PROCEEDINGS OF THE NATIONAL CONFERENCE ON LAND UTILIZATION

CHICAGO, ILL.
NOVEMBER 19–21, 1931

Called by the Secretary of Agriculture and the Executive Committee of the Association of Land-Grant Colleges and Universities

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FOREWORD

For more than 10 years people have been saying, "We need a new land policy for American agriculture." When I became Secretary of Agriculture I found that, for a long time, this great department had been studying the thesis and groping toward agreement on the fundamentals of such a policy. A good deal of progress had been made in developing the necessary factual basis, that the main outlines of national forest policy—so closely interrelated with agricultural policy—were already formulated, and that an effective policy of range administration had been built up in the 140,000,000 acres of the national forests.

More intimate contacts with these students of land economics developed my interest into convictions. The depression, from which we have not yet emerged, gave poignant emphasis to these convictions. The panorama of overproduction, serious maladjustments in taxation and credit, a radical transformation in the geography of production, a greatly changed outlook with regard to population increase and land requirements, and withal the widespread human distress growing out of these dislocations, all emphasized the need for action. The time appeared ripe for attempting to make at least a beginning.

Happily my own convictions were shared in most essentials by the leaders of the national farm organizations, by a substantial majority opinion among the membership of the Association of Land Grant Colleges and Universities, the Chamber of Commerce of the United States, and other organizations interested in agriculture. These and other agencies cordially cooperated in the holding of the National Conference on Land Utilization.

The results have more than met our expectations. The papers presented at the conference, and published in the present volume, are highly illuminating. It is my expectation that for years to come this volume will be of paramount interest to those individuals and agencies concerned with the rebuilding of our rural civilization and the reestablishment of our agriculture upon a sound economic base. The recommendations of the conference are remarkably appropriate, considering the brief time available for their formulation. While it would be too much to expect that they are an ultimate statement, nevertheless they provide a substantial foundation on which to build.

We have here no quick remedy for the serious maladies by which American agriculture is afflicted. We expected none. But we believe that some light is shed on the path along which we shall slowly move toward a reconstructed, cohesive, and substantial rural civilization.

ARTHUR M. HYDE,
Secretary of Agriculture.

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LAND UTILIZATION AND THE FARM PROBLEM

Presiding—R. A. Pearson, *President, University of Maryland and Chairman, Executive Committee, Association of Land-Grant Colleges and Universities*

Doctor Pearson. You have been invited by the Secretary of Agriculture to come together this morning for the purpose of considering one of the great questions that is before our Nation at this time. This group is not large, but it represents a wide variety of interests. The leading agricultural organizations and business organizations, the land-grant institutions, and the Federal Department of Agriculture, all are represented. I am sure that no program on the subject of land utilization ever set up is so comprehensive as the program prepared for this conference.

The agricultural history of our country can be divided easily into three great epochs. The first comprised the days of our grandparents and great-grandparents when the chief ambition of the farmers was to produce food for their own families and feed for their livestock, and fibers for their clothing. They were not much interested in world prices nor even in home prices. What little they had in excess of their needs they traded for the things they lacked. The second great epoch in the history of agriculture was very different. Then the chief ambition of farmers was to produce as much as they could produce, which meant that a great surplus had to be disposed of; and that in turn meant that world prices were prevalent throughout this country. Whatever those world prices were, the farmers accepted them and managed in one way or another to get along.

With the great development of the Middle West there came intense difficulties and considerable suffering in the older agricultural sections, and that suffering has been referred to as the growing pains of a great Nation. It was unavoidable with the kind of development that was under way.

And then came important changes. Costs of producing farm products were increased. Taxes have increased 172 per cent, we are told, in the last decade; in one important agricultural section 330 per cent in the last 16 or 17 years. Labor costs increased. There were heavy costs for machinery; fertilizers had to be purchased even in the newer regions. Our living standards were raised. Mechanical power came into use. A vast area as large as a good-sized State was released from the necessity of producing feed stuffs for work animals. These changes are slowly swinging agriculture into its third epoch during which business principles must prevail. The cost so increased must be kept below the income. Living standards must be maintained.

These are our problems. How can they be met? You have been invited here to consider them. What shall the Government do?

The Government directly and indirectly has had much to do in helping to bring about present conditions. We are familiar with them. Farm income has greatly decreased. Farm values have fallen heavily. Wastes continue on a large scale. What should the Federal Government do? What should the States do? What should the private landowner do?

It is hoped that this conference will lead into the right answers to these questions.

I think that a history which might be written about 200 years from now would contain a chapter under the subject "The Destroyer" and it would read in part as follows:

The people who occupied this country two centuries ago had a strange mental complex. They thought they were the world's greatest inventors and builders. Some of their accomplishments, considering their primitive knowledge, were rather remarkable. In the short span of years from 1870 to 1935 they developed methods of making and transmitting electrical power, of mechanical flights through the air, and even some elementary knowledge of vision and photography through certain opaque substances by a device which they called X-ray, and with the aid of powerful apparatus they had some success in throwing sound through earthly space. Then they had not learned how to communicate with other planets. They fabricated steel so as to permit the construction of high buildings, and this development was carried beyond all reason. It was a machine age. Machines and quantities and height and speed were the four gods of those people. They had little regard for the conservation of the seemingly unbounded wealth of natural resources available to them. If they could not use these resources, they wasted them or deliberately destroyed them. Literature of that period shows that occasionally a prophecy was made that the world would soon come to an end. The most charitable thing that can be said of our ancestors is that they must have believed these prophecies. So, they thought it proper to eat, drink, and be merry. They did this literally and figuratively on a colossal scale. They allowed natural gas and oil sufficient to have lasted until now and for the next 100 years, to burn in great fields without the slightest benefit to one human being. They used up billions of tons of high-grade coal in a system that gave them only a small amount of its available energy, and they wasted the remainder. With our present knowledge that coal would have been twenty-five times as effective, but they never gave a thought to their successors. They allowed plant food to be carried into the ocean, and the whole time of millions of people now must be given to the labor of bringing back to where it may be used the soil fertility that those destroyers allowed to escape. Fuel reserves we have learned to replace. It seems that an All-Wise Providence gave to our ancestors gas and coal and oil to allow them more rapid development of industry, while they were learning to develop our present sources of boundless energy. Occasionally a warning voice was heard, but it was like a lone voice in the wilderness. Some riotous waste was checked, but not for long. About the year 1894 a man named Van Hise sounded a warning. He was president of a land grant university, an institution in which the value of natural resources should have been appreciated if anywhere. But an indifferent people heard his words. They were too busy to listen and the wanton waste went on. In the year 1931 a man named Hyde, Secretary of Agriculture, tried to arouse the people to their danger, or still more to our danger. He brought together in Chicago a group of their best experts and a great array of so-called facts were discussed. At that conference some speakers made it clear that the Nation and the States should give attention to the uses made of land, which was then, always was, and always will be, our greatest natural resource.

That is the end of the quotation from the history. You can guess as well as I what will be the rest of the chapter. Will it record the fact that this conference helped to put the Nation and the States on a course of sanity in the use of our greatest natural resource which is subject to our control, the land?

THE AGRICULTURAL OUTLOOK AND THE LAND PROBLEM

NILS A. OLSEN, *Chief, Bureau of Agricultural Economics, United States Department of Agriculture*

These are trying times. Economic conditions the world over are at low ebb. The pessimist could scarcely choose a better moment to paint the agricultural picture in drab colors. But why waste precious moments? You know the facts. You have tasted the bitter dregs of agricultural distress. Wantonly serving up the evidences of hard times will gain us nothing.

It would be profitable, however, to examine with care the causes of our present difficulties if time would but permit. There, of course, is no simple explanation of the agricultural crisis. Some economists stress the influence of industrial, financial, monetary, political, and other conditions upon the purchasing power of consumers. Others attribute our troubles largely to inflation and deflation and the downward trend in the general commodity price level. Still others emphasize the effect of planless agricultural expansion and top-heavy supplies upon the course of agricultural-commodity prices. It is now clear that these and many other powerful influences have combined to undermine our economic structure and violently shake the foundations of our agriculture.

AGRICULTURAL MALADJUSTMENTS

Whatever the forces, their results upon our agriculture are unmistakable. Prices of agricultural commodities have been driven to levels unmatched since the middle nineties. The exchange value of farm products in terms of commodities the farmer buys is now 42 per cent below pre-war levels and lower than at any time in more than a generation. Even though the volume of agricultural production in the United States has remained relatively stable since 1925, the gross income from agriculture this year promises to be less than $7,000,000,000, which is 42 per cent below the gross farm income for 1929 and the lowest since 1911.

Meanwhile, taxes and interest on debts, those troublesome fixed charges, have climbed persistently upward. The annual farm-property tax bill is now two and a half times larger than in pre-war days and for 1930 is placed roughly at $777,000,000, consuming in that year over 8 per cent of our gross farm income, or nearly 21 per cent of the income available for the labor, capital, and management of our farm operators. If we include gasoline and automobile license taxes these figures rise to 10 and 25 per cent, respectively. And, of course, the severe decline in income in 1931 has significantly increased the weight of taxes upon farm incomes.

Farm-mortgage debt is almost three times larger than it was 20 years ago and represents an annual interest outlay of $560,000,000. This indebtedness would not weigh so heavily but for its uneven distribution and for the fact that much of it unfortunately was contracted during the high prices and high land values of the war and early post-war years. Wholesale prices have since dropped to 40 per cent and land values to 62 per cent of their peak levels. Serious impairment of the farmer's equity in his land inevitably followed in many areas. (Fig. 1.)

Distressed lands lie about us everywhere. Under the influence of competitive forces great shifts have occurred in the use of agricultural lands. The area in harvested crops east of the Mississippi is approximately 19,000,000 acres smaller than 10 years ago, whereas west of that boundary it is 20,000,000 acres larger. Strange as it may seem, our agricultural plant in these 10 years of agricultural difficulty has expanded almost 31,000,000 acres, and of the area of cultivated crops is larger by 1,200,000 acres than when peak prices prevailed. Some of this shift in the use of land is probably temporary and reflects present abnormal conditions; some of it, however, was probably long overdue. The so-called "abandoned farm" which dots the landscape in many parts is mute evidence of the slow and painful adjustments that farmers have been compelled to make.

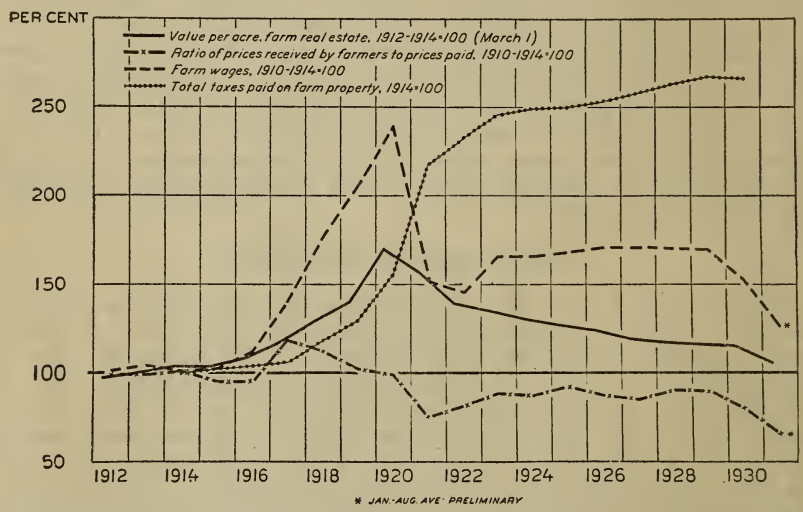

FIGURE 1.—RATIO OF PRICES RECEIVED TO PRICES PAID, FARM WAGES, TAXES ON FARM PROPERTY, AND VALUE PER ACRE OF FARM REAL ESTATE

The prices of farm products during 1931, when compared with the prices of goods farmers buy, were only about two-thirds as high as in the pre-war period, 1909–1914; that is, the purchasing power of farm products was one-third lower. Farm wages, however, were still about 30 per cent above the pre-war level, and taxes on farm property were over two and a half times as high as in 1914. The price of farm land, in the United States as a whole in 1931, was about down to the level of the years 1912–1914, having declined from a point about 70 per cent above that level in 1920.

In the process of settling our agricultural empire, large areas have been occupied that were poorly suited to continuous cropping. As a result it is now estimated that between one-fourth and one-third of our cultivated lands are badly eroding and that between 17,000,000 and 25,000,000 acres of land have been destroyed beyond recovery.

Still other vast areas yield so low a return as to place them in the submarginal class. It is now conservatively estimated that in the more important sections of low agricultural income as many as 1,000,000 farmers occupy submarginal farms embracing in the neighborhood of 100,000,000 acres, one-third of which is in harvested crops.

Even in the better farming areas desirable adjustments making for increased farm returns have been too slowly made. Failure to

adopt the highest yielding strains of crops and livestock, better cultural practices, and improved technic in machinery, or to adjust properly the enterprises within the farm or the size of the farm itself to the changed conditions, have combined with low commodity prices and relatively high costs to pull farm incomes downward.

In the use of forest lands the results have been no less deplorable. The timber supply has been decreasing at a rate several times the annual growth. In some farming areas timber has all but disappeared as a source of supplementary farm income. Inadequate provision in general for the control of forest fires obtains. And about 100,000,000 acres of cut-over lands lie idle with wholly inadequate provision for restocking.

Evidence of maladjustments takes still other forms. Financially distressed drainage and irrigation projects containing large acreages

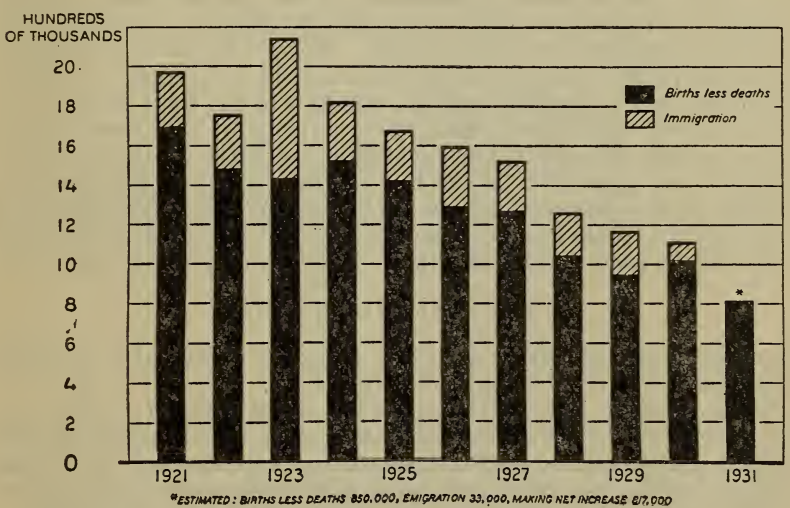

FIGURE 2.—POPULATION INCREASE IN THE UNITED STATES, 1921-1931

Ten years ago the population of the Nation was increasing nearly 2,000,000 a year. In 1931 the increase has been less than 1,000,000, and the trend is downward. About six-tenths of the decline in the decade is owing to fewer births, three-tenths to decreased immigration, and one-tenth to more deaths.

of undeveloped lands are all too numerous. Eighty-one per cent of all land in drainage enterprises in 1929 was occupied as farms, but as much as 35 per cent of such land, or nearly 29,500,000 acres, was unimproved. Slightly less than 64 per cent of the 30,600,000 irrigable acres in irrigation enterprises in 1929 was irrigated, although water could be supplied for over 84 per cent of the total area. In the face of these facts it is difficult to avoid the conclusion that there is now far more land in organized drainage and irrigation districts than can be economically utilized for many years to come. High engineering and development costs in many instances have led to overcapitalization and serious financial embarrassment.

Still more widespread has been the financial loss of individual farmers in all parts of the country. Farm bankruptcies and foreclosures have continued at abnormally high levels, and in 1930 over half (52.8 per cent) of our farmers rented from others part or all of

the land they farmed. At no time in our history has there been such a large proportion of the farmers renting the land they farm. Credit agencies have gradually and unwillingly acquired substantial amounts of distressed farm lands which frequently have been continued in use or thrown upon an inactive market only to demoralize values still further. The effect of the agricultural and business collapse upon our rural credit institutions also has been tragic. Bank failures and suspensions during the last 10 years amount to about 28 per cent of the number of active banks in 1920, and this with other influences has seriously checked the flow of credit to agriculture.

Meanwhile farm tax delinquency has rapidly mounted. In 1930 eight States alone reported over 50,000,000 acres of tax-delinquent land. These figures do not adequately tell the story. They do not include the acreage sold to private individuals at tax sales, nor do they reflect the increased delinquency of the current year. Our information is incomplete but it indicates the trend in important agricultural and timber-producing States. Many counties in the cut-over regions at present, in fact, have taxes subject to penalty on half of their total areas. In some counties one-half of the total property-tax levy is on the delinquency list. Few sections of this country have escaped, and although much tax-delinquent land no doubt will be redeemed, we appear to be surely creating a "new public domain" carrying with it new and serious problems. Whole communities and States are confronted as never before with a difficult job of financing their schools, roads, and other public institutions and services.

THE AGRICULTURAL OUTLOOK

Our agricultural plant, in short, is badly deranged and drastic adjustments will be necessary to restore it.

And in making these adjustments let us not forget to look ahead. The nature of the plans we adopt will in a measure depend upon whether agricultural supplies in the future will increase or decrease, whether outlets for farm products will expand or contract, and whether prices will tend to rise or fall. It is quite impossible to appraise fully the various elements in the outlook ahead, but we are not without extremely useful guides. Some of the influences with which we must reckon are more or less temporary; others are more permanent. Some of them affect the demand for agricultural products; others affect the volume of supplies produced.

THE DOMESTIC MARKET

The domestic market is the principal outlet for agricultural products. It now absorbs the production of 90 per cent of our farm land and its relative importance is not likely to diminish. But the growth of this home market is not so rapid as in recent years. Ten years ago our population was increasing at the rate of nearly 2,000,000 a year. Now the annual increase is less than 1,000,000. (Fig. 2.) From 1921 to 1931 births per year decreased from about 2,940,000 to 2,370,000. Between these years, an annual net immigration of 280,000 changed to a net emigration of 74,000, and deaths per year increased more than 150,000.

If these trends continue, and there is much evidence that they will, and if our present immigration quotas are maintained, it is probable that by 1960 we shall have a stationary population of about 145,000,000 people. Thereafter it is not improbable that our population may slowly decline in numbers. It would require a material relaxation of present immigration restrictions to stay or reverse this trend and it would call for a larger immigration than we have had in our national history to restore the population growth of 10 years ago. At present such an increase in our immigration appears no more likely than that the trend of the birth rate will be reversed.

In the main, the total per capita consumption of food products does not vary widely from period to period. The capacity of the stomach has definite limits. But although the total per capita con-

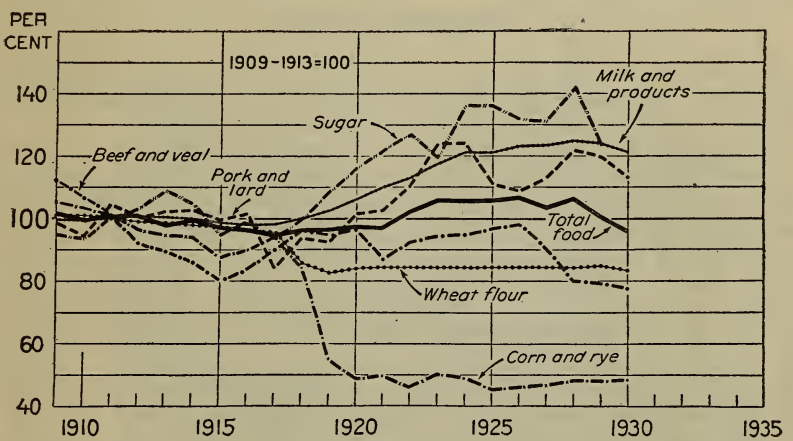

FIGURE 3.—CHANGES IN CONSUMPTION OF FOOD PRODUCTS PER PERSON; TOTAL AND SIX PRINCIPAL PRODUCTS OF THE UNITED STATES, 1909-1930

Notable changes in diet have occurred during the last 20 years, mostly since the World War. Wheat consumption per person has decreased about 15 per cent, that of corn and rye apparently 50 per cent, and that of beef is now about 20 per cent below the pre-war level (1909–1913). On the other hand, sugar consumption per capita has risen 30 to 40 per cent, milk and its products 20 per cent, pork from 10 to 20 per cent. Increases have about balanced decreases when the items are totaled on the basis of a 10-year average farm price, and the area of crop land required to feed the average American also has changed only a little because of these changes in diet.

sumption of food can not be increased materially, there may be significant changes in the diet, expanding the outlets for some products and reducing them for others. (Fig. 3.) The increased per capita consumption of such commodities as sugar, dairy products, fruits, and vegetables is to a considerable extent offset by decreases in the consumption of cereals. Changes in the diet are not likely to affect greatly the per capita area of land required to produce the domestic food supply, but may materially influence the demand for the products of particular regions. On the other hand there is somewhat more flexibility in the demand for products such as cotton, that lend themselves to industrial uses, depending upon general economic conditions. In the main, however, it is likely that the consumption of farm products for some time to come will vary largely with the Nation's population.

In appraising the future demand for farm products we must consider not only the kinds and amounts of products that people consume, but the prices they are able and willing to pay for them. To pursue this subject now would take us too far afield, but, in passing, it may be observed that the level of income, as well as the volume of supplies, influences the price paid by consumers. The volume of production in the United States this year is not much larger than in 1929, yet prices of farm products are 50 per cent lower. This is largely explained by the downward movement of the general price level as well as the drastic reduction in business activity, employment, and purchasing power the world over. The probable trend of agricultural prices, accordingly, will depend in a measure upon the restoration of general business conditions.

THE FOREIGN MARKET

Tendencies in our foreign markets are no less significant. Ten years ago we exported from 14 to 15 per cent of our agricultural products and now only 10 per cent or less goes abroad.

The great foreign markets for agricultural products in northwestern Europe have been adversely affected by slower population growth, business depression and unemployment, trade barriers, and mounting supplies that press for outlets. The birth rate has been declining for the last 50 years and populations are rapidly approaching the stationary point in most of these countries. The population of France, in fact, has been practically stationary for the last 60 years. On the other hand, in southern Europe the birth rate is declining less rapidly, and stationary populations are more remote. And in Russia and in the Orient populations are increasing at a rapid rate, but agricultural countries like these are less promising as outlets for our farm products.

The purchasing power of our foreign buyers has been seriously impaired by the destruction of wealth and the disruption of industry resulting from the World War, and by widespread unemployment and financial, monetary, and other disturbances. Besides this, high tariffs and other barrier walls built around European markets have stimulated the production of home-grown supplies and restricted the inflow of products from without.

The creation of new States, the desire for self-sufficiency, and the spirit of nationalism following the World War resulted in restoring tariffs to pre-war levels. Then came the crash in 1929 and a veritable orgy of trade barriers to protect domestic producers against the ruinously low prices. Practically all of Europe joined in this feverish protective movement, and even England, the greatest of our foreign markets, now promises to be drawn into it. How soon economic conditions abroad will be righted, how soon trade barriers against our products will be lifted, no one can foretell. More than likely, however, it will take some time. But whatever happens, farmers in this country should be alive to the fact that our agricultural exports have been trending downward for a decade and are now the lowest since 1895. (Fig. 4.) At least it would seem wise to base farm production plans for some years to come upon the assumption that foreign markets will continue to be disappointing if, in fact, they do not contract still further.

AGRICULTURAL PRODUCTION IN THE UNITED STATES

While markets have been contracting, supplies have been expanding. In the United States the volume of agricultural production has increased roughly 20 per cent since the World War, even though the crop area has remained relatively uniform and yields have not materially increased. (Fig. 5.) This is accounted for by a number of influences that were of minor significance before the war. The substitution of gasoline for horse and mule feed and the reduction of horses and mules by 9,000,000 or 10,000,000 head has, according to our most recent estimates, released for other purposes 30,000,000 acres of land previously used in the production of feed for work stock. This is equivalent to an increase of fully 10 per cent

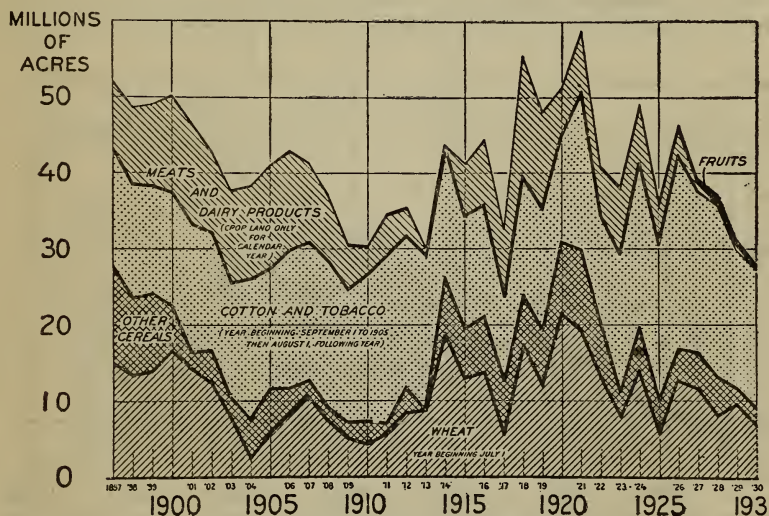

FIGURE 4.—APPROXIMATE ACREAGE REQUIRED TO PRODUCE NET EXPORTS OF MAJOR FARM PRODUCTS, 1897-1930

Ten years ago exports of farm products required almost twice the land for their production that is now required. It is true agricultural exports were abnormally high for a few years following the World War, but now they are lower than they have been for more than 30 years. Moreover, European countries, hitherto our best markets, have adopted policies of agricultural self-sufficiency, maintained by bounties and other restrictions.

in the effective crop acreage of the Nation. It appears that the tendency to substitute tractors and automobiles for horses and mules will continue in some degree to assert itself in the future.

It is estimated further that the increasing production of meat and milk per unit of feed consumed, through herd improvement, marketing of slaughter animals at younger ages, reduction of death losses, and the like, has had the effect of adding the equivalent of 25,000,000 acres to our crop area. If these tendencies continue, and it seems probable that they will, our farmers will need less land to produce a given amount of animal products than they now use.

The substitution of tractors and automobiles for horses and mules and the increased efficiency in the utilization of feed for livestock together have added the equivalent of around 55,000,000 acres, or about 18 per cent, to the effective crop area since the World War. Other

tendencies, such as the shift from the less productive crops per acre to the more productive crops, and from the less productive to the more productive kinds of livestock such as dairy cattle, hogs, and chickens, have contributed to the same result. It is probable, however, that the influence of these factors may diminish somewhat in the future. Then, too, lower prices for fertilizer may increase the profitableness of their use, resulting in higher crop yields per acre during the years ahead.

I realize, of course, that it is often asserted that further material expansion of our agriculture is impossible now that the available public lands suitable for arable farming have passed into private

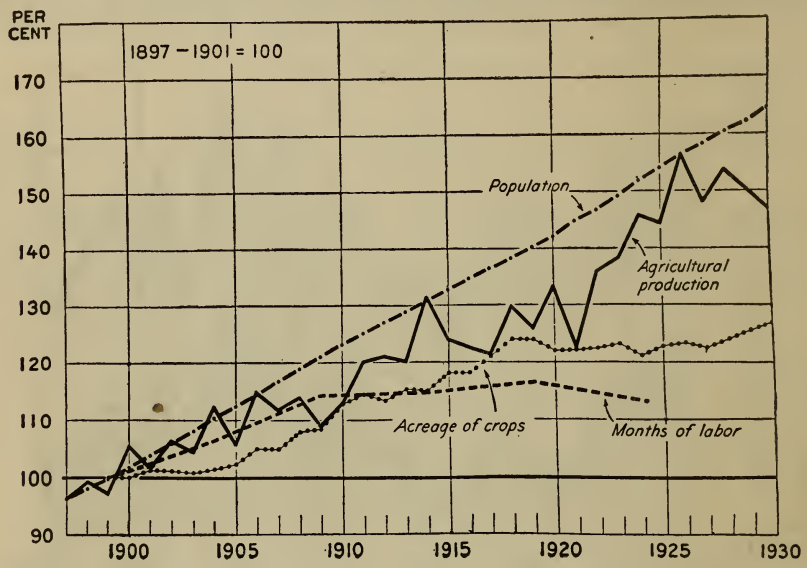

FIGURE 5.—AGRICULTURAL PRODUCTION, CROP LAND, FARM LABOR, AND POPULATION, 1897-1930

During the first decade of the twentieth century, production and crop acreage tended to increase at about the same rate. Since 1910, however, and particularly since the World War, production has increased much more rapidly than crop acreage. This is due not so much to increased yields per acre as to great economies in the utilization of feed in livestock production and shifts in crop and livestock production from less productive to more productive areas. These mentioned shifts have been made possible in part by reduction in number of horses and mules due to increasing mechanization. For somewhat similar reasons agricultural production, since the beginning of the century, has increased about 50 per cent, while labor engaged in agriculture has increased only about 10 per cent, being less in quantity now than it was 20 years ago.

possession. This contention does not square with the facts. The transfer of our cultivable lands to private possession has not resulted in drawing them all into cultivation, but it has made them in some respects more available for exploitation and use. The area of land in harvested crops in 1930 was approximately 360,000,000 acres. This is about 19 per cent of our total land area and 36 per cent of all land in farms. In addition to these harvested crop lands, it is estimated that there are over 600,000,000 acres physically capable of use for crops, much of which, to be sure, is rough and poor, or in need of expensive improvement by clearing, drainage, or irrigation. It is significant, however, that one-half of this huge area would require

only the plow to prepare it for use. Even within the bounds of existing farms there are vast opportunities for diverting lands to higher yielding cultivated crops.

FOREIGN AGRICULTURE EXPANDING

Developments in the agriculture of foreign lands have been equally astonishing. The World War eliminated Russia for a time as an exporter of agricultural products and drastically reduced the agricultural output of other European countries. Meanwhile, under the stimulus of war prices, overseas agriculture expanded by leaps and bounds. Since the war, European agriculture has returned to prewar levels, Russia has come back, and agriculture in the newer countries has continued to expand.

Some of the more striking features of this agricultural expansion abroad will interest you—the invasion of vast areas previously un-

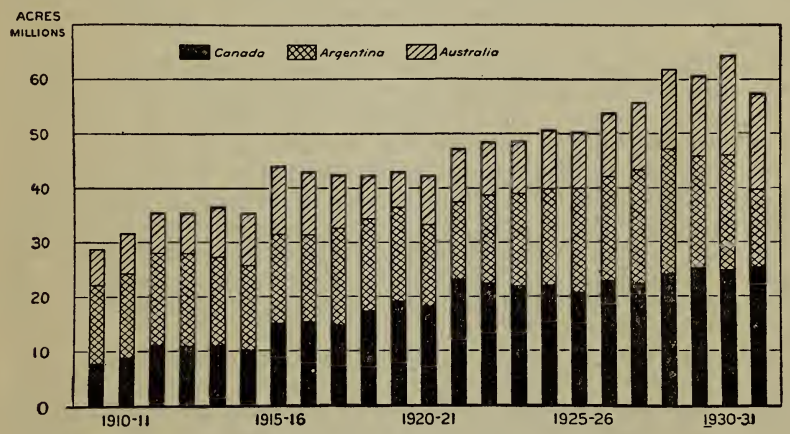

FIGURE 6.—WHEAT ACREAGE: CANADA, ARGENTINA, AND AUSTRALIA, 1909-10 AND 1931-32

Agricultural production has been increasing in other countries as well as in the United States; in some foreign countries it has been increasing very rapidly. The production of wheat, for example, has increased nearly threefold in Canada during the last 20 years, has more than doubled in Australia, and has increased about 50 per cent in Argentina.

touched by the plow in new agricultural countries, the outpourings of tropical agriculture, the determined drive of Russia to reorganize and expand its agricultural plant, and the universal effort of western European countries to ward off the avalanche of outside supplies and to produce to the limits of their capacities.

The area of cultivated crops in the new agricultural countries of Canada, Argentina, and Australia has trebled in the last 30 years, and the limits of this expansion have not been reached. In this span of years, Canada enlarged her wheat area 375 per cent and the development of early-maturing varieties of wheat will make it possible to push the limits of wheat production still farther north. Argentina's wheat area expanded 250 per cent, her flax and corn areas quadrupled, and large areas of grazing lands still await the plow. In like manner, Australia enlarged her wheat area by 350 per cent, and some further expansion appears possible. (Fig. 6.)

The production of animal products such as wool, dairy products, and meat in the Southern Hemisphere countries parallels that of crops. Australia is now the greatest exporter of wool, New Zealand is second in the export of butter, and Argentina has long held first place in the export of beef. The competition from the Southern Hemisphere, in short, looms as a factor of the greatest importance in the agriculture picture.

Manchuria, now in the spotlight, a region almost equal to Texas and California combined, was thinly populated in 1900 by roving tribes engaged in hunting, fishing, and herding. To-day this new agricultural country has a population between 20,000,000 and 30,000,000 and a cultivated crop area of about 35,000,000 acres, and this is thought to be only one-half of her cultivable land. The production of soybeans, her great staple, increased from 75,000,000 bushels in 1915 to almost 178,000,000 bushels in 1929, and of this amount over half goes to Europe to support the livestock industries of our competitors, and to increase the competition of vegetable oil with our lard.

The outpourings of tropical and subtropical agriculture, particularly sugar and vegetable oils, have greatly intensified the problems of American farmers. Our measures of production in the Tropics are inadequate, but the quadrupling of copra and cocoanut-oil shipments from the Philippines in the last 30 years, the quadrupling of the palm kernel tree acreage in Sumatra in the last 10 years, and the doubling of exports of palm kernels and palm oil from West Africa in the last 20 years will sufficiently indicate the trend. Sugar is a classical example of the mad race in agricultural production. The sugar output of Cuba and Java, for example, has averaged in recent years twice as much as before the World War.

And then there is Russia, the great enigma of world agriculture. Before the World War, Russia was the world's greatest exporter of wheat. The war eliminated her for a time from the world markets, but she has returned bringing with her handsome supplies. But the future is shrouded in doubt. Will she resume her former place in the international grain trade or will she become merely a sporadic visitor in the world markets? Will the collective and State farms which now embrace something like 70 per cent of the crop area dominate Russian agriculture, and under Government direction and control create a new type of menacing competition? Or will a rising level of living among Russia's one hundred and sixty millions absorb the major part of her growing output? The answer will be important to the American farmer.

The outpourings of all surplus countries are fairly staggering, and the effects of course are greatly intensified by the world-wide economic collapse. World wheat production, excluding Russia and China, has risen from an average of 3,041,000,000 bushels before the war to an average of 3,675,000,000 bushels in recent years, and the accounted-for stocks of wheat, now twice their normal, have broken all records. World cotton production has increased from an average of 20,900,000 bales before the war to an average of 26,300,000 bales, and the present supply of American cotton is greater than the combined consumption of the last two years. The recovery of the European beet-sugar industry combined with the phenomenal expansion

in cane-sugar production has resulted in building up stocks that are two and a half times larger than they were immediately following the war. Butter exports from Australia and New Zealand have almost trebled since pre-war days and exports of cheese from those countries have almost quadrupled.

