plan is illustrated by three different examples for each forest, assuming in turn uniform reduction factors of 10, 20, and 30 percent. These factors correspond to standard income cycles of 5, 10, and 15 years, respectively.

Certain assumptions are necessary with reference to the various tax plans in order to apply them to the conditions of these hypothetical forests. Taxes under the property tax and its modifications are levied each year on the value at the beginning of the year and payable

at the end of the year. All incomes are treated as occurring at the end of the year with income and yield taxes payable at that time. The income tax is calculated on the basis of net income before interest and taxes; the yield tax is a combination of a gross income tax and a land tax at the property-tax rate. In all cases, the trees are marketed at the time of financial maturity.

With the above explanation, the figures given in tables 159 to 162 may be interpreted. The immature-timber exemption plan evidently offers the most favorable results from the standpoint of the forest owner, and the property tax the least favorable. If the income (net yield) tax be taken as the standard of reasonable forest taxation, from the public as well as from the forest owner's point of view, immature-timber exemption produces less revenue than it should and the property tax more. Thus the tax ratio, or fraction of the tax-free value taken by taxes, is high for the property tax and low with immature-timber exemption. In forest A, for example, when the property tax rate is 1 percent, the tax ratio under the property tax is 44 percent; with immature-timber exemption it is 21 percent (tables 159 and 161). Under the income tax, on the other hand, the tax ratio is about midway between these two extremes, or 31 percent.

It is also evident (tables 159 and 161) that under the immature-timber exemption plan the tax ratio for an even-aged forest would remain constant regardless of the length of the rotation. In such a forest the tax burden under this plan, while less than that under any other, remains substantial, because the land value is a large part of the total forest value in the early stages of the rotation, and the taxes on this value accumulate with interest until charged to income at the end of the rotation. On the other hand, when this plan is applied to an uneven-aged forest (tables 160 and 162), the tax ratio diminishes as the income cycle is shortened, because the land value becomes a relatively smaller part of the total forest value the shorter the income cycle, and the taxes on this value accumulate for a shorter time.

As measured by tax ratios in the hypothetical forests under consideration, the yield-tax plan gives a variable tax burden compared with that of an income or net-yield tax. When the yield-tax rate equals 10 times the corresponding property-tax rate, this burden is greater than that of an income tax in the case of even-aged forests of short rotation (table 159, forests A and B), about the same in the case of even-aged forests of somewhat longer rotation (table 159, forests E and F), and less in the case of forests managed on a 60-year rotation with income cycles of 5 to 15 years (table 160). The longer the rotation the less the importance of the land element in the tax base, and therefore the lower becomes the relative tax burden under the yield-tax plan, which includes a land tax. Of course, the entire level of the yield-tax burden could be changed by varying the rate from the assumed standard of 10 times the property tax rate.

The adjusted property tax gives results identical to those given by the income tax under the assumptions which have been made in preparing these tables. Precisely the same results would not be expected in actual practice.

The tax ratios under the income tax and adjusted property tax increase slightly the longer the income cycle. The income tax allows, for the purpose of computing taxable income, a deduction from gross income for annual expenses only and not for interest on those expenses.

The adjusted property tax is regulated on the same principle. Therefore these tax plans give slightly larger tax ratios when the time between outgo and income is longer, as happens with longer income cycles. Under the deferred timber-tax plan, the tax ratio is equal or very close to the tax ratio under the income tax or adjusted property tax in every case where the income cycle is 15 years or less (tables 160 and 162). It becomes moderately higher where there is unusually long deferment of income, as in the case of single-aged forests managed on rotations of from 30 to 60 years (tables 159 and 162). The reason for this result is that the land value is a relatively larger part of the total forest value the longer the income cycle, and the taxes on this value, which are not deferred under this plan, accumulate for a longer time

If the deferred timber tax allowed deferment of taxes on land value as well as on timber value, it would impose in these examples precisely the same tax burden as the adjusted property tax. In spite of the retention, for practical reasons, of the annual land tax, the tax burden on forest property in the aggregate might be no greater under the deferred timber tax than under the adjusted property tax. The repayment of deferred timber tax is limited to a fixed portion of the yield, but there is no corresponding limitation on the adjusted property tax. In these examples, representing typical cases, the assumptions are such that the limitation on payment of deferred taxes never applies, but in practice there would be cases in which this limitation would have the effect of reducing the tax burden. Therefore the advantage to the forest owner which the adjusted property tax offers in comparison with the deferred timber tax, apparent in these hypothetical examples, would not necessarily be realized in practice.

The differential timber tax plan with a 50-percent reduction factor, under the conditions illustrated in tables 159 and 161, where the income cycles are 30 years or over, gives tax ratios between the income tax and the property tax, but closer to the income tax. The tax ratios are very close to those of the income tax for the 30-year rotation and income cycle, and increase moderately in comparision with the income tax as the rotation and income cycle are lengthened. The increase over the income tax is caused by the limit of 50 percent placed upon the reduction factor. In order that the taxes on all the forests in this example might agree with the income tax, the reduction factor would have to be somewhat higher than 50 percent, increasing as the rotation period lengthened. Hence, the use of 50 percent as a maximum reduction factor is conservative, being slightly favorable from the point of view of public revenue.

In tables 160 and 162 three different reduction factors were used for each income cycle. For the 5-year income cycle the 10-percent factor gives a result equal to the income tax. The other two factors produce too small a tax burden. For the 10-year income cycle the 20-percent reduction factor seems the best; for the 15-year income cycle the 30-percent gives closest adherence to the income tax. These results are in harmony with the set of reduction factors enumerated in the section where this plan is developed.

It is evident (tables 160 and 162) that quite a large difference in the reduction factor makes a relatively small change in the tax ratio. For example, in the case of forest F–3, with a rotation of 60 years and

an income cycle of 15 years, the tax ratio with a reduction factor of 30 percent is 41, the same as that of the income tax. However, if the factor is reduced from 30 percent to 10 percent, the tax ratio is increased only to 47 percent. The reason for this result is in part the stabilizing influence of taxing the land value at the full property tax rate.

The comparisons in this section have been based on tax ratios, because these ratios lend themselves readily to comparative analysis. The discussion might have been built about taxes or land values, with conclusions similar to those developed.

The results in this set of examples are in some measure dependent on the relationships between the several items of income and expense assumed for the purpose of illustration. These relationships cannot be typical of all forest conditions. Therefore, it is suggested that the reader use the method and formulas of these tables to test the application of these plans to the forest conditions with which he is familiar.

A MORE INCLUSIVE BASE FOR THE PROPERTY TAX

Examination of the possibilities of forest-tax reform would not be complete without at least brief notice of the possibility of relief from broadening the base of the property tax. Reference was made at an earlier point (p. 527) to the charge that, on account of the virtual escape of intangible property and many forms of tangible personalty, real estate is burdened with a disproportionate part of the revenue collected by means of the property tax. Whatever disability exists here obviously affects the forests, and any reform which would broaden the base of the property tax by means of more effective taxation of personal property would bring corresponding tax relief to the forests. In the brief discussion of this topic on page 527, no attempt was made to arrive at an answer as to the justice of this charge against the property tax. This is a question on which opinion is divided, and the answer requires further extended study. For the purpose of this investigation the answer to this question is not of great importance, owing to the very slight probability of relief to real estate along this line. The notion that all intangible property ought to be included along with tangibles in the tax base is unsound in theory and utterly incapable of practical achievement. Attempts thus to tax intangibles have everywhere resulted in failure. A considerable school of thought today believes that the remedy lies in the classified property tax, by means of which intangible property, or certain classes of intangible property, would be taxed at rates materially lower than are applied to tangibles. While this is not the place to go into a thorough examination of this question, it is submitted that this program is weak in theory and of little promise as to practical result. If intangible property, as is held by many, represents in large measure simply property rights to tangible property which is itself taxed, then even a low rate on such intangibles is double taxation. If, on the other hand, intangible property is to be regarded as representing taxpaying ability in the same way as tangible property, then the low rate of tax represents an unjustifiable discrimination. The classified property tax, indeed, rests on no sound foundation of theory; rather, it represents the attempt to get as much revenue as possible from the taxation of intangibles. It is admitted that taxation of intangibles at the same rates as apply to tangible property is utterly impossible, and those who advocate the classified property tax set themselves the

problem of finding what rate will produce the maximum revenue, or, in other words, charging what the traffic will bear. Experience with the classified property tax in the United States has failed to demonstrate its effectiveness in any large way. There is little reason to hope that future developments will succeed in producing any greatly increased revenue from the taxation of intangibles, or any corresponding relief to real estate.

What has been said about intangibles applies substantially to the attempt to obtain more revenue from the taxation of those forms of tangible personal property which now largely escape. Household furniture, libraries, jewelry, and musical instruments are undoubtedly destined more and more to evade the attention of the assessor. Even such forms of personal property as merchants' stock in trade, and manufacturers' machinery, materials, goods in process, and finished products present a problem whose solution has not yet been found. There is no sound basis for the hope that future developments will greatly increase the effectiveness of the property tax as it relates to tangible personal property generally.

It should be noted that attempts in the United States to improve the application of the property tax to personal property, and especially to intangibles, run counter to experience in other parts of the world. In only a few places, found chiefly in the Swiss Cantons and the States of Germany, has the "general" property tax persisted outside of the United States. Of course, the tax is not "general", except in name, even in the United States. Everywhere else the attempt to tax intangibles and most forms of personal property has been given up, and the general property tax, after a long process of evolution, has reverted to its original form as a tax upon real estate. Those who look for a different ultimate result in the United States have slight ground for their hope.

With respect to tax exemption, there is, as has been shown, room for substantial relief. Whether there is ground for any real hope in this direction is largely a matter of speculation. Frequent protests are being heard against the increase in tax exemption, and serious question is being raised as to the theoretical basis, if any such exists, of exemption. What is obviously needed is the formulation of a clear theory upon which to justify the public concession to the favored property. It is hard to see how any sound theory of this sort could fail to condemn much of the exemption that is now permitted. Even as to the rest, there would then arise the question of whether the favor could not be extended in some more equitable way than through tax exemption. A system of bounties, carefully drawn so as to conform to some measure of the public service justifying the concession, would possibly be more equitable than exemption from taxation. As a general rule, the value of property exempted can have only a rough relation to the considerations which would justify a public concession in any given case. It may be stated that while forest property doubtless suffers from the widespread prevalence of exemption and has just ground for demanding a change, the prospect of any substantial relief here is at best remote and problematical.

In conclusion, while any change which would broaden the property tax base and reduce the importance of real estate therein, would, to that extent, benefit forest property, there would appear to be no ground for expecting any very substantial relief to the forests from this direction.

DIMINISHED RELIANCE ON THE PROPERTY TAX

In the section immediately preceding, attention was given to the possibility of relief to forest property through a broadening of the base of the property tax. A somewhat similar question is presented by the charge, referred to earlier (p. 528), that the predominant position of the property tax (as compared with other revenue sources) in American State and local finance places an unjust tax burden upon taxable property in general and forest property in particular. In the brief discussion of this question in the previous section, no attempt was made to answer the fundamental questions: (1) Whether the admitted predominance of the property tax actually is a defect, and (2) what actually would be the result upon forest property of a change in the tax system which would place greater reliance on other forms of taxation. There would appear to be little doubt that, other things being equal, a diminished reliance upon the property tax would tend in some degree to relieve the burden of taxation on forest property, although it would be quite impossible to follow all the ramifications in order to determine precisely the magnitude of such relief. To the question of the justice of the present reliance on property taxation it would probably be impossible to find a conclusive answer. In fact, for the present purpose the answer to this question is of minor importance. What is of far greater concern is an estimate of the probable development of the tax system in this respect and its probable effect upon the burden of forest taxes. In this connection it is to be noted that changing conditions have already brought into existence new forms of taxation, and that the States have for some time been gradually diminishing their dependence on the property tax for the support of State government. In many of the most important States the property tax now furnishes only a minor source of State (as contrasted with local) revenue. In some States it is not so used at all.

In the course of time the weaknesses of the property tax have made themselves more and more evident, and the public is gradually becoming aware of its shortcomings. At various special points the sway of the property tax has been weakened, as, for instance, in the taxation of public-service and public-utility corporations, and to some degree also as regards manufacturing and mercantile corporations. The weakening here has been largely due to difficulties in local assessment rather than to any inherent fault of the property tax itself. In spite of these developments, the property tax still remains a very important source of State revenue, and almost the exclusive source of local revenue. By and large, the introduction of new sources of revenue has as yet not even sufficed to offset the constantly increasing cost of government which has marked the history of the last half century. Indeed, the actual burden of the property tax, though not its relative place in the tax system, has materially increased. In the realm of local finance the predominant position of the property tax has as yet been scarcely threatened.

There is without doubt today a wide-spread feeling that the property tax is still bearing more than its share of the cost of government. This sentiment may be expected to continue and possibly to increase in strength. It is quite likely that there may come some broadening of the revenue base of counties and towns through placing greater

reliance on other forms of local taxation. The same result, as to diminishing the reliance on the property tax, may be brought about indirectly through a continuation of the movement already under way toward redistribution of government functions between the State and its local subdivisions. As the State takes over functions formerly performed by the local governments or renders aid to the local governments toward defraying their expenses, the net effect will generally be a decreased relative reliance upon the property tax, since the State, more than the local governments, already has access to other sources of revenue and may be expected to continue to cultivate these other sources in the future.

So far as events develop in this direction, the tendency will of course be to lighten the burden of forest taxation. On the other hand, the persistent increase in governmental costs which has been in progress for at least 2 or 3 generations must not be forgotten. If this development is not checked, it is quite possible that new sources of revenue may no more than suffice to meet the increased demands of government, with the result that, even though the property tax might come to occupy a relatively less important position in the tax system as a whole, its absolute burden might remain undiminished, or even continue its past increase. It should be noted, however, that a relative decrease in the use of the property tax would reduce the competitive disadvantage of forestry as an avenue for investment.

Obviously, no precise conclusion is possible in this matter. It may safely be concluded that forest property stands to benefit in the future from the tendency to develop other sources of revenue and so to diminish the relative position of the property tax. On the other hand, this favorable tendency may be counteracted in whole or in part so far as absolute burden is concerned by continued increase in the cost of government. While there is here a tendency favorable to the use of land for forestry, it would be altogether too optimistic to infer the probability of any immediate substantial contribution to the solution of the forest-tax problem.

RELIEVING THE ABSOLUTE BURDEN OF TAXATION

The reforms which have thus far been discussed have the power to produce a more just distribution of the tax burden and a method of imposing taxes more appropriate to the peculiarities of forest property and forest enterprise. But with all such reforms the tax burden may still be heavy. A heavy tax burden is primarily due to heavy costs of government, and after all the most effective device for relieving the forest-tax burden may be that which offers relief to all taxpayers, namely, reduction in the cost of State and local government. Since most forest land is naturally in rural areas it is a reduction in the cost of government in counties, towns, school districts, and other taxing units in rural territory that would give the greatest relief to forest owners.

So far as the burden of taxation may be reduced through the elimination of waste and the promotion of efficiency, there can hardly be any question of the desirability of this appropriate action. Beyond that the question is, What scale of government activity can the community afford? There must be provision for a strong, constructive, aggressive public service covering activities that are justified by the

public interest. The point is that such a service costs money, and if the consequent tax burden is heavy, forest owners, like all other classes, must accept heavy taxation.

The waste and inefficiency which exist in government, particularly local government, can be attributed largely to overorganization, antiquated machinery, and an untrained personnel. However innocent and impersonal these sources of waste, there is nevertheless no question that the total amount is large. It is not capable of exact quantitative measurement, but its existence is perceptible to any careful observer. Some of the evidences were presented in the part which deals with the absolute burden of taxation as controlled by governmental organization and functioning (pt. 8) and need not be repeated here. Likewise, in pointing out the sources of waste, the remedy was often suggested or implied. It is, therefore, necessary here only to make specific recommendations in respect to each type of maladjustment which is manifest. The first is in respect to the structure of rural local government.

REORGANIZATION OF LOCAL GOVERNMENTAL AREAS

There could unquestionably be a substantial saving in the cost of government in rural areas if the number of units were reduced. The multitude of small units which now exist is due to the fact that the general pattern of local government in every State was set up to meet pioneer conditions. Later, when these basic units proved unsuited to the administration of new functions, special districts of one kind or another were created and superimposed on the existing framework. The result is a series of governments with overlapping jurisdictions, a condition which in itself conspires against economy of administration and facility of control.

The crusader might desire to obliterate all existing political boundaries and draw new lines in conformity with present resources and needs, but practical considerations will dictate otherwise. Political and social institutions are not created but evolved out of what exists before. The reorganization of local governmental areas in the United States should therefore be accomplished without any unnecessary upheaval. This does not mean that the task should not be attacked with boldness and pursued toward a rational goal.

The approach to the reorganization of local government must be both structural and functional. The county, town, or district is in one sense only a vehicle to provide education, highways, protection, and other services. Yet, in another sense, the local unit of government is, or ought to be, more than a unit of administration. It ought to be a political entity, a conscious, vital community, in which the people are bound together by common interests and, through their government, advance their common purposes. This cannot be if people owe allegiance and pay taxes to four or five overlapping jurisdictions. On the other hand, there can be a strong local government and a real community of interest when the political unit corresponds to a social and economic unit and the local political allegiance of the citizens is limited to that single unit. Local self-government, properly defined, should be preserved in the United States, for it is the very foundation of our republican institutions.

It can be preserved if the local units are recast, where necessary, to meet changed economic and social conditions. Where there is now a strong spirit of local self-government it will usually be found that the conditions mentioned above have been met or approximated. In this case the existing set-up should be built upon rather than disrupted. Where local self-government is weak the causes for the weakness are likely to be economic, necessitating a change in the political boundaries. Generally speaking, the reorganization of local governmental areas, in the interest of both increased political vitality and better administration, will need to be in the direction of fewer and larger units. The ideal, from the political or civic point of view, would be only one government between any citizen and the State, but this would probably not always be ideal from the administrative point of view.

The most promising avenues of improvement in the structure of local governmental areas appear to be the following: (1) The abolition of the township as a governmental unit in the 17 States where it exists outside of New England; (2) a reduction in the number of New England towns by abolishing those which are within urban territory and by annexing those which have a very sparse population to contiguous towns; (3) a reduction in the number of counties, particularly in the South and West, through the absorption of weak, sparsely populated counties by the strong, unified counties; (4) the elimination of special taxing districts wherever the benefit can be properly extended to the entire town, county, or city; and (5) the elimination of many school districts by adopting the county as the unit of administration and standard support.

This program would leave the county, enlarged and strengthened in many instances, as the primary unit of government in most rural territory. In New England the town, enlarged and strengthened in some instances, would occupy the corresponding position, and in further discussion it will be understood that what is said of the county in general applies to the town in New England. The population of limited areas should of course not be denied the right to tax themselves for a special purpose, but this privilege should be surrounded with such safeguards as greatly to restrict its use. Perhaps its most frequent and most justified use would be to provide educational facilities beyond those supplied by the State and county. The latter should, however, be adequate to satisfy all normal requirements, so that a special school district, in rural territory at least, would be exceptional. If these changes were made, most rural property would be subject to only two taxes, the State tax and the county tax. This is the case now in certain restricted areas.

The relation of the city and the county should depend on the size of the city. There is no need for county government in large cities, which should probably be entirely independent of the county, the city area being extended to include the whole metropolitan area. Small cities should not be detached from the county, but rather the county should be enlarged to include the tributary trade area. Most towns (villages) containing from 3,000 to 10,000 population which are now county seats should remain so; and, in some instances, counties with less populous towns as county seats should be perpetuated. Generally, however, a county which lacks a town of 3,000 people lacks the resources and the unity to justify its per-

petuation as a political entity. While it would generally be undesirable to form or perpetuate a county with less than 30,000 population or less than $20,000,000 of assessed value, no inflexible minimum should be established. The average county should greatly exceed these figures in both population and wealth, but neither factor should outweigh the one of unity. The main objective should be a vigorous unit of local self-government, which, if too small to serve effectively for the administration of certain functions, could handle those functions as joint undertakings with another county or with several other counties.

The creation of a more vigorous political unit also demands a recognition of the new modes of transportation and communication which have come into use and the longer radius of one's daily activity. Trade and social intercourses have overreached village and township boundaries, even county boundaries. The new seats of government should coincide with the new centers of trade, recreation, and social activity. The new units of taxation must be enlarged to correspond with these larger economic areas. The farther the farmer goes to trade, the larger should be the area which supports the roads over which he travels, the schools which educate his children, and the other institutions which he patronizes. Not only is the larger unit warranted on grounds of economy and equity, but in order that local government may command popular respect and support. Township officers and township institutions have generally lost their dignity as well as their usefulness. This applies also to the officers and institutions of the weaker counties.

DISORGANIZATION OF LOCAL GOVERNMENTS IN SPARSELY SETTLED AREAS

There are certain forest areas in the United States which are so sparsely populated that there is no need for any local governmental organization at all. The limited public services needed by the few scattered and generally migratory inhabitants can be provided most economically by the State. This has been demonstrated in the unorganized territory in Maine where practially all local functions are provided by the State. The people and property of this district, comprising nearly one-half of the area of the State, are provided all the protection and benefits of government that are generally enjoyed in sparsely settled areas, but at a very much lower cost. The advantage is due to the absence of a plethora of local governments, which has come about because this part of the State has always been regarded as predominantly forest land and has never been open to uneconomic settlement based on misconception of the ultimate use of the land.

While the fortunate situation which obtains in this area is perhaps more attributable to the accidents of history than to political foresight, it is nevertheless one which could be attained or approximated in other, though less extended, areas. New York is proposing the creation of a district in the Adirondack area which will perhaps go further in the matter of disorganization than Maine and give the State exclusive control. Similarly, there are extensive areas in the Lake States that should be reduced to unorganized status. There are also areas in other New England States, in the South, and perhaps

in other parts of the country where some degree of disorganization would be feasible.

One of the major costs of local government is the support of schools; the more sparse the population the greater the weight of this item. The American people have assumed that a corollary of compulsory education is a schoolhouse within reach of every child. This idea should be exploded. If a family deliberately moves into the wilderness, the State should be under no obligation to follow with a school. Sparsely populated areas should have an unorganized status, and parents moving into these areas should understand that in so doing they forfeit the benefits of free public schools which their children can attend while living at home. The matter could be handled as in Maine, where the State pays the tuition and board (less $1 per week) of the children of isolated homes in unorganized territory, who are sent to school elsewhere. When financed on this basis, the cost of education is less than where schools are maintained in remote places for a handful of children.

Usually the second heaviest item in the cost of local government in sparsely settled areas is the expenditure for highways. If the area were unorganized, settlers would recognize that they could not demand a highway leading to every cabin. Except those which the State provided, all roads and trails would have to be provided by the settlers themselves through their own efforts or through voluntary cooperation.

With no roads and no schoolhouses, or other public buildings to construct, the creation of debt would be avoided and the item of debt service, which figures heavily in most local budgets, would be nonexistent. The absence of these major expenses, together with the elimination of the cost of elections, the salaries of local officials, and the upkeep of public buildings, would reduce taxes to a very nominal rate. Access to the courts, in case life or property were threatened, relief in case of poverty, and other inalienable rights of a citizen should of course be provided by the State directly or through the agencies of an adjacent organized jurisdiction. For these services the people in unorganized territory should pay their full part. The unorganized territory should be fully self-supporting. In Maine, despite a tax rate about one-third of that in organized territory, the unorganized territory is more than self-supporting.

CONTROL OF FURTHER LAND SETTLEMENT

Unfortunately many areas which are predominantly forest or cut over have a sprinkling of agricultural settlement. In many cases the agricultural development has proved unprofitable and is in a state of decline. Yet the survival of a few families, reluctant to surrender their waning equities, necessitates the perpetuation of schools and other governmental services. A diminishing tax base necessitates a heavier and heavier tax burden on both farm and forest property. Eventually the farms may all be forced into bankruptcy, but the process may require 20 or 30 years. If a few owners succeed in selling their holdings to innocent buyers with fresh capital the process may take even longer. In the meantime an increasing number of both farm and forest properties will be surrendered through

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tax delinquency. But the presence of a few inhabitants with substantial equities in their properties, and the fact that there are solvent taxpayers, both resident and nonresident, to redeem such public debt as may exist, prevent the immediate reduction of the area to unorganized status.

If the State or county through a zoning law or other legal device could close such areas to further settlement, land values would fall, as they should, and the collapse of the community would be expedited. All the farm land would eventually be abandoned and either be acquired by forest owners or revert to the public domain through delinquency. Through this process certain areas that are distinctly submarginal for agriculture would become closed for that purpose and could, if suitable, be devoted to forestry. At best, however, this method does not permit a prompt liquidation of the existing local government and a reduction of the area to unorganized status. If the depopulation of the area cannot be accomplished for several years and governmental services continue to be provided, the high taxes may drive a great deal of land out of private ownership while the change is being effected. This method thus amounts to confiscation of private property.

A less harsh method than simply closing an area to further settlement, and possibly a more profitable one for the State in the long run, would be for it to purchase the few surviving farms at a moderate price and effect depopulation at once. The cost of these farms might be no greater than the amount that would be dispensed as school and road aid in the next few years if the settlement remained. Indeed the State might be able to resell them to forest owners at no loss, as soon as the area were reduced to unorganized status. In any case, the latter method would hardly result in any more land passing into public ownership than the former. Finally, and perhaps most important of all, the State would spare innocent people the hardships of a slow collapse and permit them to establish themselves in a more favorable environment.

A REDISTRIBUTION OF GOVERNMENTAL FUNCTIONS

The character of public functions has changed so greatly since the existing system of local government was adopted that the machinery and structure are often ill-adapted to perform the tasks at hand. In earlier days the functions of government were simple and could easily be performed by amateurs; today they are technical, requiring the use of complicated machinery and highly trained technicians. Again, the unit of economic life has greatly expanded; communities have become less self-contained. What one township or county does concerns and affects other townships and other counties. In its policy in respect to health, education, highways, policing, and so forth, no unit can act independently of other units. These services have such a far-reaching effect that they can no longer be considered a local responsibility. Finally, an unequal distribution of population and wealth makes it impossible for each local unit to provide a similar quality of service without very great differences in financial burden.

For these reasons there has been a steady transfer of functions from smaller to larger jurisdictions. But the distribution is still

imperfect. A full readjustment has been hampered by the perpetuation of township governments and a multiplicity of tiny school districts, these units often being kept alive through the stimulus of State aid. Nevertheless a reallocation of governmental functions need not wait for a change in political structure. Indeed, it may be that one way to bring about the abolition of superfluous governments is to shear them of their powers. In some regions the township has already been greatly weakened by this process.

In allocating the functions of government three factors should be considered: (1) The scope of the benefit; (2) the ability to support; and (3) economy and efficiency of administration.

A function which was once properly local may now be otherwise because of a change in the character of the service. This is well illustrated in the case of roads. They were once primarily neighborhood institutions, used for horse-and-buggy travel, and maintained largely by free labor. Later they came to be maintained through taxation, the local roads by township or district taxes, the farm-to-market roads by county taxes. Then, since the development of automobile travel, the State has aided the local units in the support of the more important highways or has developed a system of State highways the cost of which is borne entirely by the State. The reallocation of burden has, however, lagged behind the need. In many States there are still township and local road districts. These small units are ill-equipped to administer and support even the short, tributary roads which have been left in their jurisdiction. The average county is none too large to serve as the primary road district. Few roads are of such purely local benefit as not to justify county-wide support. The construction and maintenance of primary roads, serving intercounty and interstate traffic should be exclusively a State obligation, with possibly some Federal aid. The granting of State aid for local roads to be locally expended and the joint support of primary roads locally administered are arrangements of doubtful merit. The better plan would seem to be full State support and State administration of at least all the main-traveled roads and possibly of all the roads.

In the case of schools, the problem is not so much one of distribution of function as one of allocation of cost. The responsibility for rural education is not so exclusively local that its cost should be primarily upon the rural communities. Even the benefits of rural education are widely diffused by the migration of young people from the farm to the cities. The principal unit of support should cease to be the local district and become the county, with the State assuming a much larger share of the total cost than is now generally the case. Except to provide unusual facilities there would seem to be no need for a local district tax, all normal expenditures being met from the State and county funds.

It has been demonstrated that a population of about 60,000 is the minimum for an efficient health unit. After certain needed consolidations, most counties would contain a population as great as this, and thus the county appears to be the proper unit to cooperate with the State in public-health activities.

The care of most dependent classes has already been assumed by the State. This is proper, for the smaller jurisdictions are not in a position to provide modern specialized institutions. Poor relief has remained largely a local function, but even in this field some States

are now participating through mothers' and old-age pensions. The county home or almshouse is still in wide use, but the average county home has so few inmates that they cannot be supported economically. In Virginia several counties have united for the support of such homes.

The custody of most delinquent classes has also been assumed by the State; the county jail, while still nearly universal, being used mainly for the incarceration of misdemeanants for short periods. Some of the more populous counties have institutions for juvenile delinquents but most of the institutions of this kind are maintained by the State.

Thus many of the traditional functions of local government are being absorbed by larger jurisdictions—county functions by the State and township functions by the county or State. This trend is in the interest of economy, efficiency, or equity, or perhaps all three. Its continuance may be expected, with the probable effect that the township government and possibly other minor units of government will be abolished. The county, enlarged and strengthened through consolidation, will be able to perform many of its present functions and those new ones which it takes over from the smaller governmental units or develops in response to modern needs.

APPRAISAL, COORDINATION, AND CURTAILMENT OF GOVERNMENTAL SERVICES

For a long period the functions of government have tended to increase. This trend may be expected to continue as population becomes more dense, industrialization increases, and the whole pattern of society becomes more intricate. It is inevitable that as civilization becomes more complex the sphere of collective action must be extended. This does not necessarily justify an uninterrupted expansion of government on every front. For the last decade the cost of State and local governments has increased much faster than the income of the people. So long as incomes were rising, the fact that taxes were rising still faster was not a cause of great concern; it was a condition which might conceivably be desirable. But when many sources of income have dried up and the national income has been cut in half without any appreciable reduction in the expenditures of State and local governments (as at present, 1932–33), taxpayers are demanding a reappraisal of the objects of government. Some are demanding a drastic curtailment in governmental services. They maintain that some of these services are in the nature of luxuries, which were all right so long as they could be afforded, but that now the people must forego luxuries furnished by government along with those which they personally forego. While there is danger of mistaking essential services for luxuries and of carrying retrenchment too far, there is undoubtedly merit in the suggestion. It is not easy however to determine when an object or service, personal or governmental, becomes a luxury.

Superfluous governmental services should not only be dispensed with, and desirable but nonessential services limited to those which the public can afford, but extravagance and waste should also be eliminated. These take many forms—pretentious public buildings, elaborate furnishings, unnecessary employees, needless equipment. Corrupt mismanagement of public affairs has also been a source of waste in many cases.

Taxpayers are justified in demanding an examination and appraisal of every institution or agency of government and the discontinuance of those which are not worth their cost. In making the appraisal, however, care must be taken not to overlook intangible and indirect benefits. Faced with the necessity of reducing their budgets, many governing bodies have, in the last year or two, suspended public-health work or educational activities that promised big dividends in the long run and have overlooked substantial savings that could have been made by introducing certain improvements in organization or administration. There are undoubtedly places where public services could be curtailed without any detrimental effect, but quite often fully as great savings could be effected through a better coordination of the work of the different units and departments. Forest land, and all other rural property, could obtain a considerable measure of tax relief through this channel. In certain sparsely settled areas, as already pointed out, there could be and should be a definite curtailment of governmental services. In most rural areas, however, the savings should come through a reduction in overhead costs rather than through the suspension of essential services. The problem is (1) to secure efficiency and economy in the public administration, and (2) to limit governmental activities to those which the community can afford, or, in other words, to those which it can pay for without an excessive load of taxation. Many a community has the opportunity, through efficiency and economy, to increase the useful services rendered by its government while at the same time reducing the cost and so relieving the burden of taxation.

ADMINISTRATIVE PERSONNEL OF LOCAL GOVERNMENT

There is no question but that the cost of local government in rural areas could be reduced through improvements in administration, without reducing the effectiveness of public services. It has already been pointed out that a reduction in the number of political units and the consequent enlargement of the administrative area would create a condition more favorable to good administration. Many units now are too small and weak to attract the type of personnel or to provide the equipment required for efficient public service. But even were the county to become generally the primary unit of government in rural territory, and even were the counties to be enlarged in many instances through consolidation, there would still remain room for improvement in administration. No form of government is more fettered by tradition or clings more tenaciously to antiquated practices than county government.

A unified, well-coordinated administration is just as much frustrated by a long ballot in the county as it is in State government. The popular election of numerous administrative officials, each of whom is the political peer of all the others, results in a government that is planless, disjointed, and irresponsible. The only county officers that should be chosen by popular election are the members of the policy-determining board. The policy-determining functions, including education, should be concentrated in a single board. All county officers performing administrative tasks should be appointed by and be responsible to the county board or to a county manager who stands between them and the board. The manager plan has

worked so satisfactorily in most of the 400-odd cities where it is in use that it would seem to be adapted to at least the more populous counties. Even in the average rural county the plan would seem to be practical if the manager himself served as the head of one or more departments. Nevertheless it is doubtful if the universal adoption of the county-manager plan would be justified.

In the administration of county affairs there is a need for men with technical training. The construction of highways, the assessing of property, the administration of the schools, the care of delinquents, the protection of public health are all matters which should be in the hands of experts. Moreover, the public service demands men of initiative and social vision. There are opportunities in county administration for careers of great usefulness as teachers, doctors, engineers, jurists, public accountants, and leaders in the cause for more efficient land utilization and a more balanced economic development.

The filling of administrative posts by appointment rather than election will help to attract more capable men to these positions. A responsible appointing authority will at least be less likely to bestow the offices as gifts to the unfortunate or as rewards to the faithful. But young men with ambition and ability will not prepare themselves for the public service unless the positions carry the salary, the security of tenure, and the dignity of other professions. Therefore appointments should be made on merit and the appointees assured of freedom from political obligations. The result of such appointments would be a more economical, a more purposeful, and a more constructive administration of public affairs. Indeed the gains will be progressively greater, for when appointment and security of tenure open up opportunity for a career in the public service, training facilities will be provided. There is little inducement for a young man to train himself for a job that is filled by popular election.

BETTER FINANCIAL PRACTICES

Great savings would accrue to the taxpayers if every local government were required to operate on a budget, to determine carefully the nature and extent of the public services it demands, and, except in rare emergencies, to live within its revenue. It has been too easy to let a deficit accumulate and then through a funding bond to spread its payment over several subsequent years. The first principle of sound governmental policy is to keep current operating costs within the limits of the revenue receipts. A wise administration will go further and so distribute its capital outlays that they can be taken care of through current revenues. If all governments in times of prosperity had limited bond issues, as far as possible, to self-liquidating improvements they might now, in a time of depression, be able to grant substantial temporary relief to the hard-pressed taxpayers. Instead, in many tax jurisdictions, 30, 40, even 50 percent of the taxes now being imposed are required for debt service and hence cannot be reduced without defaulting on the bonds.

Desirable as it may be for political units to live within their income, they have not done so in the past, and it is certain that they will not always do so in the future. Hence, there should be definite limitations imposed on the amount and character of the debt and certain safe-

guards provided in regard to its repayment. In about half of the States there are consitutional provisions limiting the amount of bonded debt which a local unit may incur, but to be effective the limitation should cover also nonbonded debt and should apply to the aggregate indebtedness of all overlapping districts. A limitation applying to a single juridsiction has often been completely circumvented by the creation of a special district. In lieu of, or perhaps in addition to, a constitutional limit, there is much to be said for a disinterested reviewing agency to pass on each proposed note or bond issue. Several States have such agencies and have found them an effective deterrent to the creation of hasty and ill-advised indebtedness. Statutory restrictions are also needed covering the terms of the debt contract. Sinking funds are so precarious that some States have forbidden the issuance of any other than serial bonds, a safeguard that should be universally adopted. There should also be definite limitations in respect to maturity, the life of the bond depending on the character of the improvement to which the proceeds are applied. Funding bonds should have a very restricted maturity.

There are many other aspects of governmental finance which are frequently characterized by laxity and a consequent waste of the taxpayers' money. Public funds on deposit in banks should be more amply protected. Officials handling public funds should be required to furnish bonds ample in amount and taken with strong surety companies; personal bonds should never be accepted. There is a need in most local governments for better accounting and more regular and systematic auditing. Savings could often be effected through centralized purchasing.

IMPROVED TAX-COLLECTION PROCEDURE

One of the fields in which there is the most room for saving in local government administration is the collection of taxes. This is a difficult and very complicated problem, and such suggestions as may now be offered looking toward its solution have already been presented in discussing means of improving the operation of the property tax.

STATE SUPERVISION AND GUIDANCE

Local units of government have always been subject to a certain amount of State regulation. Formerly this regulation was attempted through legal prescriptions or restrictions interpreted and enforced by the courts. However, as the functions of local government have expanded and become more complex, there has arisen a need for expert supervision and guidance. The local governments often lack the experience and facilities to meet the technical problems which arise. State agencies have therefore been set up to assist and cooperate with the local agencies. While generally the local governments have been left with a large measure of autonomy, the nature of the service has sometimes compelled the attainment of a minimum standard of performance. In these fields, the State has often attained its objective, without appearing to dominate, through the use of a grant-in-aid conditioned on the attainment of the required standard. In other fields, the State has exercised no compulsion but has offered only counsel and guidance.

Among the fields in which there is an increasing degree of State supervision and guidance are public education, public health, highway administration, charities and corrections, policing, the assessment of property, and the accounting, custody, and expenditure of public funds. In most of these fields the need appears to be for more rather than less regulation and guidance. This need arises not only because the tasks are technical, but because the manner in which they are performed concerns the whole State. No community can live unto itself nor be entirely free to adopt its own standards.

Arbitrary control on the part of the State would be destructive to local initiative and contrary to the principles of democracy, but if the relationship between the State and the local authorities is one of cooperation and mutual respect, and the State agency considers itself a teacher rather than a dictator, no violence is done to local self-government, but rather it is strengthened through the contact. Indeed, the helpfulness and steadying influence of a competent, disinterested agency, with a State-wide rather than a local perspective, may be the tonic that is needed to revitalize local self-government and prevent the collapse with which it is threatened in rural areas.

MORE EFFECTIVE POPULAR CONTROL

No matter how skillfully the boundaries of a political unit may be drawn nor how perfect its administrative set-up, no government is self-operating. It will not function efficiently unless there is an enlightened and sustained public interest. The machinery of government may be so designed as to make popular control easy or difficult; and an easy method of control is more likely to invite a sustained public interest than a difficult method.

Experience has demonstrated that an elaborate system of checks and balances, designed to prevent an autocratic usurpation of power by any one official, has served only to diffuse responsibility and invite manipulation by unofficial agencies. A system which denies an official the power to act independently because he might misuse that power also ties the hands of a wise and able official who wants to act for the public good. Recent years have therefore witnessed a tendency to increase the powers and responsibilities of executive officials.

Likewise, the selection of most officials by popular election was formerly considered a protection against official tyranny—an effective instrument of popular control. Experience has demonstrated that this device also has failed to contribute either to efficiency or democracy. The short-ballot principle has been discussed in connection with improvement of the administrative personnel of local government. It is also a step toward giving the voter more influence in shaping public policy.

Quite as valuable an instrument of democracy is the budget. Citizens have an opportunity to attend hearings before its final adoption and speak for or against specific items. At these hearings they have the year's work outlined and explained to them, and they are enabled to see the whole program in its proper perspective. The hearings thus serve to dispel misunderstanding and prejudice, invite useful criticisms, and win for the administration the interest and support of thoughtful citizens.

Citizen interest and support will be even stronger if the administration or some competent unofficial agency will disseminate regularly, and not too infrequently, full and frank statements about the the public business. This information should be presented so simply that it can be readily understood by the average citizen. Certain cities issue a monthly bulletin to serve this educational purpose. But in most political units the citizens have no channel of information in respect to the operations of their government except an occasional financial exhibit which they do not understand and current news items which are likely to be garbled by uninformed reporters or colored by political bias.

SUMMARY

In conclusion it may be stated that owners of forest property will share with other groups of taxpayers such relief as can be brought about through a reduction in the total cost of government. Since the property tax bears most heavily on forests, and it is mainly a local tax, a reduction in the cost of local government would yield the most relief. There is no question that a substantial reduction in the cost of local government—that is, rural local government—could be effected through the improvements suggested in the foregoing pages. Summarized briefly, they are:

(1) State assumption of functions which are plainly a State responsibility, and partial State support of essential services which cannot be supported locally with adequacy or equity.

(2) A drastic reduction in the number of local units of government through the abolition, or at least the consolidation, of township governments and school districts, the enlargement of New England towns, and the elimination of numerous special districts.

(3) The general adoption of the county, enlarged in many cases through consolidation, as the primary unit of rural local government, except in New England, where the town may be better adapted to serve the same purposes.

(4) The disorganization of certain areas with a sparse and declining population, a shrinking or restricted tax base, and little promise of agricultural or industrial development.

(5) More efficient and economical administration of local government through the greater use of trained administrators, through better financial practices, and through a larger degree of State supervision and guidance.

(6) More responsible self-government through the short ballot, the budget, full publicity, and other instrumentalities of citizen control.

The emphasis which has been given in the foregoing section to the tax relief which can be obtained for forests, and other classes of property as well, through a reduction in the cost of government does not mean to ignore the relief that might be brought about by increasing the taxpaying ability of forest communities. Indeed the long run objective in forest-tax reform is to remove an obstacle to the conversion of the present unorganized forests to a sustained yield, taxpaying basis. Similarly with other classes of property, an improved capacity to pay taxes is much to be desired.

MODIFICATIONS IN OTHER TAXES

GENERAL INCOME TAXES

Outside the realm of the property tax, there are only three types of taxation from the modification of which any significant relief to forestry may be expected. These are the general income tax, the death taxes, and the severance tax.

As has been pointed out, the income tax presents no serious problem of forest taxation, being by its nature most favorable to forestry. No change in the general structure of the income tax is therefore recommended.

It is true that the provisions of the Federal income tax relating to depletion are not entirely correct in theory. But they work fairly well and they are not unfavorable to forestry under present conditions. Whenever sustained-yield forestry comes to be more generally practiced, it would doubtless be well to recognize more suitable methods of accounting for depletion. Two such methods are suggested in an early section of this part (p. 530).

DEATH TAXES

As to the death taxes, there is no reason for any special treatment of forest property, except in one particular; and even here the change might well be recommended in behalf of all classes of property. Heavy death taxes may have the effect of disrupting a going business concern or of depriving the heirs or associates of a control which they would otherwise have retained, by compelling sale of a part of the capital in order to pay the tax. This is a hazard, which, as has been shown, is especially serious in the case of a forest-growing enterprise. It is therefore to the interest of forestry that death taxes be kept moderate as to rates. Whatever the rates, it is recommended that permission be granted to pay the death taxes in moderate annual payments.

As the Government income from death taxes fluctuates greatly, because the taxes are levied intermittently, these taxes have no close relation to Government needs, and the rates are fixed quite arbitrarily. For this reason it is possible for the Government to fix high rates or moderate rates. It has been suggested by the national committee on inheritance taxation (in its report to the National Conference on Estate and Inheritance Taxation in 1925) that the sum of Federal and State death taxes should in no case exceed 15 percent of the value of the property, which would ordinarily not exceed the normal income for 3 years.

As regards payment, it is recommended that the death tax on the value of forest property, where the rate exceeds 2 percent, should be payable in equal annual installments of not less than 1 percent of the value of the forest. These installments should continue to be paid, whether any yield is received from the forest or not, until the entire amount due had been paid or until the death of the new owner. If the new owner should die before all of the installments are paid, the remaining installments should be canceled; the property should be reappraised and the death taxes again levied, but upon the new base. However, if the timber is being cut, the annual death-tax installments should not be less than the full rate of the tax times the value of the cut.

By this plan the death taxes on most forest properties belonging to estates of small value would be paid at the usual time, as the rates on such estates are usually no more than 2 percent. In the case of large properties, the effect of the progressive rates in forcing the denudation of the forest or the breaking up of operating units would be minimized, for the tax would be payable over a period of years. Where the maximum rates are moderate, say 10 to 15 percent, the installments on forest property could well be limited to 1 percent which could be realized from most forest properties without interfering with the owner's management plan.

The American system of death taxation has without doubt its imperfections and might be improved at various points. The national committee on inheritance taxation presented certain recommendations, adoption of which would undoubtedly be advantageous to forest property along with all other classes of property. These are discussed in part 10. They include moderate rates, installment payments, uniformity of rates among the States, and stability both in rates and other provisions.

SEVERANCE TAXES

There is no justification for a severance tax, in addition to property or other adequate tax, in the case of forests, except possibly as a measure to be applied to forests destructively exploited without provision for restocking. Only two States, Arkansas and Louisiana, now have severance taxes in addition to the property tax upon forests. The yield tax on forests in lieu of the property tax (which is one form of severance tax) has been treated elsewhere.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

This concluding part has undertaken to present the broad outlines of the forest-tax problem and a program for its solution, based upon evidence and principles developed at length in the preceding parts. The following is a brief summary of the conclusions and recommendations.

Taxation is today a matter of major importance, and all classes are interested in the possibility of tax relief. In general, the problem of taxation resolves itself into two parts: (1) The total burden of taxation, and (2) the distribution of this burden among the several taxpayers. As to the first, the matter is settled when the appropriate legislative body determines upon the functions that the Government is to perform and their cost; it is a matter of the Budget. When once the cost is fixed, taxation must, sooner or later, foot the bill. The second phase of the tax problem involves methods of taxation, the ideal being a just distribution among all who have an interest in the Government. In particular cases a third phase may exist, where the prevailing tax system is out of harmony with the peculiar circumstances of an industry or a taxpaying class and so works hardship on account of the method of imposition rather than the amount exacted.

The problem of taxation, as thus broadly outlined, is an important element in the forestry situation in the United States. The present heavy burden of taxation does not spare the forests. In some localities the operation of the tax system imposes an inequitable burden upon certain classes of forests or forest lands. And it has been

demonstrated that the principal instrument of local taxation—the property tax—is not under existing conditions well adapted to the business of forest growing or the conservative management of mature timber. The public has an interest in the conservative management of existing forest resources and the growing of forests on cut-over and waste lands where conditions are suitable, for the sake of watershed protection and other indirect benefits as well as to provide an adequate supply of timber products. It follows that the taxation of forests is distinctly a matter of public interest.

It is essential to visualize the forest-tax problem in its true proportions. Taxation is only one of the carrying charges that tend to bring about the rapid cutting of virgin timber and only one of the reasons why private capital is not embarking in timber-growing enterprises. There is no magic in forest-tax reform. Nevertheless, so far as taxation has any undue influence in bringing about the overcutting of mature forests, the public has an interest in its reform. As to the cut-over regions, it has been made evident that, whatever other causes may now be deterring investment in forest growing, no widespread development can be expected so long as the present methods of taxation continue. Even in these regions there are those who are interested in forest growing, and their number may be expected to increase. To such the existing tax system presents what may be in many cases an insuperable obstacle.

The goal of tax reform, from the viewpoint of the public interest in the forests, is such a system of public finance and taxation as will limit the tax burden to the requirements of efficient and economical government and will impose it by methods which, while requiring a just contribution from the owners of forest property, will place no special obstacle (beyond what any just tax must impose) in the way of the best use of the forests and forest lands from the standpoint of the public interest. In striving toward this goal, it is necessary to keep in view, not merely the forests and their taxes, but the whole structure of American State and local finance, including the public functions for which tax money is spent and the tax contributions of all elements of the community. Forest-tax reform should thus be based on broad principles; it should be not opportunistic but farsighted, destined to fit the taxation of the forests into a sound and enduring American system of State and local finance. To this end the following suggestions are offered for the consideration of the people and the legislatures of the several States.

Although it has been shown that the property tax is chiefly responsible for the special problem of forest taxation, there is possibility of improvement with respect to certain other taxes. Recommendations with reference to these other taxes will be reviewed before summarizing proposed improvements and modifications in the property tax.

The income tax, in the usual forms now in use, is generally favorable to forestry. There is, however, room for eventual improvement through giving recognition to methods of accounting for depletion which will be better adapted to sustained yield forests. This is not a problem that demands immediate attention.

Payment of death taxes should be allowed in installments equal to at least 1 percent of the value of the forest each year until the amount due is paid or until the death of the beneficiary. Should the beneficiary die before all the installments have been paid, the remaining

installments should be canceled, the property reappraised, and the death taxes levied upon a new base. In any case, if timber is being cut, the annual installment should be not less than the product of the tax rate times the value of the year's cut.

The use of a general severance tax on forest property, imposed in addition to whatever other taxes are borne by property generally, is not recommended. If it were not for the practical difficulties of administration, a special severance tax might be used for the purpose of exacting a proper contribution from destructive operations, or from properties located in undeveloped regions.

As regards the property tax and its modification, with which subject this report is chiefly concerned, certain general conclusions, mostly negative in character, may first be noted. (1) Assessments fixed by statute and specific taxes of so much per acre fixed by statute are not recommended. (2) Special methods of taxation imposed in accordance with a classification of properties based upon the intentions of their owners are not advised. (3) Special forest-tax laws should be of general application, without requiring any unusual initiative on the part of forest owners. (4) Tax measures in favor of forestry should not be given the character of a contract between the State and the taxpayer for the sake of protecting a present law from amendment by a future legislature. (5) Special tax subsidies to forests are not recommended, either as compensation for regulatory requirements, which could better be provided by direct means, or as inducement to adopt particular measures of forest practice.

It has been shown that it is chiefly the property tax which makes the taxation of forests a special problem, and analysis of the working of the property tax shows that its adverse effects are due in part to its faulty admininistration and in part to certain features inherent in its nature. The property tax has, throughout the history of the United States, been the chief source of State and local revenue, and in spite of its recognized defects it is likely to continue as an important source of revenue for most of the States and as the chief source of local revenue in practically all of the States. Whatever changes the property tax may undergo in the future, it is almost certain that real estate will continue to be subject to it. There is little foundation, therefore, for the hope that forest property may be removed entirely from the realm of the property tax.

Foremost in the program of tax reform should therefore come measures for improving the operation of the property tax, to the end that all property be assessed at its full value as now required by law (or at such specific fraction of full value as is stated in the law). The most approved devices for arriving at sound assessment of taxable property should be introduced, such as maps, surveys, and sales data. Scientific methods of assessment, developed already in many cities and a few local jurisdictions, should be used in the assessment of rural property so far as they are applicable. Setting a minimum amount below which no person's tax might fall would tend to prevent overassessment of the smaller properties. Cooperation with the taxpaying public and exercise of tact, judgment, and courage should be required of the assessing officials.