Meanwhile, western European countries have valiantly struggled to restore their agriculture, and with marked success. Pre-war crop areas have been enlarged in all countries, and the expansion in many directions has gone beyond. The number of hogs in Germany and Denmark is now at record levels. Denmark has almost doubled her exports of butter, and the Netherlands has also enlarged her exports of dairy products over pre-war volumes. On every hand the battle for self-sufficiency is waged. Italy has the "battle of the wheat," Russia the "5-year plan," and other countries their protective barriers or other price-enhancing devices. The tendency toward expansion of agricultural production throughout the world, as a result of improved production technic, the opening of new lands, deliberate political fostering, and the pressure of urban populations in a period of industrial distress seeking a livelihood on the land, is a fact our generation must recognize and adjust itself to.

PROBABLE TREND OF THE GENERAL PRICE LEVEL

Still another factor touches the outlook for the future—that is the probable trend of the general price level. Everyone recognizes that we experienced a violent rise in the general price level coincident with the war-time period of financial inflation. Everyone is well aware that since 1920 we have experienced a drastic fall in the general price level and that this period has witnessed a marked deflation, especially of credit.

Looking back upon the long downward trend of prices following other comparable war-time periods, we are justified in entertaining at least the possibility that we may be now similarly embarked upon a long-time lower level of commodity prices. (Fig. 7.) This is not to gainsay temporary upswings in prices nor that prices of agricultural products will improve in relation to nonagricultural commodities. Both of these things will almost surely happen. But we are now back upon the pre-war price level. That point we have reached. And in the light of the historical precedents, it is certainly the part of wisdom to include in our reckoning the possibility that the world will have to adjust its economic affairs to this lower price level for a considerable time to come.

ADJUSTMENTS IMPERATIVELY NEEDED

Thus, we are confronted by a prospect of basic forces not merely of passing significance but so powerful that they are combining actually to reshape our agriculture. Within the country, radical changes in the technic of agricultural production; important regional shifts in enterprises; a serious slowing down in population growth; an almost unprecedented slump in business and in consumer buying power. Abroad, a changed pattern of world trade, with rising competition and shrunken markets for several of our key products. And last but not least, a fall in the general commodity price level so

drastic as to force a most painful readjustment of costs and exchange relationships as between farmers and the urban community.

There is nothing fanciful about this picture. These are stubborn facts. The crying need is for recognition of this prospect which confronts us—for action which will hasten the truly sound economic adjustments.

At this point may I reemphasize that this picture of the outlook is not painted in the spirit of an alarmist? We are searching out the stubborn facts that appear to lie ahead, and facing the issue thus frankly for the sole reason that practical, constructive policy demands it. It is because we can set our economic house in order once more, as I am confident we can, that we should choose to look upon the situation with unshrinking eyes.

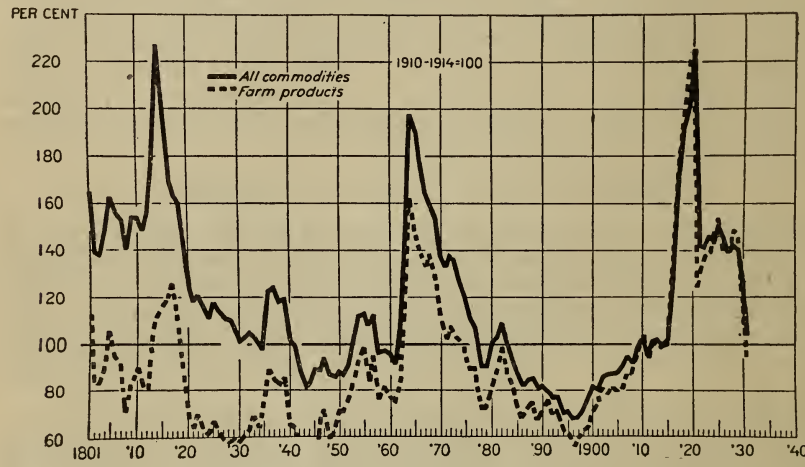

FIGURE 7.—WHOLESALE PRICE INDEX NUMBERS OF ALL COMMODITIES AND OF FARM PRODUCTS IN THE UNITED STATES, 1801-1931

Trends of agricultural prices are associated with similar long-time changes in general commodity price levels. Following the War of 1812, price levels fell sharply at first, then more gradually. Following the high point of the Civil War, price levels fell sharply until 1879, then fell gradually until 1897, when an upward trend began. Following the World War, price levels dropped precipitously, then rose again until 1925, but have been declining since.

American agriculture can be set aright, painful as the process may be, should the general commodity price level remain low. Its production can be adjusted to a profitable basis of exchange with urban industry, even though the domestic market does not expand indefinitely. It can be equipped to meet foreign competition in at least some portion of world trade. Our farm business can be restored to prosperity. But all this is provisional. Restoration can come, provided the essential individual and collective adjustments are made, and provided sound public plans and policies are adopted and followed.

No one has more faith in the future of American agriculture than I. But we have reached one of those important turning points in economic affairs, a time to pause and take stock, to survey the changing prospect and shape our plans to meet the new conditions.

The immediate concern is that our rural standard of living shall not be sacrificed. The privations of recent years are a real menace to

the standards of comfort, of education, and of health. This level of family well-being, slowly built up during the present generation, must somehow be held. That is the meaning of America. Agricultural leadership must somehow be wise enough and aggressive enough to hold this line.

It seems apparent that the first requirement is to maintain production within normally profitable limits. It seems equally apparent that this can be done for some time to come without expansion of the agricultural plant. There will, of course, be shifts in our producing areas as in the past, but deliberate as well as planless expansion of our agricultural plant is not in harmony with the economic outlook, nor is it in the best interest of the millions now struggling to extract a living from the soil. Rather we should seek to assist established farmers to realize to the fullest extent possible upon their every opportunity.

I realize that in making that simple statement we are in some degree touching upon one of the traditions of our national history. It is true that from the earliest days this country, in spirit and in legislation, has maintained the tradition of free land or of easy acquisition of land and its tools. We have looked upon our millions of small family farms as perhaps our strongest economic and social bulwark.

So they should still be regarded. But we have moved onward from an old era of self-sufficing family existence into a more commercial era. The all-essential thing now is that farmers shall be able to make a decent living under the new conditions. An agriculture with an intolerable load of taxes and debt and with rapidly increasing tenancy is not our national ideal.

In these days of widespread economic distress, I realize that many of the unemployed in industry will naturally look to the countryside for food and shelter. Some no doubt will find opportunities in agriculture upon which to build for the future. Furthermore, there should be a fluid movement of population between country and city to maintain the proper balance between agriculture and industry. But the present country-ward movement is not without its element of danger, prompted as it is by widespread industrial depression, and it behooves us to assist in directing it wisely to avoid the pitfalls of disappointment and loss.

So we come to the problem of the vast areas of land potentially available for farming. Shall this land be brought into use in response to the program of interested promoters, or in response to sectional pride and desire; or shall it be held out of use until the actual assurance of profitable operation warrants putting it under the plow?

It is not a question of developing the agricultural resources of one region as against those of another. It is not a question of North versus South, and East versus West. It is not a question of more irrigation or less irrigation, for no reasonable person would question that the waters of irrigation ditches are as vital to the agricultural life of the West as generous rainfall is to the farming life of the East. But it is a question of developing the agricultural resources of the East and the West, of the humid and the semiarid regions, of the drainage and irrigation sections, in keeping with the probable

demand for the products of such lands, the economic soundness of such developments, and the probability of returns that will enable such lands to rest on their own bottoms.

What shall we do with the land now submarginal or presently to become so? Such areas, notably in the Eastern States, are demonstrating that they can not maintain commercial production nor the minimum institutions necessary to a farm community. Upon what basis shall community, State, or Nation reorganize or reacquire such lands and hold this new type of domain with greatest advantage to all concerned?

There is the problem of hastening profitable farm adjustments in the better farming areas. What course, for example, shall the Corn Belt take with respect to its vital hog industry in order to meet the contraction in the foreign outlet for pork? Shall the wheat belt take further steps toward diversified farming or shall it go ahead re-equipping itself to meet the sharpened competition of other countries in the world's wheat markets? What acreage program will come nearest to making profits for the Cotton Belt through this looming period of industrial and international upheaval?

It is a commonplace now that farm real estate is bearing an undue part of the local tax burden. Furthermore, this is no longer an academic question. Adjustments must be made and speedily. The farm business cries aloud for relief from the pressure of an antiquated system of taxation. Larger areas of land can not be put to the most economic use until taxes are reduced. Rebuilding the rural credit structure is equally urgent. Shall we launch permanently upon a program of emergency rural credit, administered of necessity without adequate reference to the effective use of land and the likelihood of permanent success? Or shall we build a rural credit system through which the resources of the large reservoirs of credit can be siphoned into agriculture in an orderly and constructive fashion?

The production and marketing of farm products are so intimately related that adjustments in the one field should proceed with adjustments in the other. It is well known that the spread between prices received by producers and prices paid by consumers is often very wide. From investigations already made I am convinced that adjustments can be made through both farmers' cooperatives and independent distributors that will materially reduce the costs and waste in distribution.

There are many influences beyond the immediate control of farmers that vitally affect farm profits—such things as State and national land policies, tariffs, freight rates, central bank policies, wages. We are no longer without knowledge of the effects of these factors. Moreover, the country has reached a point where the direction of such forces bears less of sectional bias and more of regard for the common welfare than was true years ago. In short, here is a field where sound and wise influence not only can be exerted but can be exceedingly effective.

And so spread out before us is the vista of jobs pressing for consideration and requiring leadership. It is not enough merely to envision the problems. The economic circumstances which now surround and harass our agriculture are largely man made. The readjustments which will bring us more happily into line with the new

conditions also must be largely man made. Agricultural leaders in these times who merely define the problem and stop there are like the pilot who perceives the channel accurately but who nevertheless drops the wheel and lets the ship bump through the rocks as best she can.

But we must go further. It is not sufficient to effect the adjustments imperatively demanded by the deplorable conditions facing us now. We must seek to prevent such conditions from developing in the future. This economic world of ours is an ever-changing one, and we ourselves do much to shape the course of events. The forward look, continuous planning, adjustments before it is too late—adjustments made individually, collectively, legislatively—they are the key to a permanently prosperous agriculture.

If the agricultural situation in this country ever presented a challenge to intelligent leadership, it does to-day. Nor is this a job to be tackled piecemeal. The first principle of leadership is to get a coordination of efforts. That we must have now. And I take it that one of the tangible results of this conference should be the taking of definite steps to assure some such coordination. I hope that suitable machinery may be set up to focus wise thought and wise action upon these vital considerations which are inherent in the economic outlook and are fundamental in the land problem as related to the outlook.

THE PLACE OF FEDERAL RECLAMATION IN A FEDERAL LAND POLICY

Dr. Elwood Mead, *Commissioner, Bureau of Reclamation, United States Department of the Interior*

The reclamation I shall discuss is the reclamation of arid land by irrigation. Originally this was not a concern of our Government. Individuals or groups of individuals turned the water of streams on low-lying bottom lands. The first works were small and inexpensive. Corporations and districts later undertook larger and costlier works, but in time all the opportunities attractive to private enterprise were utilized. The further conservation of our resources of land and water became primarily a task of the Federal Government. It alone had the resources adequate to overcome the obstacles which had to be met. The works now being built are reservoirs to hold back floods until they are needed, and great and costly diversion dams and canals to utilize the water of large rivers. Designing and constructing these works require a high degree of engineering skill and experience. The outlay on them is too great and the return too slow to make it an attractive field for private enterprise.

The experience of the United States has been the experience of the world. Wherever irrigation works are being built, the central government builds them. This country is doing precisely what is being done in Italy, Egypt, India, Australia, Japan, Mexico, and Peru.

Irrigation and the conservation of water comprise part of the development of the West in a zone 1,500 miles wide and extending from our northern to our southern boundary, which must travel along with the growth of population and industry throughout the

Nation as a whole. The economic development of the West is essential to national success and the best use of all our resources.

Here we are evolving land and water policies suited to economic conditions. Many of these are foreign to our past traditions and experiences. The greater part of the land can be used advantageously only for forestry or grazing. Water for irrigation can not be obtained. The land which can be reclaimed is in relatively small and widely separated tracts. Its total area is insignificant—less than 1 per cent of the area cropped in the whole country.

Nevertheless it has an important national significance. These oases of production are "seeds of civilization" in what would otherwise be unpeopled and useless deserts. They give value to the surrounding grazing land. Their influence is felt in many directions. They give winter feed to range stock. They provide cheap and fresh fruits and vegetables to local towns, mines, and lumber camps, and are an important factor in the Nation's commerce. If it were not for the people of the arid States, supported by irrigation and the traffic originating on and sent to these irrigated districts, continental freight rates would be much higher. In one year 17 of these irrigation projects received from eastern points 95,000 carloads of merchandise valued at $120,000,000. They are life-savers to the railroads and to makers of automobiles and clothes, farm machinery, and furniture.

CHANGED VIEWPOINT OF THE WEST

The activities, the hopes, and plans of the arid States to-day are as unlike those of 50 years ago as the automobile of to-day is unlike the covered wagon of that period. A few illustrations will show this. Cheyenne in 1880 was the chief center of the range-stock industry. The life of the range stockman was alluring. The grass eaten by the flocks and herds cost nothing. If anyone realized that the grass could be destroyed by overstocking and that the grazing industry could survive only by being combined with irrigation, he kept the belief to himself. The universal desire was to keep conditions unchanged. Julian Ralph, seeking facts for his book, Our Great West, came to Cheyenne and was told by one of the leading stockmen that irrigation farming in Wyoming was impossible, that only deluded visionaries advocated it; that Wyoming was suited only to range-cattle business, and that those who talked irrigation would spoil a horn without making a spoon. To-day Wyoming has one of the best administered irrigation laws found in any arid State. Irrigation has saved the livestock industry, and no one works harder for more canals and more reservoirs than do the cattlemen and sheep owners of Wyoming.

MINES GIVE WAY TO FARMS

In place of mines like the Comstock in Nevada, the Little Pittsburgh in Colorado, or the Ontario in Utah, we have great irrigation projects like that of the Imperial Valley in California and of Yakima in Washington. We have power projects like the Southern California Edison in California and the Idaho Power Co., in Idaho. One pumps water to irrigate thousands of acres, the other provides electricity to light 10,000 farm homes. We are creating a new industrial empire based on the conservation and use of water.

Statistics are tiresome, but they show as nothing else can how the collapse of the West, threatened by the decline in mining and lumbering, was averted by the growth of irrigated farming. In 1900 the gold and silver output of Colorado was about $50,000,000; in 1930 it had shrunk to $6,000,000. The great Argo and Grant smelters at Denver have been torn down. There are none to take their place. The processions of ore trains that once came out of the canyons of Boulder and Clear Creeks and the Platte and Arkansas Rivers are gone. The leading railroad from Denver to Leadville has been abandoned. If there had been no other resource to take the place of the abandoned mines, if some other profitable employment of labor could not have been found, Denver to-day would be a decadent city with grass growing in its streets, as it does in the streets of Leadville and Cripple Creek. The resource was the water of Colorado streams replenished from the snows of its mountain summits, and making fertile the wonderful soil of the valleys. To-day irrigated farms give employment to more people and yield more certain and larger returns than the mines ever did.

The experience of Colorado was repeated in every State where the mining of gold and silver was once important. The gold and silver output of Montana in 1900 was over $13,000,000. By 1930 it had shrunk to less than $4,000,000. The returns from the gold and silver mines of Washington in 1930 were less than one-tenth of what they were in 1900. The Comstock lode in Nevada turned out, in 20 years, bullion worth $278,000,000. To-day the costly homes and business houses of the city it created are in ruins, the great mine is worked out, and nothing like it exists in any State.

The pioneer who preceded the irrigator was active, but his was a destructive activity. He slashed away the mountain forests. He overgrazed and destroyed the native pasture of the valleys. He wrested a golden hoard from its hiding place. Gold is not renewed when the mine is worked out; the miner must look for a job elsewhere; the store and the boarding house have to migrate with the worker and his wages. The situation has been saved where irrigation is possible. The lumberman, the stockman, and the miner have shifted from denuding the country of its wealth to conserving its resources and creating wealth. Boise, Idaho; Phoenix, Ariz.; Yakima, Wash.; and Denver, Colo., are only a few examples of the prosperous transition to irrigated farming.

The western third of this country is becoming water conscious. It sees more clearly than in the past that future growth depends on measures adopted to conserve and distribute its water supply. In its 30 years of experience, the Reclamation Bureau has learned much of what to do and what to avoid. Let me explain some of the principles which govern its action.

FEASIBILITY AND ITS MEANING IN RECLAMATION

First, let me explain the meaning of feasibility as found in recent reclamation laws. The act of December 5, 1924, provides that:

> No new project or new division of a project shall be approved for construction or estimates submitted therefor by the secretary, until information in detail shall be secured by him concerning the water supply, the engineering features, the cost of construction, land prices, and the probable cost of de-

velopment, and he shall have made a finding in writing that it is feasible, that it is adaptable for actual settlement and farm homes, and that it will probably return the cost thereof to the United States.

Federal reclamation is one of few Federal activities that is expected to pay its way, to return all the money spent in constructing works. Before the Secretary of the Interior recommends any new project for construction he has to certify that it is feasible and will probably repay all the costs incurred. When projects are submitted to the secretary, the soil, climate, crops, and markets have been thoroughly studied to determine what returns may be expected from irrigation. The plans and estimates of costs have been carefully reviewed; and recent estimates have been remarkably close to final costs. In the case of nearly all recent projects authority to construct has been preceded by a contract with the water users requiring the payment of the entire cost within 40 years. In 1930, over 97 per cent of the money due under these contracts was paid. The effort is to make reclamation a business activity in all that the term implies.

POWER A GROWING FACTOR IN FEASIBILITY

When Federal reclamation began, the opportunities to generate hydroelectric power as an adjunct to irrigation were disregarded both in construction and in reclamation laws. Now the ability to generate such power is one of the important factors in determining the feasibility of new works. The value of power plants is two-fold. Electricity on the farm makes life easier. The electric washer and the electric-driven separator save many a weary arm and tired back. The revenue from several of the power plants already built is greater than the income from irrigation payments. This income lightens the irrigation payments of farmers and makes possible many works which, without it, would not be feasible.

It is doubtful whether the great development to control and utilize the Colorado River at Boulder Canyon would ever have been approved by Congress had it not been for the fact that contracts for the power to be generated there insure the payment in 50 years with 4 per cent interest of all the money spent by the Government on construction. These payments give a subsidy to the States of Nevada and Arizona and will, in the end, leave $66,000,000 profit to be used in development elsewhere. The remarkable increase in the financial return from power plants, the industrial and social advantages of having hydroelectric power on projects, make this power one of the important factors in future reclamation activities. More adequate laws to protect the public interest in these power plants are needed. We need laws to define how these power plants shall be financed and how the net profits shall be used.

WHERE THE PRODUCTS OF IRRIGATION ARE MARKETED AND USED

There is a widespread misconception that Federal reclamation contributes to the agricultural surplus and so is an injury to the rest of the country. Those who know what is taking place know that is a mistake. As Secretary Wilbur has stated, one timely rain in the Mississippi Valley will cause a greater increase in our crop production than will all the crops grown under Federal works. Besides, the greater part of the crops grown on arid lands are noncompetitive.

Sugar beets, long-staple cotton, and the products of the orchards and gardens of the Southwest that come into the markets at a time when they can not be grown elsewhere except at prohibitive cost, add to our national wealth and satisfaction but do not compete with the products of the farms of the East and Middle West. Each year an ever-increasing proportion of the products of the irrigated areas goes to meet the steadily growing needs of western cities, especially the cities of the Pacific fringe of the country. The butter from the dairy farms of Idaho goes to Los Angeles. A constantly increasing part of the products of the orchards of Oregon and Washington is finding markets across the Pacific.

DEVELOPMENT OF IRRIGATION INSTITUTIONS

In irrigated areas, human foresight in planning has to supplement Nature. Farms stretching for hundreds of miles along a stream are bound together by their common tie of dependence on its water. To protect them there must be water laws, measurement of streams, regulation of diversions. The early irrigators did not realize the significance of these things. They looked on the water of streams as being like air, free to all alike. They built ditches and took water as they shot game and caught fish. They opposed laws needed for their protection because they believed they could always do as they pleased. They now know that as population increases the value of water increases and the struggle for its control increases in like measure.

SUPPLEMENTAL STORAGE ESSENTIAL

Dependence upon the spring floods of unregulated streams is as uncertain as dependence upon rain in time of drought. As irrigated districts began to grow better crops, to support orchards and dairy herds, they found that irrigation, to be successful, required a water supply that would last throughout the whole growing season, and on nearly all streams such a water supply necessitates storage of the floods. Reservoirs are costly. The pioneer irrigation districts could not build them, and the reclamation act was born out of the needs of these districts. The irrigation works that stand out as the greatest contributions to the prosperity of the arid region are reservoirs built to salvage private enterprises, to rescue communities where irrigation companies were bankrupt and settlers suffering from lack of water in midsummer to irrigate their fields.

One of the first of these works was the Roosevelt Dam. Without Government aid to create that storage, the orchards and farms which surround Phoenix and which created Phoenix, would have gone back to desert. The floods which the Roosevelt Reservoir stores bring to maturity crops worth over $25,000,000 a year, and enable the people living on the project to buy—largely from the East—manufactured goods of equal value.

Without the two reservoirs which the Government rebuilt and enlarged on the Pecos River to irrigate the burnt-up fields of the Carlsbad private project, that prosperous district would to-day be only a memory.

Without the Elephant Butte Reservoir to hold back the floods of the Rio Grande, the irrigated country above and below the city of

El Paso, which has done so much to make El Paso a city, would consist only of the lands of a few primitive and discouraged Mexican irrigators.

The bankrupt private development along the Klamath River was made an enduring success when the Government put a dam across the outlet of Klamath Lake and built two other reservoirs to supplement it.

On the Yakima River private enterprise built canals, but without stored water for late-season irrigation they proved of little value. The Government has built reservoirs to supply these canals. The city of Yakima, with its 22,000 people, its great fruit warehouse and the growing vegetable industry of the valley, are the creation of these reservoirs.

GOVERNMENT SUPPLEMENTS PRIVATE EFFORT

The Federal Government has agreed to build five storage reservoirs to supply water at critical periods of the year to the lands first reclaimed in Salt Lake Basin. The first of these reservoirs was completed in time to be used this year. The value of the water the first season equaled the cost of the storage.

Two Government storages built on Snake River in Idaho have taken the hazard out of farming in that important valley. These two reservoirs hold over 2,000,000 acre-feet of water which can be drawn upon whenever the settlers need it. Certainty and security have exerted a great influence toward creating better farms and better farming. The crops taken from the irrigated fields of this area give more business to the Union Pacific Railroad in a year than was furnished by the whole State before this irrigation development started. The crops saved by these storages in 1931 were worth more than the cost of the reservoirs.

The Government storage on the North Platte project was worth $1,000,000 to the farmers this year.

In all, the Federal Government has built 52 storage dams and has petitions to build 144 more. Every one of these is to improve the water supply of existing communities. Hoover Dam will create the largest artificial lake in the world. It will hold the entire flow of the Colorado River for two years. Without it, the river would continue to be a turbulent agent of destruction with an ever-present threat of inundating the irrigable lands in Mexico and the Imperial Valley in California. Los Angeles will draw on this lake to meet its imperative needs. It will add millions to the population of the Southwest and give an immense stimulus to industry.

INCOME AND EXPENDITURES OF THE RECLAMATION BUREAU

The bureau's means and efforts are to-day directed mainly to the rescue of harassed and impoverished communities that lack money and credit to help themselves. Reservoirs serving such communities would be worth many times their cost. They would save farm homes and local banks and stores from failure. The progress made depends on the fund's income, which is about $6,500,000 a year.

This income is being spent to build the Cle Elum Dam on the headwaters of the Yakima River; to build the Owyhee Reservoir to meet the water needs of four privately built irrigation systems in the

valley of the Owyhee and Snake Rivers. It is building a larger pumping plant for the Kennewick district, which has orchards 20 years old, and will build the Hyrum Reservoir in the Cache Valley in Utah, to supply the water needed to raise sugar beets on farms cleared, improved, and irrigated by the early Mormon settlers. It is building a reservoir for the Baker project in Oregon to provide water for one of the oldest communities in the State. The Seminoe Reservoir in Wyoming will give that State a larger share of the water of the Platte River and create a sorely needed agricultural district in a Wyoming county which has contributed $30,000,000 to the reclamation fund from the oil leases in the Mid-West field.

No activity of the Government has brought greater private and public benefits to the Nation than have come from the money spent on these Government reservoirs. Unless this activity is continued, scores of impoverished communities will give up, thousands of farms will be abandoned. This would be a national loss as well as local disaster. It ought to be averted. An unhappy ending to the courage, sacrifice, and industry of thousands of worthy people who blazed the trails and began the development of irrigated agriculture would be a national calamity. The future of cities, railroads, mines, and factories, as well as of farms in the arid region rests on the measures taken for the conservation of the waters of western rivers. Water is the dominating factor in all the development of this region. Federal reclamation is meeting a national economic need and averting a crisis in the business and industrial life of this region.

RELATION OF LAND UTILIZATION TO THE GENERAL OBJECTIVES OF THE FEDERAL FARM BOARD

JAMES C. STONE, *Chairman, Federal Farm Board*

The last two days I have been down in my old State, Kentucky, and while there I found out how some of my friends in that section are solving the land-utilization problem. I was driving along in Bullitt County, Ky., and met one of my old friends who had a hillside farm that was largely rock. I stopped to talk with him a while. I said: "Bill, how can you make a living on this farm of yours? Why, you hardly have any dirt on it; there are rocks here almost as big as an ordinary house." The old fellow dropped his head a minute and then he said: "Well, you see that fellow standing across the road over there? Well, he works for me. I don't make enough money to pay him, and at the end of the year I just turn the farm over to him and I work for him the next year. And on that principle we get along very well." I think there are a good many people in that fix over our whole country.

The principal thing I am going to talk about to-day is the possibility of the adoption of a land-utilization program. The primary objective of the Federal Farm Board operating under the agricultural marketing act is to promote the effective marketing of farm products. But the framers of the act realized fully that no marketing system which the board might help to build could accomplish the end sought, namely, "to place agriculture on a basis of equality with other industries," unless an orderly program of production was developed to go with orderly systematic marketing. Accordingly,

the act specified "orderly production" and "prevention of surplus" as one of the four means to be employed in improving the marketing of farm products. As a basis for this the board is instructed "to investigate conditions of overproduction of agricultural commodities and advise as to the prevention of such overproduction." Such instruction was, of course, not needed, for without such investigation how could the way to orderly production be discovered? Neither did the act need to mention particularly, as in section 5, the subjects of "land utilization" and "reduction of the acreage of unprofitable marginal lands in cultivation," for these are part of the foundations of orderly production.

The real significance of the references in the agricultural marketing act to orderly production and land utilization is not that thereby these are made subjects of especial concern of the Farm Board, but instead that the board is not to confine itself to assisting in setting up a mere marketing structure without relation to the rest of our economic system. The marketing structure instead is to be closely integrated with the production of farm products. Hence the board must reach back to the farm and analyze the conditions under which farm products are produced including, as of primary importance, the use of land in such production. In a word, the board is instructed to lend its aid to the building of a whole economic structure for agriculture, from the grass roots up to marketing, instead of a marketing structure alone.

In the early post-war years, the discussion of farm relief was mostly in terms of reforming our marketing system. Most of us will remember the time in 1924 and 1925 when the phrase "orderly production" began to be associated with orderly marketing. The language of the agricultural marketing act indicates the extent of the progress which the Congress of the United States had made in recognizing the importance of orderly production by the time of the passage of the act early in 1929. Orderly marketing still stood out in the minds of Congressmen and Senators, and of the farm leaders likewise, as the need most vital to agriculture. But orderly production, it was thought, would be of help to orderly marketing.

The two years of experience since 1929 have made people recognize the importance of orderly production as they did not in 1929; and if the measure establishing the Farm Board were to be enacted to-day, it would undoubtedly emphasize production much more than did the act of 1929. A reading of the board's first annual report will convince anyone that the members of the board were deeply interested in orderly production. It is a safe forecast that the second report will show a continued interest in this direction. The failure of the agricultural production of the country to adjust itself to changes in consumption and in production in competing countries has been the greatest obstacle the board has encountered in carrying out the program.

But whether the major emphasis in the act, as framed, is upon marketing or upon production, is not really an essential point. The fundamental objective of the act was to set up an agency to help in building a better economic system for our agriculture, whatever lines this rebuilding might have to take. Presumably at different times the help would be needed in different parts of the system; and the board would be expected to direct its efforts accordingly.

The name commonly given, these days, to undertakings in rebuilding economic systems is "economic planning." In popular language, the board has been asked to help the people of the United States develop plans for the country's agriculture.

The World War and its aftermath gave new strength to advanced ideas (more or less radical in some countries) for the development of plans for both agriculture and industry. These new ideas represent a reaction against the haphazard, disjointed, hit-or-miss way of doing things that went with the intense individualism and wide-open competition that the Western World made its social creed during the last century.

The first reaction to this was the trust and merger movement, appearing in strength in the United States during the last quarter of the century. Thus industry and the railroads took the lead in finding a way of escape from the evils of too much competition and too little joint action. The rest of the business world watched with jealous eyes this growth of combination in industry; and followed after whenever possible. Agriculture watched also; but in its attempts to emulate the business world it was beset with tremendous obstacles—there were hundred of thousands or even millions of separate units, widely separated, practiced in individual action through centuries, slow to recognize the changing order, and slow to respond even after recognizing it.

In the field of distribution, many of the same difficulties prevailed. There were large numbers of small retailers each pursuing his own course, and the distribution process for any product was divided between several different middlemen, each dealing disjointedly with the others. The competing middlemen began to exchange ideas and information and began to plan together; the different types of middlemen began to integrate their efforts; and agencies developed that reached forward or backward, or both ways, and brought several steps in the distribution process under one control. A notable example is the chain-store organization.

In distributing agricultural products, the development took the form of cooperation, first in local markets, then reaching into central markets. When it was created, the board's principal assignment was to hasten this development. Our people had come to recognize that joint action develops slowly among agricultural producers and among the agencies handling farm products after they leave the farm; and so they had been setting up public bodies to furnish leadership and planning.

The Federal Farm Board represents the latest and most vigorous effort along these lines. Hence it follows that economic planning for the marketing of farm products has been the principal work of the board in its first two years.

But it is now clear that this planning must be carried back from the marketing of the commodities to their production and that the marketing and production plans must be coordinated with each other. The important thing is that we all now clearly recognize the situation and the board is ready to join in a united effort in developing these needed plans for production along with marketing.

In making plans for agricultural production, one can start at either of two places: One can begin with the utilization of the prod-

uct by consumers, and the amounts and types of the product which the consumers stand ready to take at various prices and under various conditions, and work back from this to organizing production to conform with these facts; or one can begin with the land available for its production and the amounts of various products it is capable of producing under various conditions, and work forward from this to the marketing plans. In either case, it will be necessary to work out reconciliations of consumption to the factors conditioning production, and of production to the factors conditioning consumption. Hence in either case the plans will need to include provision for use of the land. Therefore land-utilization plans are an essential part of any economic plans for agriculture, from whichever direction the approach is made.

But it would be hard to find any part of our economic life in which there has been less careful planning than in the use of land. It is a field in which planning could easily have been arranged, had our forefathers had the foresight and the knowledge to do it, for most of our land was once the property of governments. Instead, until late in the last century, one identical plan was laid out for all of it, namely, to get it into the hands of a multitude of farmers—as rapidly as possible—160 acres to each, regardless of the type of the land.

A vast amount of maladjustment and misuse has developed, partly in consequence of this lack of planning, partly in consequence of economic changes that could not have been foreseen. A million or two of farm families are working pieces of land too poor to return a fair living or too small in view of the scanty product obtained from an acre; or they are practicing a system of agriculture no longer likely to provide a fair return on such land. Over large areas, the taxable wealth arising from such agriculture as persists will not support the schools, roads, and other public services necessary to good citizenship.

To lessen this misuse of land is the primary objective of all land-utilization planning—to get families away from land that will not, however employed, yield as good a living as they can earn elsewhere; to get land laid out in tracts that can be operated more effectively than as laid out at present; to shift land to other uses or combinations of uses promising more nearly adequate returns.

Land-utilization planning, however, has a larger aspect than the foregoing. It will not suffice to consider individual tracts or areas by themselves. There is an important relation between the aggregate volume of production from all competing areas and the welfare of any one area. Before a decision to bring a new tract into farming use should be made, an estimate is needed as to how much of the several commodities will be produced on it, and how much these additional amounts will lower the prices for these commodities under what they might otherwise be, and the effect of these lower prices on all other areas producing the same products. Plans for new land developments in the past have all too commonly ignored entirely the effects on competing areas.

By the same logic, land-utilization planning must consider the advantages to other farming areas of transferring any area to non-agricultural uses. This phase of the problem is particularly important at this time. There is evidence that the combined output

of all the farms in the United States represents a larger total than will sell at prices on a parity with those of other products. This calls for a transfer of some land out of agriculture altogether—to forests, recreation areas, etc.; or to uses yielding a smaller agricultural product per acre—such transfers as from crops to grazing, or from high-acre-value crops to low-acre-value crops. Not until such changes take place does it seem probable that farm incomes generally will buy an adequate living for the family.

The meaning of the term economic planning may not be the same to all. As used here, it includes provision for carrying out the plan or program laid down as well as working out the program; the executing of the plan as well as the mapping of it. It is the execution of the plan which is most in need of discussion at this conference. Much headway has already been made in learning how to study an area and how to designate the most probable future uses of its land. I have given some attention to the methods used by the Division of Land Economics of the Department of Agriculture, as illustrated, for example, by its study in Laurel County in my own State of Kentucky. We shall hear of the methods used in the Michigan land economic survey. I think we can trust these earnest workers to develop effective procedures for determining the uses to which the different tracts of land in a particular area are likely to be best fitted.

Of course I do not expect omniscience from them. Forecasts of future best uses of land are likely to be in error at least a fourth of the time. There are too many uncertainties in the problem, as to population growth, as to new discoveries in plant species or varieties, as to new developments in power and machinery, for any one to be very positive of what particular use will prove best for a given tract of land a quarter century hence.

But with all the mistakes which will inevitably be made, we are better off if we have land use guided by the conclusions of these workers than if we are left to the hit-or-miss results attained when each individual seeks his own interests as he sees them from his narrow, restricted, and almost wholly immediate, point of view.

Problems there are, no doubt, connected with mapping out land according to its most probable best future uses. The actual experience of area land planning will point to ways of meeting them, while no doubt bringing to the fore still other problems. But the real need of the hour is for discussion of ways of putting plans into effect. The Division of Land Economics under the able direction of L. C. Gray has already spent years getting an understanding of the situation with respect to land use in this country. If we are ever to catch up, we must make a start now. This conference should not adjourn without coming to some conclusions, stated in the form of definite recommendations to the Federal Government and its various departments, to the Congress of the United States, and to the State governments, as to ways and means of getting land transferred into its more promising uses with a minimum of delay.