The above-mentioned improvements in assessment practice can be expected only to a limited degree without thoroughgoing reform of assessment organization and personnel. It is recommended that

assessment be in large measure taken out of the hands of the minute local jurisdictions which now generally administer it and be centralized in the hands of jurisdictions large enough to maintain an efficient organization of full-time, well-paid, expert assessors appointed on the basis of merit and free from local interference. In general, State assessment would appear to be the ideal; and the next best step, centralization by groups of counties or towns. Where complete centralization of assessment is not attainable, or during the period while this result is being brought about, improvement may be obtained by an increased degree of State control of and assistance to local assessment.

Changes are necessary in the haphazard methods of tax collection which prevail in many States. Efficient collection procedure vigorously enforced, together with accurate assessment, might do much to reduce the widespread and growing evil of tax delinquency and should go far toward eliminating this evil in normal times.

Sound methods in the administration of the property tax would go a long way toward providing more suitable forest taxation. Nevertheless, they would not wholly solve this problem, since the very nature of the property tax imposes disabilities upon certain types of forest enterprise. To meet these inherent defects of the property tax, more fundamental changes are required.

Recognition of the weaknesses of the property tax, both structural and administrative, might conceivably lead to the suggestion that the forests be cut loose entirely from the property tax through substitution of a yield tax. Widespread discussion of the yield tax and some legislative experimentation during the past three decades, together with the general history of property taxation throughout the world, would appear to indicate the futility of seeking to introduce the pure yield tax in place of the property tax on forest properties. If the yield tax is to be considered at all, it will doubtless be that form which substitutes a yield tax for the property tax upon the trees, while leaving the land subject to the property tax. Such a plan has certain distinct advantages from the viewpoint of the forest owner, but certain disadvantages as well. Furthermore, its adaptation to local finance presents serious difficulties. These difficulties would apparently require a State-wide administration for the benefit of the various local subdivisions concerned. The entire yield tax would preferably be retained in the State treasury, with a corresponding assumption by the State of functions formerly performed at local expense. Any attempt to distribute the proceeds of such a tax among the local jurisdictions raises problems, the solution of which appears not to have been found. The lack of a clear-cut method of determining the rate of the yield tax is also a serious weakness. In short, the yield-tax plan appears distinctly inferior to other possible solutions of the problem, and it is therefore not recommended. The fact that after 20 years of experiment no State has yet succeeded in setting up a satisfactory yield tax of broad application is evidence of the difficulties involved.

It has also been proposed that forest property be relieved from the property tax by the simple device of exempting all immature timber from taxation. As such an exemption would grant a greater tax concession than can be justified, this proposal is not recommended.

Three plans for meeting the defects of the property tax as related

to forests are suggested. It should be especially noted, however, that the adoption of any one of these plans would in no wise reduce the importance of those reforms in the administration of the property tax which have been recommended. On the other hand, any one of these plans may be added to the existing tax system with favorable results, without waiting for the accomplishment of the recommended reforms which are essential to a complete solution of the forest-tax problem.

The first of these three recommended plans is the adjusted property tax. This plan would give every forest property the income from which is deferred for more than 1 year a tax that would be less than the usual property tax. The amount of the reduction would be proportional to the deferment of income. This result would be accomplished by means of a deduction from assessed value that would be cumulative as long as income were deferred but which would be diminished and in the ordinary case eventually eliminated through the receipt of income. The amount of the deduction from assessed value to be accumulated in any 1 year during the periods of income deferment would be regulated by the assessed value of the property, a rate of interest fixed by law, and the taxes actually levied.

The effect of the adjusted property tax would be to approximate the burden of an income (or net-yield) tax. While recognizing that this plan, like any practical device, necessarily falls short of perfection, it is believed that it would come closer than any other practicable device to complete correction, under all conditions, of the inherent defects of the property tax as applied to forests. The administrative obstacles are readily surmountable and would diminish with general improvement in the administration of the property tax.

The second of the three recommended plans would offer deferred-yield forests a reduction in tax burden very similar in amount to that provided under the adjusted property tax plan. This result would be accomplished by deferring all of the required property tax payments on timber value until income was realized through the cutting or sale of timber and other forest products. The loss in tax revenues would be made good through payments from a timber-tax fund to be provided by the State. Upon realization of income from timber, this fund would be reimbursed by collecting the deferred timber taxes, without interest, at a rate not to exceed a fixed percentage of the stumpage value of the forest products cut or sold. This plan has the advantage of giving all the immediate tax relief granted by the yield-tax plan, without incurring any serious revenue difficulties. The net cost to the public would not be very great at the outset, and it would eventually be reduced through decreasing deferment of income from timber by wider application of sound forest management.

The third of the three recommended plans would offer second-growth forests an adjustment of the property tax to the normal degree of income deferment by means of differential timber taxation. A reduction factor, usually uniform over the State, would be applied to timber assessments. This factor would depend on a standard income cycle, representing normal deferment of income, which would be determined at a figure readily attainable by a large number of forest properties throughout the State. The reduction factor would be so calculated as to give forest properties which were subject to the standard degree of income deferment a tax burden approximately equal to that of an income or net-yield tax. The reduction factor

would be prescribed by law. Forests subject to a deferment of income greater than normal would be obliged to bear a heavier tax burden than that of the income tax, but less than that of the property tax. On the other hand, forests which were so regulated as to receive substantial income at shorter intervals than indicated by the standard income cycle would enjoy a lighter tax burden than that of the income tax.

This plan would also grant differential timber taxation to old-growth forest properties by allowing them a graduated reduction factor applicable to timber of 5 percent for each year from the effective date, with a maximum equal to the second-growth reduction factor. This reduction would at the outset apply only to forests which were completely withheld from commercial operation. After a transition period of at least 20 years, all old-growth forests would be given benefit of the same reduction factor as second-growth forests. In States where old-growth forests are of little importance as an element in the tax base, they would be treated in the same way as second-growth forests from the beginning.

It is evident that the differential timber tax would offer a less perfect adjustment than the other recommended plans to all the degrees of income deferment that characterize forest properties within a State. While that disadvantage is recognized, this plan is believed to deserve favorable consideration because of its simplicity and the ease with which it may be added to the existing tax system.

In brief, three plans are recommended for so modifying the property tax as to make it suitable to forest properties. The adjusted property tax involves some difficulties in application, but presents the closest approach to a perfect device. The deferred timber tax requires State financing, but offers the greatest immediate tax relief consistent with equitable taxation. The differential timber-tax plan is a rougher method for adjusting the property tax to the existing conditions of income deferment in forest properties but is extremely simple of application.

After all is done by way of improving the operation of the property tax and counteracting its adverse effects upon the forests, forest taxes are bound to be high so long as costs of local government are high. It is recommended, therefore, that the States give careful consideration to measures for reducing this cost, through reorganization of local governments, disorganization of local governments in sparsely settled areas, and control of further land settlement; through redistribution of governmental functions, analysis and coordination of governmental services, and their curtailment where the service appears not worth the cost; through improved administration of local government, better financial practices, State supervision and guidance, and more effective popular control.

These recommendations present a program which, if adopted by the States, should go far to solve the forest-tax problem. Obviously this is not the only problem confronting American forestry. But it is a serious problem and one which, if not solved, will become more serious with time. Its solution will be an achievement worthy of the best efforts of the people and full of promise for the ultimate development of American forestry.

LITERATURE CITED

PART 1

(1) Great Britain, Ministry of Reconstruction.
1918. final report of forestry subcommittee of reconstruction committee. 105 pp., illus. London.

PART 2

(2) Johnson, E. H.
1932. tax administration in georgia. Natl. Tax Assoc. Proc. 24: 14–21.

(3) National Industrial Conference Board, Inc.
1932. cost of government in the united states, 1929–1930. 167 pp. New York.

(4) Pond, C. B.
1931. full value real estate assessment as a prerequisite to state aid in new york. N. Y. State Tax Comn. Spec. Rept. 3 189 pp., illus.

(5) United States Department of Commerce, Bureau of the Census.
1932. financial statistics of states for 1929. 123 pp. Washington, D. C.

(6) ———
1932. fifteenth census of the united states: 1930. v., illus. Washington, D. C.

(7) United States Treasury Department.
1932. annual report of the secretary of the treasury on the state of the finances for fiscal year ended june 30, 1932. 490 pp. (U. S. Treas. Dept. Doc. 3049.)

PART 3

(8) Fisher, I.
1906. the nature of capital and income. 411 pp., illus. New York.

(9) Hiley, W. E.
1930. the economics of forestry. 256 pp., illus. Oxford, England.

(10) Zon, R.
1928. timber growing and logging practice in the lake states. measures necessary to keep forest land productive and to produce full timber crops. U. S. Dept. Agr. Bull., 1496, 64 pp., illus.

PART 4

(11) Arthur, W.
1913. the new building estimator. 705 pp., illus. New York.

(12) California Tax Commission.
1929. final report. . . . 317 pp., illus. [Sacramento.]

(13) Clarke, G B.
1930. the assessment system in minnesota in its relation to equality of taxation. Jour. Farm Econ. 12:573–587, illus.

(14) Connecticut Tax Commissioner.
1922. report for 1921–22. 194 pp., illus. Hartford.

(15) ———
1931. methods of relief by greenwich, connecticut, from inequitable distribution of local tax burden. Compiled by J. R. Donahue. Taxation Doc. 241, 35 pp. Hartford.

(16) Daugherty, M. M.
1928. the assessment and equalization of real property in delaware. Del. Agr. Expt. Sta. Bull. 159, 51 pp., illus.

(17) Dreesen, W. H.
1928. A STUDY IN THE RATIOS OF ASSESSED VALUES TO SALE VALUES OF REAL PROPERTY IN OREGON. Oreg. Agr. Expt. Sta. Bull. 233, 45 pp., illus.
(18) Englund, E.
1924. ASSESSMENT AND EQUALIZATION OF FARM AND CITY REAL ESTATE IN KANSAS. Kans. Agr. Expt. Sta. Bull. 232, 70 pp., illus.
(19) Eveland, H. L.
1925. THE VALUATION AND ASSESSMENT OF FARM LANDS. Natl. Tax Assoc. Proc. (1924.) 17:201–205.
(20) Gabbard, L. P.
1932. INEQUALITIES IN TAXATION OF FARM LANDS AND CITY PROPERTY DUE TO SCOPE AND METHOD OF ASSESSMENT. Tex. Agr. Expt. Sta. Bull. 458, 28 pp., illus.
(21) Haas, G. C.
1922. SALES PRICES AS A BASIS FOR FARM LAND APPRAISAL. Minn. Agr. Expt. Sta. Tech. Bull. 9, 31 pp., illus.
(22) Hammar, C. H.
1932. THE ACCURACY AND FLEXIBILITY OF RURAL REAL ESTATE ASSESSMENT N MISSOURI. Mo. Agr. Expt. Sta. Research Bull. 169, 68 pp., illus.
(23) Illinois Tax Commission.
1930. TENTH ANNUAL REPORT, 1928. 570 pp., illus. Springfield.
(24) Iowa General Assembly, Joint Legislative Committee on Taxation.
1930. . . . REPORT OF JOINT LEGISLATIVE COMMITTEE ON TAXATION AND STATE BOARD OF ASSESSMENT AND REVIEW. 79 pp. Des Moines.
(25) Iowa Laws, Statutes, etc.
1930. REVENUE LAWS OF IOWA. Compiled by J. W. Foster. 424 pp.
(26) Jensen, J. P.
1931. PROPERTY TAXATION IN THE UNITED STATES. 532 pp. Chicago.
(27) Kittredge, J., Jr.
1925. A PROPOSED CLASSIFICATION OF THE FOREST TYPES OF THE LAKE STATES. Jour. Forestry 23:890–895.
(28) Lacy, A. J.
1931. [COSTLY LOCAL GOVERNMENT.] Pub. Dollar 4 (3):5.
(29) ———
1931. NATIONAL ASSOCIATION OF REAL ESTATE BOARDS. N. Y. Times, Mar. 8, 1931, sec. XI, p. 8.
(30) Louisiana Tax Commission.
1931. FOURTEENTH ANNUAL REPORT, 1930. 275 pp. Baton Rouge.
(31) Lutz, H. L.
1930. THE GEORGIA SYSTEM OF REVENUE, ITS PROBLEMS AND THEIR REMEDIES; A PLAN OF REVISION AND REORGANIZATION. 126 pp. Atlanta.
(32) Maine Board of State Assessors.
1927. LAWS RELATING TO TAXATION. 137 pp. Augusta.
(33) Michigan Board of State Tax Commissioners.
1922–31. REPORTS 12, 14, 15, 16.
(34) Michigan State Board of Equalization.
1925. PROCEEDINGS, 1925. 152 pp. Lansing.
(35) Minnesota State Tax Commission.
1920. SEVENTH BIENNIAL REPORT. 272 pp., illus. St. Paul.
(36) Mississippi State Tax Commission on Assessments.
1928. REPORT ON ASSESSMENTS FOR THE TAX YEAR 1928. 245 pp.
(37) National Industrial Conference Board, Inc.
1924. THE TAX PROBLEM IN WISCONSIN. 163 pp. New York.
(38) ———
1930. STATE AND LOCAL TAXATION OF PROPERTY. 245 pp., illus. New York.
(39) Nelson, R. W., and Mitchell, G. W.
1931. ASSESSMENT OF REAL ESTATE IN IOWA AND OTHER MIDWESTERN STATES. Iowa Univ., Bur. Business Research Study 10, 272 pp., illus.
(40) Nevada State Range Commission.
1931. REPORT TO THE LEGISLATURE, MAR. 4, 1931. Stockgrower 12 (6):8–9.

(41) Newton, R. W., and Hedrick, W. O.
1928. farm real estate assessment practices in michigan. Mich. Agr. Expt. Sta. Spec. Bull. 172, 80 pp.
(42) New York Special Joint Committee on Taxation and Retrenchment.
1923. report. Leg. Doc. 55, 310 pp., illus.
(43) New York State Tax Commission.
1931. annual report, 1929. 412 pp. Albany.
(44) Ohio Joint Legislative Committee on Economy and Taxation.
1926. report. 270 pp., illus. Columbus.
(45) Oregon Laws, Statutes, etc.
1920. oregon laws. Compiled and annotated by C. P. Olson.
(46) ———
1927. oregon school laws. Prepared by the Superintendent of Public Instruction. 215 pp.
(47) Oregon Superintendent of Public Instruction.
1927. twenty-seventh biennial report. 79 pp., illus.
(48) Rhode Island Tax Officials' Association.
1931. report nineteenth annual meeting. R. I. Tax Off. Assoc. Bull. 18, 48 pp.
(49) Simpson, H. D.
1929. the tax situation in illinois. 104 pp., illus. Chicago.
(50) United States Department of Commerce, Bureau of the Census.
1924. digest of state laws relating to taxation and revenue, 1922. 544 pp. Washington, D. C.
(51) ———
1925. estimated national wealth—wealth, public debt, and taxation: 1922. 34 pp. Washington, D. C.
(52) United States Treasury Department, Bureau of Internal Revenue.
1929. regulations 74, income tax, revenue act of 1928. 463 pp.
(53) Wager, P. W.
1928. county government and administration in north carolina. 447 pp., illus. Chapel Hill.
(54) Washington State Tax Commission.
1926. first biennial report, 1925–26. 156 pp.
(55) Washington State Tax Investigation Commission.
1930. report. 82 pp. Olympia.
(56) Weaver, F. P.
1931. the rural tax problem in pennsylvania. Pa. Agr. Expt. Sta. Bull. 263, 35 pp., illus.
(57) West Virginia Special State Tax Commission.
1927. report. 204 pp., illus.
(58) Wisconsin State Tax Commission.
1924–32. reports for the years 1924; 1930; 1932.
(59) Yount, H. W.
1927. farm taxes and assessments in massachusetts. Mass. Agr. Expt. Sta. Bull. 235, pp. 85–120, illus.
(60) Zangerle, J. A.
1929(?). analysis of commonly accepted evidences of real estate for purposes of taxation. 13 pp. Chicago.

(*See also* Johnson (*2*) and Pond (*4*) cited in part 2.)

PART 5

(61) Anonymous.
1931. compromising taxes destroys incentive to pay. Bond Buyer 83 (2003): 5.
(62) Bird, F. L.
1934. the four year trend in tax delinquency. Natl. Munic. Rev. 23: 110–116.
(63) Chamber of Commerce of the United States, Taxation Division, Finance Department.
1930. assessments, a report of the committee on state and local taxation and expenditures. Ed. 1, no. 1515, 35 pp.
(64) Chatters, C. H.
1928. the enforcement of real estate tax liens. 51 pp. New York.

(65) CONNECTICUT TAX COMMISSIONER.
1927. INFORMATION RELATIVE TO THE ASSESSMENT AND COLLECTION OF TAXES. Pub. Doc. 48, Taxation. Doc. 227, 138 pp. Hartford.
(66) CUNNINGHAM, R. N., and FRANK, B.
1933. TAX DELINQUENCY AND THE CUT-OVER LAND PROBLEM IN NORTHERN MINNESOTA. Minn. Univ. Studies in Econ. and Business 4: 112–146.
(67) DEVRIES, W. E.
1930. HOW MICHIGAN HANDLES ITS STATE OWNED LANDS. Jour. Land and Pub. Utility Econ. 6: 119–126, illus.
(68) FLORIDA STATE COMPTROLLER.
1930. REPORT FOR THE FISCAL YEAR ENDING JUNE 30, 1930. 507 pp., illus.
(69) HIBBARD, B. H., HARTMAN, W. A., and SPARHAWK, W. N.
1929. USE AND TAXATION OF LAND IN LINCOLN COUNTY, WISCONSIN. Wis. Agr. Expt. Sta. Bull. 406, 38 pp., illus.
(70) ——— SWENEHART, J., HARTMAN, W. A., and ALLIN, B. W.
1928. TAX DELINQUENCY IN NORTHERN WISCONSIN. Wis. Agr. Expt. Sta. Bull. 399, 28 pp., illus.
(71) KANSAS TAX CODE COMMISSION.
1929. REPORT . . . 175 pp., illus. Topeka.
(72) MANNING, R. E.
1933. STATE TAX LEGISLATION, 1933. Natl. Tax Assoc. Bull. 18: 176–178, 202–205, 240–243, 260–263.
(73) MICHIGAN AUDITOR GENERAL.
1909–28. REPORTS, 1900; 1905; 1910; 1915; 1917; 1920; 1925; 1927; 1928.
(74) MICHIGAN STATE TAX COMMISSION.
1907–28. BIENNIAL REPORTS, 1907–8; 1909–10; 1911–12; 1921–22; 1925–26; 1927–28.
(75) MINNESOTA STATE AUDITOR.
1925. REPORT TO THE LEGISLATURE.
(76) ———
1926. BIENNIAL REPORT. 1925–26.
(77) ———
1927. THE TRUST FUND POLICY FOR MINNESOTA. Pamphlet.
(78) NEW HAMPSHIRE STATE TAX COMMISSION.
1932. THE CITIZEN, THE COLLECTOR, AND THE CITY. 20 pp. Concord.
(79) NEW YORK STATE TAX COMMISSION.
1929. ANNUAL REPORT, 1928. 453 pp. Albany.
(80) NORTH CAROLINA STATE TAX COMMISSION.
1928–30. REPORTS.
(81) OREGON TAX COMMISSION.
1927–29. BIENNIAL REPORTS 9–10.
(82) STAUBER, B. R.
1931. THE FARM REAL ESTATE SITUATION, 1930–1931. U. S. Dept. Agr. Circ. 209, 67 pp.
(83) STAUFFER, W. H.
1931. TAXATION IN VIRGINIA. 309 pp., illus. New York.
(84) WASHINGTON STATE BOARD OF EQUALIZATION.
1921–28. MINUTES AND OFFICAL PROCEEDINGS, 1926, 1928. Olympia.
(85) WILSON, F. G., and TRENK, F. B.
1933. LOCAL GOVERNMENTAL CONTROL IN LAND UTILIZATION AND FORESTRY. Jour. Forestry 31: 796–806, illus.

(*See also* Jensen (*26*) and National Industrial Conference Board, Inc. (*38*) cited in part 4).

PART 6

(86) ANONYMOUS.
1929. FOREST LANDS IN OREGON—PRIVATELY OWNED. Oreg. Voter. 59(4): 4.
(87) COLORADO TAX COMMISSION.
1929. SEVENTEENTH ANNUAL REPORT, 1928. 124 pp.
(88) IDAHO STATE BOARD OF EQUALIZATION.
1929. PROCEEDINGS. 179 pp.
(89) MAINE BOARD OF STATE ASSESSORS.
1928. MAINE STATE VALUATION, 1928. 284 pp. Augusta.
(90) ———
1929. THIRTY-SEVENTH AND THIRTY-EIGHTH ANNUAL REPORTS, 1927–28. 244 pp.

(91) Mississippi State Tax Commission.
1929. report, 1928–29. 245 pp.
(92) Montana State Board of Equalization.
1928. third biennial report for the period july 1, 1926–june 30, 1928. 143 pp.
(93) New Hampshire State Tax Commission.
1928. eighteenth annual report. 179 pp. Concord.
(94) United States Department of Commerce, Bureau of the Census.
1927. united states census of agriculture, 1925. Parts 1, 2, and 3, pp. 1318, 1328, and 512, respectively, illus. Washington, D. C.
(95) ———
1932. financial statistics of cities having a population of over 30,000, 1929. 515 pp., illus. Washington, D. C.
(96) United States Department of Commerce, Bureau of Foreign and Domestic Commerce.
1931. statistical abstract of the united states. 53, 898 pp. Washington, D. C.
(97) Washington State Tax Commission.
1928. second biennial report. 153 pp.
(98) Wisconsin Tax Commission.
1928. report . . . 269 pp., illus.

(*See also* Louisiana Tax Commission (*30*), and United States Department of Commerce, Bureau of the Census (*51*) in part 4; and Oregon Tax Commission (*81*) and Washington State Board of Equalization (*84*) in part 5.)

PART 7

(99) Coombs, W.
1930. taxation of farm property. U. S. Dept. Agr. Tech. Bull. 172, 75 pp., illus.
(100) Dana, S. T.
1930. timber growing and logging practice in the northeast. measures necessary to keep forest land productive and to produce full timber crops. U. S. Dept. Agr. Tech. Bull. 166, 112 pp., illus.
(101) Fairchild, F. R.
1909. taxation of timber lands. Natl. Conserv. Comn. Rept. 2: 581–632.
(102) Forbes, R. D., and Stuart, R. Y.
1930. timber growing and logging and turpentining practices in the southern pine region. U. S. Dept. Agr. Tech. Bull. 204, 114 pp., illus.
(103) Kittredge, J., Jr.
1929. forest planting in the lake states. U. S. Dept. Agr. Bull. 1497, 89 pp., illus.
(104) Maine Department of Education.
1930. bulletin of information. 25 pp.
(105) Stuart, R. Y.
1931. report of the forester. U. S. Dept. Agr., Forest Serv. 82 pp.
(106) Toumey, J. W.
1932. the yale demonstration and research forest near keene, new hampshire. Yale Univ. School Forestry Bull. 33, 106 pp., illus.
(107) United States Department of Agriculture, Forest Service.
1929. volume, yield, and stand tables for second-growth southern pines. U. S. Dept. Agr., Misc. Pub. 50, 202 pp., illus.
(108) United States Department of Commerce, Bureau of the Census.
1930. fifteenth census of the united states, agriculture, general statistics. summary for the united states, 1929 and 1930. 111 pp., illus.
(109) United States Treasury Department, Bureau of Internal Revenue.
1925–31. statistics of income, 1923, 1924, 1926, 1927, 1928, 1929.

(*See also* National Industrial Conference Board, Inc. (*3*), Weaver (*56*), Michigan State Tax Commission (*74*), North Carolina State Tax Commission (*80*), Oregon Tax Commission (*81*), Washington State Board of Equalization (*84*), Wilson and Trenk (*85*), Anonymous (*86*), Maine Board of State Assessors (*89*, *90*), New Hampshire State Tax Commission (*93*), United States Department of Com-

merce, Bureau of the Census (*94*), Bureau of Foreign and Domestic Commerce (*96*), and Washington State Tax Commission (*97*).)

PART 8

(110) Brunner, E. de S., and Kolb, J. H.
1933. rural social trends. 386 pp., illus. New York.
(111) Byrd H. F.
1931. good roads paid for. Better Counties 1 (1): 20–26, illus.
(112) Catherwood, M. P.
1932. rural school costs and taxes in new york. preliminary report. N. Y. Agr. (Cornell) Col., Dept. Agr. Econ. and Farm Mangt. 25 pp., illus.
(113) Chamber of Commerce of the United States of America.
1928. capital expenditures. Report of Committee on State and Local Taxation and Expenditures, 1927–28. Finance Dept. Bull. 5, 30 pp.
(114) ———
1928. relations between state and local governments. Finance Dept. Bull. 6, 27 pp.
(115) Clayton, C. F., and Peet, L. J.
1933. land utilization as a basis of rural and economic organization, based on a study of land utilization and related problems in 13 hill towns of vermont. Vt. Agr. Expt. Sta. Bull. 357, 144 pp., illus.
(116) Collins, A.
1931. toward one governing body. Pub. Mangt. 13: 327.
(117) Compton, R. T.
1929. fiscal problems of rural decline. a study of the methods of financing the costs of government in the economically decadent rural areas of new york state. N. Y. State Tax Comn. Spec. Rept. 2, 283 pp., illus.
(118) Fairlie, J. A.
1925. state supervision of local finance. Amer. Polit. Sci. Rev. 19: 146–147.
(119) ——— and Kneier, C. M.
1930. county government and administration. 585 pp., New York.
(120) Gray, L. C., and Baker, O. E.
1930. land utilization and the farm problem. U. S. Dept. Agr. Misc. Pub. 97, 54 pp., illus.
(121) Howe, C. D.
1934. [remarks on transfer of settlers from wilderness areas.] Jour. Forestry 32: 147.
(122) Institute for Government Research of the Brookings Institution.
1930. report on a survey of the organization and administration of county government in north carolina . . . 152 pp., illus. Washington, D. C.
(123) ———
1932. report on a survey of the organization and administration of the state, county, and town governments of new hampshire. 633 pp., illus. Concord, N. H.
(124) Institute of Public Administration, Bureau of Municipal Research
1932. the reorganization of local government in the state of new york to meet modern conditions . . . 23 pp. New York.
(125) Jones, H. P.
1932. unrest in county government. Natl. Munic. Review 21: 469–472.
(126) Kendrick, M. S.
1928. the collection of general property taxes in towns, townships, and counties in the united states. Natl. Tax Assoc. Bull. 14: 8–14.
(127) Kilpatrick, W.
1923. state supervision of municipal accounts. Natl. Munic. Rev. 12: 247–254.
(128) ———
1931. tax control—is the indiana plan the way out? N. J. Municipalities 8 (12): 22–24, 36–40. Reprinted in Minn. Municipalities 17: 110–117.