To be sure, one must recognize that to plan land use for the whole country would be a gigantic, in fact, an impossible task. By the time such a plan was completed, the early analyses would all be out-of-date. That is the way with most economic information—it is useful

at the time it is collected and for only a short while afterward. The planning at any one time should be restricted to areas or sections where critical conditions have developed and where help is much needed in guiding the readjustments. Any section in which taxes are increasingly delinquent, or crop land is being rapidly abandoned to pasture and brush, would qualify for such planning. Just at present so much land is in a critical condition that no land-planning agency, or group of such agencies, could hope to handle all of it even in the next 5 or 10 years. But every area effectively handled would relieve to that extent the distress of people living on the land, and gradually the volume of farm output would be adjusted to the market at a better level of prices.

There are those who would like to see land planning undertaken on a grand scale, the whole country being analyzed in a preliminary way at the start as a basis for choosing the appropriate areas, this being followed by a program of land purchase of 20,000,000 acres or more per year. I hope that persons with such ideas are present at this conference and will not hesitate to present them to us. I am anxious to see their possibilities and difficulties fully brought out.

This task of economic planning for agriculture is not a special Farm Board task. It is one which calls for the vigorous and united effort of all the agencies, public, semipublic, and private, which have a duty toward agriculture or a concern with it—the United States Department of Agriculture; the State departments of agriculture; the agricultural colleges, experiment stations and extension services; the Federal farm loan system; the farm organizations; the farm press; the rural bankers; the cooperative marketing organizations; the private middleman agencies; the manufacturers of farm machinery and supplies; the insurance companies; as well as the Federal Farm Board. Many of these agencies have been working hard for many years in the direction of a better planned and organized agriculture.

The Farm Board has no new magic formula to offer. It represents a new agency brought to the task, to join forces with the rest of the workers. In several respects, however, it represents a new type of agency. It probably comes a little nearer to being a planning board than any agency previously set up. It has somewhat more liberal grants of powers than most agencies. In certain particulars its action can be more forceful. With its energies properly employed, therefore, the board should be able to add much new strength to the planning movement in agriculture. It has already done this in the field of marketing. Working side by side with all the other agencies named, it should be able to strengthen their hands in achieving a better organization of production and land utilization as well as marketing.

But let me emphasize this: I think a program of action should be adopted by this conference and a start made now. If it is impossible to adopt at this meeting a well-rounded plan along scientific lines, I am still of the opinion that we should at least make a beginning.

The farmers see the need of it. The farm organizations are ready to help. The business men as represented by the Chamber of Commerce of the United States have gone on record favoring it with definite suggestions.

It is my belief, however, that any plan adopted will have to demonstrate definitely to the farmer just how he is to benefit by it. For example, practically every farm has some waste land on which the owner is paying taxes and from which he receives no revenue. Perhaps the State could pass a law exempting a maximum percentage (say 20 per cent of each man's acreage) or any part of it, provided he planted it to trees under the supervision of the State forestry department, land so planted to remain exempt from taxation so long as it remains in trees. Large tracts of cut-over land could be bought by State or Federal Government or both, replanted to trees, and held as forest reserves.

Operations such as these and others could be started at once in many sections of the country in addition to any long-time program which may be adopted. The Federal Farm Board is ready and anxious to help.

DEVELOPING A NATIONAL POLICY OF LAND UTILIZATION

ARTHUR M. HYDE, *Secretary of Agriculture*

Our knowledge of land and its uses is far from complete. This is, in a sense, strange, since we all live so close to it. Perhaps for that reason our knowledge is more intimate and detailed as to our own land, and our own neighborhood, but small and spotty regarding land in its national, competitive, social, and economic aspects.

It is not expected that this conference will speak the last word on a land-utilization program. We of the Department of Agriculture have brought to this conference no ready-to-wear suit which we want you to put on and wear away. Rather have we brought a few materials to exhibit to you. We are here to see the materials you have; to match and compare and discuss these materials; to see what we lack, and of what we have too much, to make a garment. The cutting and the fitting must come later.

We have made, over the last 10 years, a good many studies of various segments of the national problem of land use. So have many of you. The object of this conference is to get all these studies out in the open, to compare and discuss them, and to check them against observation and experience in field, forest, and farm. We shall probably discover a host of conflicting opinions and interests. Facts are stubborn things, even those of mere local application. We can not afford to be dogmatic.

Railways, highways, and waterways have put every section of our agricultural plant into competition with every other. Boomer days are over. Main Street can no longer boost development of adjacent territory in defiance of national and international competition. It will not profit Main Street; it will increase cut-throat competitive production. It is easy to boast that our own is the "best county in America"; that we can lick the farmers of any other county or State; that we are the really low-cost producers, and therefore can and will run all other farmers out of the market. That is a beautiful economic theory, which somehow bogs down a trifle in practice. The attempt to run the other fellow out somehow starts a vicious circle of bankruptcy, which may break the other fellow all right,

but which spreads its contagion right back and involves the "best county in America."

Agriculture is no longer local. There was a time when agriculture supplied its own table from the produce of its own fields; when farm clothing was woven by the farm family from the wool of its own flocks. In those days, the farmer was not concerned with competition. He was concerned solely with his own supply. Later it became good economy to sell to near-by towns and territories the produce over and above his own needs, in exchange for products of industry that couldn't be produced on the farm. Then came railways, highways, and waterways, and the field of exchanges expanded to include the whole Nation. Oranges from California now compete with oranges from Florida and with apples from New York. Potatoes from Maine compete with potatoes from Idaho and with rice from Louisiana and Texas. Every farmer in America is now in competition with every other.

This competition is not only national, but international. Our wheat meets the wheat of the Argentine, of Canada, and Australia, and of Russia, at Liverpool. Our cotton meets the cotton of China, India, and Egypt, in the textile centers of Europe. For this reason, if for no other, agriculture might as well make up its mind that the old, peaceful days when farming was a way of living, rather than a means of making a living, are over. In its national and international economic aspects agriculture has become an industry.

It is because agriculture is an industry, and because farmers do compete with each other, that the economic aspect of agriculture's problem has become most vitally important. Our research has been largely upon the problems of production. We know a great deal about how to produce. We know far too little about what to produce, how much to produce, and where, when, how, and for how much it is going to be sold.

The cure for overproduction is production balanced to market demand. This is our fundamental problem. If we decline to attempt to solve that problem by law, or by shotgun methods, what way is left to us? There is a way. It is not easy, but it will work—and work without a raid on our ideas of liberty, property rights, and common sense. That is the method of voluntary control of production through farmer-owned, farmer-controlled cooperative associations.

We have only begun to test the possibilities of that method. We still lack unified thought and action. There is no organization which speaks for most of the 6,000,000 farmers in the United States and wields their collective power. There is no authoritative body which holds the power of attorney of the farmers to collectively plan the volume of production and to pass back equitably both the limitation and the benefits of such planning to the individual producers. We must first of all have organization. That organization, when built, will own, manage, and operate our agricultural plant, not as a mass of competitive units, but as an organized industry.

While the cooperative organizations which shall manage and operate our agricultural factory are being built, it may be wise to examine the plant itself. Some of its machinery may be obsolete. The routing of the production line may be faulty. Some sections of it, in themselves highly efficient, may be depressed by the operation of

other sections not so efficient. Some of the workrooms may be too large, others too small. Perhaps we could operate more economically if the partitions were moved over. The whole plant may need overhauling, regrouping, reorganization.

Beginning the examination with an inquiry into production capacity, we find that the total area in continental United States is 1,903,000,000 acres. Of this area, 986,000,000 acres are classed as land in farms. On a little more than one-third of this land in farms, or on 360,000,000 acres, the American farmer is now producing, not merely enough foods and fibers to feed and cloth the Nation, but vast surpluses of some crops in addition.

Not only do we already have an excess plant capacity, but economic forces are at work to increase its size and its productivity. Something akin to a new national domain is emerging. The fact is familiar that the disappearance of some 9,000,000 horses and mules since the war has released, for other production purposes, the 27,000,000 acres of land formerly required to feed them. Here alone is an agricultural revolution.

New methods as well as new machines are likewise contributing to enlarge our productive capacity. We produce more milk and more meat per unit of feed consumed than formerly. The improvements in animal-husbandry practice alone have increased our productive capacity to an extent equal to that of an area of 25,000,000 acres. We are shifting, gradually, from less productive to more productive crops per acre, from corn to cotton in the South, from wheat toward corn in the North, and from grain toward fruit and vegetables in several regions. Mass-production machinery, drought-resistant seed, and early maturing strains have spread our acreage in grain westward and northward. Advances in mechanization and technology have developed some areas. Those very same advances have enhanced and emphasized problems of submarginal areas, and of the small towns dependent upon them. The advantages of these improvements will be apparent in the long run, but, coming in conjunction with a drastic deflation of purchasing power, they present acute problems of readjustment.

Nor have farmers in foreign lands been idle. European Governments, striving for independence in food supply and self-sufficiency in industry, have stimulated their producers by means of phenomenally high import duties to raise more foodstuffs for domestic consumption. You are familiar with European wheat tariffs—France 85 cents, Italy 87 cents, and Germany $1.62 per bushel—beside which our 42-cent wheat tariff seems grotesque. In the newer countries of the world, despite the gradual narrowing of the European market, wheat and wool and beef have poured forth in ever-increasing volume.

The economic definition of submarginal land is a slippery, elusive thing. The definition from a social point of view is simple enough. It is land on which no farmer, however skillful, can support a decent standard of living. It is the old, old, tragic story of someone trying to get bread out of a stone.

In one Eastern State, the facts on 15 submarginal areas have been gathered. These areas are scattered, but considered as a unit they comprise 200,000 acres. There are 1,500 farms. More than half of them have been abandoned. Of the occupied farms, one out of every

four is not worked. They are places of residence merely. A full third of this farming district is in woods. Forty per cent of the cleared land is idle.

The average farm produces 1 acre of potatoes, 3 acres of buckwheat, 6 acres of other grain, 29 acres of hay.

The average yield per acre is 60 per cent of the state-wide yield.

Twenty-five hundred farm people live in this area. Only 558 of them are men. Most of the boys and many of the girls left for town before they reached the age of 20.

The reason is plain enough. The young folks saw their fathers reaping a labor income of less than 4 cents an hour.

That is a generous estimate, based on a highly hypothetical 8-hour day, and a purely theoretical 300 working days. The year's labor income on the average farm in the area is $98. In one community the income soared to the dizzy height of 12 cents per hour.

In this area, settlement was rapid about 150 years ago. Abandonment has been going on for more than half a century.

First the hired hands, then the young men and women of the farm families, leave for more promising fields. Few tenants remain.

When the old folks die, the alleged farm will be for sale. It may be listed with a real estate firm. Follows the usual booster talk. "No more land is being created. Population is increasing. Buy now while bargains may be had." After an indefinite period, ranging from 1 to 10 years, the new owner finds that he has lost his time and money. Disillusioned, he may remain a few years in hopes of selling or renting the place. If he makes a sale, the dreary process is repeated. If he doesn't sell, and can't pay taxes, the land reverts to the county.

Such, stated in economic terms, is the hideous cycle. Stated in terms of human values, of high hopes and bitter disappointment, of unrequited labor, of wasted lives, of men and women broken against hard conditions, of children denied a chance in the world, it states a tragedy to the poignancy of which we have become calloused.

In one Great Lake State, in 1927, 2,600,000 acres were sold for taxes. Two-thirds of the land thus sold reverted to the counties. In another State a few years back, three farms per day were falling into the hands of the State for unpaid taxes. In one Eastern State, farms have been abandoned at the annual rate of 272,000 acres since 1920.

Within the past few years many millions of acres of farm lands have been abandoned or sold for taxes. Many more millions of acres have been sold under foreclosure of mortgages. Many irrigation and drainage districts have fallen into financial difficulty.

Owing to abandonment and tax delinquency, the towns dependent on such lands find the foundations of their prosperity undermined. Counties are shorn of a large part of their revenue. The costs of schools and roads in such areas are met with increasing difficulty by the sparse population that remains.

In some cases it has been found that the expense of schools and roads, capitalized at 5 per cent, amount to more than the value of the scattered farms they serve. The county could well have afforded to buy the land, and move the people to more thickly populated localities In other cases the cost of county and other local adminis-

tration was so burdensome as to demand reorganization. A proper land policy would approach such problems sympathetically with a view to helping maintain the economic community life while pointing to such reorganization as would make it better.

Such a policy will deal not alone with areas which lack in fertility, but also with the best farming areas we have. Even on good land, some farms are submarginal because conditions have produced a size and type of organization unsuited to economic conditions. In some areas, a program of consolidation is called for; in others, of subdivision. In some parts of the Great Plains, for instance, where the farm family must subsist entirely upon the income produced from the farm, larger units may prove to be desirable. The ownership of the lands, however, has been diffused through the operation of our earlier land policy, among numerous small landholders, many of them absentees. In areas adjacent to industrial centers, where the farm income can be supplemented by occasional employment in industry, small units are practicable.

An important factor in the agricultural situation is land taxation. Direct taxes paid by farmers now amount to more than $900,000,000 annually, of which approximately 84 per cent is paid through the general property tax. Taxes in general have continued to rise and a disproportionate amount of the increase has fallen upon farm property. This situation is made more serious by the fact that the farmer is least able of all producers to shift his taxes. For him they can not be passed on. He not only pays the taxes assessed against his own property, but also pays a part of the taxes assessed against others.

Obviously, taxes paid by railroads, public utilities, and like concerns are passed on to the consumer. High taxes, high rentals, and high wages, are, for the most part, passed on by industry to be paid by the consumer. They are elements of production cost which the consumer must pay. Farmers, along with others, pay a part of these charges in the form of higher prices for goods and services. Land is the principal part of the valuation of farm property. Unless the farmer can sell his products at a profit, he can not pass the taxes on to the consumer.

Thus the farmer has been caught between the upper and the nether millstones of mounting tax levies on the one hand and low income on the other. These have caused a serious decline in land values which has not only reduced the farmers' equity but also made it difficult in many instances to renew mortgage loans. Taxes, after all, are the first lien on the land.

There is another angle to the tax situation that does not operate in favor of the farmer. Through his trade he contributes to the prosperity of the cities and of industry. In the price of his purchases, he pays a proportional part of city taxes, rentals, and wages. Through his production, he contributes the raw material which keeps the factories running and the payrolls going. For over 100 years he furnished 80 per cent of our exports, and kept the balance of trade in our favor. He still furnishes 35 per cent of our exports. His is a substantial contribution to urban and industrial life.

Further, the farmer should have an equity in the community values which he has helped to create. Community life creates new values, social, cultural, and economic. Opportunities are larger in community centers. Land values increase with concentration of population. In these increased community values, the farmer has no share. Does not the farmer's equity entitle him to call upon the community for relief from the unjust portion of his load of taxation? Thus far we have considered only facts and conditions which now exist. Who is wise enough to forecast what awaits us in the future? What new conditions of competition, of production, of marketing? What new discoveries in methods, or what new inventions in machinery, are about to be made? Is the cotton picker, with its vast train of problems, just around the corner? We do not know, but if the past is any guide, we can be sure that we shall need to be vigilant in shaping our policies to the kaleidoscopic economic changes of the future.

Any program, to be sound as well as humane, must be elastic. In that program, the problems of submarginal land and the closely allied taxation question must be considered. Whatever the solution may prove to be, it should approach helpfully the problems of both the farms and the local communities dependent upon them. No violent shift of the population or of land use is desirable or possible. No modern hegira is being planned. Yet some action is imperative, for there is nothing economically sound or socially desirable in producing crops to sell always at a loss. Such production exacts an enormous toll in living standards at the expense of helpless women and children.

Before we take a hasty position based on present conditions, it is well to remember that as recently as 1900 Sir William Crookes confidently predicted a wheat famine by 1931. As late as November 21, 1918, after the war was over, our own Congress passed the war finance act, the preamble of which recited a purpose "of stimulating agriculture." Who does not remember the dire prophesies of a few years ago that our oil resources were being depleted and would soon be exhausted? And who has not shivered before icy blasts from an imaginary frozen north, which were conjured before our minds by the prophets of a vanishing coal supply? It is evident that a long-time national policy for the use and the management of land must have elasticity enough to meet changing economic conditions.

Suggestions have come from various sources that the answer to the problem of submarginal lands is purchase and reforestation by the Government. There probably are areas which possess so high a value for national uses that they should be acquired. National uses, under our present policy, include watershed protection, national forests, parks, and game preserves. Possibly sound policy would include acquisition to stop erosion and to conserve the soil for future generations. There are other areas in which the continuance of the economic life of whole communities depends upon the maintenance of some national resource, such as forests, which provides raw materials and employment to farmers and workmen in small towns.

In such instances acquisition, either by Federal or State Governments, or jointly, may be justified but to purchase all of the

submarginal areas is hopelessly impossible. There are 636,000,000 acres classed as land in farms, which are not now plowed. Of these, 500,000,000 acres are suitable in point of lay of land and climatic conditions for cultivation. Three hundred million acres require no clearing. These are not suitable for forests. It should be remembered, too, that many millions of acres now under cultivation are submarginal. To acquire all such land would require many billions of dollars. Such a program would displace millions of people. On so large a scale, it would undermine the economic base of schools, communities, and counties. I doubt if conditions, economic and financial, would ever make the recapture of these hundreds of millions of acres desirable. Certainly there is no justification for it now.

What then can be done? What is the occasion for such a conference as this? The answer lies in the vast waste of human and material resources now taking place in our rural areas. Erosion has already gashed and gullied our countrysides and ruined 21,000,000 acres beyond repair. The wastage of natural resources in the East and South has already sapped the economic strength of communities of farmers and small towns. Everyone of these conditions presents problems of economic readjustment and political reorganization which might conceivably change a loss into a modest profit. Thousands of pioneer souls have listened to the siren song of the expansionists and have followed their land hunger into arid regions or on to cut-over lands which nature intended for other purposes than farms. Theirs has been a high adventure which they have filled with deeds of valor, but let us not forget that in this prosaic world, it is the unheroic question of profit which will determine their economic success. A penny of profit is a million times better than a penny of loss.

There is probably more hope of success in slamming shut a few doors through which expansion is flowing than there is in the recapture of acreage. Most of the expansion takes place in four directions—drainage, irrigation, clearing of forests, and dry-land farming. The extent of that expansion is not generally recognized. There are both dynamite and enlightenment in the statistics, taken from the Fifteenth Census, that there were 84,000 fewer farms in 1930 than in 1925, but there were 15,000,000 more acres in crops. This in five years, and the last five years at that. There are both pathos and problems in the fact that the 366,000,000 acres planted in crops in 1930 was 55,000,000 acres more than our cultivated area in 1909, and larger than the war-time peak of 1919.

We must start sometime. No program which we can conceive will immediately cure the present emergency. A long-time land-use program can not write an immediate answer to the present emergency, but the present emergency emphasizes the immediate need for a long-time program. If we had begun even so short a time as 20 years ago—before the expansion of our cultivated area by 55,000,000 acres—how much of tragedy and distress might have been prevented. If we could have prevented the entry of the submarginal portion of those 55,000,000 acres, or could have held in abeyance such portion as was not economically needed, what a different story we could write for American agriculture.

The proper size of our agricultural plant can not be definitely fixed. Conditions change and national demands upon agriculture

change with them. Nevertheless, one great benefit from a proper land policy would be the approximation of the size of our land plant in the light of economic conditions. We ask the farmer to adjust his acreage. His is a difficult job if forces beyond his control and heedless of his interests are constantly enlarging the total acreage to which he must adjust his own.

I hope sometime proper supervision of colonization schemes can be had, proper surveys of lands about to be offered for farms can be made, and settlers truthfully apprised of the economic facts about the ocean of doubts upon which they would embark their argosies.

I hope to live long enough to see the county agent go to the man on submarginal lands and say, "Bill, you haven't a chance on this farm. Get a good one, or if you must live here, get a job at something else. This farm couldn't make a living for the best farmer who ever walked on leather."

I hope sometime Uncle Sam will refuse to deed 640 acres of sand and cactus to a man, no matter how courageous and industrious he may be; will refuse to be party to the certain tragedy which waits for those pioneer souls who, dauntless but misguided, would carve a farm from barren wastes.

The present economic depression will be a fruitless era indeed if we fail to utilize its lessons. This Nation has incomparable resources in land, labor, and capital. No less important is the intelligence with which these assets are utilized. The individual farmer will have to show resourcefulness in meeting changes in world economic conditions. He needs to adopt every economy of production. He needs to recognize handicaps, natural and economic, that foredoom him to failure. But it is no less vital that the Nation, in the interest of a profitable agriculture and a balanced national life, shall promote a wise utilization of our resources. Our traditional national policy of planless agricultural development should be replaced without delay by a program based upon such a utilization of our land resources as will yield greater economic and social values, will stay erosion and soil depletion, will preserve and conserve our land inheritance, and limit our agricultural plant to such size as will supply the Nation's needs, without the ruinous blight of overproduction.

The epic of land settlement in this country is nearly complete. The day of the pioneer as a farmer is merging into the day of the farmer as an industrialist. The pioneer was a dynamic figure. His life story was replete with drama and human interest. The story which he wrote across the map of America was heroic in determination, in courage, in accomplishment. Nevertheless, some of his effort was futile, some tragic. While in the aggregate his beneficient accomplishment is great, agriculture is to-day tasting the bitter disappointment which has followed some of his misdirected and overabundant energies.

We have come now to the time when we should write a new epic—the epic of adjustments, of regrouping, of retirement from cultivation of lands which the pioneer subdued, but which stubbornly refuse, to yield to his grandchildren a reasonable standard of living, of developing parts of our great patrimony and conserving other parts; in short, the epic of conserving a hardworking, God-fearing, agricultural people—proud to be, as in fact they always have been, the mainstay of a great people, the nursery of a great race.

LAND: ITS USE AND MISUSE

Presiding—CHARLES E. HEARST, *Vice President, American Farm Bureau Federation*

Mr. HEARST. Gentlemen, there are approximately 6,000,000 farmers living on the farms in the United States who are wholly dependent on the returns from their farms. There are other millions who are almost as wholly dependent on the products of those farms as are the farmers who work these farms themselves. The immediate problem before us this afternoon is to consider how we are going to use this land we now occupy, and to try to find ways of avoiding its misuse, because we shall have following generations who are entitled to have these natural resources conserved for them. It is our responsibility to see that the land is kept in such shape that those who follow us can use it for their own advantage.

To digress for a moment; I am probably the only farmer to be chairman of a meeting during this conference. I am thoroughly in sympathy with this movement. The American Farm Bureau, with which I am connected, has for several years been pressing for a national policy on land use. We have felt seriously the need of a practical policy to conserve for our actual farmers, the possibility of life on the farm with living standards such as we all desire. We are mighty glad this conference is being called at this time.

I care not how practicable nor how workable a land policy we may adopt, that policy can be entirely upset if the powers that handle the finances of a nation see fit to do so. In the early days people bartered back and forth, traded one commodity for another, until they found it necessary to devise some measuring stick of value so that trading would be unnecessary and credit might be obtained from the barterer. We adopted the dollar as the measuring stick—the gold dollar. Recall what has happened in our country during the last 25 or 30 years. When we had enough of this measuring stick in circulation, the country was quite generally prosperous. The farmers' products sold at a fairly good figure and people were employed. But just as soon as the circulation of those measuring sticks was curtailed, prices dropped, labor was idle, business stagnated. We remember that period in 1896. Our recovery came quickly. Not that anything was done in a national way, but because we discovered gold in Alaska and the Klondike, thus bringing in a new volume of gold. This dollar or this measuring stick was cheapened. It was brought down within the reach of all of us; therefore our labor and the prices of our commodities advanced. We are now in a period similar to that of 1896. Consequently the prices of commodities are low. If, in shaping a policy, we do not take into account some of these things that affect agriculture and business we may find the best policy that we can possibly adopt disrupted by our method of handling the finances of this Nation.

So far as business, farming, and labor are concerned, the dollar must be stabilized. It must be the measuring stick of value, as the ton is the measure of weight, and as the yard is the measure of distance—they stay fixed. When the dollar advances in value it inures to the benefit of the creditor but inures to the disadvantage of the ordinary citizen. That is the situation we are in now; whether

because of lack of gold or whether because of the way the gold we have is handled, makes no difference. If gold is stored in the vaults, is sterilized there, and no credit is issued against it, then, that gold does our citizens no good whatsoever. It may just as well be in the mines from which it came. But if credits are issued against that gold, and money is put in circulation among our own people, then its use is of advantage to us. I think that we should insist that the dollar be stabilized at a fair point and then some directions given to those who are in authority—the Treasury Department, the Federal Reserve Board—to keep that dollar stabilized throughout the years, to avoid conditions such as we are up against to-day.

Just one more observation: I am from Iowa, the State where we look to the heavens for rainfall, and they rather overlooked some of us in the northern part of the State this year, to our sorrow. I have seen thousands of reclamation projects started, some of my very closest associates have pioneered on projects. One of my near relatives went West and set himself up on a new irrigation project only to find that his 80 acres of trees could not be watered; he finally came back and secured a job as a motorman on a street car in order to make enough money to take care of his family until he could get into business again. Exploitation of the people by private interests has been a terrific drag on our agriculture. I would like to see the Bureau of Reclamation put where it belongs, in the Department of Agriculture, and not have it where it is now. I think such a change would be very advantageous to the farmers, to the national land policy, and to the good of all of us.

LAND UTILIZATION IN THE WESTERN RANGE COUNTRY

WILLIAM PETERSON, *Director of Extension, Utah Agricultural College*

Originally the 11 Western States had a total area of 810,723,200 acres. There remains unappropriated 178,979,446 acres. The difference between these two acreages has been disposed of in some way. In order that the land might be transferred it was necessary that this great western area be surveyed. The time may have seemed ample to complete this survey of the entire area but approximately 50,000,000 acres have not yet been surveyed. Utah still has more than 11,000,000 unsurveyed acres. It is estimated by the United States Land Office that it will cost approximately 12 cents per acre to complete the survey. This indicates that there must still be a large investment before complete transfer of this part of the public domain can be made.

Approximately 48,000,000 acres of the western area is included in Indian reserves. Indian reserves have been enlarged, readjusted from year to year; many of the areas are still in a state of flux so at this time it is difficult to say how much will eventually come under this heading.

With the passage of the homestead law in 1862 land began to pass into private ownership. Land adapted to building of homes was the first to be taken. Several bills have been passed by Congress providing methods of transfering land to private ownership. As the better lands have been taken, provisions for private acquisition of land have grown more liberal, but the economic relationship between

the possible income from such lands and the demand for a satisfying standard of living for a resident family, has not been worked out. The rate at which these lands have passed into ownership since 1921 is indicated in Table 1.

TABLE 1.—*Number and area of homestead entries of public lands allowed during fiscal years 1921 to 1930, inclusive*

Fiscal year	Sec. 2289, Revised Statutes, original homestead, 160 acres		Feb. 19, 1909, enlarged homestead, 320 acres		Dec. 29, 1916, stock-raising homestead, 640 acres		All other homesteads, 160 acres		Total	
	Number	*Acres*	*Number*	*Acres*	*Number*	*Acres*	*Number*	*Acres*	*Number*	*Acres*
1921	7,416	884,475	9,465	2,445,793	25,193	10,136,486	1,739	195,081	43,813	13,661,835
1922	5,400	646,576	4,900	1,248,371	17,597	6,957,254	1,366	147,851	29,263	9,000,052
1923	4,599	506,652	2,974	745,721	10,541	4,183,922	828	87,865	18,942	5,524,160
1924	3,763	418,668	2,329	592,349	6,880	2,765,440	914	96,714	13,886	3,873,171
1925	3,358	365,641	1,639	401,355	5,416	2,217,383	597	56,419	11,010	3,040,798
1926	3,646	369,658	1,172	291,830	5,070	2,170,028	466	43,381	10,354	2,874,897
1927	2,931	315,214	1,189	294,264	5,771	2,571,646	609	55,640	10,500	3,236,764
1928	2,870	323,818	1,227	315,070	5,704	2,667,392	628	60,536	10,429	3,366,816
1929	2,726	297,334	1,385	375,842	7,060	3,465,727	427	39,592	11,598	4,178,495
1930	2,876	315,318	1,734	468,550	8,520	4,125,120	118	11,853	13,248	4,920,841
Total	39,585	4,443,354	28,014	7,179,145	97,752	41,260,398	7,692	794,932	173,043	53,677,829

In addition to homesteads, large areas of land have passed into private ownership as mining claims. Many coal entries were made before the repeal of the coal entry act. It is impossible at this time to check the amount of land held in private ownership as lode claims and placer claims.

It is not difficult to check the land which has gone to patent, but the law in most States is so written that lode and placer claims can be taken, and as long as assessment work is done annually, the claim is not forced to go to patent. It may be held indefinitely with assessment work recorded each year. Incidentally this has the effect of keeping the claim off the tax roll.

With the settlement of the West, especially following the Civil War, there was the allurement of the livestock industry and free range. It is to be noted that in this western grazing the Government did the unprecedented thing of allowing promiscuous use—in every form conceivable—of these great areas of land. Grazing was free and very profitable. All that was necessary to become a cattle king was to get a few cows, turn them on the range, and see to it that enough calves were branded each year to keep the herd on the increase. Strife began early between the cattle barons, the sheep herders, and the homesteaders. The man with his family who went out and took a quarter section of ground on the streams was considered by the larger grazers as a nuisance. He was entirely within his legal rights, but his action was far from popular.

When a man chose 160 acres on which to make a home it was often considered that a satisfactory standard of living could not be obtained from the 160-acre tract. He settled with the intent of pasturing the surrounding public lands. There are many home tracts on which it would be impossible to make a living were it not for the advantages of free grazing; in fact, this was considered to be a part of the ranch. Recently a ranch was sold in Utah for $50,000. It was isolated and it controlled the waters of a small

stream. The total inventory of the land, cattle improvement, and equipment would not exceed $30,000. The balance of the purchase price was accounted for by the advantages of grazing on the public land. In other words, the public land was sold at about so much per acre.

Free pasture added a tremendous advantage, and its use increased so rapidly that it has been estimated by those who made a study of the western range, that in about 1890 the western ranges were stocked to their full carrying capacity; but both cattle and sheep increased, and the range began to go down. The high timber sections were grazed more severely, especially by sheep. A study of these conditions and the economic appreciation of the western timber lands led to the reservation of the national forests.

One who has watched the operations of the Forest Service since their inception can not help but believe that the forest reserves have functioned. These forest lands were taken over at a time when they were greatly depleted for grazing. Timber growth was constantly in danger of fire; possibly the greatest value of the forest reserve is watershed protection. Many areas already were producing hazardous floods instead of a late-summer water supply. These lands have now been built up by consistent methods until the carrying capacity is approaching that which might be expected in the best use of uncultivated areas.

In 1930 the forests of the Western States furnished approximately 20,000 pasture permits for 1,300,000 head of cattle and 50,000 head of horses, and 6,500 permits for 6,650,000 sheep and 15,000 goats. While the forest lands are carrying this grazing they are being rehabilitated through protection of timber, increased carrying capacity of the range, and normal protection to watersheds.

The area of the forest reserve at present aggregates 136,000,000 acres. In most of the arid States the Forest Service has functioned more effectively in grazing conservation than in timber development. The Forest Service took over the responsibility of administering this large area of land and in the beginning it had very restricted knowledge of what should be done by way of conservation and rehabilitation. The area was tremendously overgrazed and scarred with fire in many places. Great destruction was threatened to the watersheds,—which are the very life stream of the attempted settlements.

In addition to the task of conservation the problem of administering land which had been free and open to the western stockmen confronted the Forest Service. It is not the inclination of the western stockmen to be supervised. Restriction and proper distribution of animals over the area in the forest reserve were absolutely necessary. Many a stockman has conceded that this was a correct procedure, but when it was applied to his particular business it became an infringement on personal rights.

The Forest Service may have made mistakes, but the most outstanding piece of conservation and rehabilitation that is found in the West to-day, is within the boundaries of the national forests, and in years of water stringency we look to the forest for even more intensive conservation and watershed protection. The Forest Service has developed methods of plant rehabilitation that have functioned, and the areas taken over have increased in carrying capacity

under the supervised stock-grazing program. The lands that were transferred into the forest reserve are generally higher, often better, and have greater rainfall, than those left in the public domain.

In recent years men of the West have developed great concern over watershed control. Streams formerly dependable have developed into hazardous floods through excessive, sudden run-off.

The rate of run-off from the watershed depends upon several factors: (1) The rate at which the rain may fall or the rate at which the snow may melt, (2) the slope or gradient of the land surrounding the headwaters of the stream, (3) the porosity of the soil, (4) the vegetative cover, (5) the organic material or mulch in the surface soil.

Man has no control over some of these factors. He has no control over the rainfall nor the snowfall, nor the rate at which snow melts. He has little control over the character of the soil, the vegetative cover, or the porosity of the soil. However, there is a chance for some control.

We have had numerous demonstrations that the removal of too much of the vegetative cover changes a stream from a dependable water supply to a dangerous flood menace. This is because, under the normal condition, the surface flow of the water was retarded and was absorbed as ground water whereas, with the removal of the vegetative cover, a much larger amount flowed off directly and suddenly, and became a real menace.

Under such conditions erosion is intensified and flood destruction becomes a hazard. It is impossible to prevent erosion entirely but if normal erosion can be maintained the watershed will seem to maintain stability. In the erosion process nature has a tendency to set up a balance which contributes to stability, a balance between soil type, gradient, rainfall, and vegetative cover. This balance does not prohibit erosion but develops what we call a normal erosion. There are certain areas that never reach a balance, such as those of unusually soft ground, the Bad Lands of Dakota, the outcrop of Mancos shales, Niobrara shales, or Green River shales. There are also many areas where the rock is so positioned that solid rock areas do not retain a soil cover or a vegetative cover sufficient to create a balance. But where a balance has been established it should be maintained. Much of the area on the watersheds of the West is just at the point of balance. Removing the small amount of vegetation would create abnormal erosion, and abnormal erosion is associated with hazards and damages by floods. Normal erosion removes from the surface of the United States about 1 foot of soil every 8,000 to 9,000 years. In certain areas a foot of soil may be removed in 100 years, but at such a rate of erosion plants can readjust themselves so as to occupy the area and stimulate normal absorption of the ground water. We are arguing that a balance is developed between the soil type, gradient, rainfall, and vegetative cover. During many hundred years of the past there has been little change in rainfall, soil type, or drainage; the factor which is likely to be disturbed is the vegetative cover. This is best illustrated where areas of appreciable slope are plowed and the vegetative cover is entirely removed. This is the condition which has necessitated terracing many lands in the Southern States.

Two years ago I observed a heavy rainstorm in the dry-farm wheat area of southern Idaho. The period was early August. The wheat

was practically ripe but none had been harvested. One-half of the area, about equally distributed, was in fallow; the other half was in crop. The area in fallow had been eroded and the plowed soil removed. Thousands of ditches and destructive gullies from 1 foot to more than 30 feet in width, had been cut through the plowed ground, but not a single gully was observed in the growing-wheat area though it was of the same type of soil and had the same gradient.

Fire on the watershed is one of the most destructive agencies. It not only destroys the growing vegetation but usually entirely destroys the mulch in the surface soil. This leaves the ground ready to disintegrate. Many years may elapse before the area can again be brought back to normal balance.

The plant growth depends on the amount of plant food and moisture. The limiting factor in the plant food is usually nitrogen. The supply of nitrogen comes largely from organic material in the soil. The nitrifying bacteria live in the organic material and make available nitrogen. If the vegetative cover is grazed too closely the annual organic contribution to the soil gradually grows less. Plants become stunted. The nitrogen so decreases that the better forage plants, such as grass, will give way to poorer plants, even poisonous plants.

The multiple root system of the grass is abbreviated. The partial sod cover is replaced by isolated plants. Less moisture from each storm is retained by the soil. This allows more water to run over the surface. Nitrogen which is available for plant food is soluble. More run-off means chemical erosion of plant foods. When the soil is denuded by lack of organic matter and multiple root system it will readily disintegrate. The soil is broken and actual gullying begins.

Erosion is associated with the hazards of floods and the silting of streams and reservoirs. Normal erosion is a factor of conservation. It has been estimated from experimental data that to maintain the balance in any area at least from 10 to 15 per cent of the annual growth of the plants should remain as an organic contribution to the soil. When the plants have been removed and the surface has been actually broken it often means reseeding; the best figures indicate it will take from 30 to 40 years of careful supervision to rehabilitate the area and give it a balancing vegetative cover.

In the West there are numerous examples of normal balance in erosion developing on slopes up to 30° or 40°. Excess grazing on such areas invites, with the first heavy rain, the starting of gullies and washes, and hazards of floods. This detail is given to emphasize the necessity of proper administration in watershed protection and in flood areas. The excess erosion may seem to come in a single year. The disposition of the vegetative cover may have been going on for many years. A fire over the area may prepare it for disintegration of the ground within a single season.

The most valuable watershed lands in the western area are in the national forests. Many of the watershed areas, however, are not in the national forests. These are either on the public domain or in private ownership. It is the destructive condition proceeding on these uncontrolled lands that is causing the flood menace at present. These watersheds need definite administration, protection, and control just as does a reservoir that has been built at large public ex-

pense. The water-absorbing power of our watersheds in the West is the most precious reservoir, not only for future development but for protection of the investments we have in present settlement. Too often in irrigated areas the farmer's interest ceases at the head gate of the ditch as though he had no concern for the conditions on the headwaters of the streams. The time has come when every person who has a water right in any stream is just as vitally concerned in what is being done to protect the watershed on that stream as the man under the reservoir is concerned in the perpetuity and upkeep of the reservoir.

There are those who believe that if these watershed lands were placed in private ownership instead of remaining in the public domain, the problem would be solved. This is a fallacy and not a fact. Nor should any plan be adopted assuming the problem will be solved through private ownership. There is no reason to believe that because Mr. A owns lands which are watersheds to a certain valley and because he has purchased these lands with his own money he should be compelled to treat them in such a way that they become a definite protection to the water users below. If the land is private he is entitled to make what use of the land he chooses, and there is no more reason why he should be restrained than why any other man on any farm land or grazing land should be restrained from using it the way he chooses. Water has been regarded as public property belonging to the State or to the Federal Government. If this is correct then the watershed should be public property.

The call of the West at the present time is for better administration of watersheds and watershed protection. In a careful analysis over a long-time study of these problems I have failed to find a single outstanding example in which a proper effort for watershed protection or flood control has been inaugurated, either on privately owned land or on State-owned land. Hazardous floods occurring in Utah during the last few years and causing menace and damage amounting to more than $100,000 have originated on privately owned land. A study of the area by a committee appointed by the governor attributed the cause of damage to burning and too-intense grazing. The damage was not done by the direct use of the owner but by those to whom he had leased the land. A present owner may properly protect the watershed of a stream, but if the land is private it is subject to exchange or sale at any time. New owners or new conditions may force a policy that will be the ruination of the watershed.

This does not mean that watersheds can not be grazed. It merely means that they must be grazed more carefully than other lands.

Another argument in favor of public ownership is that usually when damage is done, it is paid for, in a measure, by the public. A man's home or farm is destroyed. No blame can be attached to any single individual. An appeal is made either to the Government or the State legislature and usually he is reimbursed for a part of the damage, if not all.

When areas of land have been found to be more valuable or more attractive to the public than they could be to any individual, these parcels of land have been organized into public parks and public monuments. At present there are 5,935,912 acres in the national parks and 130,590 acres in the national monuments. Such an allot-

ment seems satisfactory. There are, no doubt, several areas not yet so designated that should become public parks or monuments. Without doubt this is a splendid policy. But at present we seem to be having almost an epidemic of such movements. We seem to feel that every county or community that has a box canyon, a high cliff, a petrified tree, or any type of fossiliferous monstrosity, should have the area about the object designated a national monument or a national park. This policy needs careful guiding; only those areas that do have real merit should be taken out of the grazing area and designated as national parks.

There are other classes of lands over which the western stockman is greatly concerned. The Government in its conservation policy has set aside known valuable mineral lands for future use. Some of these are definite withdrawals while others are temporary, pending further classification. Withdrawals have been made as follows:

	Acres
Oil and gas structure	514,557
Coal withdrawals	23,929,002
Classified coal withdrawals	20,398,451
Oil withdrawals	4,629,331
Classified	67,651
Oil shale withdrawals	4,116,097
Classified	1,934,969
Phosphate withdrawals	1,937,969
Classified	300,362
Potash	9,411,939
Helium	12,255
Total	65,463,761

The area of these lands is equal to one-third that of the total public domain. Most of them are good grazing grounds and many of them contain important watersheds. Part of the area extends into the forest. These withdrawals have a decided influence on the grazing lands. Most of them have been specially and recently withdrawn, and no land policy for watershed protection or rehabilitation of grazing has been inaugurated. The area of mineral withdrawals in Utah is equal to the area of the national forests within the State.

In the enabling acts of the various States provision was made for transferring large tracts of lands to the States. In some States two sections in each township were transferred to the State for school purposes. In other States four sections were transferred to the State for school purposes.

In addition to these, large grants for various purposes have been made to the States. Land and scrip have been granted to the Western States for educational and other purposes as follows:

State:	Acres
Arizona	10,489,236
California	8,425,320
Colorado	4,433,538
Idaho	3,631,965
Montana	5,869,618
Nevada	2,723,647
New Mexico	12,656,026
Oregon	3,436,203
Utah	7,414,276
Washington	4,138,569
Total	66,262,869

In general, this has amounted to from 3,500,000 to 12,500,000 acres in each State. Some States received their school lands in blocks and made immediate disposal of them to large stock companies. Other States inaugurated a selling process by which the land was sold on a long-time payment method and all lands having promising value were disposed of as rapidly as they were surveyed. Other States have attempted a definite policy of selecting and renting lands in large blocks, leasing rather than selling their school lands, and have made up a school fund out of administered leases and rentals, preferring this to receiving the annual partial payments and interest on money invested. It is claimed by the latter group that their method has been more profitable because land values have increased and the State has benefited.

It will be noted, however, that this method puts the State in a different position when it comes to considering the disposal of the public domain. For instance, in a State like Nevada, which has practically no State land left, there has been no State policy of administration. A State like Utah which has received land grants amounting to 7,600,000 acres now has less than 2,000,000 acres of State land and no policy of administration has been developed, whereas a State like New Mexico, which still retains in its possession more than 10,000,000 acres of State land, has developed a definite policy for the administration of the State land, and there are those who believe that this administration is so efficient that the same policy might be extended to the public domain.

In giving to the State two sections or four sections in each township, apparently the intent was to give to the State lands that are comparable in quality to other land within the State. However, in administering these lands it has been very difficult to inaugurate any policy which would give to the State any benefit from scattered marginal grazing pieces separated from each other by long distances.

Out on the American desert the State of Utah may have several sections of land. These are separated among townships as sections 2, 16, 32, and 36. One section can not be protected and restricted for the use of an individual; therefore, leasing or renting these sections has not been practicable. For the protection of the State and the school lands that remain, it seems necessary that a law be enacted that will permit the exchange of the present school lands for others equal in value, and that lands be collected in blocks of such size as to make economic grazing areas. The same procedure would seem necessary in the case of railroad land grants where every other section on either side of the railroad, for 20 miles, was given to the railroad to assist in building. These areas have been greatly abused, in that private individuals have purchased the railroad lands and afterwards have completely used and controlled the intervening sections. Whatever method of administering the public land is finally attempted, assembling the school lands into more economic units seems necessary. This resource of the schools should be kept intact.

Probably the different land policies adopted by different States were the greatest factors influencing the committee on the conservation and administration of the public domain in recommending an option for Federal control or State control of public lands. There

was also with some States the thought that an immediate State benefit is more desirable than a long-time program of conservation and rehabilitation.

These are those who believe that if the land is placed in State ownership on a system of leasing to private individuals, the problem will be solved. It must be remembered that there is lack of agreement on what is meant by rehabilitation, conservation, and watershed protection; also, that States are interdependent both in grazing and in watershed protection. Many States have more winter grazing than summer grazing, and interstate transfer of sheep and cattle is necessary. Table 2 shows the condition in Utah, Idaho, and Nevada.

TABLE 2.—*Principal interstate stock migration in Idaho, Nevada, and Utah*

Direction of migration	Sheep		Cattle	
	Winter	Spring	Winter	Spring
From Utah to—	*Number*	*Number*	*Number*	*Number*
Arizona	100,000		200	
Nevada	100,000		500	250
Idaho	50,000	85,000	[1] 3,600	
Wyoming	40,000	[1] 22,000		150
Colorado (winter)	50,000	[1] 106,000		
		Summer		Summer
From Nevada to—				
Idaho	30,000	20,000		500
California		127,670		4,855
Oregon		75,000		1,150
Utah	[2] 20,000			350
From California to Nevada	104,400		6,400	
From Idaho to—				
Nevada	80,000	20,000	950	
Oregon	23,000			
Wyoming		63,000		1,241
Utah	154,000	3,400	325	
From Colorado to Utah	235,000		254	
		Spring-fall		Spring-fall
From Wyoming to—				
Idaho	1,000	25,000	1,600	
Nevada	2,000			
Utah		21,000	3,400	2,200
		Summer		
From Montana to Idaho	50,000	10,000		
From Oregon to—				
Idaho		20,000		
Nevada	25,000	30,000		

[1] Summer movement.

[2] Part.

The boundaries of the 11 Western States are nearly all straight lines. The States are not separated by natural geographic divisions. Rivers flow from one State into another. Watersheds must be protected in one State for the benefit of another. Often water is reservoired in one State for use on lands in another. Flocks and herds must continue to make seasonal migration from one State to another, because in many of the States the winter and summer grazing are not in balance. All of this argues for a uniform policy in the supervision of public land.

The livestock industry of the Western States is now demanding for the free grazing lands in the public domain, including mineral reserves, some type of administration similar to that of the national forests. Livestock owners are convinced:

That watershed protection is absolutely necessary;

That the program for the grazing of the public range including mineral withdrawals should be such that the grazing not only will be maintained but will be rehabilitated, as rapidly as possible and as conditions will permit, in the best interests of the number of livestock;

That long-time allotment should be allowed in permits so as to give the livestock industry safe and dependable range;

That the same agency should supervise the grazing of the forests, the public domain, and grazing lands in the mineral withdrawals;

That the program should include a year-round permit in which summer and winter grazing may be so allocated as to allow the most economic use of the entire range, including the forest area;

That experiments to determine the best methods of rehabilitation should be encouraged; that they should include a thorough investigation of the possibility of plant importation, and that experiment stations should be so located as to afford data to the largest possible areas;

That water holes should be developed so as to make complete use of the public grazing lands;

That a definite program for watershed protection should be inaugurated both for watersheds within the State and for interstate watersheds, and that this program should have for its objective the proper grazing that will prevent abnormal erosion on watershed areas;

That all school lands should be definitely protected for the continued benefit of the schools by a provision for such exchanges as are necessary in gathering the State lands into blocks of economic units that can be better administered;

That the programs for reclamation in the States should be allowed to continue and that rehabilitation through reclamation should be given first to settled areas with incomplete water rights;

That the location of mineral claims under lode and placer acts should be allowed to continue as under the present law;

That the program of Federal cooperative road building should be continued as at present, but that a definite and immediate program should be adopted for the administration and conservation of the western range lands.

EXTENT AND EMERGENCY CHARACTER OF PROBLEMS OF SUBMARGINAL LANDS

THOMAS P. COOPER, *Dean, Kentucky College of Agriculture*

The term "submarginal" as applied to land has come into popular usage during recent years. The definition involves the economic and social conceptions of the use of land. (Incidentally I might say this does not quite square in words with the Secretary's definition of submarginal lands this morning, but I think it means the same thing from the standpoint of the economist.) I shall not attempt

the refinements of the definition, but for the purpose of this discussion shall consider land submarginal for agriculture when it is not capable of yielding to the average farmer the returns for the use of his labor and capital that he could obtain elsewhere.

Land is submarginal for the private forester if it can not yield to the average operator a return for his labor and capital equal to that which he could secure in other employment. In a general way, submarginal land is that which the average run of operators do not find profitable.

From a social point of view, certain areas may be submarginal because the present method of utilization is destroying all resources for future use. At present, it may be profitable for an individual to cultivate certain lands where the soil erodes badly, or to cut the forest without any thought of a future stand of timber, or to graze a range heavily without any concern for the future of the range. Lands which fall in these categories may be temporarily profitable, but their utilization under present conditions and methods may be inimical to public welfare. In a somewhat similar class are those areas which are capable of maintaining only a scattering population, with the result that the public burden for supplying schools, roads, and other services is unduly heavy in proportion to the number of persons benefited.

Submarginal land is being increasingly recognized as constituting a burden to the agricultural industry as a whole, as a frequent source of unneeded production, and as a source of economic loss to the State and to the Nation.

Allow me to illustrate by a quotation from a recent article by W. W. Ashe in the Journal of Farm Economics:

> Of the land planted to cotton the current year, not less than 6,000,000 acres can be classed as land of marginal character, the yield from which contributes the larger portion of the surplus crop, periodically forcing down the price of this commodity to low levels. Possibly as much as 10 per cent of the present crop was produced upon land which is marginal under existing economic conditions and with present standards of living.

There are several types of submarginal lands in the United States. These lands may be grouped according to their character and the causes of their submarginality.

The first class is land of rolling-to-rough topography and of poor soils, on which, under earlier standards of living and conditions of production, operators were able to secure satisfactory returns. The changing economic conditions have caused these lands to fall below the margin. I am not thinking now of the present period of depression, but of the long-time changes brought about by modifications in agricultural technic. In the eastern United States, there are extensive areas of rolling-to-rough land which for 100 years or more have been gradually becoming submarginal by reason of increased competition from better-favored lands and because of changing standards of living. This topographically ill-favored land has dropped out of crops into pasture, from pasture into woods, and has then been abandoned altogether as farm-owned land. The problem of farm abandonment is not new. Much abandonment has occurred in the New England States, in New York, and in others of the older States. Since the World War there has been an unusual acceleration of this process. A rapid shift in the areas producing our two important

export crops, cotton and wheat, has taken place. The result of this shifting westward has been the elimination from cultivation of thousands of acres all over the eastern United States. Between 1919 and 1929 every State east of the Mississippi River, as well as Missouri, Arkansas, and Louisiana of the first tier west of the Mississippi, showed a decrease of land in farms. Considerable areas in the southern parts of Ohio, Indiana, and Illinois, in the Ozarks of Missouri and Arkansas, and in portions of Kentucky and Tennessee, are also exhibiting symptoms of submarginality.

A second important submarginal area is the southern Appalachians. Much of this area has long been isolated, and only comparatively recently have the outside economic forces begun to exert an influence upon its life. It is probable that the agricultural depression has affected this area less than it has some of the areas of commercial agriculture having favorable natural conditions. Because so little of the product is sold, the returns from this mountain land are nearly as great as formerly, but very much lower than those secured in more favorable locations.

In a study made in the Kentucky mountains typical of the southern Appalachians, it was found that the average value per family of the goods purchased for consumption was $324. For the farmers in areas of favorable environment outside the mountains, the average was $914. The value of goods purchased by the more prosperous farmers was almost three times as great as was the value of goods purchased by those on these submarginal mountain lands.

The families of this mountain area lived to a great extent on the products of their own farms. However, the quantity and variety of the goods furnished by the farm was greater on the supermarginal land than on the submarginal, and their value was nearly twice as great. The houses of the first group were smaller and they lacked the conveniences of the farm homes found in the other areas.

When the details of the expenditures are considered, all are in favor of the farmers living on better land. For the maintenance of health, the expenditure was $16 in the mountain area as compared with $61 outside; the payment for advancement goods, that is, for books, magazines, education, etc., was $30 as compared with $105; life and health insurance, $3 as compared with $41. These items, none too large at the greatest for our more prosperous farmers, show how meager is the standard of living of those who are attempting to farm these mountain and often submarginal areas.

It is characteristic of these mountain areas that for the time being, many of the occupants are well satisfied to remain, partly because they are unacquainted with, or unadapted to, other modes of existence. Any proposal regarding such land must take these people into consideration. Although the land is essentially submarginal from the point of view of commercial farming, any attempt at the present time to stimulate the evacuation of these areas would be unwise. On the contrary, a wiser present policy is to help them make the best of their meager environment.

Nevertheless, the present stability is beginning to show signs of disappearing. With the improvement of transport facilities, there is developing a movement of the people from the more remote areas to places more accessible. That is perhaps the result of the growing

consciousness of the limited opportunities for social intercourse that these isolated areas have.

A decreasing population in submarginal areas has added to the per capita cost of public service in these areas. This in turn has resulted in demand for relief from the State governments in the support of roads and schools. Thus the interest of citizens located in the better regions of the State is turned to the submarginal problem. Shall the State maintain certain minimum functions of service in submarginal areas? The question is destined to occupy a larger and larger place in the thinking of many citizens.

Cut-over areas in the Lake States, the Southern States and, to some extent, in the Pacific Northwest, represent a third type of submarginal land. Much of this land may be submarginal for forestry as well as for agriculture. Some of this land is still being sold for farms. Some small areas have proved profitable, while much is below the margin of profitable cultivation. In these newer sections exist all the problems previously named—farm abandonment, low standards of living, and high costs for the social services. The problem of tax delinquency is more acute in these recently cut-over areas than in the submarginal areas of the older agricultural regions. The original owner who has decided that it would be unprofitable to hold either for timber production or for sale as farm land, naturally has ceased to pay taxes on it. Likewise, the farmer who has attempted to make a living and has failed, has stopped paying his taxes. With the opportunities provided by lumbering gone, farms in these areas that were previously profitable may become submarginal. Much of this land is submarginal, not because the land lacks natural fertility but because the costs of clearing, and in some cases of drainage, are so great that it is not worth what it costs. In 1928, more than 25 per cent of the cut-over lands of the Lake States were delinquent for taxes. In some counties, two-thirds of the land had been allowed to go delinquent. In Florida, over 20 per cent of the land was sold to the State for taxes in 1921. In 1926, in one county of the timbered mountain area of Virginia, over 180,000 acres, or more than half the area, had been tax delinquent for two or more years.

Throughout the cut-over areas, the problem of tax delinquency exists. The loss of tax income increases the burden of taxation on those who do pay, a burden which is already heavy because of the high per-capita cost for schools and roads in such submarginal areas. This added burden causes more land to become tax delinquent. In counties where submarginal land has constituted a large part of the tax roll, it is difficult to balance the budgets and meet obligations.

An especially acute phase of the tax-delinquency problem is evident in some of the cut-over areas where drainage districts have been established. Considerable areas of cut-over land in certain sections were in need of drainage to make them available for agriculture. Drainage districts were organized and bonds were issued for drainage on an extensive scale. In spite of the high natural fertility of most of this land, much of it has proved to be submarginal. Economic conditions are only partially responsible for this. The high cost of clearing the land, the need of additional drainage, and a heavy soil texture that is difficult to handle under present methods

of soil management, have been important factors. Many of the large holders, finding that they could not dispose of their land, permitted it to revert for taxes and many of those who attempted to farm gave it up. As a result, much of the land in certain drainage districts is delinquent and, in some States, drainage districts containing as much as half the total area of drained land in the State are in arrears on payment of interest or principal, or both. This problem is particularly important in the delta section of Tennessee, in Arkansas, and in some of the drainage districts of Texas. The data available from the census of 1930 show that there is a very close relation between the amount of land in crops and the acreage in arrears. The districts having large areas delinquent are, in general, those with a small percentage of crop land.

There has been a large increase in crop acreage in the Great Plains region. It is evident that large areas have been found profitable for crop production. This same region contains a large amount of submarginal land which, except under conditions of increased rainfall or of high prices for agricultural products, would not be profitable for crop production. The cycle is one of good prices and favorable rainfall, temporary occupancy and cultivation, unfavorable conditions for a few seasons and then abandonment. The consequences are destruction of what was previously a grazing area, difficulty in restoring the range, the problem of farm abandonment and tax delinquency, and the fiscal and social problems growing from a scattering and unstable population.

In the piedmont and to some extent in the coastal plain of the South, particularly in Georgia and South Carolina, in portions of the "highland rim," and possibly in some other areas, there is much land which, although not submarginal in the same sense as the other land which has been discussed, still presents many of the same problems. The piedmont area particularly has felt the force of recent economic change. The farmers have not been able to become adjusted to the new conditions. In addition to the competition from the increase in cotton production in the western part of the Cotton Belt, this area during the same period has suffered very severely from the boll weevil. The necessary adjustments in tenure and in farm reorganization are of so far-reaching a character and the handicaps of earlier overcapitalization and excessive indebtedness and taxation are so serious that the process of restoration has been greatly retarded. In this area, we find many of the symptoms of submarginality. Some of the area has become permanently submarginal for farming on account of soil depletion, changes in methods of farming, and the higher level of wages in relation to prices of farm products. Much of the area is subject to erosion, and changes in crop production and soil management will be necessary to prevent erosion from making considerable areas definitely submarginal. Tax delinquency has been increasing, and has mounted to serious proportions in some counties.

In Georgia, there were 25 counties in which 20 per cent or more of the taxes were delinquent for 1929. In South Carolina, one county has 25,000 acres which have been forfeited for taxes. That State has a provision for a commission in each county to deal with land that has been forfeited for taxes. One county at least feeling it nec-

essary to secure some revenue from this land, has appointed a land agent to secure tenants for forfeited land and to supervise operation of the farm land acquired.

Although a large proportion of the piedmont probably is not submarginal, nevertheless, on account of lack of adjustment to the rapid economic changes, there is a high rate of foreclosure on farm land. The United States Department of Agriculture has collected data, which are published in its annual reports on the farm real-estate situation, showing that the rate of turnover of farms through foreclosure of mortgages for the United States was 7 per cent greater for the year ended March 1, 1931, than for the year ended March 1, 1926. The rate of mortgage foreclosure for Georgia had increased by 22 per cent and the rate for South Carolina by 53 per cent. In 1926, for every 1,000 farms, 17.4 farms in the United States changed hands through mortgage foreclosure; in 1931, the rate was 18.7. For Georgia, the corresponding figures are 22.4 for 1926 and 27.4 for 1931. For South Carolina they are 21.5 for 1926 and 32 for 1931.

The distress areas in these States are examples of submarginal land occurring largely because of economic conditions. Some of the land could be made profitable with certain reorganization; other areas have become definitely submarginal.

Submarginal land is found in every State in the Union. It is becoming an increasing problem to State as well as to county governments. It is bringing to the solvent taxpayer an increasing burden. In those regions where the submarginal areas are very considerable, such areas are characterized by low standards of living, a waste of human and natural resources, low educational standards, deficiencies in needed public services, and difficult problems in financing local government. The complications arising from the submarginal lands are so many that some careful attention must be given to satisfactory solutions. While to some extent these problems have been before us for many years, the changes in our economic and social life in the past decade have increased them and given them an emergency character they did not have before.

The Chief of the Bureau of Agricultural Economics, in the foreword to the publication, Land Utilization and the Farm Problem, says:

> Effective use of our land resources is thus a vital phase of the farm problem. What are the uses to which the various classes of agricultural land may be put most profitably? How can we divert to nonfarming uses the lands that, under present conditions, will not yield adequate returns to farmers? Submarginal lands that, under present conditions, can not compete with better lands are not confined to any one section of the country but are scattered throughout the North, the South, the East, and the West. Moreover, lands that now are submarginal for crop production may perhaps another day, under changed conditions as to prices, farming methods, and operating costs, be farmed with a profit. Under a sound national policy of land utilization, the lands that have natural and economic advantages over other lands will be brought into production whether located in the East or the West, and the submarginal lands that will not yield a profit will be gradually diverted to other uses.
>
> Elimination of submarginal lands from our crop-producing area will not of itself provide a solution of the surplus problem. This fact should be emphasized. But the continuous withdrawal of such lands from crop production will contribute somewhat to the reduction of agricultural surpluses and will retard the expansion of the agricultural area while demand overtakes supply. Furthermore, the adoption of a constructive policy of facilitating the with-

drawal of unprofitable lands from agricultural use, as contrasted with our present national policy of permitting and even encouraging planless agricultural expansion, would contribute to the mobility of population between country and city and would help to restore and maintain a better economic balance between agriculture and industry.

The gains to agriculture through the elimination of submarginal lands and inefficient producers will be slow at best. Neither will completely disappear from our agriculture. There will always be some who prefer to live in the country even under low economic standards of living. But the vast majority of those who live on the land, even in areas of poverty agriculture, will respond to every opportunity to better themselves. It is a service to them to point the way to agricultural reorganization for greater profits and better living wherever conditions permit. It is an equally valuable service to lay bare the hopeless handicaps under which they may labor in some sections. Discontented farmers who understand the hopelessness of their outlook will not farm at a loss indefinitely, but will seek other opportunities. In this manner we may speed materially the processes of adjustment in agriculture.

Submarginal lands, their disposition, State and national policy with regard to them, form one of the important land problems in which agriculture as well as industry is interested. The solution of the problem of effective use of land remains, and, it will require wisdom, foresight, and keen perception of public welfare. It is well that we should give attention to the problem of submarginal lands and lay plans for their most effective use.

NEW YORK'S LAND-UTILIZATION PROGRAM

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New York State has faced its problems in land utilization and, during the past three years, has developed a definite land policy. It has also organized a program of work to meet these problems.

It is the land policy of the State of New York to differentiate closely between its various classes of farm lands: The land that is clearly suited for permanent agricultural use shall be developed as highly and as intensively as possible. Hard-surfaced roads, electric power, good high schools, and health facilities shall be made available for every farm as rapidly as these are economically possible; the land that is unfitted for permanent agricultural use shall be transferred from private to public ownership and used for growing trees, furnishing recreational opportunity, protecting water supplies, beautification of the State, and timber production. Stated more concisely, the land policy of New York consists of three things: (1) classifying land; (2) developing the best land as highly as possible; and (3) transferring the poorest land to public ownership and reforesting it.

This is the situation we face. New York State has been abandoning farm land at the rate of 100,000 acres per year for the past 40 years. For the past five years this abandonment has proceeded much more rapidly, probably at the rate of about 250,000 acres per year. We estimate that we have approximately 3,000,000 to 3,500,000 acres of this abandoned farm land which should be transferred to public ownership. It is a little difficult to determine the exact amount, as some land has been taken up by cities or villages for water-supply protection, some has been used for parks, some has been purchased and reforested by individuals, school districts, townships, counties, and others.

In discussing this question before the people of our State we always remind them that this area of idle land does not in any way indicate a decadent agriculture. During this same 40-year period the production on New York State farms has increased, so that to-day, in spite of the large amount of abandoned farm land, New York is producing more than it ever has before and has no trouble whatever in maintaining its position as fifth or sixth among all the States of the Union in total value of farm products, although the State ranks about twenty-ninth in size. We are farming the good land so much better and keeping so much better livestock that the total production of the State has increased.

To get a true perspective of the situation we need also to remember that New York State has no larger a problem than many other States. Several of the Lake States and several of the Southern States have a larger idle-land problem than has New York.

This idle farm land is largely concentrated in certain counties and particularly in certain townships. In some of the townships which we have studied 40 per cent of the farms have already been abandoned. When this has occurred it is obvious that the township is too poor to do anything toward solving the problem. If there are many townships of this sort in the county it is just as obvious that the county is too poor to do much toward solving the problem.

The development of a State land policy has been to a considerable extent the result of the development of public opinion on the idle-land problem in the State of New York. Nearly a quarter of a century ago President Roosevelt's Country Life Commission, with Dean Liberty Hyde Bailey as chairman, called attention to the abandoned-farm problem in southern New York, and President Roosevelt himself made a trip to see some of these farms. About eight years ago the board of directors of the Chenango County Farm Bureau passed a resolution calling upon the College of Agriculture to make a study of one of the townships in that county to determine what should be done to meet the abandoned-farm problem.

As a result, studies were begun which not only continued in that particular township but extended to many other townships in the State where there seemed to be considerable areas of idle land. These studies were aimed at finding the true situation in the State. This work was carried on by graduate students under the direction of Dr. G. F. Warren. The work was very inexpensive and yielded us a vast amount of information. The cover work that we are doing, or the surveys we are doing now, are costing somewhere around 1 cent an acre.

As soon as this information was available, the more important of the data were placed on charts and were presented for discussion at agricultural meetings all over the State. When the first abandoned farm township was surveyed the figures from that township were taken back to the farmers in that township and were presented to them at three meetings in the township before they were presented to anyone else. They were discussed with these people right in the township, discussed by practically every farm bureau in the State, published in agricultural papers several times each year, and in various other ways were brought sharply to the attention of the people. That has been going on for seven or eight years.

In 1929, Governor Roosevelt's Agricultural Advisory Commission made a special study of the needs of the State as to a survey of its agricultural resources. As a result of this study, the commission recommended appropriations for such a survey. From the beginning this whole movement was nonpartisan in character—a Democratic governor and a Republican legislature joined whole-heartedly in appropriating $20,000, in 1930, for a survey of the agricultural resources of the State of New York. In 1931 this appropriation was increased to $96,000.

It must be borne in mind, however, that a considerable percentage of this money was used for completion of the soil survey. Some of the States farther west have already completed their soil surveys, I believe, but New York still had about a third of the State to survey. A considerable proportion of the appropriation was also employed for special studies. A relatively small proportion, not over one-third, was used for the actual land-classification work.

In this land-classification work, an effort is made to classify rather large areas of land as to its agricultural possibilities, to classify the roads that shall serve this land and to determine where electrical lines should be located to best serve the farms that will remain in these areas. All available data are used, including soil maps and climatic data. There are available a large number of financial surveys giving records of business on thousands of farms throughout the State. In addition, a cover map of the area to be studied is made and certain other facts as to values of land, income from land, and crop yields, are gathered. We get a record for every acre by 10-acre squares.

On the basis of all of these data the land is classified into five groups: Group 1 contains the land that should be reforested as early as possible. Group 5 contains the best land in the State, land which should remain permanently in agriculture. Group 4 contains land that is nearly as good as that in Group 5, land that will remain permanently in agriculture, but that is not quite the highest class of land in the State. Groups 2 and 3 are intermediate groups.

The conclusions that come from such a study may be illustrated by the following: In one poor county in central New York, after the land was classified it was found that 14 per cent of it should be reforested immediately, and 22 per cent ought to be reforested eventually. This gives 36 per cent of the land to be reforested during the next generation. It was found that if this land were reforested, 224 miles of road, or 20 per cent of all the road mileage in the county, could be closed, with a resulting saving to the county. This is not quite so good as it seems, for some of these roads will be kept open for forestry and recreational purposes. It was also found that 29 school districts, or 22 per cent of the school districts in the county, could give up their schools. This means, in our State, an average saving of about $1,500 per district. A development of this sort will undoubtedly lead to a combination of some townships. It might possibly lead to a combination of counties, although this is much less certain.

If Groups 1 and 2 are to be reforested it is recognized that it will be necessary to do this with public funds. In spite of anything that can be done to relieve taxation or to aid in other ways, private in-

dividuals, corporations, and private businesses in general do not reforest much land. As one of our eminent foresters in the United States has said, "psychology and economics are against this." We might also add that compound interest is against this.

Although we have for some years carried on one of the largest reforestation programs, still we recognized that this program was hopelessly inadequate to meet the larger problems which accompany the purchase and reforestation of these vast areas of idle farm land. We have been distributing and planting about 25,000,000 trees per year. Farmers have planted some trees; cities, villages, and counties have planted some; the State planted some; and even the 4-H club members planted 1,000,000 trees last year. But all these together are merely a beginning.

About three years ago a legislative commission was appointed to investigate the whole problem of reforestation. As a result of their studies two pieces of legislation have been enacted. The first provides State aid to counties for reforestation work. It is essentially this: If any county will purchase land and reforest it, the State will pay half of the cost of the land and the reforestation work up to a maximum of $5,000 to any county in any one year. The forest remains the property of the county.

The second piece of legislation was a constitutional amendment which provided for a 15-year program appropriating a total of $20,000,000 to purchase and reforest something over 1,000,000 acres of land. This constitutional amendment was approved by the people on November 3, and the State is now definitely embarked upon the program. For the past two years enlarged annual appropriations have been made looking forward to the beginning of this program, so we are already underway. As a matter of fact, we are two years underway. We have not 15 years to go—we have but 13 years to go.

You will appreciate that it is a tremendous task to reforest 1,000,000 acres of land in 15 years. Just purchasing land and clearing titles alone constitutes a big job. The land this year is being purchased at about $4 per acre. We often purchase land for 30 per cent of its assessed valuation. Much of it is owned by nonresidents. You can not expect a landowner to go to much trouble in helping to clear titles of land for which he will receive $4 per acre. Nearly all of it is in small holdings of approximately 100 acres each.

We have five forest-tree nurseries in the State. This year we have purchased land for an additional one. It will be necessary to purchase an additional nursery of from 75 to 100 acres each year for the next five years. We must ultimately turn out from 150,000,000 to 200,000,000 trees per year.

We are using several of the new tree-planting machines in our reforestation work. These work very well on old farm land where there are large fields, fairly level, with not much interference from stumps.

Our foresters think that they can plant trees with this machine for about one-third the cost of planting with hand labor. That may be a little optimistic, but if they can do it for half the cost of planting by hand, it will help us a great deal.

We are developing a very large and complete fire-protection program.

You might well ask what the people expect to get out of this big program. Why were they willing to vote for an expenditure of $20,000,000? Remember that the studies preceding this work have been carried on during the past seven or eight years. The results of these studies have been presented to the people through many, many meetings. The people have come to know the situation throughout the whole State. In the State government, as I have above remarked, the whole movement has been a nonpartisan one; both political parties have favored it. Apparently the people expect to obtain the following things:

(1) Timber. Our people realize the importance of having a timber supply for future generations. Contrary to the general opinion of the foresters themselves, I believe this is the least important reason in the eyes of the public.

(2) Recreational opportunities. In a thickly congested State, opportunities for more hunting, fishing, camping, tramping in the open, are becoming more and more important. These forests are to be public hunting grounds.

(3) Prevention of floods and erosion.

(4) Slight modification of the climate of the State.

(5) Beautification of the State. The old abandoned farms with their tumbled-down buildings and poorly kept fields are an eyesore to the better farmers of the State. When they are replaced by trees, the State will be more beautiful. This is one of the most important reasons in the eyes of the people.

Most important of all is the fact that public ownership and reforestation will change a process of destruction of national resources to a process of conservation. Under private ownership this land was becoming poorer and poorer. It was constantly being skinned by lumbermen and by others. It was the bait which unscrupulous real estate agents used to cheat many Western and Southern farmers who wished to try to farm in New York State. This land has broken the hearts and pocketbooks of thousands of families who have attempted to farm it.