(129) Kilpatrick, W.
1932. tax control—local community review of finances. N. J. Municipalities 9 (1): 14–17, 39–43. Reprinted in Ill. Munic. Rev. 9: 108–113, 115; and in Minn. Municipalities 17: 169–178.
(130) Klemmedson, G. S.
1930. cost of public education from viewpoint of agriculture in larimer county, colorado. Colo. Agr. Expt. Sta. Bull. 368, 66 pp., illus.
(131) Lang Plantation.
1929. annual report of plantation officers. 7 pp. Augusta, Maine.
(132) Leech, C. G.
1930. the county unit in school administration. Amer. School Bd. Jour. 81: 37–39, 112, 114, illus.
(133) Leland, S. E.
1930. the relation of federal, state, and local finance. Natl. Tax Assoc. Proc. 23: 94–106.
(134) Lowden, F. O.
1931. the problems of rural government. Amer. Country Life Conf. Proc. 14: 1–9.
(135) Maine Board of State Assessors.
1927. laws relating to taxation. Secs. 58–61.
(136) Maine Commissioner of Education.
1928. report for the school biennium ending june 30, 1928. 147 pp., illus.
(137) Maine Department of Agriculture.
1925. agricultural census of maine by towns. Maine Dept. Agr. Bull., 128 pp., illus.
(138) Maine Department of Education.
1930. bulletin of information. 25 pp.
(139) Maine Forest Service.
1930. the forest manual, 1930. 76 pp. Augusta.
(140) Manning, J. W.
1928. county consolidation in tennessee. Natl. Munic. Rev. 17: 511–514.
(141) ———
1932. the progress of county consolidation. Natl. Munic. Rev. 21: 510–514.
(142) Manny, T. B.
1930. rural municipalities; a sociological study of local government in the united states. 343 pp., illus. New York.
(143) Massachusetts Bureau of Statistics.
1918. annual reports on the statistics of municipal finance. 11, 1918; 16, 1923.
(144) Mississippi Tax Commission on Assessments.
1927. report for the tax year 1926 and income tax and inheritance tax collections for 1927. 191 pp.
(145) National Tax Association.
1927. digest and index, 1907–1925. Prepared by R. G. Blakey and G. C. Blakey. 519 pp. New York.
(146) New Jersey Commission to Investigate County and Municipal Taxation and Expenditures.
1931. a discussion of some factors contributing to the high cost of local government, and a suggested program of revision and reconstruction. Rept. 1, sec. 3, 101 pp.
(147) New York Special Joint Committee on Taxation and Retrenchment.
1923. report. Leg. Doc. 55, 310 pp., illus.
(148) New York State Commission for the Revision of the Tax Laws.
1932. report. Memo. 10, 106 pp.
(149) New York State Tax Commission.
1928. annual report, 1927. Leg. Doc. 11, 691 pp.
(150) North Carolina Department of Public Instruction.
1931. transportation of public school children. State School Facts 7(6):1.
(151) Ohio Joint Legislative Committee on Economy and Taxation.
1926. report. 270 pp., illus.

(152) Oregon Property Tax Relief Commission.
1928. digest and summary of the subcommittee on reduction of local taxation. 55 pp.
(153) ———
1929. report. 75 pp.
(154) President's Conference on Home Building and Home Ownership.
1932. home finance and taxation; reports of the committees on finance and taxation. Pubs. v. 2, 278 pp., illus. Washington, D. C.
(155) Reed, T. H.
1932. rural social governments found unequal to burdens. N. Y. Sunday Times, Jan. 24, 1932.
(156) Roosevelt, F. D.
1929. address . . . Natl. Tax Assoc. Proc. 22:319–327.
(157) Smith, A. E.
1927. the governor's message to the legislature. jan. 5. 46 pp. Albany, N. Y.
(158) Swift, F. H.
1931. federal and state policies in public school finances in the united states. 472 pp. New York.
(159) Tax Research Foundation.
1933. federal and state tax systems. 4th. 209 pp. Chicago.
(160) U. S. Department of Commerce, Bureau of the Census.
1930. number and distribution of inhabitants in maine. Pop. Bull., First Series. 13 pp.
(161) United States Department of the Interior, Bureau of Education.
1926. a manual of educational legislation. U. S. Bur. Ed. Bull. 22, 67 pp., illus.
(162) ———
1932. biennial survey of education, 1928–1930. U. S. Bur. Ed. Bull. 20, v. 1, 807 pp.
(163) Vermont Commission on Country Life.
1931. rural vermont; a program for the future, by two hundred vermonters. 385 pp., illus. Burlington.
(164) Virginia Commission on County Government.
1931. report . . . to the general assembly of virginia. 112 pp., illus. Richmond. (S. Doc. 3.)
(165) Wager, P. W.
1931. can local self-government be preserved in our rural areas. Amer. Country Life Conf. Proc. 14: 54–61.
(166) ———
the case for the county manager. Pub. Mangt. 12(3): 78–82.
(167) Wallace, S. C.
1928. state administrative supervision over cities in the united states. 288 pp. New York.
(168) Wehrwein, G. S., and Allin, B. W.
1933. possible farm tax reduction through changes in local government. Wis. Agr. Expt. Sta. Spec. Bull., 17 pp.
(169) Wilson, F. G., and Trenk, F. B.
1933. local governmental control in land utilization and forestry. Jour. Forestry 31: 796–806.
(170) Wisconsin University, Extension Service of the College of Agriculture.
1929. making the most of marinette county land. Wis. Col. Agr Ext. Serv. Spec. Bull., 23 pp., illus.
(171) ———
1930. making the most of ashland county land. Wis. Col. Agr. Ext. Serv. Spec. Circ., 30 pp., illus.
(172) ———
1931. making the most of taylor county land. Wis. Col. Agr. Ext. Serv. Spec. Circ., 26 pp., illus.
(173) ———
1931. making the most of oneida county land. Wis. Col. Agr. Ext. Serv. Spec. Circ., 30 pp., illus.
(174) ———
1931. making the most of forest county land. Wis. Col. Agr. Ext. Serv. Spec. Circ., 24 pp., illus.

(175) Wisconsin University, Extension Service of the College of Agriculture.
1932. making the most of washburn county land. Wis. Col. Agr. Ext. Serv. Spec. Circ., 31 pp., illus.
(*See also* Pond (*4*), Wisconsin State Tax Commission (*58*), and Cunningham and Frank (*66*).)

PART 9

(176) Anonymous.
1819. [the new proposed system of revenue.] Letter to the Courant signed "Publius." Conn. Courant 55 (2821, Feb. 16): [3].
(177) Akerman, A.
1905–6. annual reports [state forester] 1–2. Mass. Gen. Court, H. Doc. 113, 1905; 350, 1906.
(178) Black, S.
1860. governor's message (dec. 6). Nebr. Terr., 6th sess., 1859–60, Council Jour., pp. 8–22. H. Jour., pp. 10–24.
(179) ———
1861. governor's message (dec. 4). Nebr. Terr., 7th sess., 1860–61, Council Jour., pp. 8–13. H. Jour., pp. 18–23.
(180) California State Board of Equalization.
1930. report, 1929–30. 133 pp.
(181) Chittenden, A. K., and Irion, H.
1911. the taxation of forest lands in wisconsin. Wis. State Bd. Forestry Pub., 80 pp. Madison.
(182) Connecticut General Assembly, October Session, 1818.
1819. the tax bill, as altered and amended at the last session of the assembly. Conn. Courant 55 (2817, Jan. 19): [1].
(183) Connecticut Special Committee on Taxation of Woodlands.
1913. report. Pub. Doc. (Spec. pt. 1, no. 6) 1:54.
(184) Elliott, S. B.
1906. how should our future forest lands be taxed? Forest Leaves 10:104–107. Reprinted in report of the Pa. Dept. Forestry for the years 1905–6, Off. Doc. 25, pp. 117–124. Harrisburg, 1907. Forestry and Irrigation 12: 178–183.
(185) Fernow, B. E.
1888. proper basis of forestry legislation. *In* Proceedings of the Forestry Convention, held in Grand Rapids under the auspices of the Independent Forestry Commission, January 26 and 27, 1888. 66 pp. Mich. Agr. Col. Bull. 32.
(186) Foster, J. H.
1908. taxation of forest lands. N. H. State Forestry Comn. Bien. Rept. 1907–8: 47–112.
(187) ———
1915. the present forest tax situation in new hampshire. Forestry Quart. 13: 474–480.
(188) Furnas, R. W.
1873. inaugural address (jan. 13). Nebr. Gen. Assembly, 9th sess., S. Jour., pp. 51–61; H. Jour., pp. 63–73.
(189) ———
1875. governor's message (jan. 8). Nebr. Gen. Assembly, 11th sess., S. Jour., pp. 24–59; H. Jour., pp. 35–71.
(190) Gaskill, A.
1906. how shall forests be taxed. Soc. Amer. Foresters Proc. 1:115–131.
(191) Griffith, E. M.
1908. second annual report, 1907–8. Wis. State Forester Rept. 2, 133 pp. Madison.
(192) Hough, F. B.
1878–84. report upon forestry . . . 4 v. Washington.
(193) Hubbell, J. J.
1901. relation of taxation to forestry. Mich. Engin. (Mich. Engin, Soc., Proc.) pp. 160–174. Reprinted in Mich. Forestry Comn., Steps of Progress in Michigan Forestry, pp. 27–31.
(194) Ise, J.
1920. the united states forest policy. 395 pp., illus. New Haven.

(195) Kansas Commission to Revise the General Statutes.
1923. report. 309 pp.
(196) Kinney, J. P.
1917. the development of forest law in america, a historical presentation of the successive enactments, by the legislatures of the forty-eight states . . . 254 pp., New York.
(197) Lyford, C. A., and Margolin, L.
1906. forest conditions in southern new hampshire. N. H. Forestry Commission Bien. Rept. 1905, 276 pp. Concord.
(198) Maine State Board of Agriculture.
1857–70. annual report of the secretary. 1, 10, 14.
(199) Massachusetts Committee to Consider the Laws Relative to the Taxation of Forest Lands.
1906. report. Mass. Gen. Court, 1906, H. Doc. 134. 28 pp. Reprinted as State Forester's Off., Bull. 3, 1906.
(200) Massachusetts Commission to Investigate Laws Relating to Taxation.
1909. report of the commission appointed under the provisions of chapter 142 of the resolves of 1909 to investigate the laws relating to taxation. 80 pp. Boston.
(201) Massachusetts Commission on the Taxation of Wild or Forest Land.
1914. report. Mass. Gen. Court, 1914, S. Doc. 426. 98 pp.
(202) Michigan Forestry Commission.
1901. steps of progress in michigan forestry. 60 pp. Lansing.
(203) ———
1906–8. reports for the years 1905–6, 1907–8. Lansing.
(204) Miller, F. G., [and Kellogg, F. B.]
1914. forest taxation in washington. Soc. Amer. Foresters Proc. 9:407–447.
(205) Minnesota State Forester.
1911–12. annual reports. 1–2.
(206) Nebraska Constitutional Convention.
1906–13. official report of the debates and proceedings in the nebraska constitutional convention assembled in lincoln, june 30, 1871. Pubs. Nebr. State Hist. Soc.
(206a) New Hampshire Civic Association.
1924. report of the committee on forest taxation. N. H. Forestry Comn. Bien. Rept. 1923–24 (app.): 132–133.
(207) New Hampshire Convention to Revise the Constitution.
1912. journal (june), pp. 568, 574. Manchester, N. H.
(207a) New Hampshire Farm Bureau Federation.
[1928]. inequalities of taxation unearthed by n. h. farm bureau federation. Preliminary Report of Committee on Taxation. Farm Bureau Federation News.
(208) New Hampshire Recess Tax Commission of 1927–28.
1929. report. Bound with N. H. State Tax Comn. Ann. Rept. 19, 33 pp.
(209) Pennsylvania Department of Forestry.
1907–15. reports for the years 1905–6, 1912–13.
(210) Rothrock, J. T.
1892. remove the tax from timber land. (Pa. Forestry Assoc. Primer 3.) Forest Leaves 3:152–153.
(211) ———
1894. vanishing industries. Pa. State Bd. Agr. Ann. Rept. 18: 223–226.
(212) Stevens, J., Russ, J., and Colt, E.
1817. report of the committee appointed by the legislature in may last on the subject of taxation. Conn. Courant 53(2753, Oct. 28):[2].
(213) United States Department of Commerce, Bureau of the Census.
1925. estimated national wealth—wealth, public debt, and taxation: 1922. 34 pp. Washington, D. C.
(214) Ward, C. W.
1907. taxation of timber an incentive to its destruction. Amer. Lumberman 1697:37–38.

(215) Ward, C. W.
1911. taxation of american timber holdings. Amer. Lumberman, 1910:50.
(216) Webster, N.
1817. domestic economy. Conn. Courant 53(2726, Apr. 22):[1–2].
(217) Wolcott, O., Jr.
1817. [inaugural address, may 12, 1817.] Conn. Courant 53(2730, May 20):[3].
(218) ———
1819. speech to the two houses of the legislature assembled in the senate chamber. Conn. Courant 55 (2833, May 11):[3].
(219) ———
1819. sketch of a bill providing for the assessment and collection of taxes in the state, together with an explanation of the principles on which the bill is founded. Photostat copy (negative) Lib. Cong. Reprinted, except for the sketch of the bill, in the Columbian Register (New Haven) June 5, pp. 1–2, and June 12, p. 2, 1819.
(*See also* California State Tax Commission (*12*), Fairchild (*101*).)

PART 10

(220) National Tax Association.
1925. report of the national committee on inheritance taxation to the national conference on estate and inheritance taxation. 92 pp. New York.
(221) Shere, L. and Shoup, C.
1932. use of reserve funds to stabilize revenue available for expenditure. N. Y. State Tax Comn. for the Revision of the Tax Laws Rept., Mem. 11, 27 pp.
(222) United States Treasury Department, Bureau of Internal Revenue.
1929. general counsel memorandum no. 6544, june 20. Cumulative Bull. VIII–2.
(223) ———
1929. regulation 74 relating to the income tax under the revenue act of 1928. 463 pp. Washington, D. C.
(224) ———
1931–32. statistics of income for 1929, 1930.
(225) ———
1932. revenue act of 1932, subtitle b. Part I, sec. 11.
(226) ———
1932. synopsis of income and profits tax rates, estate tax rates, credits and exemptions under the revenue acts of 1909 to 1928. 14 pp.
(227) ———
1933. regulations 77 relating to the income tax under the revenue act of 1932. 423 pp.

PART 11

GREAT BRITAIN

(228) Albion, R. G.
1926. forests and sea power; the timber problem of the royal navy, 1652–1862. 485 pp., illus. Cambridge, Mass.
(229) Augur.
1933. war of the tithe arouses england. N. Y. Times 82 (27,595, sec. 4): 2.
(230) Gardiner, R. S.
1927. the agricultural landowner's handbook on taxes, rates, tithe rentcharge and the death duties. a brief guide to law and practice in england and wales. Ed. 2, 178 pp. London.
(231) [Great Britain] Board of Trade.
1932. statistical abstract for the united kingdom. v. 77, p. 413. London.
(232) ——— Forestry Commission.
1928. report on census of woodlands and census of production of home-grown timber, 1924. 68 pp., illus. London.

(233) League of Nations.
1932. taxation of foreign and national enterprises in france, germany, spain, the united kingdom, and the united states of america. 275 pp. Geneva.
(234) Watt, H. B.
1912. early tree planting in scotland. Roy. Scot. Arbor. Soc. Trans. 26: 12–31, illus.

FRANCE

(235) Barbier, H.
1931. rapport sur la production, l'industrie et le commerce des bois, présenté au conseil national economique. Bull. du Comité des Forêts 7:472–477.
(236) Comité des Forêts.
1930. chronique forestière. Bull. du Comité des Forêts 7:234–244.
(237) ———
1930. les droits de mutation en matière forestière. Bull. du Comité des Forêts 7:298–310.
(238) ———
1933. exemption d'impôt après incendie. Bull. du Comité des Forêts 7:635–636.
(239) Dreuzy, De L.
1930. l'application de l'impôt foncier dans le cas de replantation. Bull. du Comité des Forêts 7:198–207.
(240) Epstein, M., ed.
1933. the statesman's year-book; statistical and historical annual of the states of the world. Ann. Pub. 70, 1471 pp., illus. London.
(241) [France] Minister of Finance.
1931. la revision des évaluations foncières. Bull. du Comité des Forêts 7:534–537.
(242) Gény, F.
1933. quelques directives en matière d'expertise fiscale de biens forestiers. Bull. du Comité des Forêts 8:412–416.
(243) Haig, R. M., with the assistance of Shoup, C. S., Werth, A., and Molodovsky, N.
1929. the public finances of post-war france. 463 pp., illus. New York.
(244) Jagerschmidt, J.
1933. exposé devant le groupe forestier du sénat, le 23 mars 1933. Bull. du Comité des Forêts 8:363–376, 473–484.
(245) Prieur, P., and Chaveneau, J.
1924. code de l'impôt foncier et de la taxe des biens de mainmorte. 335 pp. Paris.

GERMANY

(246) Bühler, O., ed.
1930. die gesamten reichssteuergesetze. Aufl. 5, 706 pp. Mannheim.
(247) Fairchild, F. R.
1914. the taxation of forests in europe. Mass. S. Doc. 426, pp. 58–77.
(248) Glaser, T.
1912. die berechnung des waldkapitals und ihr einfluss auf die forstwirtschaft in theorie und praxis. 131 pp., illus. Berlin.
(249) Landkreis Brieg.
1930. haushaltsplan des landkreises brieg für das rechnungsjahr 1930. 23 pp.
(250) Preussischen Statistischen Landesamt.
1929. statistisches jahrbuch für den freistaat preussen. Bd. 25, 403 pp. Berlin.
(251) Raab, F.
1931. die deutsche forstwirt im spiegel der reichsstatistik. 182 pp., illus. Berlin.
(252) Reichsfinanzministerium.
1925. Reichsgesetzblatt Jahrg. 1925, Teil 1, nr. 43, pp. 319–330.

(253) Reichsfinanzministerium.
1925. vermögensteuergesetz (artikel i des gesetzes über vermögen- und erbschaftsteuer vom 10. august 1925). 19 pp.
(254) ———
1926. umsatzsteuergesetz in der fassung der bekanntmachung vom 8. mai 1926. 14 pp.
(255) ———
1927. grunderwerbsteuergesetz in der fassung der bekanntmachung vom 11. märz 1927. 67 pp.
(256) ———
1930. Reichsgesetzblatt Teil 1, nr. 47, 2, Dezember 1930. Teil 3, kapitel 2, pars. 3–4, pp. 517–604.
(257) Reichsminister der Finanzen.
1928. reichshaushaltsrechnung. Bd. 1, 575 pp.
(258) ———
1930. verordnung zum ausgleich besonderer härten bei der besteuerung des einkommens aus land- und forstwirtschaft vom 16. november 1930. Circular S 2140–5400 III, 4 pp.
(259) ———
1931. betrifft reichsbewertungsgesetz; feststellung der einheitswerte forstwirtschaftlicher betriebe. Circ. S 3141A–40 III, 16 pp., Aug. 3, 1931; Circ. S 3141A–41 III, 28 pp., Aug. 6, 1931.
(260) ———
1931. finanzausgleichgesetz. anlage zum runderlass des reichsministers der finanzen vom 20. januar 1931. Circ. S 1612–412 IV, 44 pp.
(261) Rothkegel, W.
1931. grundsätzliches über das verfahren des bewertungsbeirats zur steuerlichen bewertung von forstbetrieben. Berichte ü. Landwirtschaft, Bd. 14, Heft 4, pp. 649–659.
(262) Statistischen Reichsamt.
1929. verwaltungsaufbau, steuerverteilung und lastenverteilung im deutschen reich. Einzelschr. zur Stat. des Deut. Reichs nr. 6, 698 pp., illus.
(263) ———
1930. die ergebnisse der forstwirtschaftlichen erhebung im jahre 1927. Stat. des Deut. Reichs, Bd. 386, 127 pp., illus.
(264) ———
1931. statistisches jahrbuch für das deutsche reich. 191 pp.
(265) Vereinigung der Deutschen Bauernvereine.
1929. die steuern und abgaben des landwirts, walldbesitzers, winzers und gärtners. Deut. Bauerntum. Heft 4, 235 pp.
(266) Weber, H.
1927. forstpolitik. *His* Handbuch der Forstwissenschaft, Aufl. 4, 770 pp. Tübingen.

SWITZERLAND

(267) Biolley, H.
1925. la taxation cadastrale des forêts. Jour. Forest. Suisse 75: 213–218. Transl. in Jour. Forestry 23: 781–790.
(268) Eidgenössische Inspektion für Forstwesen, Jagd und Fischerei.
1930. schweizerische fortstatistik. (statistique forestière.) 24 pp. [Printed in German and French.]
(269) Eidgenössischen Statistischen Amt.
1932. statistisches jahrbuch der schweiz, 1931. (annuaire statistique de la suisse, 1931.) 433 pp. [Printed in German and French.]
(270) Felber, R.
1925. die besteuerung der waldungen in der schweiz. Eidgenössisches Departement des Innern. 95 pp. Berne.
(271) Luze, J. J. de
1933. le régime fiscal de nos forêts. Jour. Forest. Suisse Année 84, nos. 7, 8, 9, 10.
(272) Moreillon, M.
1925. taxes venales des forêts vaudoises. Jour. Forest. Suisse 76: 20–23. Transl. in Jour. Forestry 23: 791–794.

(273) NEUCHATEL, RÉPUBLIQUE ET CANTON.
1921. TARIFS ET TABELLES DE CALCULS POUR L'IMPÔT DIRECT. (DÉCRET DU GRAND CONSEIL DE 9 FEVRIER 1921.) 2 pp.
(274) ST. GALLEN, DER GROSSE RAT DES KANTONS.
1903. ZWEITES NACHTRAGSGESETZ ZUM GESETZ BETREFFEND DIE DIREKTEN STAATSSTEUERN VOM 28. DEZEMBER 1903. 4 pp.
(275) SOCIÉTÉ FORESTIÈRE SUISSE.
1926. LA SUISSE FORESTIÈRE. Ed. 2, 240 pp., illus. Lausanne.

SWEDEN

(276) RIKSSKOGSTAXERINGSNÄMNDEN.
1930. SWEDEN'S FOREST RESOURCES, ACCORDING TO THE NATIONAL FOREST SURVEY CARRIED OUT DURING THE PERIOD 1923–29. 16 pp., illus. Stockholm.
(277) STATISTISKE CENTRALBYRÅN.
1929–30. STATISTISK ÅRSBOK FÖR SVERIGE. 1929, 399 pp; 1930, 402 pp. Stockholm.
(278) TOUMEY, J. W., and LINDEBERG, E.
1930. AN EXAMPLE OF FOREST TAXATION IN NEW HAMPSHIRE AS COMPARED WITH AN EXAMPLE IN SWEDEN. Jour. Forestry 28: 199–211.

NORWAY

(279) RUDEN, I.
1931. RIKSSKATTESTYRETZ FORSKRIFTER FÖR VAERDSETTELSE AV SKOG. Tidsskr. Skogbruk 39:228–230, 414, illus.
(280) STATISTISKE CENTRALBYRÅ.
1929. STATISTISK ÅRBOK FOR KONGERIKET NORGE. Årgang 48, 266 pp. Oslo.

FINLAND

(281) ILVESSALO, Y.
1924. THE FORESTS OF FINLAND. Reprinted from Communicationes ex Instituto Quaestionum Forestalium Finlandiae. Ed. 9, 40 pp., illus. Helsinki.
(282) STATISTISKA CENTRALBYRÅN (BUREAU CENTRAL DE STATISTIQUE DE FINLANDE).
1931. STATISTISK ÅRSBOK FÖR FINLAND (ANNUAIRE STATISTIQUE DE FINLANDE). 366 pp. Helsinki. [Printed in both Swedish and French.]
(283) UNITED STATES DEPARTMENT OF COMMERCE, BUREAU OF FOREIGN AND DOMESTIC COMMERCE.
1930. FINLAND: AN ECONOMIC REVIEW. U. S. Dept. Com. Bur. of For. and Dom. Com. Trade Inform. Bull. 681, 49 pp.

(*See also* Tax Research Foundation (*159*).)