There are three definite steps which should be included in any program of land utilization: (1) The land should be classified. This need not be an expensive project if the soil survey has already been completed in the State. Although all kinds of detailed surveys are valuable to the State it is not at all necessary to spend a large amount of money or spend long years of time. In the first place, if you are doing it for the one purpose only you do not have to cover all the State, and this is the sort of survey that would cost something like 1 cent per acre. Probably with complete tabulations and printing the cost will not go to $8 per square mile.

(2) As soon as an area of land is determined to be unfitted for agriculture, it should be transferred to public ownership and used for growing trees, for recreational purposes, water-supply protection, and other public uses. In most cases this transfer must be through the medium of private purchase and may require some time. But the market is always a buyers' market. The State can purchase the land cheaply and it can wait many years if necessary to obtain it. There need be no coercion of individuals in this process; that understanding should be a part of every land-utilization program.

(3) The land that is clearly suited for permanent agriculture should be developed as highly as possible. This development includes hard-surfaced roads, good schools, good health facilities, and rural electrification.

SOME WAYS OF DEALING WITH THE PROBLEMS OF SUBMARGINAL LAND

Dr. L. C. Gray, *In Charge, Division of Land Economics, Bureau of Agricultural Economics, United States Department of Agriculture*

The term, "submarginal," formerly the exclusive possession of the economist, within the last few years has entered the vocabulary of

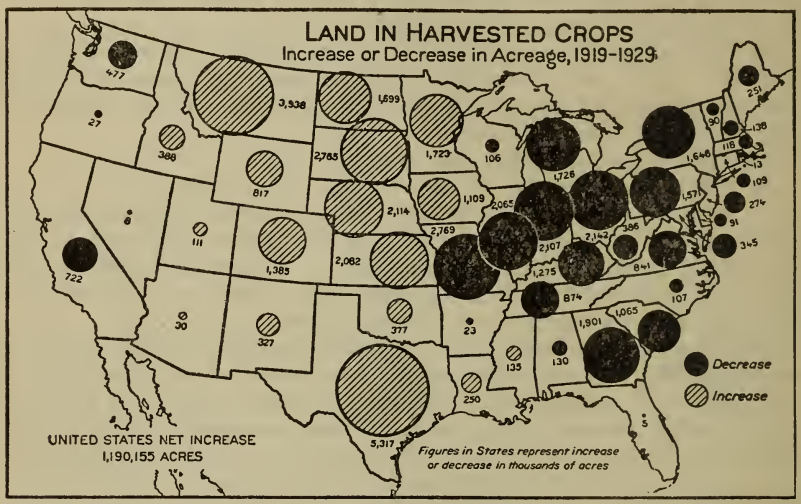

FIGURE 8.—A great regional shift in crop acreage has occurred since the World War. The recent census revealed that total crop acreage declined in every State east of the Mississippi River, except Mississippi, and increased in all the States to the West, except Missouri, Arkansas (very slightly), and the three Pacific Coast States. The decrease was notable in a belt which extends from New England across New York and Pennsylvania, eastern Ohio, and southern Indiana and Illinois, into Missouri. A heavy decrease occurred also in Georgia and South Carolina, and smaller decreases in the Virginias, Kentucky, and Tennessee, and in Michigan. The increases were notable in the Great Plains area, where mechanization had made it possible to produce grain on land too dry for profitable cultivation previously with less efficient machinery. In general, crop acreage increased in regions of large farms and decreased elsewhere

the man of the street. Without precise definition in his mind, it has become his generic term for characterizing a wide group of problems that have come to the forefront in our national consciousness.

The admirable program developed for New York State, is a forward-looking step that challenges the attention and interest of the entire Nation. Nevertheless, though it may admirably fit conditions in New York State and possibly in certain other areas, from the point of view of the Nation, it deals with only one phase of the complex and widely ramifying problems of submarginal land.

In classical economic theory submarginal land is land that, under proper conditions of utilization, it will not pay to cultivate according to the normal standards of return to labor and capital that tend to prevail throughout the competitive field. Yet, if I could

take several hours of your time instead of 20 minutes, I could cite you a score of difficulties that would be encountered in applying that definition to actual situations.

For instance, there is the assumption of proper conditions of utilization. Undoubtedly thousands of farms that now appear to be submarginal could continue to hold their own if the tax burden were better adjusted to the earning power of the land. Doubtless much forest land could be effectively utilized by private enterprise if the tax burden could be made more equitable. It is for this reason that the subject of local finance plays so important a part in this conference. Moreover, on thousands of farms normal conditions of use do not prevail. The size and equipment of the farm and the system of farming developed under the conditions of an earlier day are

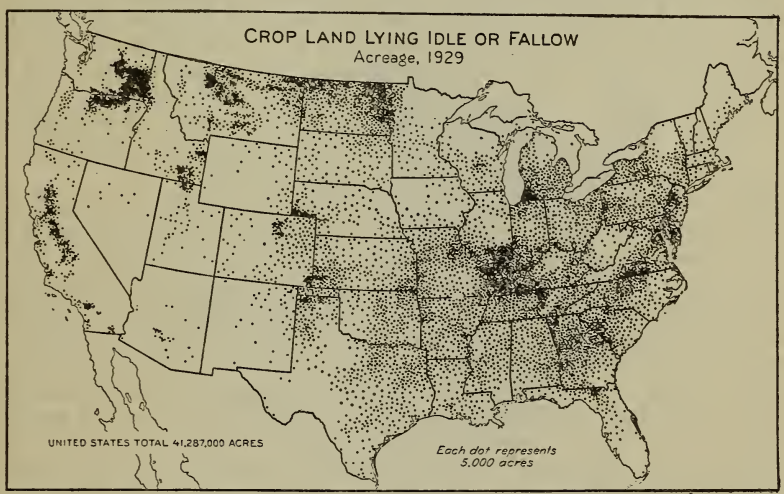

FIGURE 9.—Most of the land represented in the map, east of western North Dakota and western Texas, is idle crop land; much, perhaps most, of the land to the west is summer fallow. In the counties reporting a decrease betweeen 1919 and 1929 in acreage of crops harvested, this decrease totals 32,000,000 acres. Apparently most of this land is lying idle. Some also is used for pasture (fig. 12), and some has reverted to brush and young forest. The contraction of crop acreage, which started in some of the hilly counties of New England more than 50 years ago, has spread, mostly since 1919, into 60 per cent of all the counties in the United States

wholly out of line with radically changed requirements of the present.

One of the primary tasks, therefore, in developing a land-use program for any community is to determine how far we can go in turning submarginal farms or forests into supermarginal businesses through modifications in the tax system and through adjusting the farm plant and organization to present-day requirements. The submarginal job is so big in itself that we should go as far as we can toward reducing its extent.

This problem of adjustment in the utilization of lands that are not inherently submarginal will take time, but it should be visualized in advance in order that it may be differentiated from, as well as coordinated with, the job of handling submarginal land. In large areas of our country this readjustment of farming can not be ac-

complished by farmers acting as individuals; it must rest on the solid basis of economic research, it will demand leadership of high quality, it will require credit facilities that will provide the capital essential for far-reaching readjustments. In many areas collective action will be necessary. In some parts of the West, for instance, the homestead system has dissected the surface into ownership units of 160, 320, or 640 acres. Many of these units are held by absentee owners scattered throughout the United States. Some of the units are mixed in with the alternate sections of railway land granted by the Federal Government or with alternate sections of public domain still held by the Government. Yet economic conditions in many parts of the territory demand two sections for a family farm and a township or more for a stock ranch.

The job of getting together these scattered holdings into units large enough for efficient operation as farms or ranches is as much a challenge to constructive statesmanship as was the task of inclosing the scattered strips that were developed in European countries under the feudal system. In many of the Southern States, on the other hand, the problem may be one of effecting subdivision of plantations the owners of which lack the capital, inclination, or capacity to operate them effectively or even to subdivide them.

What I have said about defining submarginal land leads me to touch briefly on some ultrasimple formulas for dealing with it. One of these formulas, widely accepted, is, "Let us buy up a lot of submarginal land and put it into forests as a means of getting rid of the agricultural surplus." An excellent way to get better acquainted with the problem of submarginal land will be to consider some objections to this formula. For one thing, it is a roundabout and more or less futile way of dealing with the problem of overproduction. It does not affect the foreign sources of supply in the world market. It does not provide a means of preventing further expansion of the domestic crop acreage. In many cases it would mean purchasing large areas, with the improvements, in order to get rid of only a small percentage of crop land. It would mean buying out many farmers who do not want or think they do not want to leave, some of whom through age or lack of capital and experience would have no alternative means of making a livelihood.

Certainly if you tried to acquire enough land within a short period to reduce materially the so-called surplus, you would have to pay far more than the land is worth. To make much headway in affecting the surplus would require the expenditure of billions of dollars of public money. Many of the tracts would be so scattered that they could not be combined into units suitable for forest administration. As a method of acquiring forest land, it would be far more costly than buying unimproved areas in large pieces. The sudden and extensive purchase of so-called submarginal farms and turning them into forests would most seriously dislocate the fiscal and institutional arrangements of the areas concerned.

One sometimes hears an amendment to the formula of wholesale purchase in the suggestion that submarginal farms be leased rather than purchased. In its amended form the proposal is open to all the objections to the primary formula except that it seems to take less out of the Treasury. It would be more costly in the long run,

however, for the rate of interest at which the Federal Government could borrow funds for purchase is considerably lower than is the ratio of rent to the capital value of the land in most parts of the country. Furthermore, a patrol system would be necessary to make sure that the land was kept out of cultivation.

Still another phase of this acquisition formula is the suggestion that part or all of the crop land in the farm be leased and turned into forest or grazing areas. In addition to the objections already mentioned, this proposal confronts another serious difficulty: In a large majority of cases, for the small pittance he would receive for the rent of a part or all of his crop land the farmer could afford neither to continue living on his farm nor to abandon his entire farm and improvements.

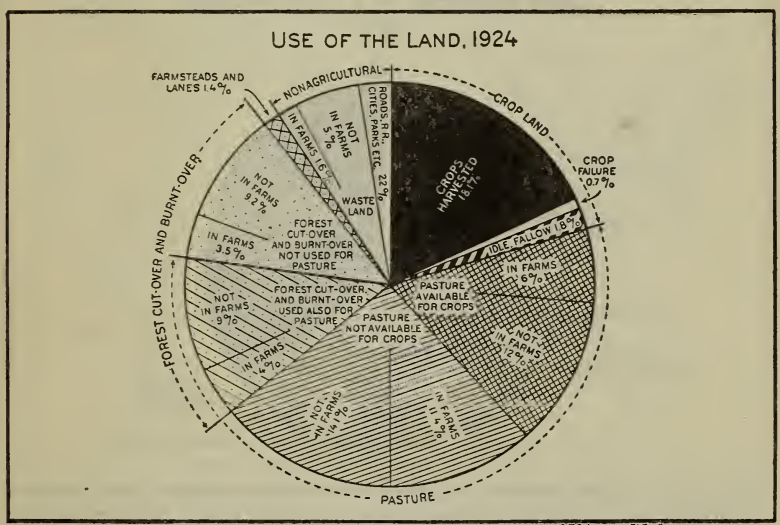

FIGURE 10.—About 20 per cent of the land area of the United States is crop land, about 44 per cent is pasture and grazing land, not including woodland pasture, and over 25 per cent is forest or cut-over land. Approximately half of this forest and cut-over land is also used for pasture. Of the remaining 9 per cent, 7 per cent is waste land—ungrazed deserts and marshes, bare rock, and sandy beaches—and 2 per cent is occupied by roads, railroads, cities, parks, etc.

If the results in reducing overproduction in a short period could be expected to be material, such shotgun methods of dealing with submarginal land might be worth more consideration, but I believe little could be quickly accomplished toward the improvement of prices.

The most immediate need is for a program of readjustment for areas in which a considerable proportion of the farms have become incapable of furnishing an adequate livelihood and in which a large part of the timber resources have been cut—that is, for areas in which submarginal lands have been abandoned or are about to be abandoned.

Such a program should be based on an adequate determination of the economic uses for which the principal classes of land are best adapted. Some or all of the following lines of action would be found desirable.

(1) Readjust the tax burden and methods of taxation so far as possible to conform to the uses for which the land is adapted and to the tax-bearing ability of each class of land and type of use.

(2) Develop a forest-crop law or some equivalent through which the State will share with individual and community the burden of maintaining timber until maturity.

(3) For sparsely occupied areas where costs of local services are greater than the value of occupied tracts, work out a program of evacuation to be put into operation so far as practicable by a strong extension program to show the occupants the futility of remaining and to help them in finding other opportunities for livelihood either in farming or in nonagricultural occupations. In some cases evacuation of sparsely settled areas may have to be effected by public acquisition of some or all of the occupied holdings through exchange or pur-

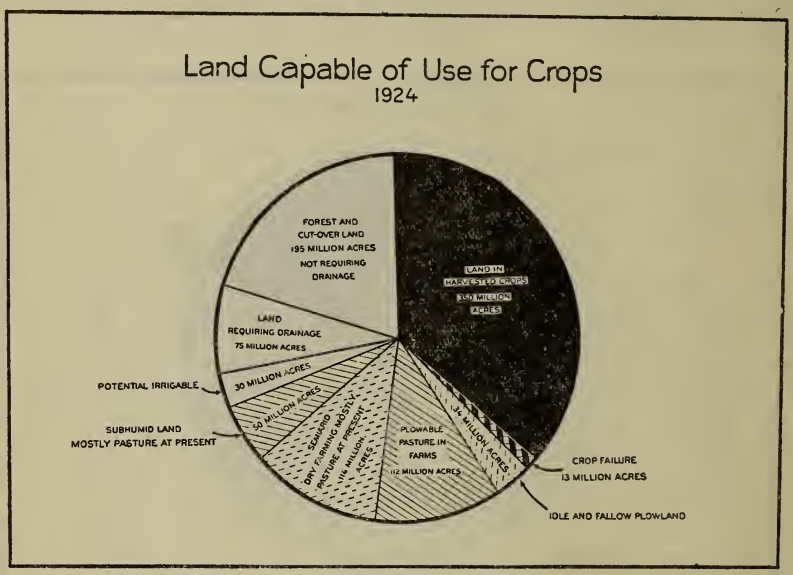

FIGURE 11.—The area of land in harvested crops in the United States in 1924 was about 350,000,000 acres (in 1929 about 360,000,000 acres), or less than one-fifth of the total land area; but it is estimated that, in addition, there are over 600,000,000 acres physically capable of use for crops, of which 300,000,000 are immediately available for the plow (lightly shaded in the graph). Much of this plowable land is in farms, and provides a larger reserve than is ever likely to be needed for crops, unless the population of the United States increases greatly or exports of farm products increase many times

chase, with a view to economizing local public expenditures. There are some areas of submarginal land, however, not yet ripe for a program of evacuation. This is especially true of portions of the Southern Appalachians long occupied by farm families isolated from the outside world. A large proportion of these people would be helpless if moved to a new environment. In some localities they are already beginning to move; as the tendency gains momentum as a result of increasing contacts with the outside world, the problems of readjustment characteristic of other submarginal areas will emerge. Where the movement has not yet gained much headway, attempts should be made to alleviate conditions of life.

(4) After submarginal areas have been thus evacuated, it would be important to zone them against resettlement. Zoning against settlement would be desirable also in the case of areas not yet occupied which are unsuited to farming or not specially adapted to other types of occupancy. Zoning might be enforced either by refusing to provide schools and other public services in case of settlement of undesirable areas, by tax discrimination, or by both methods.

(5) Discontinue attempts to resell tax-delinquent lands unsuited to private utilization for agriculture or other purposes, and restrict such resales in any case to areas where they will not entail an undue burden for public services.

(6) Consolidate areas acquired by tax delinquency into units suitable for administration, either by exchange or purchase.

(7) Provide an adequate program of fire protection both for private and for public lands, and determine a sound program of use for public lands, for forests, recreation, grazing, or such combination of these uses as may seem practicable.

(8) Encourage by extension, education, and demonstration a sound type of forest and wood-lot management on areas found to be adapted to private utilization. In some areas this may take the form of consolidation of scattered privately owned tracts, cooperative management, cutting, hauling, and marketing.

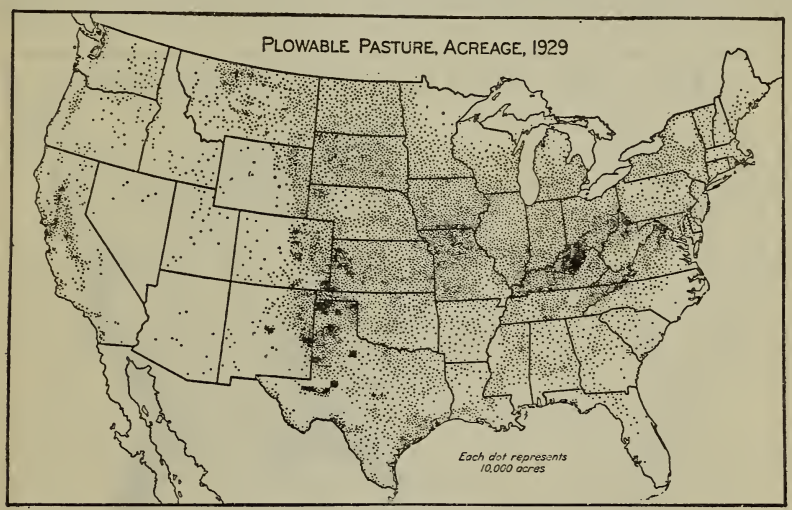

FIGURE 12.—It is probable that future needs for additional crop land may be met in large part by the utilization of arable lands now used for pasture. Six sections where plowable pasture is very important are: (1) The Bluegrass Basin of Kentucky, (2) the Valley of Virginia, and (3) the lower Shenandoah Valley, all areas of limestone soils often shallow (Hagerstown series), (4) the upper Ohio Valley, having soils partially derived from limestone, (5) the flat uplands in northern Missouri and southern Iowa, and (6) the southern Great Plains ("High Plains") extending from western Nebraska to the Edwards Plateau in Texas, which, though extensive, are much lower in carrying capacity per acre, because more semiarid than the other regions named. This High Plains territory is rapidly passing from grazing to crop farming. Pasture in rotation with crops constitutes a considerable part of the plowable pasture, except in the South and in the grazing and irrigated-crop region

(9) Revise the institutional set-up of the community, planning the location of schools, roads, and other utilities so as to conform to the general program of land utilization.

(10) Regroup units of local government and redistribute governmental functions, not only as between State and local governments, but also through cooperation among counties and other units of local government in supplying various kinds of public service. In certain areas a greater contribution from State resources will be found necessary.

The above outline of action suggests the desirability of the enlargement of public ownership of land along three lines:

(1) Withholding from resale the tax-delinquent lands not suited for private utilization or specially desirable for public ownership.

(2) Public acquisition of scattered holdings as a means of economizing in local services, such as schools and highways.

(3) Acquisition of tracts needed to round out into suitable administrative units areas previously acquired by tax delinquency.

It should be frankly recognized, however, that there are probably much more extensive areas that private enterprise will not utilize in any adequate way. I do not subscribe to the point of view sometimes voiced that the Federal or State Governments should take over all the extensive areas of cut-over or other marginal lands that are virtually idle. We should certainly go as far as we can in modifying methods of taxation and other conditions to enable private enterprises to utilize these lands in ways reasonably consistent with the public interest. But, after all, there will remain extensive areas where such private utilization will not be practicable. It seems important, therefore, to recognize that we may have to modify our conceptions of the extent and objectives of land acquisition by public

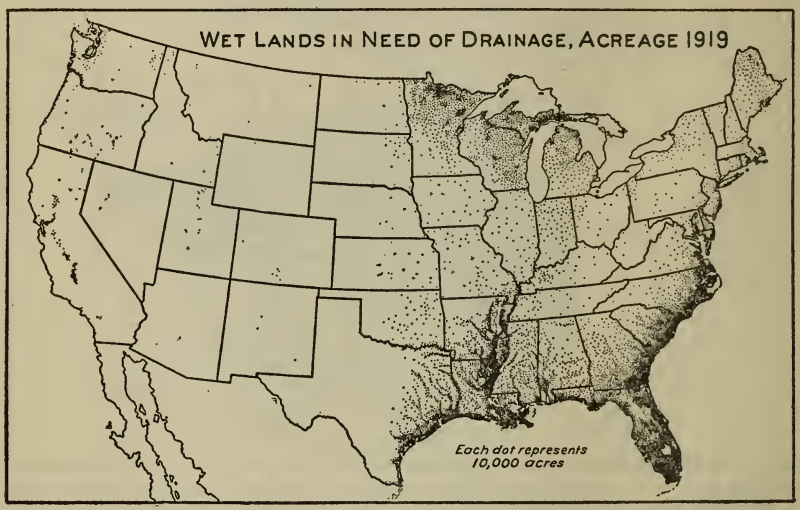

FIGURE 13.—A large proportion of one potential arable area requires drainage. Two-thirds of the land unfit for cultivation without drainage is in the Southern States, and one-half of the remainder is in the three Lakes States. Nearly all of the wet land in the South, except the Florida Everglades and prairies, tidal marsh, and Gulf coastal prairies, is forested, and requires both drainage and clearing; but much of the wet land in the Lakes States consists of unforested peat bogs

agencies. At present the main objectives of public land acquisition are:

(1) Purchase of forest land for protecting the headwaters of streams.
(2) Purchase of land for reforestation. The scope of this work by the Federal Government is limited to a few demonstration forests. When the authorized program of Federal land acquisition for these two purposes is completed, the total area will comprise only 15,000,000 acres. Yet, even including the State forests, the total appears to be an inadequate provision for future timber needs in the sections of heavy consumption.
(3) Acquisition of land for Federal and State parks, national monuments, etc.
(4) Purchase of areas for bird and game refuges.

Beyond these there are other public interests that are not adequately provided for in the existing programs of public-land acquisition. I have already mentioned the objective of eliminating scattering settlement that makes for undue expense in rendering public services. There are extensive areas subject to severe erosion which can not be profitably avoided in private utilization. Public owner-

ship is the only way to prevent much of this wastage of an irreplaceable resource that is the very foundation of our national existence.

There are hundreds of communities where the agriculture and industry are peculiarly dependent on timber for raw materials, total or part-time employment, and local markets. Yet this important part of the foundation of their economic life is now in the keeping of private concerns that may and do cut away these timber resources as their own interests may direct, without reference to the effect on the economic life of the community or its fiscal and institutional arrangements. It is about time that we begin to make provision for public forest ownership in those areas in which agriculture, industry, and the community life are largely dependent on a continuous supply of timber, so as to reduce the frightful economic instability and waste that result from present conditions of forest ownership and utilization.

Some of these objectives in public-land acquisition are largely of local concern; others are national in scope. They can not be carried out quickly. Considerable time must elapse before we can determine the location of the areas that are vested with a public interest sufficient to justify public acquisition. But surely the time is ripe for defining our objectives in their relation to the problems of land utilization, to face the magnitude of this problem of idle land, to consider what we will do with the lands that are coming back to the governmental agencies through tax delinquency, and to determine the respective responsibilities of the Federal Government, the States, and units of local government in land acquisition, ownership, and administration.

In dealing with our existing problem of submarginal land, it is important to determine how we can prevent areas from becoming submarginal and keep submarginal lands from being made into farms. I can touch on this subject only briefly.

Undoubtedly erosion is contributing notably to the development of submarginal areas, and an adequate program for reducing erosion will help to lessen this development. In so far as the lands of doubtful potentiality come into public ownership, that will also serve to remove the temptation to try to turn them into farms. It might be well, moreover, to recognize that our homestead system is tempting people to undertake to establish farms or grazing units on lands that will scarcely support a jack rabbit, that 14,532 original homestead entries were made in 1930, though it is doubtful if there is a section of unallotted or unreserved land in the public domain capable of supporting a family. While some of these entries were made merely to round out existing holdings of range land, undoubtedly many entries were made by people who actually hoped to make a living on the land thus obtained.

Finally, we should endeavor to prevent the numerous and tragic mistakes in attempting to occupy and develop new farms on privately owned land that has not hitherto been farmed or to reoccupy areas that have been abandoned. The pressure of land-selling agencies eager to dispose of their holdings, the lure of periods of temporarily high prices, and the lack of an adequate technical basis of judgment results in an appalling aggregate of economic wastage, human misery,

and disappointment. Most of the approximate 500,000,000 acres of potential crop land not yet cultivated is still in private ownership. It is doubtful if a program of regulation of land selling and settlement, beyond the detection and punishment of actual fraud, is immediately practicable.

It will be necessary to rely largely on research and on education through extension agencies. As land-utilization surveys make available a reliable body of information on the economic adaptability of various classes of land for farming or for other major uses, it should become possible to develop a vigorous publicity policy (1) to inform public opinion in general as to the outlook for agricultural expansion, both national and regional, and (2) to provide intending settlers with reliable information. The availability of such information

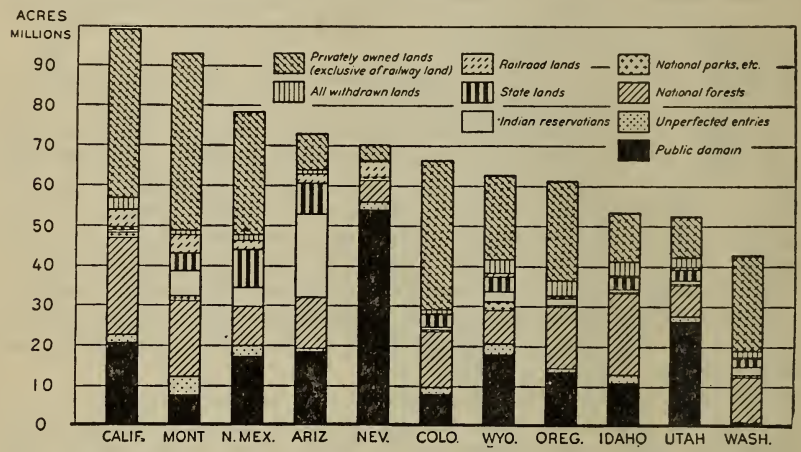

FIGURE 14.—PRINCIPAL KINDS OF LAND OWNERSHIP IN THE 11 WESTERN STATES

In the 11 Western States (which contain 99.5 per cent of all the public domain) the relative importance of the public domain as compared with land in other forms of ownership varies widely. In Nevada, for instance, the public domain is over three-fourths of the total area of the State, and only about one-eighth (including railway land) is privately owned. On the other hand, in the State of Washington less than 1 per cent of the total area is public domain, and in Colorado about one-eighth. These contrasts cause the problem of a wise disposition of the public domain to assume different aspects in the various States, and even in parts of the same State. Over large areas there is severe competition for the use of the public domain. This results in excessive grazing, impairment of the range, increased soil erosion, injury to watersheds, the silting up of irrigation reservoirs and ditches, failure to provide for reserves of range against seasons of drouth, and financial instability of the range industry.

should be so widely advertised that intending purchasers of land would look to Federal and State agencies for reliable information. This would afford a means of controlling land-selling agencies in the interest of compelling honest methods. (I wish to pause to say on the side that I do not mean to imply that all land-selling agencies are unscrupulous.) Such a program of research and education might well include a more adequate and authoritative determination of the agricultural and economic feasibility of developing new drainage and irrigation projects.

I have sketched a program which will require years to develop. It consists partly of an effort to correct the mistakes of the past in land utilization and partly of an attempt to avoid similar mistakes

in the future. To paraphrase a point made by the Secretary of Agriculture in his address, if we had had a constructive program of land utilization a decade or so ago we would have escaped much of our present misery and maladjustment, and we would have avoided, in some degree at least, the obvious decay of rural civilization in many parts of our country.

LAND INVENTORY AS A BASIS FOR PLANNING LAND UTILIZATION

L. R. SCHOENMANN, *In Charge of Land Economic Survey, Michigan Department of Conservation*

The assigned subject is "An Economic Classification of Land as a Basis of a Utilization Program." It is now a bit late to tell you that I do not care to address myself to that exact title, but to the subject of "Land Inventory as a Basis for Planning Land Utilization." This will bring our attention to the matter of deliberately planned land use by an easier route. It will also allow me to follow Mr. Olsen's suggestion which implied that you would be interested in a rather intimate acquaintance with the work of the Michigan Land Economic Survey.

The Michigan Land Economic Survey was designed to deal expressly with Michigan land affairs and land problems. It was sponsored by the Michigan Academy of Science and began its work in 1922 under a cooperative agreement involving the State university, the agricultural college, and the State departments of agriculture and conservation.

The survey is now a division in the State department of conservation and receives its funds in that department's budget by legislative act and executive approval. It is given regular active cooperation by the Bureau of Chemistry and Soils of the United States Department of Agriculture, the soil section of the Michigan Agricultural Experiment Station, the Lake States Forest Experiment Station, the State geological survey, and the State department of health. A number of university and agricultural college departments provide scientific advice and lend intermittent cooperation on projects in their respective fields of interest.

With the close of the present field season on November 14, the field work has covered an area of 7,500,000 acres in 15 counties in northern Michigan. The cost of field operations has ranged between 2½ and 7½ cents per acre, depending on the nature of the territory, but the average combined cost of field work, office work, and publication is just under 5 cents per acre.

The concept under which this work was undertaken, and has since been carried on, is so well stated by P. S. Lovejoy in his article, Theory and Practice in Land Classification, that I wish to quote at length:

> The new period in our land affairs is now well opened. It will be characterized by deliberate and more and more competent inventory of lands and of the factors which limit or affect the use of land.
>
> Moreover, it will, I believe, become increasingly apparent that a land inventory is one thing, that land classification and planning for use is another thing, and that putting the plans into practice—the political science or engineering of land utilization—is still a different thing. The three operations are quite distinct; yet all are necessary to achieve intelligent land utilization.

The inventory proper in the case of land should be like any business inventory, as, for example, in the physical valuation of the railroads; it should "express no opinions, offer no advice, and make no plans," but it should assemble all the essential data requisite to the formulation of adequate and workable plans for the utilizations involved.

Land classification, on the other hand, involves the making of specific plans for the lands reported upon by the inventory on the basis of the facts found by the inventory. Classification and land planning go hand in hand, for classification is essentially purposive; it looks to the attainment of some end and hence includes planning.

On the basis of the inventory and the classification, there remains the difficult task of transforming the plans into actualities—of putting the theories into practice—or, to phrase it another way, of getting policies in operation.

In the present phase of our land affairs we have not clearly distinguished these three essentially different operations, but rather tend to bulk them all under the term, "classification".

In keeping with these statements the Michigan-Land Economic Survey, until recently, has confined its activities to making an inventory of our land resources and the manner in which they have been affected by past use and abuse.

The following projects are included in the inventory program:

Base mapping.—The detailed map of culture and water features is the base on which all the other "mappable" features are shown. It is compiled in the field by the mapping parties on the scale of 2 inches to 1 mile. In publication the scale is reduced to 1 inch to the mile.

Soil and lay-of-the-land mapping.—The soils are identified and mapped in accordance with the standard system of classification used by the Bureau of Chemistry and Soils of the United States Department of Agriculture. This Federal bureau contributes mappers and its usual inspection service. The soil section of the agricultural experiment station contributes mappers and attention to soil classification, cooperative supervision, and inspection. The land economic survey contributes mappers and directs the field work.

The result is a reasonably accurate and detailed soil-type map that permits correlation of the soils in widely separated areas. The purpose and value of soil-type maps are so well known that we may omit further discussion of them. Your attention has been called to the purpose and value of soil measures and the necessity for definite information concerning the adaptation and productivity of soil, by two previous speakers; I shall not attempt to discuss that further.

Because of the practical significance of topography in relation to many forms of land use, the slope of the land surface has been mapped in five classes that range from level to steep-sloping.

Farm-forest mapping.—The farm-forest map charts the location and extent of the lands that have been cleared for farming and those that are still occupied by forests or other natural growth. The cleared land is further subdivided into several classes of used farm land and that which is now unused or abandoned. The areas of forest growth are outlined and symbolized to picture their composition and the mappable variations in the size and density of the stand. Nonforest areas such as recently burned-over land, slash, grassland, marsh, bog, etc., are also designated. The field men who map the farm and forest conditions also make a record of the

character of the streams, tally the wild life sighted, and report on the deer-feed conditions.

Strip tallies are run through the mapped stands of virgin forest and second growth to obtain conversion factors for computing their volume and rate of growth on different soil conditions. The Lakes States Forest Experiment Station cooperates on this technical phase of the forest inventory and is enabled thereby to make our mapping of forest conditions a part of the Lake States timber survey.

Lake mapping.—Large-scale detailed maps are made of the important lakes to show their depth, the character and location of their aquatic vegetation, the nature of the shoal lake bottom, beach, and banks, together with the lake-bordering soils, forest growth, and cottage development.

Water-power inventory.—The water-power survey gives an estimate of the potential power possibilities of the major streams and the approximate cost of construction for the power sites that are still undeveloped.

Geological inventory.—The State geological survey cooperates in the investigation of the glacial and hard-rock formations. This consists principally of refining and perfecting the existing geological maps and intensifying the previous work in economic geology. Particular attention is given to underground waters and to locating commercial deposits of sand, gravel, clay, shale, limestone, building stone, marl, and fuel peat.

Economic inventory.—The economic study covers the history of occupation and exploitation, present distribution of habitation, intent in land ownership, assessed valuation, tax delinquency, State lands, and the nature of the county's business and production.

Correlating these items with the mapped physical character and status of use brings into sharp focus not only those areas where use, physical character, and economic environment are in suitable adjustment, but also those areas where maladjustment in land use exists and those where utility is still in doubt. With such information and such understanding, intelligent planning for better, more stable, and more complete land use is both possible and warranted.

There are some, no doubt, who will grow impatient over the time and cost of accurate and adequate inventory. They need to bear in mind that their proposed plans will deal with the property of many individuals and that poorly conceived plans may work unsuspected hardship on the equities and conditions dealt with. Diagnosis of our land problems is simple in comparison with their equitable adjustment. Even the soundest plans will be tested in their application; for after having decided what should be done and even how it should be done, there still remains the perplexing problem of where it shall be done. At that point, both plan and planner find their relief in accurate and adequate inventory data.

After nine years of inventory work, Michigan is just now venturing to plan land utilization. Presently we hope to prospect into the application of those plans.

There is not time to discuss these plans here and now. But I may tell you that the first one has been reported on, is being published, and will soon be available, if you are interested. Then let me merely state that the plan for Alger County, which concerns an area of over

500,000 acres, has developed the following proposed types of land use:

Four types for forest use.
Four types for wild-life protection and propagation.
Four types for commercial and private recreation.
Four types for public recreation.
Six types for agricultural use.
Four types for urban use.
One type for water-power development.

These proposed uses are assigned to definitely bounded land areas and we are prepared to debate their assignment. Our attitude toward their imposition is best expressed by quoting from the conclusion of the report on the Alger County plan:

* * * it would likely be inadvisable to use the utilization plan as a basis for enforcing the assigned uses, or for excluding other uses, as is customarily done under city plans when zoning ordinances are adopted to enforce adherence to the plan. The thought is rather that this, or any, utilization plan will derive its effective momentum from its obvious soundness. * * * A well-conceived utilization plan ought to carry itself into effect with only such encouragement and support as public agencies and public officials may be able to accord it by adopting policies and providing facilities that will assist the establishment of the assigned uses.

And now just these thoughts in concluding:

Programs that endeavor to better the position of but a single class of land use, such as agriculture, or forestry, or recreation, may fail to accomplish their purpose unless they recognize the necessity of granting a wholesome economic environment to the neighboring associated uses. More and more, we are coming to realize that a given region's available land uses are more likely to be complementary than competitive, and that the common interest is best served when all the promising associated uses are encouraged to function to the fullest capacity of our social need.

WHAT METHODS SHOULD BE EMPLOYED TO TAKE SUBMARGINAL LANDS OUT OF AGRICULTURAL PRODUCTION?

H. W. Mumford, *Dean, Illinois College of Agriculture and Director of Experiment Station*

At this time of day all papers are inclined to fall into the submarginal class. I find myself somewhat embarrassed because so much of the territory that was assigned to me, has been covered by previous speakers; however, I suppose I will not do my duty if I do not contribute my mite.

Considering the brief time at my disposal it would be presumptuous for me to attempt seriously to answer the question asked in the topic assigned to me. Only suggestions of a very general character can be made. The real answer must come only after we have done the best we know; we must leave to the trial-and-error method the possible increase of our knowledge regarding wise procedure, and be guided by that. Nor do I make any pretense of being able to contribute any new or original ideas on the subject. But I have given sufficient thought and study to this problem to appreciate the general lack of understanding of all the implications involved in attempting to formulate wise policies for the use or disuse of submarginal lands.

That the importance of this problem has not been more promptly recognized is to be regretted.

The importance of the many problems involved in attempting to get land into the uses for which it is best adapted is becoming more widely recognized by the public as a larger and larger percentage of the land in certain regions becomes tax delinquent. Our attention has been called frequently to the large areas of submarginal land not only in the Appalachian region, but in the piedmont and Ozark regions, in the sandy lands of the Lake States, and in the eroded lands of the South. Nor are the Corn Belt States, including Illinois, entirely exempt. But it is easy to approach the whole problem of land utilization from a wrong premise, or to overemphasize the seeming importance of taking submarginal land out of agricultural production.

How shall it be determined whether or not lands are submarginal? Are they unproductive because of natural barrenness, or lack of water, or too much water, or climatic conditions, or erosion, or just neglect? We must know surely how and why the land has become submarginal if we are to decide intelligently what is the most economical use to which that land can be put and what method is likely to prove most effective in securing any shifts in its use. I suggest, as an initial step, therefore, the desirability of a classification of submarginal lands. No thoroughgoing discussion of the topic could result without such a foundation to build on. Neither time nor information is adequate, hence I must be content with reference to a single example.

There is a considerable area of land in the United States which was at one time naturally fertile but which has been cropped continuously for many years with general disregard of the loss in fertility until it is now quite unproductive. The difficulty is not in determining that such land is submarginal at any given time under a known set of conditions but whether it is practicable or possible to restore it to agricultural production, or whether it should be abandoned to other uses.

The answer to this question would differ with shifts in the level of prices for farm products; whether the land, if restored to a more fertile condition, could be advantageously used for growing crops of which there is a relative shortage, or whether it would be suitable only for growing crops already produced in great abundance.

Such examples indicate just how complex the problem quickly becomes as soon as an attempt is made to attack it constructively. In other words, by oversimplification we are deceiving ourselves; a failure to recognize the complex nature of the problem brings the possibility of ill-advised action. It is even conceivable that an admittedly bad situation may be made worse: One bad situation may be cured by creating a worse one.

Again, such policies as are adopted and such action as is taken should, in general, be based upon a long-time outlook for the needs of land for agricultural production. It is conceivable that the time may come when it would be highly desirable to bring land that is now submarginal back into agricultural production. A study of the experiences of older countries might yield much of value with reference to their adaptability to the United States.

The problem of submarginal lands is admittedly different in different areas of the United States and to a lesser extent in the several States within the same region. A person is placed at a disadvantage therefore in attempting to outline specific technic for handling the very practical problem of how to get submarginal land out of agricultural production. Some States have aimed, in the development of this movement, to make this their most immediate problem. Certain States, including New York, Michigan, Indiana, and Ohio, have taken steps to acquire these lands by the State for purposes of establishing publicly-owned forests. Wisconsin, through its forest crop law, attempts to assist the private owner in reforesting land which is unproductive for agricultural use. Wisconsin has recently passed a zoning law in which public agencies are authorized to limit the uses to which land may be put. Most States have a long way to go before they are ready to take decisive steps in this direction.

In most States, the counties and the State are confronted with the immediate problem of what to do with tax-delinquent land. In the interest of good public policy and administration they are compelled to do something with this land. This problem has grown until it is now as large and complex a problem as most States are equipped to cope with. Might it not, therefore, be well to center attention on that fraction of submarginal land to which States or counties have title or might take title because of tax delinquency? In this connection it will be necessary to determine to what uses the land should be put. Under any probable system of public ownership, it would be necessary to acquire funds for maintenance, if not for purchase. The problems of equity in taxation would be involved, especially where large fractions of counties were concerned. The method of taxation should neither retard the movement toward new and better uses for submarginal lands nor impoverish the communities from which the lands are removed. The questions of consolidation of schools and county administration would need to be considered.

Bearing in mind the inherent differences in land utilization problems in the 48 States and the need for a more thorough investigation into the possibilities, the following additional suggestions might be made:

(1) Steps for Federal agencies might include: (A) The development of integrated policies directly affecting lands in the public domain, national forests, Government tracts in reclamation projects, etc., and assistance in coordinating the interests of the various State and local agencies, governmental and other. A definite step in the right direction might be to repeal the homestead acts. (B) Provisions for purchasing additional national-forest area yearly for 10 years.

(2) Concurrent Federal and State activity might properly include the following: (A) Cooperative reconnaissance surveys designed to locate: (*a*) Land likely to be submarginal for all uses, public or private, if any; (*b*) areas likely to be submarginal for crop uses for the next 30 years but which hold promise of fitness for public use in timber growing, water supply, game preserves, recreational and scenic enjoyment, watershed protection, etc.; (*c*) areas of doubt which can be classified only after further lapse of time and after detailed study; (*d*) areas of highly probable continued utilization in cultivation of

crops or in grazing. (B) Cooperative outlining of projects of directed utilization of major areas, as a basis for better coordination of activity of the Bureau of Public Roads and State highway departments, and otherwise for simplifying transitions toward a higher standard of living for those people now living in more isolated communities.

(3) State, county, and local policies might include the following: (A) The provision of incentives to counties for (*a*) taking over without unreasonable delay the title to lands long delinquent in the payment of taxes and (*b*) reporting to State officials the detailed facts as to tax-forfeited lands. (B) State provisions for rural zoning or planning whereby the State and county interests may be integrated. (C) State provisions through tax exemptions, adjustment funds, and other arrangements, whereby land devoted to forestry is relieved from tax burdens such as tend to force it into more intensive utilization. (D) State authorization for county replanning by consolidation of established counties and otherwise. (E) State authority for establishing county and other local public forests and for coordinating necessary services for their organization, protection, and utilization.

May I suggest in all humility that one of the problems involved in vacating submarginal lands is convincing the people occupying those lands that these acreages are submarginal and that they would fare better elsewhere. Nor do business interests take kindly to having areas in which they have investments classified as submarginal. This suggests a situation that must be handled with wisdom and tact.

There is a fundamental reason why the State and Federal Governments should actively interest themselves in the submarginal-land problem. The State and Federal Governments in many instances were chiefly responsible for getting people on these lands presumably in the interest of public welfare. Now it seems to me they should be equally eager to find out what is the best procedure in specific situations and to follow up aggressively with whatever needs to be done.

I take it that this conference is a recognition of the need and of a desire to meet it.

GENERAL DISCUSSION

S. M. Woodward, of Iowa. The area in the lower Mississippi Valley originally subject to overflow comprises about 30,000 square miles. In the flood of 1927, perhaps the largest flood on record since the occupancy of that region, about two-thirds of that area—approximately 20,000 square miles, was overflowed. Following that flood, Congress passed a law adopting a plan of flood protection. In 1928 that was estimated to cost about $300,000,000. Work is proceeding on that plan at the rate of about $30,000,000 a year. Funds for four years, I think, have been appropriated already. If it is assumed that that plan is to afford complete protection against possible future flooding of the 20,000 square miles that was flooded in 1927, the $300,000,000 will amount to about $15,000 per square mile. It is true that cities were jeopardized in that flood and it is not quite fair to say that all of that money is for the protection of agricultural land. Still, I think it is true that the cities are, in most cases,

fairly well protected, and future protection is largely for possible agricultural land. It seems to be true now, and I think it is fairly well accepted, that the original plan to afford full flood protection, if carried out, will probably cost twice as much as was estimated in the original plan. It may cost ultimately $600,000,000, or perhaps well toward $1,000,000,000. That would be at the rate of $30,000 per square mile, or $50 per acre. Much of that land is not now farmed in any way. It has been suggested ever since the 1927 flood that there ought to be an adequate economic survey or study of the area as a basis for future operation. So far as I know, no economic survey that is in any way adequate or complete has ever been made, nor is yet in process of being made. I think it would be appropriate, for the committee on summaries and conclusions, to consider adopting a recommendation that some Government agency ought to make a thorough economic study of the conditions in that southern area, as a basis for future operations. I am quite sure that either in the next session of Congress or very soon agitation will begin toward greatly increasing the expenditure which has already been authorized in the law of 1928, so that expenditures that have already been authorized, about $300,000,000, may be doubled in the course of the next 10 or 15 years.

I. J. Komaroff. I should like to ask Professor Ladd what provision they have made for people that evacuate the areas?

Mr. Ladd. The social problem is much more of a theoretical problem than it is a practical problem. As a matter of fact, they are abandoning land at the rate of 200,000 acres a year while we are buying it up at the rate of 50,000 or 60,000 acres. They are so far ahead of the State that the State does not get much that people are living on. We have traced some of the people who have sold out. Many of them are old people; they go to live with their children as soon as they get loose from their farms. Those that are middle-aged buy small places on the main roads. A few do various other things. Remember that no one is forced off a farm. As I said, it is a buyers' market. There are lots more people that want to sell, lots more land for sale than the State will take on at any one time.

Lloyd P. Rice. The thing that has impressed me the most this afternoon is that we are dealing not with a single land-utilization problem, but with many problems of land utilization. In addition to that, there is something which seems not to have been sufficiently emphasized. We are dealing with problems faced by States with greatly varying resources; problems which can never be solved by 48 different policies or methods or lack of policies and methods. A comprehensive coordinated attack is neccessary. That is something that needs to be brought into the picture.

I am very favorably impressed with the admirable work that is being done by several States in these land economic surveys. The rather extensive type of survey used in New York State impresses me as best adapted to a variety of regions. However, in dealing with the problem of classifying or getting the land into other uses, many, perhaps most States, can not follow New York, because they lack the fiscal resources. And, coming as I do from a State in which land has been abandoned for generations, and more is being abandoned, I looked hopeful and took out my pencil when Doctor Gray suggested he had solutions for various types of areas. Looking down his list

of suggestions I find redistribution of the tax burden presumably from property owners to others given emphasis. But New Hampshire is so lacking in business resources, and in the other alternative tax bases, that we are compelled to fall back on the property owner. I would like to ask Doctor Gray, if he is still present—since many of his suggestions, it seems to me, apply only to wealthy industrial States or regions—what he has concretely to suggest for those areas that lack supplementary sources of taxation, those in which we do not have tax-delinquent lands, but in which we do have the problem of land utilization. The only thing I could pick out concretely was evacuation; but where are those people to go? What are they to do? How are public institutions to be supported?

W. A. Hartman of the Department of Agriculture. Mr. Chairman, I do not believe that Doctor Gray suggested that 48 different State programs are necessary or that the New York program is applicable to all, or even more than a few, States. It was my impression that Doctor Gray suggested the necessity of a coordinated attack by Federal and local interests on the land-use problems in each area in order to effect a sound, applicable solution for each community or region. For example, in those communities where tax funds are not available to acquire land for some public purpose, provided such lands could be used more economically for some public use rather than the present use, the economies which would result in school, highway, and other local expenditures by relocating farmers now on submarginal farms would possibly help those States or communities make needed adjustments without additional tax levies. That is, it is possible for many communities to actually increase their revenue from taxes through the necessary adjustments which would result from zoning or laying out large blocks of land for uses for which they are best adapted. The program read by Doctor Gray did not suggest to me that it is at all necessary to think that all or more than a few communities will have to raise additional taxes in order to effect an economical use of land resources, but that the materialization of a program to utilize land resources economically will likely vary greatly among communities or economic regions and that sound programs of this character will suggest the abandonment of an area or necessitate the raising of additional taxes only when the best interest of all parties concerned will be promoted by such action.

Mr. Hearst. Does that answer your question, Mr. Rice?

Mr. Rice. I thank Mr. Hartman for what he said. I am not sure it answers the question.

O. B. Webb. I am assistant to the president of the Texas & Pacific Railway, New Orleans. In the railroad company my classification is given as "soothing and pacifying transportation." This morning, in his splendid presentation, Doctor Mead made some statements that certainly we in the South need to ponder very earnestly. Among other things he brought out what had been accomplished in Idaho, particularly with reference to dairying. He stated that dairy products from Idaho were being marketed in Los Angeles and southern California. Of all the men in this country, Doctor Mead certainly knows, and our country is happy to have a man like that to carry forward that work that he is carrying forward. There is no criticism there, but remember that there are in east Texas areas much larger

than Idaho, with a population several times greater than that of Idaho. We are undertaking to bring back large acreages of what might be termed submarginal lands, through the cooperation of the people, the owners, the county agents, the business men, and all such forces. Great progress is being made. The farmers are being taught better agriculture and through fertilizing their soil they are pulling back into useful cultivation thousands and thousands of acres of land that were washing down the hill, or had washed down the hill. It was my privilege to listen not long ago in a master farmers' meeting, to one man who stated that he had taken a farm which had been abandoned by his grandfather immediately after the Civil War as worthless and impossible to live on, and by proper handling he had brought that land back to where he grew a bale and a half of cotton an acre on a considerable portion of it each year, showing what can be done in eastern Texas. We are working hard to meet our problems there, undertaking to develop the natural resources, to change our type of agriculture. One of the things we have done is to literally sow that territory down to Jersey cattle, hoping that we can become a great dairy country. We are becoming so. Milk plants are springing up.

One of the normal markets for our territory should be Arizona and southern California. But if we are to be brought into direct competition with territory like Idaho, and through a development carried on by the taxpayers of this country (a large number of whom are farmers, business men, and merchants in east Texas) who are taxed to develop Idaho, to make Idaho a competitor with east Texas, it seems to me it is something that our Nation should think about. It is not that we should not have done this thing, but these other things we should not have left undone. Out in the Pecos country, with which I am somewhat familiar, we have that very problem illustrated. Thousands of little farmers in the Pecos country, in the irrigation districts, bought farms and were doing gloriously. Then our Government came into the Carlsbad country and put in the Carlsbad project. There is no criticism of that, but it enabled Carlsbad to take away the water from those farmers down on the Pecos River. Those farmers are starving, their farms have gone out of cultivation, the flood waters have run down the river, and we have been unable to get help in the matter of creating a reservoir to help them. I am not criticizing it, but I must say it seems to me if we do plan to develop one part of the country we ought to be sure we are not killing another part of the country that is already established—that we are not using tax money of our people, among whom are included those who have had to suffer to develop a territory which is ruined by the new territory.

Mr. Hearst. I think that is another reason why the Bureau of Reclamation should be under the Department of Agriculture.

James A. King. I might offer the soothing, satisfying thought that I understand that the reclamation activities of the West are not being financed from Texas money but are being financed from public-land money which is always the property of the Federal Government and the State where the work is being done, and furthermore that these projects that are developing 40 per cent of our landed areas are where 10 per cent of our population is going. It may be that the further development of this area will ultimately benefit the Nation.

WILLIAM PETERSON. I should like to add a word. The reclamation fund is made up of 52½ per cent of the proceeds from the sale of mineral rights on the public domain and 35 per cent from the sale of public land, and no taxes from your people in eastern Texas ever go into a reclamation project.

Mr. WEBB. Perhaps I should have said it this way: It is a matter of public funds which are equally the property of east Texas and of Idaho and those States who use the funds. That is right, isn't it? I think that is correct. These moneys that are being used are just as much the property of the people of Texas as they are the property of the people of Idaho. That is the point. I am not criticizing the people of Idaho. What is being done in Idaho might be done by the people in Texas with these funds.

WALDO KIDDER of Minnesota. I want to call attention for a moment to one statement made by Dean Mumford and tie it up with the repeal of the homestead act. Some one this afternoon made the statement that over 30,000 entries were made in the last year, largely due, no doubt, to the present depression. We have had a great movement—a great taking up of available lands. It is going to increase the quantity of submarginal land that we are going to have to contend with in a very few years. It seems to me that our committee on conclusions and summaries should most definitely and positively pick up this idea of Doctor Mumford's on the repeal of the homestead act.

THE PLACE OF FORESTRY IN A NATIONAL LAND-UTILIZATION PROGRAM

Presiding, JAMES C. FARMER, *Lecturer of the National Grange, South Newbury, N. H.*

Mr. FARMER. I want to extend to you my appreciation of the opportunity to come down from the annual meeting of the National Grange and preside at this meeting. I also want to extend the regrets of the national master, Brother Taber, who was unable to come. To-day and to-morrow the resolutions and policies of the National Grange are determined, and he felt that he could not leave.

The grange has always been interested in the problems which have brought you here. You plan to discuss them and to formulate a definite program. For 65 years we as farming people have been working with some of these problems that you are discussing; and this particular program is of especial interest, not only to the members of the grange, but to everyone in this Nation because it has such a far-reaching effect on many different lines of business.

NATIONAL ECONOMIC AND SOCIAL OBJECTIVES IN FOREST POLICY

RAPHAEL ZON, *Director, Lake States Forest Experiment Station, Forest Service, United States Department of Agriculture*

What is a forest policy?

In its simplest terms, a forest policy must aim to determine how much land and what kind of land should be devoted to forest growth.

This, in turn, is determined by the economic and social ends which a forest policy seeks to attain.

The essence of a forest policy may be reduced to five principal objectives: (1) A sufficient and permanent supply of forest products and forest by-products; (2) protection of watersheds needed for regulation of stream flow and prevention of soil erosion; (3) preservation of forests for esthetic enjoyment and recreation; (4) preservation of forests for the propagation and maintenance of wild life; and (5) utilization of wild lands not otherwise usable.

While the emphasis on this or that objective has varied from time to time, all of these objectives have now been universally accepted as integral parts of a rounded-out forest policy. Let us consider these objectives separately in the light of our past experience and present economic conditions.

THE FOREST—A SOURCE OF RAW MATERIALS

The threat of a timber famine which loomed so large some 25 years ago has somewhat worn off. Although no one takes literally a belief in a prospective actual timber famine in this country, a sufficient and permanent supply of forest raw material is by no means a certainty. No theories, plausible as they may sound, can minimize the plain fact that, if present forest practices continue to prevail, this country will become dependent upon other countries for meeting much of its timber needs. The per capita consumption of lumber may decrease in the future, but the increase in population, together with new uses for wood which are being discovered every day, will tend to maintain the total consumption near the present level.

The larger number of substitutes for wood are not going to replace wood for uses for which it is particularly suited. The use of substitutes for wood is really an old, old story. It began with the earliest metal and coal ages, yet the consumption of wood in the world has been constantly increasing. All that wood substitutes have so far done in this country is to check the expansion in the use of softwoods. The present overproduction in lumber is not due to a surplus of standing timber. What makes the present overproduction of lumber particularly tragic is that it occurs in the face of a rapidly diminishing supply of standing timber.

We can judge the future only by the past and the present. In spite of many substitutes, such as steel and concrete, wood is one of the few commodities that has shown a steady growth, both in volume and value, during the last century. In Great Britain (which is a very good example because practically all the timber to meet the needs of England are imported), during the last 80 years, timber consumption has increased more rapidly than has the population, and the per capita consumption is now almost four times as great as it was in 1851. Even in France, with its practically stationary population, timber consumption is slowly increasing; that of Germany more than doubled within a century; in the United States at least seven times as much lumber is used now in a year as in 1850, and even the per capita rate of consumption is considerably larger. Judging from the rates of increase in these and other important consuming countries, the world's timber needs may be expected to double within approximately 50 years.

There is no question that there will be many changes in the use of wood in the future just as there have been in the past. Before coal became the universal fuel, wood was the chief source of fuel in industries. The substitution of coal for wood should have sounded the death knell to wood. Yet after a temporary disarrangement, the consumption of wood for other purposes has shown a marked increase.

The Indian used the bark of trees to build his tepee; the early settler built his cabin out of logs cut in the woods; to-day we saw logs into lumber and use the boards in the construction of our homes. For inside finish and in furniture we use a very thin veneer of some valuable wood laid over a cheaper wood. It is possible that, in the future, sawing logs into boards will be considered a crude form of wood utilization. Instead of being sawed up into logs, the wood may possibly be placed in a digester or grinder and made into pulp and the pulp may be fabricated into all forms of structural material. No matter how the form in which wood is used may change, wood will be no less of a national necessity in the future than the staple agricultural crops, such as wheat and corn.

Even if the claims of our chemists, at times very bombastic, should come true and most of our organic products of the future should be made synthetically, we shall still need organic matter as raw material for the manufacture of synthetic organic products either in the form of cellulose obtained from trees growing now or from organic matter accumulated in past geologic epochs.

Chemists can produce artificial leather but they must have wood fiber to do so. Artificial silk or rayon is now being produced in large quantities, but from the wood fibers of spruce and other forest trees. To obtain carbon for synthetic carbohydrates, for instance from the air, is a slow and unpractical process. This carbon can be obtained only from organic sources already available. The chemists frankly admit that the coming age is the "age of cellulose."

As soon as the overproduction of lumber, due to the present disorganization of the lumber industry, ceases, and the accessible timber is cut out, there must come a sharp demand for lumber. Even some lumbermen themselves foresee the not-very-distant time when we shall have to import some 15,000,000,000 to 20,000,000,000 feet from abroad. Even to-day, only half of our paper need is taken care of by pulpwood grown in this country; the other half of the pulpwood comes from Canada, Scandinavia, Finland, and Russia. All talk, therefore, that in the future there will not be so much need for wood as there is to-day and, therefore, there is no need to worry over reforestation, particularly by private forest-land owners, seems to me to lack historic perspective and understanding of the needs of modern civilization.

The march of progress throughout the entire world was characterized by greater and greater dependence of man upon organic matter. There is no other source of as cheap organic raw material, at least in temperate regions, available in large quantities as the forest. Some lumbermen, who are not discouraged and blinded by the present overproduction of lumber, realize that the best investment to-day is not virgin timber as in the old days but rather young timber. Far from the danger, therefore, of having a surplus of

timber in the future, we ought to prepare ourselves for meeting a timber deficiency in the not-far-distant future.

PROTECTION FORESTS

As the forests were cleared away from most of our watersheds, the effect of forest destruction upon our rivers and our soils has become painfully evident. In the older countries, particularly in the mountainous countries, man has learned through bitter experience, through loss of life and property, the consequences of forest destruction on watersheds. No matter how much reliance engineers may place on purely engineering works, like dams, levees, and other structures, it is now pretty universally accepted that the forest cover is an essential part of any permanent river improvement and is the best protector of soil against erosion.

In every civilized country in the world the Government has now established so-called protection forests whose purpose is to moderate the surface run-off from the watersheds and prevent the soil from eroding. Our own studies in this country indicate that some 185,000,000 acres of dense forests, or 23 per cent of the entire Mississippi watershed, are essential in our Mississippi River drainage alone if the Mississippi River is to be brought under control by engineering works. There are other areas, like the east shore of Michigan and the Pacific coast, where forest cover is essential to keep the sand from moving inland and burying orchards and other agricultural land.

I am passing over lightly the generally recognized fact of the ameliorating influence of the forest upon climate. In most of the European countries it is accepted almost as an axiom that, when the forest cover is reduced below one-fifth of the total area, there is a deterioration of the climate—less humidity, stronger winds, more frequent occurrence of frosts in the spring and fall, and even less precipitation.

FORESTS AND THE RECREATIONAL INDUSTRY

Under the strain of present-day civilization with its great amount of monotonous labor, with its nerve-racking noises, with insistent invasion of privacy on the one hand and swift and better means of transportation on the other, the value of the forest as a place for recreation and esthetic enjoyment is becoming increasingly important. It has been estimated that $4,000,000,000 are being spent annually in this country by recreation seekers—hunters, fishermen, and tourists. The recreational industry is becoming one of the basic industries of the country. In some of the Northern States it is the second largest industry. The extent of this industry may be judged from the fact that during the last fiscal year some 30,000,000 people visited the national forests alone, to say nothing of national parks and other areas. In each of the Lake States—Michigan, Wisconsin, and Minnesota—the tourists leave annually from $80,000,000 to $100,000,000. In some of the States the revenue from fishing and hunting licenses constitutes the chief source for expenditures of the State conservation departments.

The backbone of this recreational industry is the forest, particularly the lakes and streams bordered by green timber. If the forest did not yield a single stick of timber, or a single stick of pulpwood, it

would justify economically the use of the land for that purpose. In some counties of Wisconsin for which figures are available, 10 per cent of the county's acreage developed as recreational areas is paying to-day 30 per cent of all the taxes, exclusive of the larger cities. This is a new use of the land which was not dreamed of two decades ago, and the development is still in its infancy. The demand for shore property for summer homes, game refuges, private hunting clubs, and public shooting grounds is on the increase.

The recreational industry, unless intelligently guided and controlled by public agencies, may destroy itself just as the lumber industry and land colonization have destroyed themselves in the past through overdevelopment. The recreational industry, if left entirely to private exploitation, may leave in its wake abandoned "whoopee" palaces, "chicken shacks," and road houses similar to the ghost lumber towns and abandoned farms of the earlier booms.

LAND ABANDONMENT AND FORESTRY

Within the last 15 or 20 years, millions of acres of cut-over land and some farm land have gone on the tax-delinquent list and have been abandoned by their owners. This land eventually reverts to the ownership of the States or counties. A new public domain is being created. This public domain, for the most part, is cut over, is badly burned, and is largely waste land.

While the actual acreage to which the State or county has taken title is not very great as yet, the acreage which is tax delinquent and eventually must be taken over by the State or county is very great. In the three Lake States of Michigan, Wisconsin, and Minnesota alone, there must be close to 25,000,000 acres of tax-delinquent land in different stages of abandonment. The State or county, as a general rule, does not want this land and resists by every means taking over title to it. This abandonment of cut-over land is probably more conspicuous in the Lake States, but the economic process is going on everywhere, in the East, South, and even in the West. Even in such States as New York and Pennsylvania, land abandonment proceeds at the rate of some 250,000 acres a year in each State. In the entire country, there are probably some 100,000,000 acres of such land, approaching almost the acreage of the still-remaining original public domain.

This tax-delinquent and abandoned land creates a series of economic problems for the local units of government. If this land could be isolated and pushed into one corner of the State, just as we isolate contagious patients, it could be easily forgotten. But it is mixed in with other land still on the tax list. The local units of government have fixed expenditures, and must collect definite sums of money. When some land ceases to pay taxes, the rate of taxation is automatically increased on the still-remaining operated farm property.

What to do with this land, and how to make it bear taxable wealth once more?

There are no longer any optimists who believe that this land can be absorbed into agriculture. In view of the increasing demand for timber growing, recreation, game refuges, the logical answer seems to be—Use this land for conservation purposes.

One of the first steps in reclaiming this land is recreation of a forest cover. This means expenditure of money, large sums of money. There is no great economic incentive for private owners to engage in reforestation after the land has been laid bare. If there were, they would not be abandoning the land. In spite of many efforts to pass State tax laws and provide easement of taxation on cut-over land for the sake of encouraging private owners to grow timber, progress is slow.

Efforts of the counties in zoning the land, in consolidation of school districts, townships, and even counties, have not as yet produced any tangible results. If this land is to be reclaimed for conservation, it will have to be done through public efforts by county, State, or Federal Government.

The Federal Government since 1911 has been purchasing cut-over land for national-forest purposes. In the course of 20 years, it has acquired about 4,000,000 acres. This is only a drop in the bucket. If this movement of taking over the land for forest growing is to make a real dent in the vast acreage of idle land which is depressing agriculture, it must be carried out on a much larger scale. The Federal Government can help to some extent, but the task will be largely up to the counties and States.

Some States are actively engaged in obtaining tax titles for delinquent land or in purchasing and blocking up areas into State forests. The State of New York, within the past few days, through the adoption of a constitutional amendment, has made a good start. It has authorized the expenditure of some $19,000,000 in the next 11 years for the purchase of worn-out farms and for reforestation. Other States have similar programs but on a smaller scale.

From the standpoint of forestry, however, there never was a more opportune time for constructive leadership in obtaining the acreage needed to meet the future needs of the country in timber, recreation, and protection at a comparatively small cost. The counties are willing to turn over the land to anyone who is willing to develop it, often merely at a cost of paying the taxes to private owners.

If the Federal Government, in cooperation with States and counties, could work out for each State a definite plan of acquiring these tax-delinquent lands, much of it could be returned into public ownership, from which it should never have been allowed to pass. In blocking out such areas for forest and conservation purposes, a selective process must be used. We may as well admit that there are submarginal forest lands just as there are submarginal agricultural lands. It may be several generations before this submarginal forest land can be economically developed even by public efforts. Such land should be given protection against fires, but beyond that it should be allowed, for the time being, to drift as idle land, leaving it to nature to restore it to some form of usefulness.

The danger, if there is any, lies in too much enthusiasm for reforestation and the assumption by foresters of responsibilities greater than they can discharge. Reforestation, for instance, of small tracts of from 40 to 100 acres, scattered here and there, may make the management of such forests in the future impracticable. The land for reforestation should be selected with a definite objective in mind.

The many technical and economic problems connected with a large-scale reforestation program should not be too lightly dismissed.

The benefits to agriculture from such a conservation program are self-evident. It removes from the market submarginal agricultural land and other cut-over land which might enter into competition with already developed farms. It tends to reestablish in our cut-over region, and make permanent, the wood-using industries which have disappeared with the disappearance of the forest. It furnishes the backbone and the foundation upon which to build a permanent recreational industry, which is becoming one of the basic industries. It creates a new taxable wealth and brings into desolate and poverty-stricken sections of our cut-over regions new economic resources which can not help but benefit the settlers and farmers living within them. It will make the countryside more attractive and a better place in which to live.

LAND UTILIZATION AND CONSERVATION

GEORGE D. PRATT, *President, American Forestry Association*

In assigning me the subject "Land utilization and conservation" Mr. Olsen admitted it to be a rather general one and imposed upon me the responsibility of giving it such character as I saw fit. I suppose that, as president of The American Forestry Association—the oldest national conservation organization in the country—I was expected to recognize at once the fine distinctions the subject suggested to his mind. I confess, however, that I have been much puzzled and in the same state of mind as the station master of Ellis Parker Butler's Pigs Is Pigs. Certainly, my subject is as prolific of productive possibilities—of discourse at least—as the pair of guinea pigs unloaded upon the practical and untutored station master.

Each time I reflected upon the subject, I came to the one conclusion that land utilization in the sense of this conference is conservation. Therefore, conservation is land utilization. Having thus squared my subject and proven the answer, I found myself somewhat in the position of the mathematician who labored 10 years in developing a very complex equation and when he had solved it to his own satisfaction he was forced to confess that he did not know what to do with it.

At best, any discussion of the subject on my part I must make as a layman, for I am neither a scientist nor an economist. You will perhaps accuse me of generalization, in which event I shall refer your complaints to Mr. Olsen. Whether or not you agree that land utilization and conservation are one and the same, I think you will agree that they have a common objective—the making of a better country in which we and those to follow us may live happily.

The term conservation came into general usage some 25 or 30 years ago on a wave of public awakening to the fact that our forests were being neglected, mishandled, and dissipated. It was Theodore Roosevelt who dramatized conservation as a great, vital, national issue. Roosevelt unquestionably sensed the full significance of the movement, but for many years conservation, in the public mind, was of the forests and for the forests. The past 10 or 15 years, however, have witnessed a remarkable and impressive spread of the conserva-

tion idea. A cross section of American society to-day reveals a complexity of conservation thoughts, organizations, and programs that is highly significant and at times somewhat confusing.

From a stage of forest conservation we have passed into an era of conservation multiplicity, embracing all natural resources—many that are not natural—and human life itself. We have organized groups whose numbers run into the hundreds. Some are national, some State, and many local in scope, but each specializes, in some phase of conservation—forests, wild life, water, soil, oil, recreation, parks, scenery, wild flowers, and so on. This conservation set-up is a tremendous present and potential asset to land utilization in that it represents an enlightened and organized public mind sensitive to the need of a common program of coordinated objectives, once such a program is formulated. Its present weakness lies in the multitude of different programs, each usually developed by specialists or enthusiasts in one phase of conservation who therefore lack a complete knowledge of biological facts and relationships. These programs sometimes conflict, and in a sense they short circuit conservation progress until the defect is remedied.

Out of this diversity of conservation zeal and effort a growing consciousness has been developing during the past few years that, whether the objective be forests, wild life, scenery, or something else, accomplishment begins with the soil. It is dawning on conservation groups that conservation reduced to its simplest fundamental is the knowledge, put into practice, of how to use the soil so as to make it render its highest service to mankind. This brings me to my original conclusion that forest conservation is one with land utilization and that the latter gives promise of a day not far off when conservation will cease to be a movement of more or less loosely working groups and will become a movement of interlocking organizations working for a coordinated program of land utilization. In brief, land utilization, looking to the highest use of all land, is a larger and more unified edition of the conservation concept. It provides the instrumentality whereby conservation, thought, research, and progress, as they stand to-day, may be welded into coordinated action and brought to bear with most telling effect upon our land problem as a whole.

I should like to mention briefly some of the more important contributions which the conservation movement, as a result of 25 years of experience and progress, can make to land utilization. Conservation thus far has dealt chiefly with the wild lands of our country and with their present and potential resources. In the aggregate these lands embrace between 700,000,000 and 800,000,000 acres, or more than one-third the total land area of the United States. Obviously, they form an integral part of the problem of land utilization. They are in fact the most difficult land assets with which any program of land utilization has to deal. Their use or nonuse influences for good or bad the productive use of virtually all land and the social and economic conditions of the community, the State, and the Nation. It is a paramount problem of land utilization, therefore, to fit these soils into the land-use pattern of the whole country so that they may render their highest complementary services.

To this end conservation to-day has much to offer. Its program, diversified and uncorrelated though it may be, has objectives common to those of the larger program of land utilization. Conservation of the soil, I think, can be set down as the first fundamental of both conservation and land utilization. If this is correct, it follows that our ability to carry our programs through successfully rests squarely upon our ability as a people to hold our soil and to conserve its life. I, therefore, maintain with all emphasis at my command that the first objective of land utilization is to stop soil devastation and soil wastage. If we do not set our faces to this task with all earnestness and determination, we might as well close our meetings and go home. We shall never attain real land utilization so long as we permit fire to sear millions of acres and erosion to steal millions of tons of our soil every year. These two agencies—fire and erosion—constitute a challenge which this or any other land-utilization conference can not ignore or side-step.