PART 12

(284) CHAMBER OF COMMERCE OF THE UNITED STATES.
1930. ASSESSMENTS—EFFORT BY BUSINESS AGENCIES TO PROMOTE IMPROVED ASSESSMENT OF REAL ESTATE FOR LOCAL TAXATION PURPOSES. State and Local Taxes [8], 34 pp.
(285) CHATTERS, C. H.
1933. PAINLESS EXTRACTION OF TAX DOLLAR. Natl. Munic. Rev. 22(1):9–11.
(286) NATIONAL TAX ASSOCIATION.
1923. PROCEEDINGS OF THE FIFTEENTH NATIONAL CONFERENCE (SEPT. 18–22, 1922). 556 pp.

(*See also* National Industrial Conference Board (*3*), Fairchild (*101*), Tax Research Foundation (*159*), United States Department of Commerce, Bureau of the Census (*213*), and Shere and Shoup (*221*).)

APPENDIX

GENERAL BIBLIOGRAPHY OF WORKS ON FOREST TAXATION [59]

AKERMAN, A.

1908. AN OBJECTIVE POINT IN THE TAXATION OF FOREST LANDS. South. Woodlands 2 (2): 31–40.

ALLEN, E. T.

1910. TAXATION OF TIMBER LANDS. Amer. Lumberman 1836: 49–50. Also pub. in Miss. Lumberman 41 (42): 39–40.

———

1914. DISCUSSION OF REPORT OF COMMITTEE ON FOREST TAXATION OF WASHINGTON STATE TAX CONFERENCE, 1914. Wash. [State] Univ. Bull., Gen. Ser. 84: 62–66. Also pub. in Timberman 14 (9): 32.

———

1914. TAXATION. Pioneer West. Lumberman 62 (10): 11.

———

1920. KILLING THE GOLDEN GOOSE. Oreg. Voter 22 (11): 19.

———

1927. FOREST PRESERVATION AND ITS RELATION TO PUBLIC REVENUE AND TAXATION. Natl. Tax. Assoc. Proc. 20: 404–412. Also pub. in Amer. Lumberman 2735: 56–58; West Coast Lumberman 53 (625): 30, 38–39; and (in part) in Oreg. Voter 51 (5): 6.

———

1927. UNJUST TAXATION: WHAT IT IS DOING TO THE LUMBER INDUSTRY. Four L Lumber News 9 (31): 7, 38–39.

ALLIN, B. W.

1933. FOREST TAX RESEARCH AS IT AFFECTS FARM TAXES. Jour. Farm Econ. 15 (3): 550–556.

ALLISON, J. H.

1926. FOREST TAXATION. Minn. Munic. 11 (4): 180–184.

———

1933. TAXATION OF FOREST PROPERTY. *In* Blakey, R. G., and associates, Taxation in Minnesota. Minn. Univ. Studies Econ. and Business 4: 147–169.

AMES, E. G.

1912. TAXATION OF STANDING TIMBER. Pioneer West. Lumberman 58 (12): 11–13. Also pub. (in part) in Pacific Lumber Trade Jour. 18 (8): 19–20.

AMES, G. E.

1908. UNJUST LAND TAXATION. Amer. Lumberman 1712: 44. Also pub. in Forest Leaves 11: 124–126.

ANDERSON, C. R.

1927. TIMBERLAND TAXES. Pa. Stockman and Farmer 51 (2): 29; (3): 62.

AYRES, P. W.

1911. TAXATION OF FORESTS. Soc. Protect. N. H. Forests Ann. Rept. 10: 30–32.

———

1918. FOREST TAXATION AND THE FARMER. Natl. Tax. Assoc. Bull. 3 (7): 167–169.

———

1921. PUBLIC OWNERSHIP OF FORESTS. Natl. Tax Assoc. Proc. 14: 50–51.

BAKER, H. P.

1926. FOREST PROTECTION AND THE WOOD-USING INDUSTRIES; AN AMERICAN SCHEME. Roy. Scot. Arbor. Soc. Trans. 40: 145–146.

BANZHAF, G.

1926. TAXATION AS APPLIED TO FOREST PROPERTY AND CUT-OVER LAND. Marquette Law Rev. 10 (2): 84–88. Reviewed in Jour. Forestry 25: 598. 1927.

[59] Prepared by Louis S. Murphy with the assistance of the staff of the Forest Service Library. Incomplete to the extent that references in footnotes and in Liteature Cited are not repeated here.

BARNES, O. F.
1919. PRINCIPLES OF FOREST TAXATION REVIEWED. Amer. Lumberman 2287: 46–47.

———
1922. DISCUSSION OF FOREST TAXATION. Mich. State Dept. Conserv. Forestry Conf. Rept. 1922: 7–12.

———
1922. PROPOSED SYSTEM OF FOREST TAXATION. Natl. Tax Assoc. Proc. 15: 143–148.

BARRUS, G. L.
1915. STATE POLICY AND TAXATION. N. Y. State Forestry Assoc. Bull. 2: 21–26.

BARTHELL, E. E.
1923. TIMBER TAXATION WITH SPECIAL REFERENCE TO FOREST CONSERVATION. South. Lumberman 1473: 177–178.

BISSELL, J. H.
1906. NOTES ON FOREST TAXATION. Mich. Forestry Comn. Bien. Rept. 1905–6: 80–82.

BLAIR, C. B.
1908. THE STATE'S PROBLEM CONCERNING ITS HOLDINGS OF LAND FORFEITED FOR TAXES. Mich. Forestry Comn. Bien. Rept. 1907–8: 52–54.

BLAKEY, R. G.
1930. TAXATION OF FORESTS. *His* Report on Taxation in West Virginia, pp. 391–410. Charleston, W. Va.

BLANCHARD, G. W.
1928. THE FOREST CROP [TAX] LAW: ITS PURPOSE. Wis. Com. Forestry Conf. Off. Rept. 1928: 127–136.

BONNER, B. F.
1915. RAPS TAXATION SYSTEM. Amer. Lumberman 2083: 47.

BRADEN, K. J.
1923. PERMANENT INDUSTRIES VERSUS TAXES. North Woods 7 (44): 23–28.

BRINSMADE, R. B.
1909. THE NATURAL TAXATION OF TIMBERED MINING LAND. Conservation 15: 408–411.

BRONSON, L.
1912. FOREST TAXATION AND THE PRESERVATION AND PERPETUATION OF OUR WOODLANDS. South. Lumber Jour. 30 (8): 42.

BRUNCKEN, E.
1903. PRIVATE FORESTRY AND TAXATION. Forestry and Irrig. 9: 509–512.

BUCKWALTER, J. R.
1908. TAXATION OF TIMBERLANDS IN MISSISSIPPI. Lumber Trade Jour. 53 (9): 18.

BULLOCK, C. J.
1912. A PRACTICAL PLAN FOR TAXING FORESTS IN NEW HAMPSHIRE AND MASSACHUSETTS. Soc. Protect. N. H. Forests, Forestry Conf. Proc. 1912: 36–44, 76.

———
1914. TAXATION OF FORESTS IN MASSACHUSETTS. Forestry Quart. 12: 544–545.

BURT, D. A.
[1930.] WHAT CONSTITUTES FAIR FOREST TAXATION. W. Va. Com. Forestry Conf. Proc. 1929: 141–144.

CARY, A.
1906. MAINE FORESTS, THEIR PRESERVATION, TAXATION, AND VALUE. Maine Bur. Indus. and Labor Statis. Ann. Rept. 20: 180–193.

CECIL, G. H.
1924. FOREST TAXATION IN OREGON AND WASHINGTON. Jour. Forestry 22: 476–479.

———
1924. TAXATION AS IT WOULD PERTAIN TO REFORESTATION. Timberman 25 (6): 134–135, 138.

CHAPMAN, C. S.
1910. FOREST TAXATION. Amer. Lumberman 1856: 58.

———
1923. TIMBER TAXATION. West Coast Lumberman 45 (531): 36–37, 47.

———
1924. TREND OF FOREST TAXATION IN THE NORTHWESTERN STATES. Lumber World Rev. 47 (12): 49–50.

CHAPMAN, C. S.
1925. THE REPORT OF THE COMMITTEE ON FOREST TAXATION OF THE STATE FORESTRY CONFERENCE. Wash. [State] Univ. Forest Club Quart. 3 (4): 38–40.

1925. STATUS OF TIMBER TAX REFORM. Timberman 27 (2): 229. Also pub. in Lumber World Rev. 49 (12): 47–48.

1927. FOREST PROBLEMS. Four L Lumber News 9 (13): 12, 64–65.

CHAPMAN, H. H.
1913. THE RECENT CONNECTICUT LAW FOR TAXATION OF FOREST LANDS. Amer. Forestry 19: 593–599.

1919. FOREST TAXATION. Ind. Dept. Conserv. Pub. 10: 47–56. Also pub. in Amer. Lumberman 2328: 61–63; and N. C. Geol. and Econ. Survey, Press Bull. 174, 11 pp. 1920.

1920. COMMITTEE ON FOREST TAXATION REPORT. Conn. Forestry Assoc. Proc. 9: 34–46.

1921. THE TAXATION OF FOREST PROPERTY. Natl. Tax Assoc. Proc. 14: 36–47; discussion, pp. 48–52.

1926. FOREST TAXATION. Jour. Forestry 24: 275–278. Also pub. in Lumber Trade Jour. 89 (8): 26.

1926. TAXATION OF FOREST PROPERTY. *His* Forest Finance, ch. 18, pp. 262–285. New Haven.

1927. FOREST TAXATION UNDER THE FORESTRY AMENDMENT. Minn. Munic. 12 (2): 50–54.

1927. TAXATION AS A FACTOR IN LAND USE. Gopher Countryman 4 (6): 7, 24–25.

1929. PROSPECTIVE WASHINGTON FOREST LEGISLATION. Timberman 31 (1): 80, 84.

CHEYNEY, E. G.
1907. TAXATION OF WOODLANDS. Farm Students Rev. 13 (12): 238.

1924. KEEP MINNESOTA GREEN; FORESTRY AND TAX PROBLEMS AS THEY RELATE TO OUR IDLE AND NONPRODUCTIVE LANDS. Minn. [Constitutional] Amendment 4, 10 pp.

CHITTENDEN, A. K., and IRION, H.
1911. THE TAXATION OF FOREST LANDS IN WISCONSIN. 80 pp. Madison, Wis.

COMPTON, W.
1915. RECENT REFORM IN FOREST TAXATION IN THE UNITED STATES. Amer. Lumberman 2118: 34–35; 2119: 36–37, 75.

1915. RECENT TENDENCIES IN THE REFORM OF FOREST TAXATION. Jour. Polit. Econ. 23: 971–979.

1933. OUR FORESTS: WILL OUR TAX POLICY CONSERVE OR DESTROY THEM? N. Y. Lumber Trade Jour. 94 (1117): 16, 21.

CORNWALL, G. M.
1912. TAXATION OF TIMBER LAND. Timberman 13 (6): 26–27.

DANAHER, R. E.
1927. FOREST TAX LAWS IN OPERATION—CALIFORNIA. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 131–132.

DARLING, D. H.
1907. WILD LANDS; THEIR CONDITIONS AND TAXES; A CONSTRUCTIVE POLICY. Lewiston [Maine] Jour. 61 (June 13): 1. Also pub. in Amer. Lumberman 1674: 40; Forest Leaves 11: 52–53; and Maine Farmer 76 (30): 1, 1908. Author's pamphlet no. 1, [7] pp., n. p.

101285°—35——42

DARLING, D. H.
1907. TIMBERLAND TAXES; LAND VS. INCOME TAX. Lewiston [Maine] Jour. 61 (Aug. 3): 8. Also pub. in Forest Leaves 11: 68–70; and Maine Farmer 76 (31): 4, 1908. Author's pamphlet no. 2, [7] pp., n. p.

1907. WILD LAND TAXES; PENNSYLVANIA PLIGHT AN OBJECT LESSON. Lewiston [Maine] Jour. 61 (Sept. 16): 8. Also pub. in Maine Farmer 76 (32): 5, 1908. Author's pamphlet no. 3, [6] pp., n. p.

[1907]. TIMBER PROPERTY TAXES; THE FACTS. Author's pamphlet no. 4, [7] pp. n. p.

1907. TIMBER PROPERTY TAXES; STRIPPED LAND AND ITS CONSEQUENCES—A TIMBER FAMINE IS RAPIDLY COMING. Lewiston [Maine] Jour. 61 (Nov. 26): 6. Author's pamphlet no. 5, [6] pp., n. p.

1908. A STABLE FOREST POLICY ESSENTIAL TO THE PRESERVATION OF OUR TIMBER SUPPLY. Lewiston [Maine] Jour. 62 (June 15): 5. Author's pamphlet no. 6, [7] pp., n. p.

[1908]. ROUGH DRAFT OF A BILL FOR THE PRESERVATION AND PERPETUATION OF OUR TIMBER SUPPLY. Author's pamphlet no. 7, [7] pp. n. p.

[1908]. TIMBERLAND TAXES. AN INVESTMENT. Author's pamphlet no. 8, [12] pp. n. p.

DE VRIES, W. E.
1933. THE PROPERTY TAX AS AN OBSTACLE TO THE PRIVATE DEVELOPMENT OF IDLE FOREST LANDS. Jour. Land & Pub. Utility Econ. 9 (3): 228–232.

DICKINSON, M. A.
1930. THE PLAN OF THE INTERIM TAX COMMISSION. Soc. Protect. N. H. Forests, Rural Betterment and Forest Taxes, pp. 1–2.

DONOVAN, J. J.
1923. THE NEED FOR REFORMS IN TAXATION METHODS. Wash. [State] Univ. Forest Club Quart. 1 (4): 19–21.

1923. COMMITTEE ON FOREST TAXATION OF THE WASHINGTON STATE FORESTRY CONFERENCE, 1923 REPORT. Wash. [State] Univ. Forest Club Quart. 1 (4): 22–28.

DRESSEL, K.
1925. THE WOODLOT TAX ACT. Mich. Agr. Expt. Sta. Quart. Bull. 7: 161–163.

1926. WOODLOT TAXATION IN MICHIGAN. Mich. Agr. Expt. Sta. Quart. Bull. 9: 44–47.

1927. SOME RESULTS OF THE MICHIGAN WOODLOT TAX ACT. Mich. Agr. Expt. Sta. Quart. Bull. 10: 59–63.

1928. FOREST RESERVE TAX LAWS ARE NOT PERFECT. Mich. Agr. Expt. Sta. Quart. Bull. 11: 65–69.

DRINKER, H. S.
1912. AN ANALYSIS AND SUMMARY OF MODERN OPINIONS ON THE TAXATION OF OUR WOODLANDS AND FORESTS. (An address delivered at the State Forest Academy, Mt. Alto, Pa.) 18 pp. n. p.

DUNCAN, G. H.
1930. A BALANCED TAX PROGRAM FOR NEW HAMPSHIRE. N. H. Forests 7 (3): 3–4.

EARLES, M.
1909. BURDEN OF INQUITIES IN THE TAXATION OF STANDING TIMBER. Amer. Lumberman 1769: 45.

EBERLY, H. J.
1931. OREGON REFORESTATION TAX LAW. Jour. Forestry 29: 83–86.

ELLIOTT, S. B.
1906. HOW SHOULD OUR FUTURE FOREST LANDS BE TAXED? Forest Leaves 10: 104–107. Also pub. in Forestry and Irrig. 12: 178–183.

1917. FOREST LANDS AND TAX PROBLEMS. In the Open 7 (6): 18–23.

FAIRCHILD, F. R.
1908. THE TAXATION OF TIMBERLANDS IN THE UNITED STATES. Natl. Tax Assoc. Proc. 2: 69–82. Also reprinted in part in Forestry Quart. 6: 383–386.

———
1909. THE ECONOMIC PROBLEM OF FOREST TAXATION. Yale Rev. 17 (1): 377–391. Also pub. in South. Lumberman 701: 28–30. Reviewed in Amer. Rev. of Reviews 39 (4): 477–479.

———
1909. THE RELATION OF TAXATION TO FOREST CONSERVATION. Lumber Rev. 19 (15): 42–46. Also pub. in Pacific Coast Wood and Iron 52 (3): 7–11.

———
1909. TAXATION OF TIMBERLANDS. Natl. Conserv. Comn. Rept. U. S. Cong. 60th, 2d sess., S. Doc. 676, v. 2, pp. 581–632.

———
1910. TAXATION OF TIMBER LANDS. Natl. Lumber Manfrs. Assoc. Ann. Rept. 8: 65–77. Also pub. in Amer. Lumberman 1822: 43–44; South. Lumberman 761: 33–34; and Pacific Lumber Trade Jour. 16 (2): 36–42.

———
1912. THE PRESENT STATE OF FOREST TAX LEGISLATION. Amer. Forestry 18: 653–655.

———
1912. SUGGESTIONS FOR A PRACTICAL PLAN OF FOREST TAXATION. 31 pp. New Haven. Also pub. in Natl. Tax Assoc. Proc. 6: 371–401.

———
1912. TAXATION OF TIMBERLANDS. Soc. Protect. N. H. Forests, Forestry Conf. Proc. 1912: 18–35. Abstracted in South. Lumberman 878: 28; and South. Lumber Jour. 30 (3): 50.

——— chairman.
1913. REPORT OF COMMITTEE ON FOREST TAXATION. Natl. Tax Assoc. Proc. 7: 413–423.

———
1914. THE TAXATION OF FORESTS IN EUROPE. Rept. of the Comn. on the Taxation of Wild or Forest Lands. Mass. Gen. Court, 1914, S. Doc. 426, pp. 58–77.

——— chairman.
1922. REPORT OF COMMITTEE ON FOREST TAXATION. Natl. Tax Assoc. Proc. 15: 127–139. Also pub. in Amer. Lumberman 2472: 54–55; 2473: 66; and Amer. Forestry 28: 655–660, 667.

———
1925. NATIONWIDE STUDY OF FOREST TAXATION BEGUN. West Coast Lumberman 49 (579): 54.

———
1926. FOREST TAXATION. Amer. Forests 32: 424–426.

———
1926. RESEARCH IN FOREST TAXATION. Sci. Monthly 22: 428–433. Also pub. in Bull. Natl. Tax Assoc. 11 (9): 265–270.

———
1927. OREGON TAXATION STUDY. Timberman 28 (10): 206.

———
1927. PRINCIPLES OF FOREST TAXATION. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 119–127. [Reprinted as Prog. Rept. Taxation Inquiry [2], Apr. 5, 1928, 8 pp., and summarized in U. S. Dept. Agr. Off. Rec. 7 (29): 5.]

———
1928. APPROACHING GOVERNMENT STUDY OF PACIFIC COAST FOREST TAXATION. West Coast Lumberman 53 (634): 58–60. Also pub. in Pacific Pulp and Paper Indus. 2 (4): 24–29.

[———]
1928. FOREST TAXATION AND THE FOREST TAXATION INQUIRY. U. S. Dept. Agr., Forest Serv., Prog. Rept. Taxation Inquiry [1] March 1928, 7 pp. [mimeographed].

———
1928. TAXATION AND REFORESTATION. Natl. Tax Assoc. Proc. 21: 364–365, 545–553.

FAIRCHILD, F. R.
1928. TIMBER TAXATION. West. Taxpayers Conf. Proc. 1928: 131–135.

———
1929. FOREST TAXATION. Pacific Pulp and Paper Indus. 3 (4): 90, 140.

———
1929. PROGRESS OF THE FOREST TAXATION INQUIRY OF THE U. S. FOREST SERVICE. South. Forestry Cong. Proc. 11: 28–37.

———
1931. FOREST TAXATION INQUIRY OF THE U. S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE. Natl. Tax Assoc. Bull. 17 (3): 73–74.

———
1932. TIMBER TAXATION. West Coast Lumberman 59 (9): 30–31.

———
1933. TAXATION OF FORESTS AND FARM WOODLOTS IN NEW ENGLAND. Amer. Geogr. Soc. Spec. Pub., New England's Prospects 16: 237–246.

———
1934. SUGGESTIONS FOR THE SOLUTION OF THE FOREST TAX PROBLEM. Jour. Forestry 32: 128–139. (Comments by S. T. Dana, pp. 139–149.)

——— and associates
1932. CHANGES IN THE TAX SYSTEM RELATING ESPECIALLY TO FORESTS—CONCLUSIONS AND RECOMMENDATIONS. U. S. Dept. Agr., Forest Serv., Prog. Rept. Taxation Inquiry 18, 60 pp. [mimeographed].

——— and CHAPMAN, H. H.
1927. FOREST TAXATION IN A CUT-OVER LAND REGION. Natl. Tax Assoc. Proc. 20: 367–394.

FENN, L. A.
1926. IDAHO'S TIMBER TAX PROBLEM. Idaho Forester 8: 3–4, 36.

FERNOW, B. E.
1888. PROPER BASIS OF FORESTRY LEGISLATION. In Proceedings of the Forestry Convention [Mich.], Independent Forestry Comn., Mich. Agr. Col., Dept. Bot. and Forestry Bull. 32: 52–56.

———
1902. TAXATION OF WOODLANDS. His Economics of Forestry, pp. 245–253, 378, 465–467. Also pub. in Forestry Quart. 5: 373–384, 1907.

———
1908. FOREST TAXATION AND CONSERVATION AS PRACTICED IN CANADA. Natl. Tax Assoc. Proc. 2: 93–110. Also pub. in Forestry Quart. 6: 387–392.

———
1912. PRINCIPLES UNDERLYING THE TAXATION OF FORESTS. Soc. Protect. N. H. Forests, Forestry Conf. Proc. 1912: 7–17.

FILLEY, W. O.
1918. THE FOREST TAXATION LAW IN CONNECTICUT. N. Y. Forestry 5 (2): 20–21.

FITZGERALD, J. B.
1926. GET BEHIND SENSIBLE TIMBER TAXATION MOVEMENT. West Coast Lumberman 50 (598): 34, 54.

———
1927. SENSIBLE TIMBER TAXATION. Pacific Pulp and Paper Indus. 1 (11): 28–31.

FOSTER, J. H.
1908. THE TAXATION OF FOREST LANDS AND THE EFFICIENCY OF THE FIRE LAWS IN NEW HAMPSHIRE. N. H. Forestry Comn. Bien. Rept. 1907–8: 47–119.

———
1912. TAXATION OF FOREST PROPERTY IN NEW HAMPSHIRE. Amer. Forests 18: 470–473.

———
1915. THE PRESENT FOREST TAX SITUATION IN NEW HAMPSHIRE. Forestry Quart. 13: 474–480.

———
1921. FOREST TAXATION IN NEW HAMPSHIRE. Natl. Tax Assoc. Proc. 14: 47–50.

———
1925. CLASSIFICATION OF GROWING TIMBER FOR PURPOSES OF TAXATION AND EXEMPTION. Natl. Tax Assoc. Bull. 10: 182–184.

FRONTZ, L.
1931. FOREST TAXATION IN PENNSYLVANIA. U. S. Daily 6 (126): 10.

FROST, J. E.
1928. TAXATION AND REFORESTATION. Natl. Tax Assoc. Proc. 21: 359–364.

GARDINER, G. S.
1908. THE STATES AND THE TIMBER SUPPLY. Outlook 88: 568. Also pub. in St. Louis Lumberman 41 (6): 27.
GENNETT, A.
1923. TIMBER TAXATION, PAST AND FUTURE. South. Lumberman 1466: 39–40. Also pub. in Lumber World Rev. 49 (9): 108–109.
GOADBY, A.
1912. TWO SOLUTIONS OF THE FORESTRY TAX PROBLEM. Amer. Forestry 18: 663–666.
———
1913. GRADED ASSESSMENT OF REFORESTED LANDS. Amer. Forestry 19: 331–332.
———
1917. A MODERN GORDIAN KNOT—FOREST TAXATION. N. Y. Forestry 4 (2): 20–23.
GOETZ, C. H.
1907. LUMBERMEN'S VIEWS ON REFORESTATION. Forest Leaves 11: 72–73. Also pub. in Forestry and Irrig. 14: 35–38, 1908.
———
1907. WHY AMERICANS CUT DOWN THEIR FORESTS. Forestry and Irrig. 13: 382–383.
———
1912. TAXATION OF OUR FORESTS AND FOREST LANDS. Amer. Lumberman 1939: 30.
GOLDSBURY, P. W.
1913. TAXATION AND FORESTRY; THE DIAGNOSIS OF A NEW ENGLAND TOWN. Forestry Quart. 11: 383–387.
GOODMAN, R. B.
1926. STATE TAXATION AND FORESTRY. Amer. Lumberman 2664: 56–57. Also pub. in Paper Trade Jour. 83 (6): 68–69.
———
1927. WISCONSIN'S NEW FOREST TAX MEASURE CONSTRUCTIVE. Lumber Manfr. and Dealer 80 (5): 30. Comment in West Coast Lumberman 53 (642): 54.
———
1928. THE FOREST CROP (TAX) LAW: ITS APPLICATION TO THE TOWNS. Wis. Com. Forestry Conf. Off. Rept. 1928: 134–136, illus.
GOULDEN, J. J.
1931. FLORIDA'S FOREST LAND PROBLEM, WITH SPECIAL REFERENCE TO FOREST LAND INCOME TAXES. Fla. Forest Serv. Bull. 6, 31 pp.
GRANGER, C. M.
1926. NATIONAL FOREST RECEIPTS AND THE STATES' SHARE THEREIN. Timberman 27 (4): 198, 200.
GRAVES, M.
1927. TAXATION OF FOREST PROPERTY. N. Y. Forestry Assoc. Yearbook 1926: 12–13.
GREELEY, W. B.
1909. TAX EXEMPTION OF FOREST LANDS. Ohio Forester 1 (3): 6–7.
———
1923. FOREST TAX INVESTIGATIONS. TENTATIVE STATEMENT OF ADMINISTRATIVE POLICY UNDER COOPERATIVE PROVISIONS OF CLARKE-MCNARY LAW. West Coast Lumberman 47 (557): 34, 53, 58. Also pub. in Timberman 26 (2): 148–156, 1924; and Lumber World Rev. 47 (12): 50, 1924.
GRISWOLD, G.
1927. WHY ADJUSTED FOREST TAXATION IS NECESSARY. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 116–118.
HALL, R. C.
1923. THE FEDERAL INCOME TAX AND FORESTRY. Jour. Forestry 21: 553–562.
———
1929. REFORESTATION AND THE BUREAU OF INTERNAL REVENUE. Jour. Forestry 27: 989–991.
———
1930. FOREST RELIEF. Jour. Forestry 28: 794–799.
———
1930. METHODS OF RESEARCH IN FOREST TAXATION. U. S. Dept. Agr., Forest Serv., Prog. Rept Taxation Inquiry 8, [8] pp. [mimeographed].

HALL, R. C.
[1930]. PROGRESS IN METHODS OF FOREST TAXATION ADOPTED IN OTHER STATES. W. Va. Com. Forestry Conf. Proc. 1929: 134–139. Also pub. in South. Lumberman 1773: 68, 70.

1930. STATES' METHODS OF MEETING FOREST TAXATION PROBLEM. U. S. Daily 5 (241): 12.

1930. TAXATION OF FOREST PROPERTIES AND FARM WOODLOTS. Cent. States Forestry Cong. Proc. 1: 105–115.

1931. FOREST LAND TAXES. Manfrs. Rec. 99 (15): 41–42.

HANSON, H. A.
1925. CONSTITUTIONAL LIMITATIONS ON FOREST TAXATION. Wash. [State] Univ. Forest Club Quart. 3 (4): 41–44.

HARDTNER, H. E.
1921. TALKS TO CONSTITUTIONAL CONVENTION RELATIVE TO TAXATION MATTERS OF INTEREST TO ALL LUMBERMEN IN LOUISIANA. Lumber Trade Jour. 79 (10): 24–25.

1922. THE TAXATION OF SOUTHERN FOREST LANDS. Lumber World Rev. 42 (4): 43–44.

1925. DEFERRED TAXES ON FOREST LAND. Lumber World Rev. 48 (2): 37. Also pub. in South. Forestry Cong. Proc. 7: 36–40.

1933. TAXATION AND ITS RELATION TO FOREST CONSERVATION. 20 pp. n. p.

——— STRAUSS, C. W., and HALL, W. L.
1929. DISCUSSION OF FOREST TAXATION. South. Forestry Cong. Proc. 11: 37–47.

HARRIS, F. W.
1919. SHOULD GOVERNMENT TIMBER BE TAXED? West Coast Lumberman 36 (422): 58.

HARVEY, B. T.
1908. WILD LAND TAXATION; ITS RELATION TO FORESTRY IN MAINE. Paper Mill and Wood Pulp News 31 (23): 16, 36; (24): 7; (25): 36.

HASTINGS, W. G.
1921. FOREST TAXATION—AN ADDRESS BEFORE CONVENTION OF NORTHEASTERN TAX COMMISSIONERS. Jour. Forestry 19: 652–660.

HAWES, A. F.
1911. INSTRUCTIONS REGARDING EXEMPTION FROM TAXATION OF FOREST PLANTATIONS IN VERMONT. Vt. Forest Serv. Pub. 6, 4 pp.

HAWLEY, R. C.
1907. THE QUESTION OF FOREST TAXATION IN MASSACHUSETTS. Conn. Forestry Assoc. Ann. Bull. 5: 18–20.

HAY, A.
1932. TAX SPENDERS CONTROL FUTURE OF LUMBER INDUSTRY. West Coast Lumberman 59 (12): 15–16, 30.

HAYDEN, J. F.
1917. THE TAXATION OF TIMBERLANDS. Miss. Valley Lumberman 48 (50): 33.

HERBERT, P. A.
1932. THE GOVERNMENTAL ORGANIZATION AND THE FINANCING OF FOREST COMMUNITIES IN THE SOUTH; WITH COMMENTS BY R. L. THOMPSON. Jour. Forestry 39: 145–154.

HILL, R. E.
1933. EXCESSIVE TAXATION BANE OF LUMBER INDUSTRY (DIGEST). Amer. Lumberman 2987: 18.

HOLLIS, A.
1909. TAXATION OF FORESTS. Soc. Protect. N. H. Forests Conf. Proc. 1909: 28–33.

HOLT, W. A.
1915. TAXATION OF TIMBERLANDS. Miss. Valley Lumberman 46 (5): 33–34. Also pub. in Amer. Lumberman 2072: 65.

HOMANS, G. M.
1912. FOREST TAXATION BY COUNTIES. Calif. Conserv. Comn. Rept. 1912: 490–502.

HOMANS, G. M.
1912. TAXATION OF TIMBERLANDS. Timberman 13 (6): 23–24.
HOOVER, E. M.
1909. INFLUENCE OF TAXATION ON FOREST DISTRIBUTION. Conservation 15 (8): 469–470.
HOSMER, R. S.
1917. FOREST TAXATION. Empire State Forest Prod. Assoc. Proc. 12: 14–30. Also pub. in N. Y. Forestry 5 (2): 13–19. 1918.

———
1930. THE TAXATION OF FOREST LAND. N. Y. Forestry 10 (2): 38–42.
HOUGHTON, A. S.
1918. FOREST TAXATION. N. Y. Forestry 5 (3): 21–32.
HOWARD, W. G.
1933. FOREST TAXATION. N. Y. Conserv. Dept., Div. Lands and Forests Bull. 8, rev. ed., 7 pp. [Editions prior to 1928 by C. R. Pettis.]
HOWELL, P. N.
1929. FOREST TAXATION AND TIMBER GROWING. South. Forestry Cong. Proc. 11: 17–24. Also pub. in Lumber Trade Jour. 95 (8): 34–35.
HUBBELL, J. J.
1901. RELATIONS OF TAXATION TO FORESTRY. Mich. Engin. 1901: 160–174. Reprinted (in part) in Mich. Forestry Comn., Steps of Progress in Michigan Forestry, pp. 27–31.
HUMISTON, W. D.
1923. FOREST TAXATION. Idaho Forester 5: 3–8.

———
1928. REPORT OF FOREST TAXATION COMMITTEE. West. Taxpayers' Conf. Proc. 1928: 135–140.
HUNTTING, S. F.
1926. FORESTRY AND THE INCOME TAX. Jour. Forestry 24: 433–436.
HUTTON, G. W., and HARPHAM, E. E.
1916. FOREST TAXATION AS A FACTOR IN FOREST MANAGEMENT. Soc. Amer. Foresters Proc. 11: 330–335.
IRWIN, B.
1909. TAXATION AND FOREST CONSERVATION. South. Indus. and Lumber Rev. 17 (2): 36.

———
1909. AN UNCONSTITUTIONAL TIMBER TAX. Timberman 10 (5): 24–25.
IVY, T. P.
1909. TIMBERLAND TAXATION IN NEW HAMPSHIRE AND IN GENERAL. Amer. Lumberman 1799: 33.
JAMES, H., JR., and VON SCHRENK, H.
1910. TAXATION OF FOREST LANDS. Amer. Forestry 16: 314–315.
JARVIS, C. E.
1909. THE TAXATION OF TIMBER. Grizzly Bear 6 (2): 1–2.
JEWETT, G. F.
1931. IDAHO LUMBERMEN FIGHT FOR LOWER TAXATION. West Coast Lumberman 58 (11): 37–38.

———
1932. HOW TAXATION IS CLOSING SAWMILLS. Four L Lumber News 14 (21): 7, 22.
JONES, J. G.
1912. FOREST TAXATION. Amer. Lumberman 1958: 50. Also pub. in Paper Mill and Wood Pulp News 35 (46): 4, 15.
JONSON, T.
1921. DE NYA GRUNDERNA FÖR FASTIGHETSTAXERING AV SKOG. [THE NEW BASIS FOR ASSESSMENT OF FOREST PROPERTY.] Skogen 6–7: 169–183. Review in Four L Bull. 6 (10): 7–8, 1924; transl. in Jour. Forestry 23: 795–811, 1925.
JUDD, J. W.
1908. TIMBER LAND TAXATION. South. Lumberman 697: 25–32.
KIMBALL, K. E.
1925. FOREST FIRES AND TAXATION. N. C. Geol. and Econ. Survey Circ. 11, 15 pp.
KIRKLAND, B. P.
1914. DISCUSSION [OF TAXATION AS A FACTOR IN THE COST OF GROWING TIMBER]. Wash. [State] Univ. Bull. (Gen. Ser.) 84: 56–62.

KIRKLAND, B. P.
1929. TAXATION IN RELATION TO REFORESTATION POLICY. Wash. [State] Univ. Engin. Expt. Sta. Bull. Rept. 1: 35–38.
KNAPPEN, T. M.
1926. TREES AND TAXES; HOW CAN BOTH BE PRODUCED BY THE SAME LAND WITHOUT INTERFERENCE. Amer. Forests and Forest Life 32: 22–24.
LACK, M. D.
1912. THE PROBLEM OF REFORESTATION AS AFFECTED BY TAXATION IN CALIFORNIA AND ELSEWHERE. 3 pp. Sacramento.
LAMB, L. A.
1932. RATIONAL TIMBER TAXATION OR FORCED LIQUIDATION OF OUR FOREST INDUSTRIES. South. Lumber Jour. (Florida forestry supplement) 36 (12 sup.): 6.
LANGILLE, H. D.
1908. UNJUST TAXATION OF TIMBER LANDS. Timberman 9 (6): 42–43.
LAUBE, F. J.
1925. REPORT OF COMMITTEE ON FOREST TAXATION OF THE WASHINGTON STATE TAX CONFERENCE. Wash. [State] Univ. Forest Club Quart. 3 (4): 34–38.
LEMAISTRE, J. W.
1927. FOREST TAX LAWS IN OPERATION—ALABAMA. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 128–130.
LEMMON, W. P.
1930. PLAN ON TAXATION. South. Forestry Cong. Proc. 12: 149–158.
LOVEJOY, P. S.
1922. REPORT OF TIMBERLAND TAXATION COMMITTEE OF MICHIGAN FORESTRY CONFERENCE. Mich. Dept. Conserv., Forestry Conf. Proc. 1922: 2–19.

———
1923. ASSESSOR, SPARE THAT TREE: YOUR GENERAL PROPERTY TAX CAN RUIN EVERY WOODLOT. Country Gent. 88 (6): 10, 24.

———
1925. THE MICHIGAN TIMBERLAND TAX LAW. South. Lumberman 1577: 173–176.

———
1925. SOME SLANTS ON THE MICHIGAN TIMBERLAND TAX LAW. Jour. Forestry 23: 812–820.

———
1926. MICHIGAN HAS COOPERATIVE REFORESTATION LAW. Amer. Lumberman 2647: 50–51.
LUNDEEN, H.
1924. A PLAN FOR ADJUSTING TAXATION TO FORESTRY. Tri-State [Minn.-Wis.-Mich.] Devlpmt. Cong., Minutes and Papers 4: 36–39.
LYFORD, C. A.
1933. STANDING TIMBER YIELD TAX PLAN PROPOSED FOR STATE OF WASHINGTON. West Coast Lumberman 60 (1): 18–19.
LYLE, J. T. S.
1921. REDUCTION OF EXPENSES MORE IMPORTANT THAN NEW TAX LEGISLATION. West Coast Lumberman 41 (484): 27–28, 52.
LYONS, T. E.
1915. TAXATION OF FOREST AND TIMBERLAND. Amer. Lumberman 2085:33, 52
MCBAIN, B. T.
1927. MIRACLES OF TOMORROW. Timberman 28 (10): 102.
MCKAY, M. K.
1919. PRESENT STATUS OF FOREST TAXATION IN THE UNITED STATES. Jour. Forestry 17: 472–489.
MCNEAL, J. E.
1910. FOREST TAXATION. Forest Leaves 12: 120–121.
MCVEY, F. L.
1910. RATIONAL SYSTEM OF TAXATION OF NATURAL RESOURCES. Amer. Lumberman 1842: 51.
MANNING, G. H.
1926. LUMBERMEN ASK TAX REDUCTION. Timberman 28 (1): 244.
MASON, D. T.
1920. TIMBER APPRAISAL. N. Y. Lumber Trade Jour. 69 (828): 34–36.

MASON, E. G.
1923. THE TAXATION OF TIMBERLANDS. Oreg. Agr. Col. Forest Club, Ann. Cruise 1923: 33.
MASTICK, S. C.
1925. TAXATION OF FOREST LAND. N. Y. Forestry Assoc. Yearbook 1925: 13–15, 47.
MAUTHE, W.
1930. ENCOURAGING OWNERS OF LAND TO GROW FORESTS. U. S. Daily 5 (228): 12. Also pub. in La. Conserv. Rev. 1 (4): 12–13, 20, 1931.
———
1930. THE NEXT STEP IN FOREST TAXATION. Amer. Forests and Forest Life 36: 683–686, illus.
———
1931. THE WISCONSIN FOREST TAX LAW. Wis. Devlpmt. Bur. News 10 (11): 9, 16.
MAXWELL, A. J.
1930. CLASSIFIED TAXATION OF REPRODUCING TIMBER LANDS. South. Forestry Cong. Proc. 12: 136–149.
MILES, H. J.
1914. FOREST TAXATION ACTIVITY IN MASSACHUSETTS. Forestry Quart. 12: 41–43.
MILLER, F. G.
1910. REPORT OF THE COMMITTEE ON FOREST TAXATION, IN THE REPORT OF THE WASHINGTON STATE COMMISSION ON FOREST LEGISLATION. pp. 49–68. Addenda, pp. 69–87. [Mimeographed.] Reprinted in part in Amer. Lumberman 1856: 58.
———
1910. SCIENTIFIC TAXATION OF TIMBER. Timberman 11 (12): 19.
——— [and KELLOGG, F. B.]
1914. FOREST TAXATION IN WASHINGTON. Wash. [State] Univ. Bull., Gen. Ser. 84: 45–68. Also pub. in Soc. Amer. Foresters Proc. 9: 407–447. Abstract in West Coast Lumberman 26 (305): 33–34.
MOORE, A. G. T.
1921. TREES AND TAXES; TWO FORESTRY PHASES. South. Lumberman 1369: 121.
MORLEY, W. R.
1932. ARE TIMBER TAXES CONFISCATORY? West Coast Lumberman 59 (5): 18–20.
MOWRY, J. B.
1911. FOREST TAXATION. R. I. Commr. Forestry Leaflet 3, 3 pp.
MULFORD, W.
1912. RECENT NEW YORK STATE LAWS GIVING RELIEF FROM TAXATION ON LANDS USED FOR FORESTRY PURPOSES. Cornell Reading Courses, Farm Forestry, ser. 2, v. 2, no. 28, 12 pp.
MULKEY, F. W.
1909. TAXATION OF TIMBER LANDS. Timberman 10 (6): 19.
———
1909. RELATION OF TIMBER TAXATION TO CONSERVATION. Pacific Lumber Trade Jour. 15 (5): 19. Also pub. in Amer. Lumberman 1797: 37.
MURPHY, L. S.
1914. FOREST TAXATION AND THE SINGLE TAX. Forestry Quart. 12: 546–547.
———
1915. THE SINGLE TAX IN RELATION TO FORESTRY. Public 18: 217–224.
———
1919. SINGLE TAXER'S DISTINCTION BETWEEN LAND AND STANDING TIMBER EXPLAINED. Amer. Lumberman 2308: 58–60.
———
1921. DISCUSSION OUTLINING A PLAN FOR DISCOUNTING THE YIELD TAX. Natl. Tax Assoc. Proc. 14: 52–55.
———
1922. DISCUSSING REPORT OF THE COMMITTEE ON FOREST TAXATION. Natl. Tax Assoc. Proc. 15: 140–142.
———
1922. MAINE'S NEW TAX LAW IN THE TOILS. Jour. Forestry 20: 826–828.
———
1922. MANY STATE LAWS IN AID OF FORESTRY. Amer. Lumberman 2475: 51–52.

MURPHY, L. S.
1922. STATEMENT CONCERNING SENATOR VAUGHAN'S PROPOSAL TO LEVY A TAX UPON ALL NATURAL RESOURCES. Natl. Tax Assoc. Proc. 15: 447–450.

———
1923. COMMENT ON "A PROPOSED TAX LAW FOR NEW YORK STATE," BY C. R. PETTIS. Jour. Forestry 21: 26–29.

———
1923. FOREST TAXATION. Mich. Com. Inquiry into Taxation Rept. 1923: 56–62. Also pub. in Lumber Trade Jour. 84 (1): 11, 16; and Bull. Natl. Tax Assoc. 8 (7): 193–194.

———
1923. FOREST TAXATION EXPERIENCES OF THE STATES AND CONCLUSIONS BASED ON THEM. West Coast Lumberman 45 (529): 52b, 54. Also pub. in Jour. Forestry 22: 453–463, 1924.

———
1924. THE MISUSE OF SALES IN VALUING FOREST PROPERTY. Natl. Tax Assoc. Proc. 17: 231–238.

———
1930. PRELIMINARY SET OF TABLES RELATING TO FOREST TAXATION IN NEW HAMPSHIRE WITH EXPLANATORY NOTES AND DEFINITIONS. Forest Taxation Inquiry, 6 pp., 45 tables. [Mimeographed.]

———
1930. COMMENTS ON "AN EXAMPLE OF FOREST TAXATION IN NEW HAMPSHIRE AS COMPARED WITH AN EXAMPLE IN SWEDEN" BY J. W. TOUMEY AND ERIK LINDEBERG. Jour. Forestry 28: 826–830.

———
1933. THE YIELD TAX AND THE 1933 LEGISLATURES. U. S. Dept. Agr. Forest Worker 9 (3): 2.

———
1934. SELECTED PROVISIONS OF SPECIAL FOREST TAX LAWS IN THE VARIOUS STATES AS OF JANUARY 1, 1934. *In* Tax Research Foundation, Tax Systems of the World, ed. 5, rev., pp. 156–157.

——— CHAPMAN, H. H., FAIRCHILD, F. R., KING, C. L., SELIGMAN, E. R. A., GRAVES, M., and others.
1925. THE GENERAL PROPERTY TAX AND FOREST PROPERTY. Jour. Forestry 23: 717–780.

NICKEY, S. M.
1916. TIMBERLAND TAXATION. South. Lumberman 1102: 28. Also pub. in South. Lumber Jour. 40 (10): 37.

ORDWAY, S. H.
1914. FOREST TAXATION. Paper Mill and Wood Pulp News 37 (8): 76–80.

OSTRANDER, G. N.
1918. REPORT OF FOREST TAXATION COMMITTEE OF THE NEW YORK FORESTRY ASSOCIATION. N. Y. Forestry 5 (2): 5–12.

———
1930. FOREST TAXATION DEVELOPMENTS IN NEW YORK STATE. N. Y. Forestry 10 (2): 42–45.

OVERMAN, F. H.
1931. EFFECTS OF TAXATION ON HOLDING FOREST PROPERTY. Jour. Forestry 29: 925–929.

PACK, C. L.
1910. FOREST CONSERVATION AND TAXATION. Amer. Forestry 16: 291–292.

PARKER, G.
1921. COMMENT ON "FOREST TAXATION." Jour. Forestry 19: 925–927.

PEAVY, G. W.
1927. TAX BURDEN ON TIMBER. Oreg. Voter 49 (4): 16–18.

———
1927. TAXING REFORESTATION LANDS. Four L Lumber News 9 (1): 6, 41.

PETTIS, C. R.
1912. FOREST TAXATION. N. Y. State Conserv. Comm., Div. Lands and Forests Bull. 8, 19 pp.

———
1921. FOREST TAXATION IN NEW YORK. Natl. Tax Assoc. Proc. 14: 58–62.

———
1923. A PROPOSED TAX LAW FOR NEW YORK STATE. Jour. Forestry 21: 25–29.

PHILLIPS, G. R.
1925. WOODLAND INSPECTION UNDER THE INDIANA FOREST LAND TAX REDUCTION ACT. (Abstract) Jour. Forestry 23: 538–539.

PINGREE, D.
1931. A MATHEMATICAL APPROACH TO FOREST TAXATION. Jour. Forestry 29: 750–762.

———
1933. RATE OF RETURN IN A FOREST INVESTMENT. Jour. Forestry 31: 584–587.
PLEYDELL, A. C.
1917. TAXATION OF FOREST AND MINERAL LAND. Single Tax Yearbook (Quinquennial) 1917: 224–226.
PLUMB, F. H.
1909. ASSESSING THE FORESTS [IN CONNECTICUT]. Amer. Cult. 71 (4): 2.
POLLOCK, E. W.
1915. THE POLLOCK PLAN FOR EQUITABLY ASSESSING TIMBER AND MILL HOLDINGS. West Coast Lumberman 28 (330): 21, 33.
PRATT, M. B.
1925. CALIFORNIA LEGISLATION RECOGNIZES TIMBER AS A CROP. Forest Patrolman 6 (4): 2–3.
PUTNAM, C. E.
1932. A RADICALLY DIFFERENT PLAN FOR TIMBER TAXATION. West Coast Lumberman 59 (10): 7, 14.
RANE, F. W.
1918. THE FOREST CLASSIFICATION LAW OF MASSACHUSETTS. N. Y. Forestry 5 (2): 22–24.
RECKNAGEL, A. B.
1919. FOREST TAX LEGISLATION, 1919. N. Y. Forestry 6 (2): 35–38.
REYNOLDS, H. A.
1913. A CITIZEN'S MOVEMENT TO REDUCE THE TAX RATE. Mass. Forestry Assoc. Bull. 104, 8 pp.
RHODES, G. H.
1922. FORESTRY AS A BUSINESS. Amer. Forestry 28: 515–520.

———
1922. LOCALIZING FORESTRY. Amer. Lumberman 2464: 51; 2465: 54–55; 2466: 47–48; 2467: 37; 2468: 51.
RHODES, J. E.
1909. FORESTRY, FIRE, AND TAXATION. South. Lumberman 697: 32–33. Also pub. in St. Louis Lumberman 43 (4): 32–34.
ROBERTS, B. L.
1928. HOW YOU CAN HELP SAVE OUR FORESTS. W. Va. Wild Life 6 (5): 12–13.
ROBINSON, C. F.
1909. FOREST TAXATION IN MAINE. Natl. Tax Assoc. Proc. 3: 359–364; discussion, p. 365.

———
1909. STATE TAXATION AND FOREST LANDS. Polit. Sci. Quart. 24: 615–622.
ROCKWELL, T. D.
1912. TAXATION OF TIMBER LANDS UNDER THE GENERAL PROPERTY TAX SYSTEM. Wash. State Bd. Tax Commrs. Bien. Rept. 4: 14–17.
ROGERS, H. K.
1930. A PROGRAM OF ACTION. Soc. Protect. N. H. Forests, Rural Betterment and Forest Taxes, pp. 7–10.
ROTH, F.
1917. WHAT IS A BASIS FOR YIELD TAX? Jour. Forestry 15: 886–890.
ROTHROCK, J. T.
1892. REMOVE THE TAX FROM TIMBER LANDS. Forest Leaves 3: 152–153.

———
1913. PENNSYLVANIA'S TIMBER TAXATION BILLS. Amer. Forestry 19: 477–482.
ROUNTREE, J. L.
1930. TAXATION AND FOREST ENTERPRISE. Ga. Forest Serv. Bull. 11: 103–105.
RUDDLE, J.
1909. TAXING LAND HELD FOR REFORESTATION. Forest Leaves 12: 73–75.
RYALL, A. H.
1916. TAXATION OF TIMBER LANDS. Mich. State Tax Assoc. Proc. 1916: 107–117.
SCHENCK, C. A.
1899. FOREST TAXATION. N. Y. Fisheries, Game and Forestry Comn. Ann. Rept. 5: 395–400.

———
1927. FOREST TAXATION ABROAD. Mont. Univ. Forestry Club, Forestry Kaimin 1927: 13–15.

SCHROEDER, J.
1928. THE FOREST CROP (TAX) LAW: ITS APPLICATION TO THE LUMBER OPERATOR. Wis. Com. Forestry Conf. Off. Rept. 1928: 131–132.
SELFRIDGE, E. A., JR.
1915. TAXATION AND FORESTRY. South. Lumber Jour. 38 (10): 41. Also pub. in Amer. Lumberman 2113: 36.
SHAW, A. C.
1907. FOREST TAXATION. Natl. Tax Assoc. Proc. 1: 256–270.