Conservation has already accepted the challenge. It has set up State and national fire-protection organizations supported by public and private funds that have put into the field a fire-fighting army of more than 30,000 men. It is a cooperative system written into our national law by the Weeks Act of 1911 and the Clarke-McNary Act of 1924. Through its operation the Federal Government, the States, and private owners are to-day spending annually $5,500,000 and giving some sort of organized fire protection to more than 200,000,000 acres of forest lands in the United States. The conspicuous lack in the system is adequate financial support by the respective States and by the Federal Government.

Conservation offers to the larger movement of land utilization this thoroughgoing, nation-wide organization for the protection of our soil against forest fires and their trailer, soil erosion. Land utilization can and must bring to this organized army now in the field the additional support necessary to make it competent. I am sometimes fearful that the American public is becoming hardened to our annual fire drama and is accepting with too great complacency the tremendous losses, both tangible and intangible, to which our country is being subjected year after year. The increasing difficulty of obtaining support leads me to that conclusion and to the further statement that something extraordinary is necessary to dramatize and awaken the public to the full significance of the fire evil. I hope that land utilization will see and seize the opportunity.

The objectives of conservation as applied to the wild lands of our country may be broadly stated as the maintenance of conditions that will provide our people with the raw materials essential to industry and with the natural environment essential to human welfare. The latter are of the flesh and of the spirit. I refer to forests, clear running streams, wild animals and birds, recreation, parks, natural scenery, and beauty. I would not have you minimize beauty, for it has been rightfully said that "A nation that forgets beauty will in time find even the foundations of its technical and economic achievements crumbling."

Conservationists have recognized more and more that all of these values, or at least a number of them, can often be derived from the same land. I think this can best be illustrated by the

national forests. Embracing within their boundaries some 150,000,000 acres of land dedicated to economic and social uses, they are managed by the Federal Government on the principle, (1) that their dominant use is for forest growth and stream-flow protection, and (2) that their other resources shall be developed and made available for the public good so far as is consistent with their major purposes. Thus all the resources of the land—minerals, forage, timber, wild life, recreation, natural beauty—are brought into use under a coordinated program that perpetuates the resources, sustains industry, preserves environment, and extends benefits to communities hundreds of miles beyond forest boundaries.

To my mind the national forests represent the most outstanding large-scale demonstration of land utilization to be found in the United States. As a contribution to the movement taking definite shape here to-day, the system provides a nucleus that demands zealous protection and judicial expansion to a position of balance in the national scheme of land ownership and use. What that balance is, land utilization in its larger sense must determine. There would seem to be no doubt in the minds of most conservationists, at least, that very much more of our wild land, particularly in the East, must come under public ownership, as national forests or in other forms for public use, if it is to be redeemed at all.

I hold that one of the larger objectives of land utilization must be the aggressive development of our established policy of national forests and other public reservations designed to utilize land for the public welfare. These other forms of public areas are as national parks, State and county forests and parks, national wild-life preserves, municipal parks and playgrounds, etc. In the aggregate these areas now represent some 200,000,000 acres of former wild land that have been brought under special forms of productive use. They represent conservation's most concrete evidence of progress in land management. I doubt if any other movement can offer so much.

The importance of still more rapid progress in dealing with our wild lands can not be overstressed. The effects of a century of land abuse are accumulating with sinister rapidity. For evidence we have only to observe what is happening to our streams and rivers, to our swamps and lakes, our water tables, our farm and forest lands. Almost every State in the Union to-day is confronted with the reversion of devastated, worn-out, or eroding lands. Standing idle and in default, so far as productive values go, they are menacing the prosperity and the standards of living of hundreds of communities. It has been roughly estimated that the acreage of abandoned, cut-over, and farm land already reverted or in process of reversion, is close to 100,000,000 acres. To this may be added another 100,000,000 acres of cut-over and devastated forest lands in private ownership threatened with reversion in the early future. Add also the 180,000,000 acres of " no man's land " now in the public domain, and we have an empire with which to deal.

What is land utilization going to do with these acres? They must be dealt with and rare economic and scientific statesmanship must be used in the dealing, or land utilization in the national sense must inevitably fail. The conservationists view is that, depending upon the character of each area, a large portion of this land can be brought

into productive economic and social use as private and public forests, parks, and game areas, provided each area is then given adequate protection and intelligent management. This view, I think, gears in with land utilization, which must inevitably answer as to what lands will serve their highest purposes as national or State forests, as national or State parks, as game refuges, as commercial properties, or as other units of productive utilization.

A third great contribution which conservation can make to land utilization is in the field of research. It is unnecessary for me to stress the value of research to any program of land utilization. It is as essential as the land itself because without knowledge of physical and biological facts and relationships, intelligent land utilization is impossible. This seems so obvious that it needs no further comment. Conservation has well laid a foundation of research upon which land utilization can and must build. Forest research is written into our national policy by the McSweeney-McNary Act and by other legislation. A vast amount of information has already been gathered and a broad program of coordinated research is aggresively under way. These studies extend into the fields of forest economics, forest surveys, forest taxation, forest protection, erosion and stream flow, forest utilization, the relations of forest and wild life, livestock grazing, etc. In addition, many of the States have their research organizations, and within recent years conservation organizations both public and private have launched more and more into research.

Before concluding I should like to mention another notable contribution which conservation can bring to land utilization. Like the others mentioned, it is an objective common to the successful accomplishment of our ends, whether we phrase them as conservation or as land utilization. This is education. The agencies and organizations already set up by the conservation movement in every natural-resource field can be a tremendous educational power in developing a national program of land utilization. It can almost be said that conservation has prepared the public mind for the larger undertaking of land utilization. The amount of educational work that must be done as a corollary to further land programs is tremendous. In the conservation set-up to-day is an institution that can do its full part and more.

In attempting to deal with this subject from the standpoint of conservation, I have been deeply impressed by the need and importance of coordinating the efforts, the minds, and the objectives of the many groups and organizations now engaged in the various fields of conservation. This in itself is a clear objective which land utilization must accomplish. It is a herculean task and one that calls for rare leadership by the Federal Government, the States, and leaders in every field. I believe that it can and must be brought about and that a conference of this kind is a notable step to that end. I therefore desire to pay my high respects to the leaders of this movement and, speaking for the American Forestry Association, to pledge to them and to the movement our whole-hearted cooperation.

In closing, I want to quote from an address made a year or two ago by Glenn Frank, president of the University of Wisconsin. His

comment applies to land utilization with the same force as to conservation. He said:

> The conservation movement is nothing less than the guidance of American civilization in the transition from its pioneer youth of shortsighted exploitation to the productive maturity of statesmanlike development. We must learn to dress the land we have deflowered. We have been little more than high-pressure salesmen of our resources. We must become high-minded statesmen of our resources. Conservation may well prove the acid test of the ability of American democracy to pull itself together in a vast cooperative venture.

TURNING SUBMARGINAL CROP LANDS WITHIN THE FARM TO WOOD-LOT USES

JAMES FOWLER, *Farmer, Soperton, Ga.*

I was born and reared on a farm surrounded by virgin forests and one of my greatest boyhood dreams was to be a large landowner and taxpayer. I am awfully sorry to say that I reached that position in 1925. But when my crops had been gathered and I had balanced my books for the year, I found that I had lost money on more than half of my farm lands and I did not make enough money on the more-productive lands to pay the taxes on the less-productive tracts.

I grow corn, cotton, tobacco, wheat, oats, and other southern crops. I raise hogs and cows for farm use and some to sell. But as I was in the naval stores business on a small scale and had kept separate accounts of the forested lands, I found that I had made a profit on the branches and other parts of the lands growing pine timber. I began looking around to see what to do about the hillsides and crawfish bottoms and other unproductive parts of my farms. I had already become a little forestry minded from attending one or two pine-institute meetings and from reading a few articles from the Georgia Forest Service and the United States Forest Service.

In January, 1926, I decided to try planting some slash pine seedlings. I set 140 acres in rows checked 10 by 10 feet. These seedlings were wild stock pulled from the young growth on my farm. I had fine luck with these trees, 85 per cent of them living. In 1927, 1928, and 1929, I increased my area in plantings to 500 acres, all in rows 10 by 10 feet. In 1930, I planted 1,000 acres of trees spaced 6 by 10 feet and replanted approximately 300 acres in open spaces of naturally-reseeded lands. Owing to better methods of planting and plenty of rainfall the following spring, 98 per cent of the trees lived.

This makes 730,000 trees set 6 by 10 feet, 90,000 in spaces, and 220,000 set 10 by 10 feet. A total of approximately 1,040,000 young trees on 1,800 acres of land.

I do not believe trees would do well planted this thick except where the soil is deep and the rainfall is plentiful, but I have many trees planted in January, 1926, that are now 6 inches in diameter 1 foot from ground, and 20 feet high. I believe the rapid growth of these trees is due to the fact that they are growing on lands cultivated prior to 1926. These lands were planted to peas and velvetbeans in 1924–25 and were given a light cultivation.

Using submarginal farm lands for reforestation in pines seems to me to be a profitable investment. The returns are not so quick, but they are not so far distant as some might think. Each year the farm investment becomes more valuable. By confining one's

attention to cultivating the better lands, greater yields per acre will be made and there will be a better chance of making a profit on field crops. Reforestation also cuts down the danger of erosion from heavy rains. By using a few strands of barbed wire and 20 pounds of carpet-grass seed per acre one can provide a pasture for nine months in the year, sufficient to take care of two cows per acre. From my experience on 500 acres sown to carpet grass last year, I advise seeding to this grass and pasturing heavily. This cuts down the fire risk to a minimum and helps to pay cost of growing the trees. As to the cost of planting trees, that depends on the kind of labor available. Inexperienced labor will cost more, but it is usually found on the farm and should be used when possible.

Growing or producing forests is a new business. In my section it needs to be studied more. If croppers and renters are put on the pay roll at tree-planting time they will feel more interest in the trees and will help to protect them from fire and other enemies. At the present price of farm labor in the South, which is from 50 to 75 cents per day of 10 hours, 1-year-old pine seedlings can be set for about $1.75 per acre including plowing rows, digging, and planting seedlings.

On 7,000 acres of forest land which has plenty of seed trees and has been protected from fire since 1926 and 1927, a fair estimate is that I have 3,000,000 slash pine trees from 2 to 20 years old. Of course, owing to the unusually dry weather, we have lost more timber this fall from forest fires than has been lost in the past five years. While the fire risk is greatly reduced when firebreaks are built and fire-fighting equipment is kept available, the greatest problem of forests management is keeping fire out. The Georgia State Highway Department has instructed their men to help stop forest fires, using any equipment they may have. Georgia has what are called timber-protective organizations. Through them timberland owners cooperate and aid each other to protect their lands from fire, using methods recommended by the Georgia Forest Service. Burning on their protected lands is reduced to a minimum or to less than 1 per cent of the total area.

I have made several tests of thinning and pruning small trees and find that it does not pay to prune slash pines closely as it has a tendency to make the trunks small and long. The trees planted in 1926 which I expect to begin turpentining in 1935, have had very little pruning. These trees have short, heavy trunks and heavy tops which form an ideal combination for heavy yields of naval stores.

What we need in the South is more forest education and lower taxes on the forest lands.

I plant slash pine, which I believe is one of the most profitable forest trees in the United States, because of its rapid growth and high value for the production of naval stores, pulpwood, and lumber. In the economic development now well under way in the South, slash pine is playing a large part in bringing lands unsuited for agriculture into their most profitable use. Slash pine may be grown in southern North Carolina, in Florida, south Georgia, southern Alabama, southern Mississippi, and southeastern Louisiana, and is commercially important over its whole range.

Treutlen County, which is one of the youngest and smallest counties in the State of Georgia, ranks first in artificial reforestation,

I am glad to say. Several large farmers and naval-stores operators have been planting slash pine seedlings on their submarginal farm lands for the past two years. We have one of the most wide-awake timber-protective organizations in the State with 26,500 acres listed and more coming in each quarter. We have the greatest spirit of cooperation in helping to fight and keep out forest fires I have ever seen. Even the mayor of the town of Soperton (the county seat), the postmaster, railway agent, the cashier of our bank, or any other business man will quickly don overalls and assist in stopping forest fires, which I am sure is the reason we have had so few damaging forest fires this year.

The most satisfactory and economical outfit I have found for plowing out the middles, as we call them, between the rows of trees is a tractor with 6-inch extension rims on rear wheels and double narrow-type wheels in front. I use a harrow with 24-inch notched disks. By using 600 or 800 pounds of sand in bags placed in baskets made for this purpose, this outfit will practically clean any firebreak of broom sedge, underbrush, or wire grass. We cut all stumps out of every fourth row of trees and double-plow this to make sure that no fire can cross. Later we shall drive wagons down this row when dipping turpentine.

In conclusion, let me say that submarginal lands in the South can not be used profitably at the present time and, I think, for a long time to come, for anything except growing trees. The cotton-boll weevil has changed the cropping system of the Southeast. Semiarid ranch lands of Texas and Oklahoma have been turned to growing cotton cheaper than it can be grown in the Southeast. The consequence is that the Southeast has a large acreage it does not need for agricultural crops, and no farmer can afford to pay taxes on idle lands. The rapid-growing southern pine can accumulate two to three cords of growth each year; provide pasture lands while it is growing; when about 12 years old yield turpentine, or poles, or pulpwood for paper; and later on can produce more turpentine; in 25 to 30 years it can reach saw-timber size, 20 to 30 inches in diameter breast high. These returns can be had with very little cost. Growing pines is, therefore, the solution of the problem of how to use submarginal lands in the South.

The most practical bulletin I have found on planting and care of slash pine is one just issued by W. R. Mattoon, extension forester, Federal Forest Service.—(Farmers Bulletin, No. 1256.)

WHAT ARE THE POSSIBILITIES OF PRIVATE FORESTATION?

S. T. Dana, *Dean, University of Michigan School of Forestry*

With three-fourths of the forest area of the country in private ownership, the question as to the treatment which this area is likely to receive is an urgent one. While no general answer is possible, a few facts seem reasonably clear.

First of all, it can safely be said that private forestry has so far been conspicuous chiefly by its absence. This is natural, and can not be taken as any criterion of what may be expected in the future. With a virgin continent rich in natural resources of all sorts, lavish and even reckless exploitation was inevitable. Farms, forests, and

mines alike have suffered; and the lumberman who took pride in the thousands of acres which he cleared of their timber has his counterpart in the farmer who gaged his success by the number of farms he wore out.

To-day we face a new situation and are developing a new attitude. The end of the "inexhaustible" virgin forests is at last in sight, and with them is disappearing the psychology characteristic of the period of exploitation. In spite of the very considerable supply of old-growth timber still remaining on the west coast, we are already depending largely on second-growth timber, and shall soon have to do so almost entirely. One who is willing to look forward a few years can therefore enter into the business of timber growing with assurance that there will be a market for his crop provided there is a continued demand for wood. As to this I think there can be little doubt. Despite the inroads of substitutes, wood remains a material with so many advantages for so many purposes that we shall not readily give up its widespread use, particularly as its production offers a means for the profitable utilization of large areas of land otherwise of little or no value.

I do not believe, however, that we can anticipate or should desire the immediate practice of intensive forestry by private owners on all forest land any more than we can anticipate or should desire the immediate cultivation of all arable land in the United States. Private owners undoubtedly will, and very properly should, center their attention first on those lands that promise the largest returns because of superior fertility or greater accessibility to market or both. (And incidentally it may be remarked that lands which can properly be regarded as superior for forest purposes may be submarginal for agricultural purposes.) Farm wood lots frequently fall into this class. On such better lands careful cutting of the mature trees, thinnings, improvement cuttings, cleanings, planting, and the control of insects and diseases will pay, just as intensive cultivation, the liberal use of fertilizers, spraying, and the introduction of new and improved varieties pay on the better farm lands.

As for the poorer lands, probably the most that can be expected at least for the time being is to keep out fire and let nature take its course. Even with this minimum of attention the results in many cases are likely to be surprising. More intensive management will be in order when and as such lands emerge from the marginal class either by the growth of the country or by natural recuperation.

We may also expect and encourage private owners to undertake first the management of existing forests rather than to embark on extensive planting programs. It is unfortunate that popular emphasis on reforestation has led many to regard planting as virtually synonymous with forestry and has so largely diverted attention from the less spectacular but usually more substantial returns to be obtained from the proper handling of forests already in existence. "Bare-land" forestry involves a relatively heavy initial expenditure and a long wait, during which interest and taxes continue to accumulate, before the crop can be harvested. A going forest, on the other hand, can be so handled as to obtain an annual income from the very beginning and at the same time to retain the capital stock intact. Moreover, by proper cultural measures, it is usually possible

to increase materially both the quantity and the quality of the product.

In most parts of the country, and particularly in the East, it is now too late to start this kind of management with the virgin forest. There is, however, an enormous area of second-growth stands of all ages and degrees of stocking. Experience has demonstrated that intensive handling of the more promising of these is a profitable investment. Removal of the mature timber in such a way as to obtain natural reproduction, the thinning of overdense stands so as to favor the better species and individuals, and the cleaning out of weed trees which are suppressing the more promising young growth, are all practicable measures for the perpetuation and improvement of existing stands.

As a matter of fact, second-growth forests are superior in some ways to virgin forests for management purposes. This is partly because they are usually growing more rapidly and partly because a forest on a sustained-yield basis, that is, from which the same amount of wood (the annual growth) can be removed year after year, normally includes all age classes from the youngest seedlings to mature trees. Well-stocked second-growth stands with a good distribution of age classes may already approximate this ideal, whereas a virgin forest, consisting chiefly of the older trees, ties up an unnecessarily large amount of capital and must gradually be converted to the other form.

Planting on a reasonable scale also has a definite place in the private owner's forestry program. The uncultivated portions of going farms are a good example of the sort of area where planting is in order; but such planting is also worth while elsewhere as a supplement to natural reproduction and as a means of restoring productivity on limited areas that are integral parts of growing forests. On the other hand, the extensive reforestation of denuded areas, which are likely to be located on the poorer sites, is a venture that few private owners can afford to undertake. The rejuvenation of large areas of this sort is a task that will have to be handled primarily by the Federal and State Governments.

Taxation of forest lands is a time-worn subject that can not be avoided in this connection. Whether the tax burden in the past has been greater on forest lands than on agricultural lands and other real property need not concern us at this time. It is, however, important to stress the fact that overtaxation can very readily result in the destruction of existing stands, which constitute the capital essential for continuous forest production, and that even if the situation is subsequently corrected, replacement will be a slow and costly process, very likely beyond the ability of the private owner to undertake. The proper taxation of mature and partially grown forests is, therefore, fully as serious a problem as is the taxation of cut-over and denuded lands. It can not be too strongly emphasized that anything which tends to force the destruction of the growing stock is inimical to sound forest management.

Reasonable taxation of forests as well as of other real estate is obviously impracticable whenever governmental activities and expenditures are greater than the available resources can support. Therefore, forest owners must be ready to join hands with other prop-

erty owners in seeing that superfluous governmental units and activities are abolished, that those which are really essential are economically and efficiently administered, and that an effective check is placed upon the extravagant use of public funds. From the standpoint of valuation, I believe that the present tendency is to place the valuation of forest lands, and particularly those containing merchantable timber, at a higher figure than is warranted by their income-producing value on a sustained-yield basis. No more effective way of discouraging timber production could be devised than to tax all forest properties on the basis of their value for immediate conversion into lumber without reference to the plans of the owner for maintaining an adequate growing stock. Before the tax problem can be solved the point of view of owners and public officials alike will have to be reoriented. They should think of forests not as a mine to be depleted and abandoned but as a continuously productive crop, the value of which depends on its income-producing capacity.

In forestry, as in agriculture, the problem of marketing ranks with that of production. Up to this time, chronic oversupply of lumber and other forest products, with consequent low returns, wasteful exploitation, and uncertainty as to the future, has been a severe handicap to private forest management. So serious indeed is the situation that certain timberland owners are now suggesting public regulation of the amount of timber produced, and presumably also of the methods of cutting, as a means of protecting both private and public interests against ruinous competition and excessive waste—a proposal that has its parallel in other natural-resource industries.

President Hoover's Timber Conservation Board was appointed primarily to study the problem of overproduction both by itself and in relation to its effect on forest conservation. Whether or not the efforts of this board and of other agencies attempting to remedy the situation prove effective, it is certain that conditions will be materially modified in the relatively near future by the depletion of the remaining supplies of virgin timber. In other words, the material that forest owners start to grow to-day will not have to face the competition of tremendous quantities of old-growth material originally supplied by nature without cost. There is every prospect that within a few decades conditions will be reversed, with the available supply considerably less than the normal demand. Moreover, sustained-yield management, which is the type that will pay best, will automatically bring about far greater stability in cut and will correspondingly improve the marketing situation.

Another development that may reasonably be anticipated and that will work to the advantage of the private owner is the finding of new uses for wood and wood products, and particularly by-products. With one-third or less of the wood in the standing tree ordinarily reaching the ultimate consumer, wood is to-day one of the most wastefully used of our raw materials. With decreasing supplies and the progress of research, more complete utilization of the tree is becoming possible, and with it increasing opportunity for profit. In at least one pulp and paper mill, by-products now have a tendency to displace paper as the main source of income, and it is probable that a similar tendency will develop with respect to the forest as a whole.

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The closer integration of various wood-using industries, cooperative marketing of forest products, especially among the smaller forest owners, and the development of definite contractual agreements between timber producers and wood users for the handling of the product are all developments that are likely to improve greatly the present marketing situation.

Another phase of the modern conception of forestry is the use of forests for the production of fish, fur, and game, and for a wide variety of recreational purposes. For example, in a cooperative study of game-cover management now under way in Williamston Township, Mich., the protection and improvement of the farm wood lot and other uncultivated portions of the farm is proving an effective means of increasing the supply of game and other wild life, such as insectivorous birds. The importance of the forest in any program of recreational development is obvious. To what extent these uses may be expected to put additional profits directly into the pocket of the private owner is perhaps still an open question, although there are real possibilities in this direction. Indirectly they are of value in increasing the attractiveness of the area concerned, in attracting additional visitors, and thus in building up the community.

In general, the use of forest lands must take into consideration not a single product such as wood but all possible forest products, and must also tie up with other forms of land utilization. For example, it is perhaps not generally appreciated that in many regions the presence or absence of the industries supported by the forest, with the local market which they provide for agricultural products and the opportunities for employment they afford, may be the deciding factor in throwing neighboring farm land into the supermarginal or submarginal class. All of this points to the need for adequate land classification and the development of coordinated programs of land use.

Finally, the success of private forestry will depend in large part on the following of sound technical practice. Just as successful agriculture rests on a foundation of scientific information built up by years of research and passed along to the farmer by the colleges of agriculture and the agricultural extension services, just so the successful handling of forest lands requires adequate knowledge and its practical application. Whether this is done through the employment of foresters by the larger private owners, by cooperation between groups of owners, by the development of forest extension activities, or in some other way, is immaterial so long as the importance of technical direction is recognized. In practically every industry we have reached the point where ignorance is more likely than not to be a guarantee of failure, and forestry is no exception.

To sum up, I think that the outlook for the practice of forestry by private owners on a limited but steadily growing scale is decidedly promising. We are nearing the end of the period of exploitation of forest resources. Wood grown to-day will almost certainly find a ready market to-morrow. Protection from fire, fair taxation, and sound technic are essential prerequisites to management—as they are to any other form of land utilization. Given these, there is every prospect that the intensive handling of existing forests on the better sites and in the more accessible areas will prove a paying investment,

and will be voluntarily undertaken by private owners in increasing numbers.

Attractive opportunities exist both in the virgin forests of the West and in the second-growth forests of the East; but it seems probable that the greatest advances in the near future will be made in the East where the concentration of the population and the development of transport facilities make access to the principal consuming markets relatively easy. If so, this means that private forestry will go hand in hand with the new agricultural program now in process of development, and through its support of the wood-using and recreational industries and perhaps to some extent of agriculture itself, will play an important part not only in contributing to the larger manufacturing centers, but in maintaining the prosperity of many rural and semirural communities.

Satisfactory progress along these lines will be made, however, only with full cooperation by public agencies in such matters as protection, taxation, research, and education, and perhaps with some measure of public control over excessive and wasteful exploitation.

FITTING FORESTRY INTO A GENERAL PROGRAM OF LAND UTILIZATION

R. Y. Stuart, *Forester, Forest Service, United States Department of Agriculture*

Planning is basic to forestry: That is, it is required in order to perpetuate the resources and is a means of balancing production and consumption. By forest planning I mean not only planning for the wood or timber itself, but for all of the other benefits and resources that accompany a forest, such as game production or management, livestock production or management, recreational values and other values. I am to touch on that phase of land utilization. Since agriculture and forestry are, by area, the two major uses of land, we have in many respects, not only the opportunity but the need for coordinated effort. Previous speakers have given the statistics on forest acreage in itself and in relation to agricultural use. Doctor Zon has given concisely and clearly the economic and social phases of forestry and land utilization.

Many people believe that forestry is synonymous with reforestation, and that the major feature of a program of forestry would be taking over large areas of crop or pasture land and planting trees on them. Actually, although this might be a fairly important part of the program in some localities, it is of minor importance for the country as a whole. The major objectives are to keep existing forest land in such a productive condition that it will furnish needed supplies of timber, conserve water, check erosion of the soil, and conserve recreation values and wild life, and keep the land from being diverted to other uneconomic use which would threaten the welfare of existing agriculture. I do not think that last point has been developed. Forestry serves, therefore, productive and protective functions and meets essential industrial, political, and social needs.

Three classes of land come within the scope of a forestry program. They are:

(1) Land now or formerly forested which by reason of topography, soil, or climate is obviously unsuited physically for cultivation

or other use more profitable than forestry under any economic conditions that can be foreseen.

(2) Forested land that would be physically suitable for cultivation if cleared, and land already cleared that is submarginal for agricultural use under the present economic conditions or those likely to prevail during the near future.

(3) Land now or formerly forested, on which cultivation or intensive pasturage is physically and economically feasible, but is contrary to the public interest because of the danger of erosion or for other reasons.

In formulating and carrying out a forestry program, it will be useful to classify forest land according to its possibilities from the

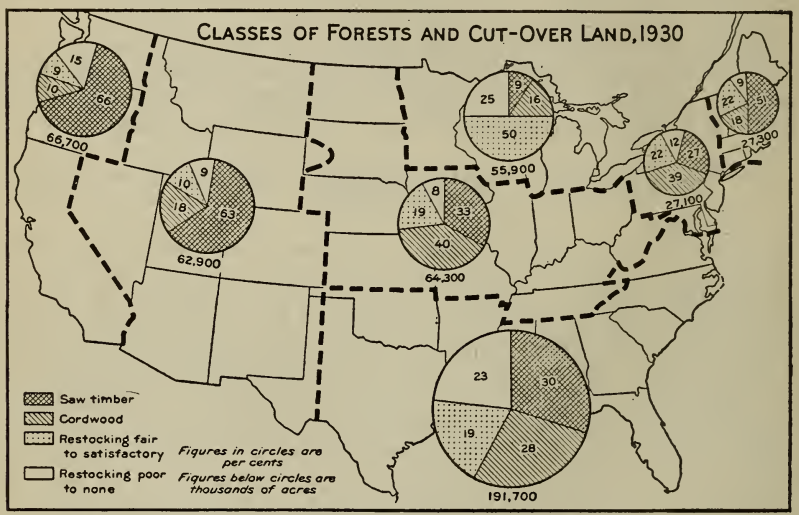

FIGURE 15.—Of the total commercial forest area of 495,800,000 acres, only 38 per cent is merchantable timber. Slightly more than half of this is old growth, largely in the West, and the remainder is second-growth, most of which is in the East, particularly the Southeast. One-sixth of the total area is cut-over or burned-over land on which useful tree growth is coming back slowly or not at all. The largest areas of this class of land are in the South and the Lake States

standpoint of a business enterprise. Three classes may be distinguished, each of which calls for a different policy of use. These are:

(1) Land on which (with proper methods of management) the salable products are reasonably sure to yield an adequate return on the entire investment. Such land is definitely supermarginal for forestry as a business enterprise, and its intensive management for commercial timber production should be encouraged.

(2) Land on which an adequate return can be earned if only part of the costs are charged against commodity production. Forestry utilization of such land may be attractive as a business proposition provided the public will pay that portion of the costs which is properly chargeable to the public benefits that are derived from the maintenance of a forest cover.

(3) Land that is so far submarginal for commercial forestry that private owners can not be expected to hold and manage it for this purpose, even if relieved of a large part of the costs.

Forest cover can be destroyed and the land utilized for crops or pasture on very short notice, but once the cover has been destroyed, it is not so simple a matter to return the land to forest use, either for timber production or even as protective cover. For this reason, stability of policy is essential if the land is to be used for forestry. If, after due consideration of all the factors, forestry is once determined to be the most desirable form of use, then the land should be kept in forest unless conditions change so radically that some other use is obviously more advantageous to both the individual and the community. Stability of policy requires either a fairly strict public control over the use of the land or a considerable degree of stability of ownership.

The ownership, and consequently the policy of utilization of much of the privately owned forest land, and of some of the publicly owned, is essentially unstable. East of the Great Plains approxi-

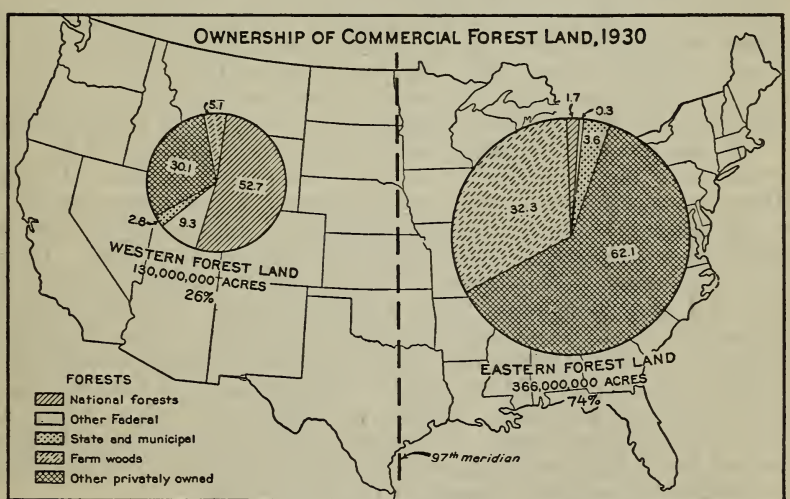

FIGURE 16.—In the East, which has 74 per cent of the commercial forest land of the country, only 1.7 per cent of the forest area is in national forests and 94.4 per cent is in private ownership. In the West, more than half of the forest area is in national forests and only 35.2 per cent is privately owned

mately 95 per cent of the forest land is in private ownership, and in the West about 25 per cent. A very insignificant portion of this belongs to corporations which have definitely undertaken to manage it for timber production. For these lands the policy of use is probably as well stabilized as can be expected under private ownership, in the absence of legal restrictions.

A large area, roughly one-third of all the privately owned forest land of the country, belongs to farmers. On the better class of farms in long-settled regions the woods are mostly on the land that has been automatically allocated to forestry use by long experience. Occupancy of these lands by tree growth is fairly well established, although the method of handling them leaves much to be desired. In the newer and particularly in the marginal regions, and on the poorer farms in all forest regions (either because the land has not been classified through experience or because the owners must expand

the cultivated or pasture area in order to get an immediate living), much land that should remain in forest is being cleared. This is offset to some extent, and is even exceeded in some localities, by the reversion to forest of land on which cultivation or intensive pasture has been abandoned. The utilization as well as the ownership of this land is very unstable, depending upon the fluctuations in the economic status of agriculture. When agriculture is flourishing, any forest growth that may have started is sacrificed, and the land is cultivated for a few years until conditions become less favorable, after which the forest may again attempt to reclaim it. For the most part, such land yields only a meager return from agricultural use and no return at all during the intervening periods, which are seldom long enough for trees to mature. Perhaps it is desirable that there should be a certain amount of this marginal land available for part-time utilization. Certainly agriculture would be much better off if the area were much smaller than it is now.

For farm woodland, the profit motive is not necessarily the primary reason for forestry use. A wood lot is a valuable adjunct of the farm for other reasons than the cash income that can be realized from it. For most other privately owned woodland this is not the case. If the owner can not expect to derive a profit from forestry, he will seek to put the land to other use or to dispose of it. The owners of a large proportion of the forest land outside of farms either do not understand the possibilities of forest management, or are not interested in such an undertaking, or sincerely believe, either rightly or wrongly, that forestry will not pay on their land. Under these circumstances it is futile to expect stability either in ownership or in use. For large areas there is little prospect of profit in merely holding the land while nature produces a more or less haphazard timber crop. The owners face the alternatives of undertaking fairly intensive forestry or, if they can not sell the land, of abandoning it. It is becoming painfully evident in recent years that many are choosing the latter course. In several important forest regions large areas of forest land are being surrendered into the hands of the States or counties through the process of tax delinquency.

A general policy for utilization of forest land should seek first to bring about stability of ownership and use. The land on which forestry can be made to pay, and which is now privately owned, should remain in private ownership, unless there are special reasons for its acquisition by the public. Public agencies can help to bring this about through scientific physical and economic classification of the land and through research on the economic and technical phases of timber growing and utilization that will show the owners how best to handle their properties. Particularly in the case of farm woodlands and other small holdings, it may be possible greatly to reduce costs and to increase returns through the development of cooperative management and marketing.

In view of the benefits to the community resulting from the maintenance of productive forests, and the community burden imposed if the owner takes everything he can get off the land and abandons it, the public should also contribute toward the costs of forestry, particularly in the case of lands where the direct money returns can not be expected to yield a reasonable profit on the whole cost. The pub-

lic's contribution might consist of such measures as cooperation in protection against fire and other destructive agencies, assistance in reforesting denuded land, modification of forest-taxation methods that are unnecessarily burdensome on growing forests, and assistance in the organization of long-term credits that would provide adequate capital for forestry enterprises at reasonable rates. Some of these forms of cooperation are now in effect, more particularly on the part of the Federal Government in the field of forest production and in planting. These and other measures, particularly if coupled with the requirement that the lands enjoying the benefits be kept productive, would help to stabilize the use of a very large area of privately owned land.

There is undoubtedly much privately owned forest land on which forestry would pay in the long run, but which the owners are not willing to hold for forestry purposes because of the long wait required to build up a timber crop, or because the prospect does not look promising on the basis of current economic conditions. It might be practicable for public agencies—preferably States or counties rather than the Federal Government—to take over such lands temporarily, with provision for return to private ownership when conditions become more favorable. Such an arrangement should include appropriate restrictions on subsequent management of the forest, and should provide for suitable compensation to the public for its outlay.

In spite of all that can reasonably be done to encourage private owners to hold forest land, there will still remain a large area of forest land which is so far submarginal for commercial timber production that private owners will not continue to hold it. Other forest land must be so restricted in its use in order to conserve water supplies, to protect the soil, or for other public reasons, that private owners should not be expected to hold it. These lands are gradually coming into public ownership through tax default, or by purchase, or in other ways. It appears inevitable that practically all of them will eventually be held by the public. Public agencies differ from most private owners in that their existence is continuing and is virtually perpetual, and in that their policies of land use need not be governed by the possibility of realizing direct profits from such use. These are ideal conditions for stability of forest-land use.