1908. INEQUITABLE TAXATION OF STANDING TIMBER. Amer. Lumberman 1720: 47.

1908. TAXATION OF FOREST LANDS. Natl. Tax. Assoc. Proc. 2: 83–91. Also pub. in Paper Trade Jour. 48 (5): 259–261, 1909.
SHERIDAN, E. J., JR.
1928. THE PRINCIPLE OF ECONOMICS APPLIED TO THE TAXATION OF FOREST LANDS. South. Lumberman 1726: 39–40.
SHIPPEN, W. H.
1912. TAXATION OF TIMBERLAND HOLDINGS. Amer. Lumberman 1952: 39.
SKEELS, I.
1919. FEDERAL TAX ON TIMBER STUMPAGE. Amer. Lumberman 2303: 42–43.
SMITH, B. F.
1927. FOREST TAX LAWS IN OPERATION—LOUISIANA. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 133–136.
SMITH, C. A.
1909. REFORESTATION OF CUT-OVER LANDS AND THE PROBLEMS OF TAXATION. Timberman 11 (2): 50.
SPAULDING, T. C.
1925. MONTANA'S TIMBERLAND TAXATION PROBLEM. Mont. Univ. Forestry Club, Forestry Kaimin 1925: 45–49, 93.
SPRAGUE, R. J.
1907. TAXATION OF WILD LANDS. *His* Tax Problems in Maine. Natl. Tax Assoc. Proc. 1: 467–470.
STARR, C. L.
1928. TAXATION AND REFORESTATION. Natl. Tax Assoc. Proc. 21: 347–358.
START, E. A.
1911. TAXATION OF FOREST LANDS; A REVIEW OF RECENT STUDIES IN NEW HAMPSHIRE AND WISCONSIN. Amer. Forestry 17: 256–264.
STEVENS, C. M.
1923. TAXATION AND SOME ASPECTS OF OUR FOREST PROBLEM. Wash. [State] Univ. Forest Club Quart. 2 (3): 11–15.

1924. THE TAXATION OF FOREST PROPERTY IN THE STATE OF WASHINGTON. Jour. Forestry 22: 464–475.

1924. THE TAXATION OF FORESTS. Lumber World Rev. 46 (9): 23–24. Also pub. in West Coast Lumberman 45 (541): 28, 52.
STONE, F. H.
1924. FOREST TAXATION. South. Lumberman 1523: 35–36.
STRADFORD, R. B.
1931. CHANGE IN TAX RULING EFFECTING TIMBER. Timberman 33 (2): 82–83.
STURGIS, H. H.
1925. WOULD EXEMPT MAINE FOREST GROWTH FROM TAXATION. N. Y. Lumber Trade Jour. 78 (931): 21.
SWAN, O. T.
1927. FOREST TAXATION—A REVIEW OF THE SESSION. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 115.
SWINDELL, W. B.
1925. MONEY-SAVING TAX FACTS FOR TIMBER OWNERS. South. Lumberman 1534: 39.
TALBOT, E. A.
1930. FIFTEEN PERCENT TAX ON LUMBER. South. Lumberman 138: 51–52.
TEWELL, H. S.
1925. DETAILS OF A BRITISH COLUMBIA NEW TIMBER ROYALTY ACT. West Coast Lumberman 47 (560): 64.
THOMSON, R. B.
1931. METHODS USED IN A STUDY OF FOREST TAXATION. Minn. Univ. Forestry Club, Gopher Peavey 1931: 71–74.

TOUMEY, J. W.
1928. WHAT AILS NEW ENGLAND FORESTS? Jour. Forestry 26: 464–471.

———
1930. THE DESTRUCTIVE NATURE OF FOREST TAXATION IN NEW HAMPSHIRE. Soc. Protect. N. H. Forests, Rural Betterment and Forest Taxes, pp. 3–6.

——— and LINDEBERG, E.
1930. AN EXAMPLE OF FOREST TAXATION IN NEW HAMPSHIRE AS COMPARED WITH AN EXAMPLE IN SWEDEN. Jour. Forestry 28: 199–211.

TOWNSEND, T. C.
[1930]. TAXATION AND ITS EFFECT ON FORESTRY IN WEST VIRGINIA. W. Va. Com. Forestry Conf. Proc. 1929: 130–133.

TYLER, J. W.
1929. FOREST TAXATION AND THE PENNSYLVANIA AUXILIARY FOREST RESERVE LAWS. Forest Leaves 22: 85.

VAUGHAN, G.
1922. TAXATION OF NATURAL RESOURCES. Natl. Tax Assoc. Proc. 15: 425–453.

———
1925. HOW MANY STATES BEST FINANCE FORESTRY? Natl. Tax Assoc. Bull. 10 (6): 188–191. Also pub. in South. Forestry Cong. Proc. 7: 40–46.

———
1925. REPORT OF COMMITTEE ON FOREST TAXATION. Natl. Tax Assoc. Proc. 18: 269–270.

VEASEY, W. D.
1920. TIMBER TAXATION. Natl. Tax Assoc. Bull. 5 (9): 278–281.

VIBERT, F.
1924. BENEFITS OF READJUSTED FOREST TAXATION. Jour. Forestry 22: 392–395.

VON SCHRENK, H.
1909. PRACTICAL PROBLEMS IN STATE FORESTRY. Lumber Trade Jour. 56 (9): 41.

WAGER, P. W.
1932. FOREST TAXATION. N. C. Law Rev. 10 (3): 255–275.

WALDER, J. F.
1922. AN AUXILIARY FOREST RESERVE. Forest Leaves 18: 154–155.

WALKER, T. B.
1908. TAXATION OF TIMBERLANDS. Miss. Valley Lumberman 39 (26): 245. Also pub. in St. Louis Lumberman 42 (1): 28–29.

———
1909. FOREST TAXATION. Timberman 10 (12): 32a.

[——— and SCAMMON, E. G.]
[1909]. TAXATION OF TIMBER LANDS AND THE FUTURE LUMBER SUPPLY. [19 pp.]

WALKER, W. J.
1909. UNJUST TIMBER LAND TAXATION. Pacific Coast Wood and Iron 51 (8): 9.

WARD, C. W.
1907. TAXATION OF TIMBER AN INCENTIVE TO ITS DESTRUCTION. Amer. Lumberman 1697: 37–38.

———
1909. GOOD ADVICE FROM MINNESOTA. Minn. Forester 1 (12): 136–140.

———
1911. TAXATION OF AMERICAN TIMBER HOLDINGS. Amer. Lumberman 1910: 50–51.

WELD, C. W.
1902. TOO MUCH IMMATURE CUTTING; EXEMPTION FROM TAXATION. New England Farmer 81 (2): 2.

WENGERT, E.
1928. THE FOREST CROP (TAX) LAW: ITS ADMINISTRATION. Wis. Com. Forestry Conf. Rept. 1928: 128–131.

WHEATON, W. R.
1928. THE FOREST CROP (TAX) LAW: ITS APPLICATION TO THE PULPWOOD OPERATOR. Wis. Com. Forestry Conf. Off. Rept. 1928: 132–134.

WHIPPLE, G. A.
1926. TAXING AND INSURING YOUR TREES. Farm Jour. 48: 11, 49, 79. Also pub. in Pa. Forest Prod. Manfrs. Assoc. 1 (5): 28–36.

WHITE, J. B.
1908. TAXATION AS RELATED TO FOREST PRESERVATION. St. Louis Lumberman: 42 (1): 63–64. Also pub. in South. Lumberman 665: 29–30.

WHITTEMORE, L. F.
1927. REVIEW OF THE DISCUSSION IN REGARD TO TIMBER TAXATION BEFORE THE RECESS TAX COMMISSION. N. H. Forests 4 (4): 13–14.
WIER, R. W.
1929. FOREST TAXATION FROM THE POINT OF VIEW OF PUBLIC REVENUE. South. Forestry Cong. Proc. 11: 24–28.
WILSON, F. G.
1932. WISCONSIN'S COUNTY FOREST PROGRAM. Jour. Forestry 30: 155–161.
WILSON, H. M.
1932. TAX AND FIRE PROBLEMS OF THE NAVAL STORES INDUSTRY. South. Lumber Jour. (Florida forestry supplement) 36 (12 sup.): 20.
WILSON, S. A.
1929. REFORESTATION LAWS OF CALIFORNIA, IDAHO, AND OREGON. Timberman 31 (1): 76–80.

———
1929. SOME ECONOMIC ASPECTS OF FORESTRY FROM A BANKER'S VIEWPOINT. Jour. Forestry 27: 38–44.
WINKENWERDER, H.
1925. EFFORTS TO ESTABLISH A FAIR TAX FOR CUT-OVER LANDS. Timberman 27 (1): 90. Also pub. in Pacific Logging Cong. Proc. 16: 28.

———
1931. TIMBER LAND TAXATION RELIEF IN WASHINGTON. West Coast Lumberman 58 (1): 18–19, 33.
WIRT, G. H.
1929. FOREST TAXATION. Pa. Dept. Forests and Waters, Serv. Letter (2) 327: 6. Also pub. in Anthracite Forest Protector 3 (6): 3–4; and Forest Leaves 22: 91–93.
WOODWARD, K. W.
1918. TAXATION OF WOODLANDS. N. H. Univ. [Agr.] Ext. Cir. 39, 19 pp.
ZIEGLER, E. A.
1928. FOREST TAXATION AN ECONOMIC FACTOR IN THE REESTABLISHMENT OF OUR FORESTS. Pa. Acad. Sci. Proc. 2: 72–79.

———
1932. FOREST TAXATION. Pa. Dept. Forests and Waters, Serv. Letter (3) 456: 1–2.

(*See also* Cunningham and Frank (*66*), Biolley (*267*), Gaskill (*190*), Lyford and Margolin (*197*), and Moreillon (*272*), and footnotes 5–10, in part 1.)

REPORTS OF STATE AND OTHER ORGANIZATIONS ON FOREST TAXATION

AMERICAN PAPER & PULP ASSOCIATION, WOODLANDS SECTION
1927. PROGRESS IN FOREST TAX LEGISLATION. Paper Trade Jour. 84 (2): 36.
CALIFORNIA FOREST PROTECTIVE ASSOCIATION
1914. BEING A PRESENTATION OF THE PRINCIPLES OF A YIELD TAX ON TIMBER, BY AUTHORITIES ON TAXATION AND FORESTRY. Calif. Forest Protect. Assoc. Bull. 4, 8 pp.
CALIFORNIA STATE FORESTER
1911–12. FOREST TAXATION. Calif. State Forester Bien. Rept. 4: 72–89.
CHAMBER OF COMMERCE OF THE UNITED STATES
1921. REPORT OF THE COMMITTEE ON NATIONAL FORESTRY POLICY, SUBCOMMITTEE ON FOREST TAXATION. 44 pp. Washington, D. C.

———
1926. FOREST YIELD TAXES; THE PRESENT SITUATION AND TRENDS IN TAXING GROWING FORESTS. 15 pp. Washington, D. C.

———
1927. FOREST TAXATION. Chamber Com. U. S., Conf. Com. Forestry Rept. 1927: 115–138.

———
1930. REFERENDUM NO. 42 ON THE REPORT OF THE COMMITTEE ON NATIONAL FORESTRY POLICY. Rev. ed., 20 pp. Washington, D. C.
CONNECTICUT AGRICULTURAL EXPERIMENT STATION
1913. CONNECTICUT'S FOREST TAXATION LAW; SOMETHING NEW IN TAXATION. Conn. Agr. Expt. Sta. Forestry Pub. 9, 8 pp.
CONNECTICUT SPECIAL COMMISSION ON TAXATION OF WOODLANDS
1912. REPORT OF COMMISSION. Conn. Pub. Doc. 6, pt. 1, 54 pp., illus.

IDAHO TAX COMMISSION
1913–14. FOREST TAXATION. Idaho Tax. Comn. Bien. Rept. 1: 35–40.
MAINE TAX COMMISSION
1908. REPORT OF THE COMMISSION. 124 pp. Appendix 91 pp.
MARYLAND STATE BOARD OF FORESTRY
1913. TAXING WOODLANDS. Md. State Bd. Forestry Bien. Rept. 1912–13: 45–47; app., pp. 49–52.
MARYLAND STATE COMMISSION FOR THE REVISION OF THE TAXATION SYSTEM
1913. TAXATION OF WOODLANDS. Md. State Comn. Revision Taxation System Rept., pp. 343–348.
MASSACHUSETTS COMMISSION ON THE TAXATION OF WILD OR FOREST LANDS
1914. REPORT OF THE COMMISSION. Mass. Gen. Court, 1914, S. Doc. 426, 98 pp.
MASSACHUSETTS LEGISLATURE
1906. REPORT OF THE COMMITTEE OF 1905 TO CONSIDER THE LAWS RELATIVE TO THE TAXATION OF FOREST LANDS. Mass. Gen. Court, 1906, H. Doc. 134, 24 pp. Reprinted as Mass. State Forester Bull. 3, 28 pp.

———

1914. THE NEW MASSACHUSETTS FOREST TAXATION LAW EXPLAINED AND PRINTED IN FULL. 35 pp., illus. Boston.
MICHIGAN COMMISSION OF INQUIRY INTO TAX LANDS AND FORESTRY
1908. REPORT OF COMMISSION. 146 pp. Lansing.
MICHIGAN COMMISSION OF INQUIRY INTO TAXATION
1923. REPORT OF COMMISSION. 62 pp. Lansing.
MICHIGAN FORESTRY COMMISSION
1901. STEPS OF PROGRESS IN MICHIGAN FORESTRY. (Containing extracts on forest taxation.) Dec. 31, 1901, 60 pp.
1906. REPORT OF THE MICHIGAN FORESTRY COMMISSION FOR THE YEARS 1905–6. (Containing articles on forest taxation.) Mich. Forestry Comn. Bien. Rept. 1905–6, 214 pp.

———

1908. REPORT OF THE MICHIGAN FORESTRY COMMISSION FOR THE YEARS 1907–8. (Containing articles on forest taxation.) Mich. Forestry Comn. Bien. Rept. 1907–8, 126 pp. Preprinted (in part) as Combined Effort in the Promotion of Forestry, 23 pp.
MICHIGAN FORESTRY CONFERENCE
1922. REPORT OF TIMBERLAND TAXATION COMMITTEE. Mich. Dept. Conserv., Forestry Conf. Proc. 1922: 3–19.
MINNESOTA TAX COMMISSION
1908. LOG AND TIMBER TAXATION. Minn. Tax Comn. Bien. Rept. 1: 149–161.

———

1910. TIMBER LAND, LOGS, AND LUMBER. Minn. Tax Comn. Bien. Rept. 2: 215–223. Reprinted (in part) in Miss. Valley Lumberman 42 (10): 28, 1911.
NATIONAL CONSERVATION CONGRESS, FIFTH
1913. REPORT OF THE SUBCOMMITTEE ON FOREST TAXATION. *In* Report of the Forestry Committee, pp. 108–142; discussion, pp. 142–146. Also pub. as Advance Rept., 32 pp.
NATIONAL INDUSTRIAL CONFERENCE BOARD
1924. THE TAXATION OF FOREST LANDS. *In* The Tax Problem in Wisconsin, ch. 7, pp. 138–159. Review in Jour. Forestry 23: 826–832. 1925.
NATIONAL LUMBER MANUFACTURERS ASSOCIATION
1926. REPORT OF ITS ADVISORY TAX COMMITTEE. Amer. Lumberman 2664: 56–57. Also pub. in Paper Trade Jour. 83 (6): 68–69.
NATIONAL TAX ASSOCIATION
1913. REPORT OF COMMITTEE ON FOREST TAXATION Natl. Tax Assoc. Proc. 7: 413–443.

———

1922. REPORT OF COMMITTEE ON FOREST TAXATION Natl. Tax Assoc. Proc. 15: 127–139. Also pub. in Amer. Forestry 28: 655–660, 667.
NEW HAMPSHIRE CIVIC ASSOCIATION
1924. REPORT OF THE COMMITTEE ON FOREST TAXATION N. H. Forestry Comn. Bien. Rept. 1923–24 (app.): 132–133.
NEW HAMPSHIRE FARM BUREAU FEDERATION
[1928]. INEQUALITIES OF TAXATION UNEARTHED BY N. H. FARM BUREAU FEDERATION. PRELIMINARY REPORT OF COMMITTEE ON TAXATION. Farm Bureau Federation News.

New Hampshire Forestry Commission
1928. forest taxation N. H. Forestry Comn. Bien. Rept. 1927–28: 26–45.
New Hampshire Recess Tax Commission of 1927–28
1929. report of commission 33 pp. Concord. (Bound with N. H. State Tax Comn. Ann. Rept. 19.)
New Hampshire Tax Commission of 1908
1908. forest taxation N. H. Tax Comn. Rept. 1908: 175–200, 306–310.
New York State Forestry Association
1918. forest taxation (Containing report of taxation committee . . . and references to legislative bills.) N. Y. Forestry, v. 5, no. 2 (Forest Taxation number).
New York State Legislature
1924. forest taxation report of special joint committee on taxation and retrenchment. pt. 1. N. Y. State Leg. Doc. (1924) 91: 7, 10, 13–95, 175–180. Review in Jour. Forestry 23: 821–826. 1925.
Ohio Agricultural Experiment Station, Department of Forestry
1925. the taxation of forest lands Ohio Agr. Expt. Sta. Forestry Pub. 1, 4 pp.
Oregon State Reforestation Commission
1926. report, 1926. Oregon State Reforestation Comn. Rept. 1926, 15 pp., illus. Reprinted (in part) under title "Proposed Forestry Legislation for Oregon" in Timberman 28 (2): 204–208.
Pennsylvania Department of Forestry
1907–15. forest taxation. Pa. Dept. Forestry Off. Doc. 1905–6 (25): 15–20, 1907; 1907 (24): 22–31, 1908; 1909 (24): 46, 1910; 1910–11 (26): 24, 1912; 1912–13 (26): 23–29, 1915.
Pennsylvania Forestry Association
1913–14. pennsylvania forestry taxation legislation. Forest Leaves 14: 58–62.
Pennsylvania Mineral and Forest Land Taxation Commission
1933. report . . . to the general assembly of pennsylvania, session of 1933. 35 pp. [Harrisburg.]
Society for the Protection of New Hampshire Forests and the New Hampshire State Forestry Commission
1912. taxation of forests: papers and discussion at a forest conference in the white mountains, july 12, 1912 . . . 80 pp. Concord.

———

1930. rural betterment and forest taxes. a symposium at the forest conference, north woodstock, n. h., sept. 3, 1930. 20 pp. Concord.
Society of American Foresters
1925. forest taxation number. Jour. Forestry v. 23, nos. 9–10. (Contains contributions from various writers and reviews of State forest taxation reports of New York and Wisconsin.)
Society of American Foresters, Portland Section
1924. taxation as it would pertain to reforestation. Timberman 25 (6): 134–138.
Washington State Commission on Forest Legislation
1910. report of the committee on forest taxation. *In* the report of the Commission, pp. 49–68, addenda, pp. 69–87. [Mimeographed.] Reprinted in part in Amer. Lumberman, 1856: 58.
Washington State Forestry Conference
1923. report of committee on forest taxation. Wash. [State] Univ. Forest Club Quart. 1 (4): 22–28.

———

1924. washington's annual forestry conference. Timberman 26 (2): 164, 166, 168–170.
Washington State Tax Conference
1914. taxation in washington; papers and discussions. 302 pp. Seattle, Wash.
West Virginia Commercial Forestry Conference
[1930]. what the forests mean to the future of west virginia. W. Va. Com. Forestry Conf. Proc. 1929, 152 pp.
Wisconsin Commercial Forestry Conference
1928. the forest crop (tax) law. *In* Forestry in Wisconsin, A New Outlook. Wis. Com. Forestry Conf. Off. Rept. 1928: 127–136.

FOREST TAXATION IN THE BRITISH COMMONWEALTH OF NATIONS

CANADA

Adkin, B. W.
1929. The rating and taxation of woodlands. Quart. Jour. Forestry 23: 230–237.
Beck, E.
1926. Burden of taxation on lumber and allied industries must be reduced. Canada Lumberman 46 (7): 32–33.
Clark, J. F.
1905. Woodland taxation. Canad. Forestry Jour. 1: 159–172.
Patterson, W. I.
1911. Timber land taxation in british columbia. Canada Lumberman and Wood-Worker 31 (13): 27–28. Also pub. in Timberman 12 (9): 62–63; Pioneer West. Lumberman 60 (1): 17–19, 1913; and Canada Lumberman and Wood-Worker 33 (15): 31–32, 1913.
Unwin, A. H.
1906. Forest land taxation. Canad. Forestry Jour. 2: 148–149.

GREAT BRITAIN

Arnould, A.
1919. L'impôt forestier en angleterre. Rev. Eaux et Forêts 57: 2–3. Also pub. in Jour. Forestry 17: 444–445.
Burrows, A. J.
1922. The rating and taxation of woodlands. Country Life [London] 51: 153–154.
Donne, C. H., and Anderson, R.
1908. Taxation of woodland. Quart. Jour. Forestry 2: 4–24.
Duchesne, M. C.
1916. Income tax on woodlands. Quart. Jour. Forestry 10: 314–318.
Elwes, H. J.
1917. Income tax on woodlands. Quart. Jour. Forestry 11: 66–68.
Galloway, R.
1913. Death duties on woods. Roy. Scot. Arbor. Soc. Trans. 27: 36–40.
———
1917. Forestry and income tax. Roy. Scot. Arbor. Soc. Trans. 31: 31–35.
Great Britain Forestry Commission
1923. Income tax and death duties on woodlands. Gr. Brit. Forestry Comn. Leaflet 12, 15 pp.
Green, G.
1909. Taxation of woodlands. Quart. Jour. Forestry 3: 264–273.
MacKenzie, K.
1910. Afforestation and local taxation. Roy. Scot. Arbor. Soc. Trans. 23: 3–7.
Malcolm, E. D.
1922. Afforestation and taxation. Timber Trades Jour. 91: 366.
Maughan, J.
1922. Death duties on timber. Quart. Jour. Forestry 16: 212–216.
Maw, P. T.
1917. Taxation of woodlands. Quart. Jour. Forestry 11: 131–132.
———
1919. Notes and suggestions on death duties, taxes and rates on woodlands. Quart. Jour. Forestry 13: 185–193.
Pratt, E. R.
1926. Estate and succession duty on forestry. Quart. Jour. Forestry 20: 303–312.
Scotland, Board of Agriculture
1914. Death duties on timber and woodlands. Scotland Bd. Agr. Leaflet 24, 2 pp.
Wood, J.
1922. The taxation of woodlands. Estate Mag. 22: 425–430.

101285°—35——43

Wood, L. S.
1909. THE RATING AND TAXATION OF WOODLANDS. Timber Trades Jour. 65: 1210–1212. Also pub. in Roy. Eng. Arbor. Soc. Rept. Brit. Timber Conf. 1909: 24–37.
Wrey, C.
1923. WOODLANDS RATING APPEAL. Estate Mag. 23: 314–317. Reviewed in Jour. Forestry 22: 318–321, 1924.

NEW ZEALAND

Foster, F. W.
1924. THE TAXATION OF LAND AND STANDING TIMBER IN PLANTATIONS AND INDIGENOUS FORESTS OF NEW ZEALAND. New Zeal. State Forest Serv. Circ. 4, 12 pp. Also pub. as New Zeal. State Forest Serv. Leaflet 10, 3 pp. 1928.
New Zealand Timber Royalties Commission.
1924. REPORT. 20 pp., illus.

FOREST TAXATION IN CONTINENTAL EUROPE

BELGIUM

Drion, R.
1921. IMPÔT FORESTIER; MODIFICATIONS. Bull. Soc. Cent. Forest. Belg. 27: 431–433, 491–511, 553–573; 28: 11–19.

———

1922. LE PROJET D'INSTRUCTION DE JANVIER, 1922, SUR LE RÉGIME FISCAL DES PROPRIÉTÉS BOISÉES. Bull. Soc. Cent. Forest. Belg. 29: 374–385.
Goblet d'Alviella, F., ed.
1921. L'IMPÔT SUR LES REVENUS FORESTIERS. Bull. Soc. Cent. Forest. Belg. 24: 399–427.

———

1922. RAPPORT SUR LE PROJET D'INSTRUCTION DU MINISTÈRE DES FINANCES EN MATIÈRE D'IMPÔTS FORESTIERS. Bull. Soc. Cent. Forest. Belg. 25: 489–510.

———

1923. L'IMPÔT SUR LE REVENUE DANS SON APPLICATION À LA PROPRIÉTÉ BOISÉE. 11th Internatl. Cong. Agr. 2: 316–329.

———

1927. LE PROJET DE LOI MODIFIANT LES IMPÔTS FORESTIERS. Bull. Soc. Cent. Forest. Belg. 30: 298–306.
Paillé
1930. NOTE AU SUJET DE L'INSTITUTION D'UNE TAXE SUR LES COUPES ANORMALES. Bull. Soc. Cent. Forest. Belg. 37: 366–368.

CZECHOSLOVAKIA

Zedtwitz, A.
1926. PRODUIT ANNUEL ET IMPOSITION DES FORÊTS. 1st Internatl. Cong. Sylvic. Actes 3: 362–371.

DENMARK

Grøn, A. H.
1929. SKOVFJENDTLIG SKATTEPOLITIK. Dansk. Skovfor. Tidsskr. 14: 317–335. Reviewed in Internatl. Inst. Agr., Sci. and Pract. Agr. Monthly Bull. 20: 424–425.

FINLAND

Lakari, O. J.
1929. VALTION METSATULOT KUNNALLISVEROTUKSESSA. [DIE WALDERTRAGE DES STAATES IN DER KOMMUNALBESTEURUNG.] Acta Forest. Fennica v. 34, pt. 35.
Saari, E.
1933. SUOMEN NYKYISEN METSÄ VEROTUKSEN TARKASTELUA. [DIE HEUTIGE WALDBESTEUERUNG IN FINNLAND.] Kansantaloudellinen Aikakauskirja 5 (29) (2): 198–213. Ylipainos [Separate], 17 pp.; German synopsis on p. 17.

FRANCE[60]

ARNOULD, A.
1908. L'IMPÔT SUR LE REVENU ET LES FORÊTS. Rev. Eaux et Forêts, 47: 1–12.

———
1908. LE REVENU IMPOSABLE DES FORÊTS. Bull. Trimest. Soc. Forêt Franche-Comté et Belfort 9 (sup. 4): 1–32.

———
1913. L'IMPÔT FORESTIER. Cong. Forest. Internatl. 1913: 258–303.

———
1913. L'IMPÔT FORESTIER; L'EVALUATION DU REVENU IMPOSABLE DES FORÊTS. Rev. Eaux et Forêts 52: 129–131.

———
1931. LES FORÊTS ET LES DROITS DE SUCCESSION. Rev. Eaux et Forêts 69: 310–312.

———
1932. LES FORÊTS ET LA TAXE À LA PRODUCTION. Rev. Eaux et Forêts 70: 491–493.

———
1933. REVISION DES ÉVALUATIONS FORESTIÈRES. Rev. Eaux et Forêts 71: 261–273.

BOUQUET DE LA GRYE
1893. LES EXEMPTIONS D'IMPÔTS DES TERRAIN BOISÉS. Rev. Eaux et Forêts 32: 561–563.

DEROYE, F.
1931–32. LE RÉGIME FISCAL EN MATIÈRE FORESTIÈRE. Bull. Soc. Forest. Franche-Comté et Provs. de l'Est 19: 121–130.

DREUZY, DEL.
1930. L'APPLICATION DE L'IMPÔT FONCIER DANS LE CAS DE REPLANTATION. Bull. Com. Forêts 7 (42): 198–207.

GÉNEAU, G.
1930. CONDITIONS D'APPLICATION DE L'ARTICLE 15 DE LA LOI DU 16, AVRIL 1930. Rev. Eaux et Forêts 68: 655–656.

———
1930. LE DROIT DE MUTATION SUR LES PROPRIÉTÉS BOISÉES. Rev. Eaux et Forêts 68: 727–730.

GOUGET
1913. LA DESTRUCTION DES FORÊTS PARTICULIÈRES PAR LES CHARGES FISCALES. Rev. Eaux et Forêts 51: 1–5.

GRANGER, A.
1926. UNE NOUVELLE LEGISLATION FORESTIÈRE. Rev. Eaux et Forêts 64: 292–296.

HIRSCH, P.
1930–31. LE DROIT DE MUTATION SUR LES PROPRIÉTÉS BOISÉES. Rev. Eaux et Forêts 68: 727–730, 1930; 69: 212–214, 1931.

LIGNIERES, DE
1911. LE REVENUE IMPOSABLE DES FORÊTS. Rev. Eaux et Forêts 50: 343–346.

NERON
1930. DISCOURS . . . Bull. Com. Forêts 7: 273–297.

PALLU, R.
1926. LES MOYENS DE FAVORISER LE REBOISEMENT ET LA CONSERVATION DES FORÊTS PAR LA SIMPLIFICATION DE LA LÉGISLATION. 1st Internatl. Cong. Sylvic. Actes 3: 315–322.

ROTHEA, M.
1909. L'IMPÔT DES FORÊTS. Rev. Eaux et Forêts 49: 385–386.

SOCIÉTÉ FORESTIÈRE DE FRANCHE-COMTÉ ET BELFORT.
1908. LE REVENU IMPOSABLE DES FORÊTS. 8 pp. Bescançon.

VIOLETTE, A.
1911. LE REVENU IMPOSABLE DES FORÊTS; DETERMINATION. Rev. Eaux et Forêts 50: 193–204.

(*See also* Fernow (1908) on p. 660, Barbier (*235*), Comité des Forêts (*236*, *237*, *238*), France, Minister of Finance (*241*), Gény (*242*), Jagerschmidt (*244*).)

[60] Recent developments in the forest-tax situation in France can best be followed through the Bulletin du Comité des Forêts, a monthly publication issued by the central council of the forest owners of France. The most important items appearing in this periodical during 1930-33 are here cited.

GERMANY AND AUSTRIA

ALBERT, J.
1866. LEHRBUCH DER FORSTGRUNDSTEUERERMITTLUNG. 121 pp. Vienna.
AUERSPERG, FÜRST
1910. EINGABE DES ÖSTERREICHISCHEN REICHSFORSTVEREINS BETREFFEND DIE BEMESSUNG DER PERSONALEINKOMMENSTEUER BEIM VERKAUF VON SCHADHOLZERN. Österr. Vrtljschr. Forstw. 60: 112–116.

———
1911. EINGABE DES ÖSTERREICHISCHEN REICHSFORSTVEREINES AN BEIDE HÄUSER DES HOHEN REICHSRATES BETREFFS BESTEUERUNG DES EINKOMMENS AUS DER FORSTWIRTSCHAFT. Östrr. Vrtljschr. Forstw. 61:220–224.
BAUER, J. R. VON
[1907.] GRUNDLAGEN EINER GERECHTER BESTEUERUNG DES WALDLANDES. Internatl. Landw. Cong. Vienna 1907, Sec. 8, Referat 8, 14 pp.

———
1909. STEUERFRAGEN DER FORSTWIRTSCHAFT. Centbl. Gesam. Forstw. 35: 50–58.

———
1912. DAS FORSTLICHE JAHRESEINKOMMEN NACH DER JUDIKATUR DES ÖSTERREICHISCHEN VERWALTUNGSGERICHTSHOFES, I. Centbl. Gesam. Forstw. 38: 3–16. Review in Forestry Quart. 10: 301–302.

———
1912. DAS FORSTLICHE JAHRESEINKOMMEN NACH DER JUDIKATUR DES ÖSTERREICHISCHEN VERWALTUNGSGERICHTSHOFES. LITERATURNACHTRÄGE ZU DEM GLEICHNAMIGEN AUFSATZE IM JANUAR HEFT 1912 DIESER ZEITSCHRIFT. Centbl. Gesam. Forstw. 38: 460–462.
——— and ENDRES, M.
1908. BASES D'UNE IMPOSITION EQUITABLE DE LA PROPRIÉTÉ BOISÉE. Ann. Sci. Agron. (3) 3 (pt. 2): 78–81.
BAUMBACH-KIRCHEIM
1930. ZU DEN NEUEN EINKOMMENSTEUERURTEILEN DES REICHSFINANZHOFS. Deut. Forstw. 12: 373–[?].
BISPINCK
1930. ZUR KLEINWALDBESITZBESTEURUNG. Deut. Forstw. 12: 85–86.
BLECKMAN, W.
1933. DIE EINHEITSBEWERTUNG DES NIEDER-, MITTEL-, PLENTER-, UND ÜBERFÜHRUNGSWALDES IN DER PROVINZ HANNOVER UND IM VORMALIGEN HERZOGTUM BRAUNSCHWEIG. Pub. by the author. Reviewed in Allg. Forst u. Jagd Ztg. 110: 67.
BODENSTEIN
1925. STEUER ERLEICHTERUNGEN FÜR WALDBESITZER DIE DURCH FORLEULENFRASS BESCHÄDIGT WORDEN SIND. Deut. Forstw. 94.
BUHR
1912. DIE REINERTRÄGE DER FORSTEN UND DER GRUNDSTEUEREINERTRAG. Ztschr. Forst u. Jagdw. 44: 105–109.
DANNECKER, F. K.
1925. ZUR WALDGRUNDSTEUER. Deut. Forstw.

———
1925. ZÜR WALDGRUNDSTEUER IN WÜRTTEMBERG. Deut. Forstw. 71.
ENDRES, M.
1899–1900. DIE BESTEUERUNG DES WALDES. Forstwiss. Centbl. 21: 489–501, 565–581, 1899; 22: 177–185, 1900.

———
1905. WALDBESTEUERUNG. *His* Handbuch der Forstpolitik, pp. 770–804.

———
[1907.] GRUNDLAGEN EINER GERECHTER BESTEUERUNG DES WALDLANDES. Internatl. Landw. Cong. Vienna 1907, sec. 8, Referat 8, 9 pp.
ERDMANN, F.
1898. DIE BESTEUERUNG DER FORSTEN IN PREUSSEN NACH DEM ERGÄNZUNGSSTEUER-GESETZ VOM 14 JULI 1893. Allg. Forst u. Jagd Ztg. [Frankfort on the Main.] 74: 37–45, 73–84.
FREY
1906. ZÜR FRAGE DER WALDBESTEUERUNG. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 82: 184–185. Review in Forest Quart. 4: 223–225.

GRAUBNER
1930. KLEINWALDBESITZBESTEUERUNG. Deut. Forstw. 12: 299–300.
HAUSRATH, H.
1902. DIE NEUREGELUNG DER WALDBESTEUERUNG IM GROSSHERZOGTHUM BADEN. Forstwiss. Centbl. 46: 14–19.
———
1906. DIE BESTEUERUNG DES WALDES. Forstwiss. Centbl. 50: 9–18.
HECKEL, M. VON
[1907.] VERGLEICHENDE DARSTELLUNG DER ERTRAGSBESTEUERUNG DER LANDWIRTSCHAFT. Internatl. Landw. Cong. Vienna 1907, sec. 1, Referat 6, 26 pp.
HERING
1933. ZUR FRAGE DER WALDBESTEUERUNG. Forstl. Wchnschr. Silva 22: 201–204.
HESSLING
1925. DIE FORSTWIRTSCHAFT UND DIE NEUEN STEUERGESETZE. Deut. Forstw. 86: —; 87: —.
HOFFMAN, F.
1928. DIE BESTEUERUNG DES WALDLANDES IN ÖSTERREICH. Österr. Vrtljschr. Forstw. 78: 144–151.
JUDEICH, J. F.
1877. DIE BESTEUERUNG DER WALDWIRTSCHAFT MIT BESONDERER BEZIEHUNG AUF DAS SÄCHSISCHE EINKOMMENSTEUERUNGGESETZ VON 22 DEC. 1874. Tharandter Forstl. Jahrb. 27: 53–81.
———
1888. DIE ANWENDUNG DER EINKOMMENSTEUER AUF DIE WALDWIRTSCHAFT MIT BESONDERER BEZIEHUNG AUF DIE IM KÖNIGREICH SACHSEN GELTENDEN STEUERGESETZE. Tharandter Forstl. Jahrb. 38: 88–110.
JUNACK, F.
1925. ZUR BERECHNUNG DES ERTRAGSWERTES DER FORSTEN. Deut. Forstw. 79: —.
KORDVAHR
1918. DIE STEUER VOM EINKOMMEN AUS DEM WALDE IN PREUSSEN. Ztschr. Forst u. Jagdw. 50(5): 193–198.
LEMMEL
1925. DIE BESTEUERUNG DES FORSTWIRTSCHAFTLICHEN EINKOMMENS NACH DEM NEUESTEN GESETZENTWURF. Deut. Forstw. 65. Review by H. Weber in Forstpolitik, Forstl. Jahresber. 1925: 137.
———
1925. ZUR EINKOMMENSTEUERGESETZENTWURF. Deut. Forstw. 73. Review by H. Weber in Forstpolitik, Forstl. Jahresber. 1925: 137–138.
LUDWIG, F.
1925. ZUR FORSTLICHEN EINKOMMENSTEUER. Deut. Forstw. 10, 75.
———
1932. PAUSCHALIERUNG DER UMSATZSTEUER FÜR HOLZ? Deut. Forstw. 14: 153–156.
———
1932. WAS IST IN DER FORSTWIRTSCHAFT ALS "WIRTSCHAFTLICHE EINHEIT" IM SINNE DES REICHSBEWERTUNGSGESETZES ANZUSEHEN? Deut. Forstw. 14: 718.
MULLER, H.
1928. ETWAS VON DER PREUSSISCHEN HOLZ-TAXE. Ztschr. Forst u. Jagdw. 60: 108–118.
NIEMAND, R.
1930. ZUR HEBUNG DES DEUTSCHEN KLEINWALDBESITZES. Deut. Forst Ztg. 45: 962–963.
OFFENBERG
1916. DIREKTERE BEWERTUNG DES WALDBODENS UND DES WALDBESTANDES. Ztschr. Forst u. Jagdw. 48: 635–639.
OSTWALD, E.
1913. DIE EINKOMMENSTEUER DES AUSSETZENDEN BETRIEBES. Ztschr. Forst u. Jagdw. 45(6): 381–384.
———
1922. ZUR VERSTÄNDIGUNG IN SACHSEN DER WALDRENTENTHEORIE. Tharandter Forstl. Jahrb. 73: 162–191.

OSTWALD, E.
1925. ZUR THEORIE DER FORSTLICHEN EINKOMMENSTEUER. Deut. Forstw. 27. Review by H. Weber in Forstpolitik, Forstl. Jahresber. 1925: 136–137.

———

1928. REINERTRAGSSTUDIEN. Forstarchiv 4: 141–147, 160–163.

———

1929. ETATSSTUDIEN. Tharandter Forstl. Jahrb. 80: 193–210.

RAAB, F.
1928. BEMERKUNGEN ZUR BESTEUERUNG DES EINKOMMENS AUS FORSTWIRTSCHAFT. Tharandter Forstl. Jahrb. 79: 302–313.

REICHSMINISTER DER FINANZEN
1930. VERORDNUNG ZUM AUSGLEICH BESONDERER HÄRTEN BEI DER BESTEUERUNG DES EINKOMMENS AUS LAND- UND FORSTWIRTSCHAFT VOM 16. Reichsmin. Finanzen Circ. S2140–5400 III, 4 pp.

———

1931. BETRIFFT REICHSBEWERTUNGSGESETZ; FESTSTELLUNG DER EINHEITSWERTE FORSTWIRTSCHAFTLICHER BETRIEBE. Reichsmin. Finanzen Circ. S3141A–40 III, 16 pp.; Circ. S3141A–41 III, 28 pp.

———

1931. FINANZAUSGLEICHGESETZ. ANLAGE ZUM RUNDERLASS DES REICHSMINISTERS DER FINANZEN VOM 20. Reichsmin. Finanzen Circ. S1612–412 IV, 44 pp.

RIEBEL, F.
1928. BEMERKUNGEN ZUR BESTEUERUNG DES WALDLANDES IN ÖSTERREICH. Österr. Vrtljschr. Forstw. 78: 141–144.

ROTHKEGEL, W.
1931.

———

1932. HANDBUCH DER SCHÄTZUNGSLEHRE FUR GRUNDBESITZUNGEN. II. BAND: DIE THEORETISCHE UND PRAKTISCHE SCHÄTZUNGSLEHRE DER FORSTWIRTSCHAFT. 234 pp. Berlin.

SCHENCK, C. A.
1924. GERMAN FOREST OWNERS OPPRESSIVELY TAXED. Amer. Lumberman 2547: 47.

SCHNIDER
1922. DIE BODENBONITIERUNG UND KLASSENBILDUNG FÜR DIE BÄYERISCHE GRUNDSTEUER UND DEREN GESCHICHTLICHE ENTWICKLUNG. Forstwiss. Centbl. 66: 175–184, 224–232.

SCHNITTSPAHN
1884. DIE KATASTRIERUNG UND BESTEUERUNG DER WALDUNGEN IM GROSSHERZOGTHUM HESSEN. Forstwiss. Centbl. 28: 41–47.

———

1900. DIE BESTEUERUNG DES WALDES. Forstwiss. Centbl. 22: 99–100.

SELLE
1930. HOLZEINSCHLÄGE, WALDVERKÄUFE UND EINKOMMENSTEURE. Deut. Forst. Ztg 45: 363–364.

TISCHBEIN
1930. ZUR EINKOMMENSTEUER DES WALDES. Deut. Forstw. 12: 285–287.

TREBELJAHR
1911. ZUR WALDSTEUERFRAGE. Silva Illus. Forst Ztg. 45: 361–362; 46: 369–370, illus.

TSCHAMMER
1925. DIE WALDRENTENSTEUER. Deut. Forstw. 10.

UNOLD, H. VON
1933. DAS PROBLEM DER BESTEUERUNG DES FORSTWIRTSCHAFTLICHEN GEWINNS. 104 pp. Berlin. Review in Forstarchiv 9: 87–88.

URSTADT
1900. DIE BESTEUERUNG DER WALDUNGEN IM GROSSHERZOGTUM HESSEN. Forstwiss. Centbl. 22: 539–546. Also pub. in Allg. Forst. u Jagd. Ztg. [Frankfort on the Main] 91: 160–165, 181–191. 1915.

VELTINS
1931. ZWEI WICHTIGE ENTSCHEIDUNGEN DES REICHSFINANZHOFS ZUR BESTEUERUNG DES FORSTWIRTSCHAFTLICHEN EINKOMMENS. Ztschr. Forst u. Jagdw. 63: 47–52.

WAGNER
1932. IST DAS VERFAHREN BEI DER EINHEITSBEWERTUNG VON MISCHWÄLDERN MIT UNREGELMÄSSIGEM ALTERSKLASSEN AUFBAU RICHTIG? Deut. Forstw. 14: 539.

WAGNER, C.
1931. DIE STEUERSCHRAUBE. Deut. Forstw. 13: 489–492.
WALTHER
1916. DIE BESTEUERUNG DER WALDUNGEN. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 92: 68–71.
WEBER, H.
1909. DIE BESTEUERUNG DES WALDES. 555 pp. Frankfort on the Main. Review by W. Borgman in Forstliche Rundeschau 10 (11): 164–166; by Hans Hausrath in Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 85 (6): 207–209; and by M. Endres in Forstwiss. Centbl. 54 (3): 174–185, 1910.

1910. ZUR BESTEUERUNG DES WALDES. Forstwiss. Centbl. 54: 467–493.

1919. ZUR KÜNFTIGEN BESTEUERUNG DES WALDBESITZES. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 95: 25–33.

1921. DIE BESTEUERUNG DES EINKOMMENS AUS DER WALDWIRTSCHAFT NACH DEM REICHSEINKOMMENSTEUERGESETZ. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 97: 49–54.

1924. DIE WALDBESTEUERUNG EINST UND JETZT. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 100: 211–225.

1925. ZUR FORSTLICHEN EINKOMMENSTEUER. Forstl. Wochenschr. Silva 13 (1): 6–7.

1925–27. ZUR WALDBESTEUERUNG. Forstl. Wochenschr. Silva 13 (23): 177–182, 1925; Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 103: 30–35, 63–65, 1927.

1925. ZUR WALDGRUNDSTEUER. Deut. Forstw. 75.

1925. ZUR WALDGRUNDSTEUER IN WÜRTTEMBERG. Forstl. Wochenschr. Silva 13 (14–15): 117–118.
WIMMENAUER, K. F.
1900. DIE NEUE STEUERGESETZGEBUNG UND DAS NEUE BETRIEBSREGULIERUNGSVERFAHREN. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 76: 208–209.

1901. ZUR WALDBESTEUERUNG. Forstwiss. Centbl. 23: 559–564.

1915. DIE BESTEUERUNG DER WALDUNGEN. Allg. Forst u. Jagd Ztg. [Frankfort on the Main] 91: 247–251.
WRABEC, W.
1925. ABÄNDERUNGSAUFTRÄGE DER FORSTWIRTSCHAFT ZUM NEUEN EINKOMMENSTEUERENTWURF. Deut. Forstw. 67. Review by H. Weber in Forstl. Jahresber. 1925: 137.

1925. AUSFÜHRUNGSBESTIMMUNGEN UND VERANLAGUNG NACH DEM NEUEN EINKOMMENSTEUERGESETZ. Deut. Forstw. 141.

1925. DIE VERABSCHIEDETEN STEUERGESETZE IN IHRER BEDEUTUNG FÜR DIE FORSTWIRTSCHAFT. Deut. Forstw. 99–101.

1930. MÖGLICHKEITEN DER NEUVERANLAGUNG FÜR VERMÖGENSTEUERVERANLAGUNG, 1929. Deut. Forstw. 12: 321–324.

1930. DIE NEUEN EINKOMMENSTEUERURTEILE DES REICHSFINANZHOFES. Deut. Forstw. 12: 321–324.

1930. WAS IST KALAMITÄTNÜTZUNG IM SINNE DES § 59, 11 E ST. G.? Deut. Forstw. 12: 337–340.

1930–31. DIE VERORDNUNG ZUM AUSGLEICH BESONDERER HÄRTEN BEI DER BESTEUERUNG DES EINKOMMENS AUS LAND- UND FORSTWIRTSCHAFT VOM 16 NOVEMBER 1930. Deut. Forstw. 12: 863–867, 1930; 13: 337–340, 1931.

WRABEC, W.
1931. NEUREGELUNG DER BEITRAGSERHEBUNG ZU DEN LAND- UND FORSTWIRTSCHAFTLICHEN UNFALLBERUFSGENOSSENSCHAFTEN. Deut. Forstw. 13: 683–686, 1931.

———
1931. STEUERLAST UND FORSTWIRTSCHAFT. Deut. Forstw. 13: 573–577.

———
1932. REICHSGESETZLICHE REGELUNG DER REALBESTEUERUNG UND VERLÄNGERUNG DER PREUSSISCHEN GRUNDVERMÖGENSTEUER ÜBER DEN 1.4.1932 HINAUS. Deut. Forstw. 14: 133–135.

———
1932. STEUERFRAGEN UND BUCHFÜHRUNGSPFLICHT. Deut. Forstw. 14: 537–540.

———
1933. DER BESTANDSVERGLEICH IN DER FORSTWIRTSCHAFT NACH GELTENDEM STEUERRECHT. Steuer und Recht des Landwirts 1 (1–2): 14–16.

———
1933. NOTWENDIGKEIT VON STEUERERLEICHTERUNGEN FUR DIE FORSTWIRTSCHAFT. Deut. Forstw. 15: 263–264.

WÜRTZ
1925. EINIGES ÜBER DAS REICHSBEWERTUNGSGESETZ UND DIE FORSTWIRTSCHAFT. Deut. Forstw. 111; Berichtigung, 123.
(*See also* Weber (*266*).)

ITALY

ISTITUTO CENTRALE DI STATISTICA DEL REGNO D'ITALIA
1933. CATASTO FORESTALE; COMPARTEMENTO DEL VENETO PROVINCIA DI TREVISO Ist. Cent. Statis. Regno Ital., Fascicolo 25, 119 pp.

———
1933. CATASTO FORESTALE; COMPARTEMENTO DEL VENETO PROVINCIA DI VICENZA. Ist. Cent. Statis. Regno Ital., Fascicolo 29, 165 pp.

SERPIERI, A.
1926. I REDDITI FORESTALI E L'IMPOSTA. 1st Internatl. Cong. Sylvic. Actes 3: 372–381.

NORWAY

BÖHMER, J. G.
1926. WALDBESTEUERUNG. 1st Internatl. Cong. Sylvic. Actes 3: 33. 6–338
(*See also* Ruden (*279*).)

RUSSIA

DAMBERG, E.
1902. APPRAISING FORESTS FOR THE PURPOSE OF TAXATION IN RUSSIA. Lyesnoi Zhur.

SAZHIN, D. H.
1912. IZSLYEDOVANIE LYESOV I METODI OTZYENKI IKH DLYA TZYELEI ZEMSKOGHO OBLOZHENIYA V SVYAZI S ZAKONOM 8 IYUN 1893. [FOREST SURVEY AND METHODS OF VALUATION FOR PURPOSES OF LOCAL TAXATION IN CONNECTION WITH THE LAW OF JUNE 8, 1893.] 12th Cong. Russian Nats. and Doctors, Moscow, Work of Sub-sec. Statis. 1912: 383–392.

SWEDEN

AUBERT, R. M.
1917. OMBESKATNING AV SKOG. Tidsskr. Skogbruk 25 (2): 38–45.

CASSEL, G.
1909. SKOGSBESKATTNINGSFRAGEN. Skogsvårdsför. Tidskr. 7: 349–376.

JONSON, T.
1920. THE IMPORTANCE OF FOREST TAXATION LEGISLATION. Skogsvårdsför. Tidskr. 18: 137–148.

———
1924. TAXING SOIL PRODUCTIVITY; NEW REGULATIONS IN SWEDEN. Four L Bull. 6 (10): 7–8.

———
1926. THE TAXATION OF FORESTS IN SWEDEN. 1st Internatl. Cong. Sylvic. Actes 3: 339–346.

KEKICH, E. A.
1927. FORESTRY IN SWEDEN. U. S. Dept. Com., Bur. Foreign and Dom. Com., Trade Prom. Ser. 56: 26–27.

LAGERMAN, K.
1914. HURU BORA KOMMUNERNAS SKOGSACCISMEDEL ANVANDAS? Skogen 1: 294–295.
NIEUWEJAAR, O.
1930. METHODS OF FOREST TAXATION IN NORWAY AND SWEDEN. 374 pp. (Diss. for Ph. D., Yale Univ.) [Typewritten.]
SØRHUUS, K.
1922. FOREST TAXATION IN SWEDEN; NEW LAW EFFECTIVE IN 1922. Jour. Forestry 20: 313–315.
WALLMO, U.
1920. MOST SUITABLE FORM OF FOREST TAXATION FROM THE STANDARD OF FOREST CONSERVATION. Skogsvårdsför. Tidskr. 18: 262–271.
(*See also* Jonson, p. 663.)

SWITZERLAND

GAUTSCHI
1928. ZUR BESTEUERUNG VON GEMEINDEWALDUNGEN. Schweiz. Ztschr. Forstw. 79 (12): 373–379.
——— and WANGER
1929. ZUR BESTEUERUNG VON GEMEINDEWALDUNGEN. Schweiz. Ztschr. Forstw. 80 (3): 83–91.
WANGER
1928. DIE STEUERUMSCHÄTZUNG IN DEN STAATS UND GEMEINDEWALDUNGEN DES KANTONS ARGAU. Schweiz. Ztschr. Forstw. 79 (7–8): 206–212.
(*See also* Biolley (*267*), Felber (*270*), De Luze (*271*), and Moreillon (*272*).)

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