Stable use is reasonably assured for most of the approximately 100,000,000 acres of forest land that is now owned by the public. The national forests and national parks are not likely ever to be turned over to other forms of use, if public sentiment continues vigilant to safeguard them against schemes or measures endangering their integrity. The same can be said of the State forests and parks in those few States which have definitely and permanently dedicated them to forest use by constitutional or legislative enactment. Smaller areas of forest protecting the water supplies of many municipalities are also in public or quasi-public ownership, and are likely to remain forested in perpetuity.

There is other publicly owned forest land of which both the ownership and the future use are undetermined. The remaining relatively small amount of forest land on the unreserved public domain is still open to disposal, as is the land held by many of the States.

In very few States is there a definite policy with respect to the use of land that reverts to State or counties as a result of tax delinquency. Most of the States endeavor to return such land to private ownership, without regard to its economic possibilities and without any assurance that the process will not be repeated after a few years. In some cases a very vicious cycle is set up. In fact, it is a common experience in cut-over regions for this process of restoration to private ownership followed by abandonment, to be repeated indefinitely or until the land becomes so worthless that no one can be found to take it. You have heard from previous speakers of the extent to which that is going on.

One of the first steps that should be taken is to formulate definite policies for stabilizing the ownership and use of unreserved forest land now owned by counties, States, and Federal Government, and of that which is returning to public ownership. Such land should not be alienated unless it can be depended on to remain in private ownership and to be utilized in a way that will not conflict with the public interest. For most forest land this means that there should be some assurance that it will remain in forest. Most of it is the kind of land that is submarginal for private forestry. This should be definitely withdrawn from alienation.

Although very large areas of this sort of land may be expected to drift into the hands of the public sooner or later, a *laissez-faire* solution of the problem will be slow, inefficient, and costly. The forest cover on much of the land that has been abandoned has been ruined for timber production or even for protective purposes, and will have to be restored, at great expense to the public. The bankruptcy and piecemeal abandonment of forest lands in many communities has already thrown steadily increasing burdens of taxation on the forest and agricultural lands remaining in private ownership and has thus led to a constantly widening circle of abandonment and to serious economic distress. Systematic acquisition of the forest land that is bound to come into public ownership, following a careful survey of the physical and economic factors governing the use of the land, would prevent much of this distress, would tend to keep the better land in private hands, and would be less costly than to restore the forest after the land is devastated and abandoned.

Any attempt at this time to estimate the area of forest land that should be acquired by the public would be futile. All that can be said is that the area is very large—much larger than has been contemplated in any program hitherto proposed. Nor shall I attempt to say how the task ought to be divided between the Federal Government, the States, and the local communities. The division will naturally vary widely, depending upon the location and character of the land and the economic conditions of the individual States and their political subdivisions. In general, the Federal Government should acquire mostly those lands which either can be managed best in connection with existing national forests, or which have an influence upon the flow or the silting of interstate or navigable streams. Acquisition of other lands should be left mainly to the States, counties, and municipalities. In many States, however, which have large areas of forest land that are destined to return to public ownership, neither the State nor the local governments are now financially able

to undertake comprehensive forestry programs. The possibility of Federal cooperation, either through long-term loans to the States or in some other way, may well be given consideration.

Doctor Ladd has told us very comprehensively of the program in land utilization of the State of New York. That program is suggestive and constructive, and in the minds of many of us, it points the way. The present exceedingly limited Federal policy of acquisition for national forests is bringing about the substitution of forests for farms only as a very minor and incidental matter. It does not aim at buying out the farmers and thereby displacing the rural population already established within the purchase areas; and whatever effect it has on the submarginal-farm problem is chiefly through tending to prevent the expansion of cultivation as a result

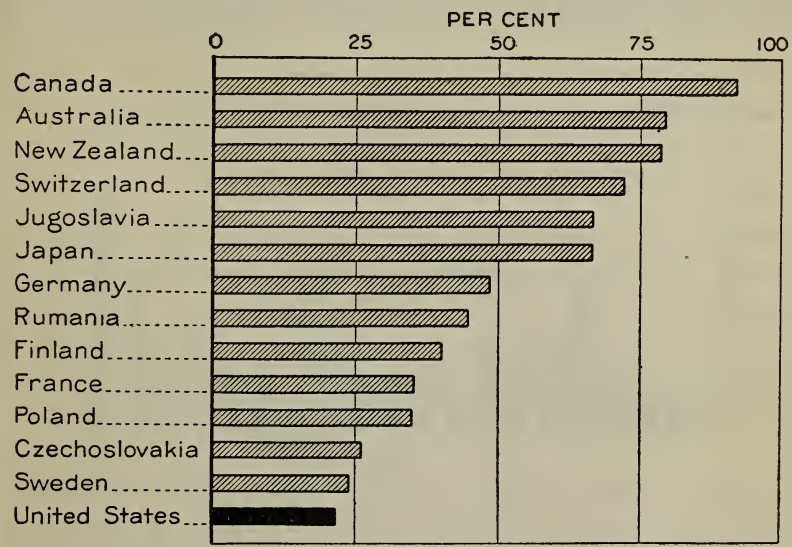

FIGURE 17.—PUBLIC OWNERSHIP OF FOREST LANDS IN COMPARABLE COUNTRIES CONTRASTED WITH PUBLIC OWNERSHIP OF FOREST LANDS IN THE UNITED STATES

In many countries a much larger percentage of forest land is owned by the public than in the United States. Most of the older countries are gradually increasing the area of public forests through purchase from private owners.

of the clearing of additional poor lands. It does, however, facilitate the gradual readjustment of agriculture by providing a purchaser, though at a low price, for submarginal farms whose owners want to migrate. Any Federal-purchase program planned with a view to reducing the submarginal-land problem through building up public forests should place first in importance the need of stabilized use for forest purposes of lands which otherwise are likely to be added to the area of low-grade farm lands. State policies of zoning might well supplement State and Federal policies of acquisition, as a means of restraining the conversion of forest lands into farms where farm development is undesirable from the public standpoint. Zoning combined with acquisition, if wisely planned and judiciously carried out may afford a means of gradually converting considerable areas of marginal and submarginal agricultural lands now mainly in

farms into sufficiently compact and extensive units of public forest to make their administration practicable; but the process of conversion must of necessity be slow and will involve many difficulties. Any wholesale rapid conversion of submarginal farm land into public forest land as a remedy for present overproduction does not seem possible. The long train of adjustments (individual, social, economic, political, fiscal, and institutional), involved in bringing about the change is too formidable.

The aim and the effect of forestry should not be to drive out the population from marginal regions, but to reorganize their life and sustain permanent communities on an economically sound and stable basis. Permanent forest production, with its opportunities for gainful labor in the woods and in the wood-using industries, and with the local markets for farm products which it creates, aids agriculture on the better land of the region. Often it means the difference be-

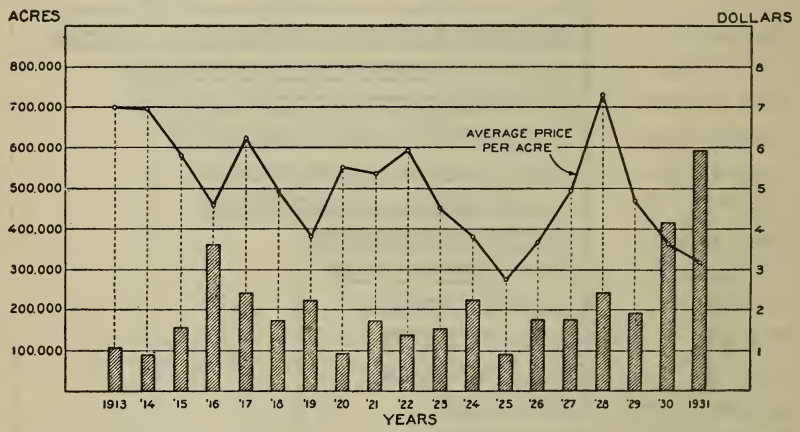

FIGURE 18.—FOREST LAND PURCHASED UNDER ACT OF MARCH 1, 1911, AND SUPPLEMENTARY ACTS

Under the act of March 1, 1911, and supplementary legislation the United States had purchased for national-forest purposes, up to June 30, 1931, a total of 4,007,386 acres of land in 17 Eastern States at a cost of $18,688,536. In addition to this, up to December 31, 1930, the national-forest area had been increased by 713,971 acres, chiefly in the West, through the exchange of privately owned forest land for national-forest land and stumpage.

tween success and failure for local farm enterprises. It furnishes cheap timber for use on the farms, provides work in seasons when farm work is slack, conserves water supplies for irrigation, stock, and domestic use, helps to protect agricultural lands from floods, silting, erosion, and extremes of climate, decreases the farmer's taxes by widening the tax base, and sometimes lowers the cost of government by creating more compact communities.

The public forests will ordinarily not be acquired or managed with commercial timber production as the primary objective. Wherever economic conditions justify, however, and particularly where local communities are more or less dependent on the forests, the public forests should be managed so as to furnish regular employment and, as soon as practicable, a steady output of material to support permanent local industries and a steady revenue to help finance local institutions.

What has been said has shown the vital import of productive forest-land use to the public, the increasing extent to which the public must inevitably participate in attaining it, and the inadequacy of its preparation to meet the task. It has shown the need for long-term planning if we are to use our land resources efficiently. Plans for forestry use must be closely correlated with plans for agricultural and other uses. Plans of the Federal Government must be coordinated with the plans of the individual States, and these in turn must consider the plans of local communities and of private owners. Comprehensive programs should be based, if possible, upon careful land economic surveys and physical and economic classification of the land. Without waiting for these surveys, however, sufficient facts are known now to enable the formulation of preliminary national and State programs of action. The formulation and adoption of such programs have been too long delayed. If it will, this conference can blaze the trail. The foresters will eagerly join in that attempt.

THE COORDINATION OF STATE AND FEDERAL EFFORTS IN THE DEVELOPMENT OF A LAND-UTILIZATION PROGRAM

CULLY A. COBB, *Vice-President and Editor, Progressive Farmer and Southern Ruralist*

The necessity for evolving and establishing a definite, long-time national agricultural policy in which the Federal Government shall assume the lead has long been regarded and urged by agricultural leaders as a first step toward bringing about those adjustments in farming programs fundamental to agricultural progress and to national economic safety. There can be no sort of long-time agricultural policy of practical value that is not, first of all, based upon a program of land utilization that will preserve the fertility of the soil, aid toward adjusting production to demand, and provide for the most profitable use of marginal and idle lands.

There can be no justice as between the industry of agriculture and other industries until a comprehensive national agricultural policy, conceived in the light of world conditions and based upon fundamental justice to all alike, comes to be an accepted and conscious responsibility of our Government.

In the formulation of economic legislation in the past, agriculture has had scant consideration. National safety, to say nothing of justice to the great agricultural group, demands a reversal of this policy. A reversal is necessary before there will be practical headway at permanent farm relief.

We now understand as never before that agriculture actually is the Nation's basic industry and that our social and economic well-being find their foundation in the soils of the farm. The records of the many depressions through which our Nation has passed all make this fact very clear. A careful reading of the records of past depressions as well as that of the one through which we lately have been passing makes it very plain that business does not come back; agriculture brings it back. It can hardly be regarded as a mere coincidence that, roughly speaking, the definite upward turn has always come with the harvest of crops and the release of new wealth thus created. But the fact that agriculture has always borne sick business

back to economic health again after business had wasted its substance in riotous living, usually has promptly been forgotten.

The farmer has not had a square deal. Had he shared justly in the national income through the past decade our business structure would have had a backlog of buying power on the farms that would have made the story of the recent past quite different. There would have been a tremendous reserve to draw upon in the day of need, and countless enterprises that have gone to the wall would undoubtedly have been able to survive. Neglect, coupled with adverse legislation in the form of aids to other groups, has had more to do with holding agriculture back and denying the farmer a just return than anything else. Relatively, the farmer is as efficient as the worker in any other group. Surely the results of his labor are as important as those of the laborer in any other group. Food and clothing and shelter are still the basic necessities of life. In civilized lands these are still the products of the farm. Fundamentally, nothing else is so important. When they are supplied there are no bread lines. Yet the farmer has been left very much alone to shift for himself, while others have had the privilege of traveling a path smoothed by governmental machinery, or apparently so smoothed for a time. Countless millions of idle walk the streets to-day in the richest country in the world because the riches of this country have not had just distribution. I can make clear what I mean by unjust distribution of wealth by simply stating that the 30 per cent of our population living on the farm have been receiving something less than 10 per cent of the national income, and that this 30 per cent are just as efficient as the 70 per cent who live away from the farm and yet look to it for meat and bread. Now all of this has a most definite bearing upon the problem of working out a practical policy of land utilization.

A national land-utilization policy as an aid within itself merely marks a beginning. Such a policy inevitably must be divided into regional policies. Then there is the matter of application. Both national and regional policies must be applied in the light of both economic opportunity and social need. Moreover, no policy, regional or national, can be accepted as capable of practical application that has not been worked out with the fullest possible consideration of world economic relationships and foreign competition, present and prospective. The matter of a land-utilization program is, therefore, all-embracing.

Congress at a single sitting can undo the work of a lifetime. Economic legislation of national scope brings an inevitable readjustment of the world economic set-up. Because of the scope and nature of the industry of agriculture, this in turn inevitably affects agriculture more than any other industry.

A little while ago we rather nonchalantly set ourselves to the task of erecting economic barriers designed more definitely than ever to prevent the entry of products of other countries into our own. We, in turn, have seen retaliation lose us markets of inestimable value, and at a time when we needed them most. It certainly has meant something to the wheat growers that tariff on imports from America into Germany, for instance, has been raised to the point of an almost absolute embargo.

We will have better cooperation from Congress, we will have less self-seeking, we will have more intelligent cooperation between regions and between groups, if we first know in a most definite manner what we want and then put it down in black and white in the simplest possible language. It is imperative that our program be fully understood. It must be clear at a glance that the simple end of national security is the fundamental aim.

Beyond this, the next and most urgently necessary step is complete coordination. There will be coordination or there will be little progress. Experience has already demonstrated this. The blame for the fact that we have had departments of our Government working at absolute cross purposes in the handling of lands and agricultural programs must be placed at the door of ill-conceived legislation. But that fact in no way mitigates the further fact that this working at cross purposes has been injurious to the farmer. Nor are we to be excused for continuing it because it has been so. Our experience, I would emphasize, makes it glaringly evident that there must be coordination of effort and singleness of direction.

A land-utilization policy may be ever so practical and yet, without unity of direction at Washington and the fullest cooperation of regions and States, it will avail us nothing. Without unity of direction in the national organization there will not be cooperation on the part of regions and States. Nor without it can we use to advantage the millions of dollars worth of machinery we have in the field in our colleges, experiment stations, extension work, and foreign service.

A few questions have been helpful in presenting the problem more clearly to my own mind. For instance, What is marginal land? Where is it? It is said that there are 1,000,000 submarginal farms. Viewed broadly, isn't the term "marginal" relative?

If we ask the Forest Service what to do with our so-called marginal land throughout the South the answer most likely would be "Trees." Well, is the right answer "Trees"? It is a partial answer, admittedly, but I am not at all convinced that this is the whole answer by any manner of means. If it is not, then what beside trees? It must be observed here that wholesale reforestation involves radical readjustment in taxation and the whole problem of private ownership.

We have seen the combine harvester force the beef-cattle industry into the hills. Where shall we grow our beef in the future, or shall we look to Argentina for it? What is the future of wheat in Russia? Will foreign competition force the American cotton producer to reduce his industry? If so, what would that do to the Middle West? What are our deficit crops? Are not these the only crops the expansion of which is to be encouraged? If so, how shall we answer those who are urging a back-to-the-land movement which has for its aim agricultural employment of idle millions? Shall we embark upon land-reclamation projects in the South? Is there economic excuse for it?

As a fine wool-producing region the plains country of west Texas apparently enjoys an economic advantage in that it is the low-cost country of the Nation. If that is true, what shall we say to the Montana producer? What about producing wool and mohair, which

are deficit crops in territories that some have thought adapted only to trees? Here, again, we run into the question of low return and taxation. Can we have successful rural credits without intelligent use of land?

In land settlement, local forces often are quite willing to overlook certain basic handicaps. Is not a unified land-utilization policy the only answer that will save the uninformed settler from wasting his money as he has done so often in the past? Admittedly, we shall have to find the answer to many of these questions in careful research here and careful study abroad. Research here and study abroad, however, must be made in the light of the problems and needs of the farmers themselves if agriculture is to be profitably served. Research here and study abroad to be effective must have common purpose and common direction.

There is a vast difference between serving the producer and serving the consumer. Their viewpoints may be and usually are radically different.

Let me say in conclusion that I have welcomed the opportunity to take part in this conference. Occupying the position I do, the matter of the coordination of the work we are discussing is of the greatest possible importance to me. It is quite impossible to cooperate with two or three groups who are working at cross purposes. If the economics of the situation compel me to take a certain position, I can support only the particular group whose plan squares with what seems to me to be the practical course. More than that, if I am to render honest service, I must oppose those moves that to me seem unsound. I can not vigorously oppose the program of one set of workers without doing more or less injury to all; indeed, to the whole cause. Enemies are quick to grasp opportunity arising out of divisions. They have used such opportunity to the great injury of agriculture in the past.

Every other agricultural editor and every other agricultural worker, indeed every citizen who would render constructive service, is in the same position I am in—a fact of very great practical importance. Controversy and confusion are inevitable if we do not have the unity which coordination alone can bring.

Agriculture is not lacking in statesmanship ability. It is not lacking in men of great minds and high purposes. It is our duty and our responsibility to do what we can to make it practically possible to bring the full and undivided force of this statesmanship, mental power, and high purpose to bear upon the problem before us. It is a privilege to have had part in a work to that end. I am hoping we shall get something done before we leave this meeting.

GENERAL DISCUSSION

Doctor Zon. Does Mr. Dana believe that forestry can solve the problem of reforestation of forests?

Mr. Dana. Not at all.

Doctor Zon. What is the other phase?

Mr. Dana. Fire protection.

Doctor Zon. What would be the effect of changing the taxation, lifting the burden from real property—would that be more important than any other thing?

Mr. Dana. It would help to encourage American forestation, but not necessarily bring it about.

Mr. Pratt. I think if we had a nominal taxation of the land and then a yield tax it would be the ideal condition, but no State seems to bring it about.

Mr. Cobb. Louisiana has it. I am not sufficiently familiar with it to explain it. All I know is that they do have a severance tax in Louisiana; that is, the tax that is paid when the timber is taken away from the land.

A Delegate from Louisiana. I believe Louisiana has a severance tax which is entirely apart from the yield tax, as we ordinarily conceive it. A severance tax is a general tax on the cutting of all the timber. I think perhaps what was referred to as part of the forest-tax system is their yield tax, which is applied to land that meets certain conditions and is classified under the forest-tax law. Such land pays an annual tax or a value fixed at the time of taxation and the yield tax at the time the timber is cut. Other plans have been tried in various other States, most of them under considerable limitation.

Doctor Zon. In our forest-tax laws, severance laws, in the Lake States (Michigan, Wisconsin, Minnesota), the principle is that the owner of the land pays nominal taxes, 5 to 10 cents, 5 cents plus 3 cents that goes into the fire-protection fund. In Wisconsin the owner pays 10 cents for every acre registered. It is optional with the owner; the State contributes another 10 cents to the support of the local government. Michigan has a similar law affecting something like 70,000 acres that has been in operation about five or six years. In Minnesota the law has been enacted about four or five years with some amendments and practically not a single acre has come under its operation. Wisconsin has made the best showing. I think at present 500,000 acres have been brought under the operation of the forest tax. The progress of reforestation under all the forest-tax laws is very slow. The reason is that the counties simply have to have so much money—they have fixed charges to support the highways, the schools, the jails, the hospitals. If a law makes exemptions it seems to slap additional taxes on some other property, and sometimes the same owner is hit by it. But the general feeling is that until you really find some other source of tax, like income tax, the assessor would exact as much tax as he can from real property, especially on the absentee owner.

Mr. Pratt. New York owns about 2,000,000 acres; they pay the tax to the county. I think that is different from any other State.

Professor Blackburn. Doctor Zon did not add that the last Wisconsin Legislature passed an additional law by which the State pays 20 cents an acre—the tax on land entered by the county—10 cents to the county and 10 cents to the local town for school government. The 10 cents paid to the county is to be used for direct reforestation purposes or for whatever purpose the county and State may specify, such as building fire lanes or fire roads or anything of that sort.

Mr. Dana. Mr. Frank, in his reference to my paper, asked a question concerning governmental forestation activities. What I had in mind was reference to local governmental activities, such as the abolishing of townships, the consolidation of school districts in the wild-land portion of the Lake States as a means of decreasing the amount

of money that the local units of government had to raise, and thereby decrease the amount of tax. I referred to the local and not the National Government.

Mr. PETERSON. In New York is that a contribution for a definite fund or is it an actual tax?

Mr. PRATT. Actual tax; they pay the same taxes as everyone else.

Mr. PETERSON. That is on the land that the State owns?

Mr. PRATT. Yes; on the land that the State owns.

Mr. ZON. I wish Mr. Blackburn would correct me further—if he is correcting me—in my belief that at the time of harvesting the crop, 10 per cent of the value of the timber cut is paid by the owner back to the State of Wisconsin and other places.

Professor BLACKBURN. I will add that in the case of the county-owned land the State gets 75 per cent of the tax and the county gets 25 per cent.

Mr. ZON. They tell us that the kind of land that the people register now in Wisconsin is sometimes waste or other low-grade land. Possibly that is a defect. The conservation commission was very liberal in accepting land under these new forest-tax laws, and the owner may have registered land which is really waste land. The conservation commission does not require the owner to do anything with that land. That is burned-over land. The State enters into a contract for 50 years, and such poor land, if it is registered and is assessed, after the owner pays his tax, amounts to about $5 in 50 years, not counting any interest or taxes. The State, on this poor land, would get about 10 cents on a dollar. The State enters it not for fiscal purposes only but really to upbuild forestation.

Mr. HERBERT. Mr. Cobb raised the question about the farmer. I was out in South Dakota two or three years ago, and I found that the farmers that wanted farm relief were the ones that left their implements out in the fields. They were mortgaged up to the hilt. The people who put their implements under the sheds and protected them wanted no farm relief.

Mr. CLARK of Wisconsin. It seems to be the open season for correcting Doctor Zon. My correction is a minor one. There is no representative of the Conservation Commission of Wisconsin present, I believe; but I do not want the impression left that they are holding the sack and are beaten, because they are not. Any land that is entered under the forest-crop law in Wisconsin and on which the owner does not practice approved forestation methods, approved by the conservation commission, during the preliminary trial period, can be thrown back on the tax roll in the ordinary way. If any land has been entered under the crop law, which is not suited to remain there, and the man who owns it has a reasonable time to practice the right kind of forestation by replanting or thinning, or by other methods, the land would simply go back to the tax rolls. They do not have to go through with this agreement of 50 years because they made the original entry.

Mr. ZON. I stand corrected only partially. It is true that the conservation commission has the right within five years to throw out any land registered if it thinks that the registration was not done in good faith. The conservation commission so far has not formulated a single requirement as to what constitutes forestation practices and I do not know what it has in mind. It is only in cases of real fraud,

of land that is held not for forestation purposes or for summer resorts, but until a chance comes to dispose of that land. Do you gentlemen stand corrected?

Mr. CLARK. I stand corrected.

(NOTE.—At this point George Pratt, president of the American Forestry Association, stated that he was compelled to leave the city and would therefore not be able to continue serving on the committee on summaries and conclusions. Accordingly, Mr. Franklin Reed, secretary of the American Society of Foresters, was named to serve on the committee in place of Mr. Pratt.)

Mr. BLACKBURN. I simply wanted to add for Mr. Zon's information that the conservation commission at its last meeting did formulate such a policy.

Mr. ZON. I stand corrected on the strength of the reports submitted by the committee.

Mr. PETERSON. I should like to ask these gentlemen who seem to be so clear as to what is done in Wisconsin: If this land is designated to be forest land and is planted as such, and continues such for a series of years, and then goes back to the State or to the regular tax roll, and thus becomes the possession of the State, does the State or county take any obligation as to keeping up the forest planting? We, in the West, have a penalty tax for clearing up obnoxious weeds, which was not fought through when it was passed, and I do not know where it is going. For instance, we have a great alkali plain worth about $3 or $4 an acre, heavily covered with white top-fallow grass. It is estimated that it will cost $50 to clear it; the land will be worth $5 when cleared. The county commissioners have a right to put a tax on this for clearing it, which they have done in some cases, and charged it against the man's taxes. Of course, if the charge becomes more than the land is worth, then the county has the land. Then, the question is raised, has that county a responsibility of keeping the land clear? If it taxes this land, does the county or the State have the responsibility of keeping the forest land up?

Mr. FARMER. Who has the answer to the question?

Mr. ZON. If nobody else dares answer, I will. That matter has come up. There are some provisions of the law to the effect that if a man purchases the land and pays taxes for 10 or 15 years (the law is a liberal law, and the taxes are nominal) and then he decides to withdraw it and may have a chance to sell it for a summer resort or something, he merely pays up the general taxes which would be levied in the normal course of events on that property.

Mr. PETERSON. Is that retroactive? Does he pay back taxes?

Mr. ZON. Yes; but it has never come up yet. I think if any such thing should happen, the State would not assume any responsibility as it has already taken over the forest. I am open to change.

Mr. FARMER. Are any of the gentlemen from New York here who might perhaps answer the question as they apply it in New York State in their work?

Mr. PRATT. I am from New York.

Mr. PETERSON. He said if land goes over to the State does the State continue to pay the taxes?

Mr. PRATT. This has happened in New York State this fall: They appropriated a bond issue of $20,000,000 to take over all the land

outside of the park area developed in the northern part of the State. The State is gradually buying back that land and is going to put it into forest. They are going to improve the land they take over and plant trees.

Mr. PETERSON. They do not continue to pay taxes to the county on that land, do they?

Mr. PRATT. Yes; they pay taxes on it.

Mr. ZON. The State pays taxes to the county?

Mr. PRATT. They pay the same as anyone else.

Mr. ZON. In Michigan also the State pays 5 cents.

Mr. TAYLOR of New Hampshire. Did I understand Mr. Fowler to say that he now has pine trees, planted in 1926, which are 6 inches in diameter and 20 feet high? To a New Englander that sounds like a tall story.

Mr. FARMER. I think that is what he said; didn't you understand so?

FRANKLIN REED. He said that, and although I have not seen his trees, I can vouch for it. It is no uncommon thing down there for pine trees to get that big.

Mr. TURNER of Georgia. I want to verify the gentleman's statement. We are conducting a 10,000-acre pine forest in Lowell, S. C. Upon that land we now have trees that are as large as the trees Mr. Fowler mentioned. Seed was planted in the seed beds in the spring of 1926, the trees were planted in 1927, and they are now as large as those Mr. Fowler mentioned. I was in New England this summer in the vicinity of Petersham, Mass., had the privilege of going over the Harvard Forest Station. I came back with a greater respect and regard for the courage of the New Englander than I ever had before.

Mr. ZON. If we want to grow trees for small products, pines of 20 or 25 feet make a very good crop. If you want to grow saw timber, New England will beat the South. In all southern countries, animals, even people, develop very quickly and then deteriorate. Take white pine for instance. In 100 years, in Michigan, you will have a stand. Even now you can find 40,000 or 60,000 board feet to the acre 100 years old. With longleaf pine at the same age, 15,000, 16,000, or 18,000 board feet to the acre is a pretty good stand. So, for the long pull, New Hampshire is all right, but for a short pull the South will beat it.

READJUSTMENTS IN TAXATION MADE NECESSARY BY CHANGES IN LAND UTILIZATION

Presiding—DR. ARTHUR W. GILBERT, *Secretary, National Association of Commissioners and Secretaries of Agriculture*

Doctor GILBERT. I understand you had a very valuable conference yesterday. Your program indicates that we shall have another today. I have the honor to represent the commissioners of agriculture—a group which does not ordinarily meet collectively with you. You are acquainted with the commissioners in your own respective States and others; I trust you will agree with me that ours is an organization which has opportunity to exert considerable influence

in helping to carry out such a program as is being elaborated during this 3-day conference. The commissioners of agriculture not only administer most of the agricultural statutes in their respective States, but in addition carry on a considerable amount of promotional work in their field. I am sure you will agree with me that not only is this important from the standpoint of educational work in our respective States, in our State colleges, and elsewhere, but it also has an important bearing on possible changes in State statutes and their administration. So we like to feel that the commissioners of agriculture are as much interested in the outcome of this conference as anyone else. I have been attending the annual convention of the commissioners of agriculture which has been meeting in Kansas City during the last three days, and I bespeak for them a most hearty cooperation in the work which this conference is trying to do.

FISCAL PROBLEMS OF LOCAL COMMUNITIES RESULTING FROM CHANGING CONDITIONS OF LAND UTILIZATION

GEORGE S. WEHRWEIN, *Professor of Economics, University of Wisconsin*

Fiscal problems of local governments take particular forms because of special conditions and peculiar governmental relationships. For instance, the problems of the counties in Michigan, where tax-delinquent land reverts to the State, are different from the problems of the counties in Wisconsin where such lands revert to the county. In the former, the burden of carrying out a land policy falls largely on the State, although the effects of delinquency may fall heavily upon the local governments. In Wisconsin the county bears both burdens until the State helps with legislation designed to aid the counties.

In Wisconsin the relation between the town and county is such that the county is the particular section of local government which carries the heaviest fiscal burdens rather than the town or the State. A few illustrations will make this clear. For instance, the entire tax as levied by the State, county, and towns is collected by the town treasurer. He pays the State and town taxes, including the school taxes, to the respective governments. The remainder is turned over to the county treasurer together with reports of all the unpaid taxes. The task of collecting the delinquent taxes now falls upon the county treasurer. In normal times and under normal conditions, when owners are anxious to redeem their property or buyers are eager to buy tax certificates, the county soon gets all the taxes plus the penalties, and it gains rather than loses by such an arrangement. However, at the present time, county officials are overworked trying to handle all the records of the delinquent lands; the county has failed to collect taxes on some lands for more than 10 years. The shortage of funds falls directly on the county. The law provides that after three years of delinquency, the county may take title to the land but it is not compelled to do so.

The peculiar position of the county is illustrated by several other laws, all designed to give State aid to local governments. A mother's pension act was passed stating that two-thirds of these pensions should be paid by the county and one-third by the State. But sub-

sequent legislatures have never appropriated sums large enough; the State in recent years has contributed about 2 per cent and the counties 98 per cent. The school equalization law granting State aid to the weaker schools requires the county to match the State's donation dollar for dollar, placing another burden upon the county as a unit of government. A final example is the forest-crop law under which the State promises to pay 10 cents an acre to match the 10 cents an acre paid by the private landowner; both sums go to the town treasurer, however. Counties may enter land that they have acquired through tax delinquency or otherwise under the law, and may practice forestry, but the State's donation goes to the town as before. The last legislature amended the law by granting an additional 10 cents directly to the counties, to help them bear the costs of reforestation and administration.

To make this discussion specific and vivid, I propose to confine this paper to the situation as it has developed in the Lake States and more specifically in Wisconsin, where the peculiar town-county set-up of government which I have sketched makes the load of the county particularly grievous.

Strictly speaking, the situation in the Lake States is not due to changes in land utilization. Much of the land in question in the northern portions of Minnesota, Wisconsin, and Michigan has not changed its use; it has never had any utilization since the timber was removed. It is in a condition of arrested development, or rather of arrested expected development. The southern part of Wisconsin passed into agricultural use about the time of the Civil War. Here forests were removed to make room for farms. In another belt running across the middle third of the State, commercial logging removed the timber, but farms came in fast enough to prevent any significant accumulation of cut-over lands. In the northern part of the State the high-powered sawmill removed the timber so fast that some 13,000,000 acres of cut-over land resulted. This is land waiting for a purchaser who will bring it into productive use.

Farming was the only productive use considered. A reforestation program was blocked by adverse court decisions; besides, public sentiment wanted the stumps removed and farms developed to create a new "dairy land."

During the decade of the World War about 20,000 acres were cleared annually in northern Wisconsin. Colonization and settlement were pushed and encouraged by private and public agencies and, in many cases, land submarginal for agriculture was cleared and farmed. The agricultural depression became the acid test. Thousands of acres of poor land have been abandoned. It should be added, however, that many inexperienced farmers and those not financially able to carry on during the "grubstake" period of their careers also abandoned their farms, even on land not submarginal for agriculture under normal conditions. But farms were being abandoned even before the depression, and the poorer soils have always produced the bulk of the casualties.

Rapid and planless agricultural development also resulted in a good deal of scattered and isolated settlement. There are a large number of fair-sized and compact settlements throughout the northern part of the State, but also many isolated farms. This,

again, is partly the consequence of legislation ostensibly designed to help settlers. Laws were passed which made it mandatory for the town to build a road to any settler who called for one—at least local officials interpreted the law to mean this. Land companies took advantage of this law and located their first settlers considerable distances from the main highways, and then helped the settlers to call for a road. After the road was built it was easier to sell the rest of their land. As long as rapid settlement followed and the community was established within a reasonable time, no great harm was done. But if this development did not materialize, it meant expenditures for roads for a few isolated settlers and abandoned roads and wasted money if the settlers moved out.

The same story can be repeated for schools. The State is committed to the policy of providing a school for every child or transporting it to a school at public expense. The abandonment of farms has tended to increase the difficulty of making settlement scattered where it was more or less compact before. Some schools have entirely disappeared and others have only a few children. The cost of educating a child naturally is in inverse proportion to the number of children. In the two schools with less than 6 pupils each, in Ashland county, the average cost per pupil was $386 a year; in the four schools with 40 to 50 children each, about $41 a year. However, the small school is a problem in every county of the State and is not peculiar to the north. But since the tax base in the newer parts of the State is so much smaller than in the wealthier districts, the problem is the more acute. Schools and roads are by far the largest single items of public expense for the local governments and, therefore, are important factors in the fiscal burdens not only of the towns and counties, but also of the State through the system of State aids that has evolved.

Another form of land utilization that has become very important in some localities is recreation. Land on streams and lakes is very desirable for summer homes, cottages, hotels, and resorts. During the boom of 1924–25 good "frontage" on the lakes was advertised as high as $25 per foot. In the two best resort counties a recent study found that 4 per cent of Oneida and 8.5 per cent of Vilas Counties have been absorbed for resort purposes. But in addition to the land actually used there are about 73,000 acres in these two counties that are being held and taxed on the basis of future development for resorts and summer homes. That is an important factor because these lands, like the cut-over lands, are waiting for development. These used and undeveloped lands together represent a very valuable part of the tax base of these two counties because of their high value, the high value of their improvements, and the general low rate of tax delinquency on recreational lands. For instance, they represent 56 per cent of the entire real-estate tax base of Vilas County and 21 per cent of Oneida County—that is, including the cities. But these two counties are the best in the State; others are not so fortunate.

The third type of valuable land is that containing the remaining merchantable timber—a small area of so-called virgin timber and about twice as much merchantable second growth. These three types of land—farms, recreational lands, and forests—are the three

productive and tax-paying types of land of the northern counties, and they occupy about 30 to 40 per cent of the land area of the 17 northern counties. The remainder, or 60 to 70 per cent, is in the form of waste, marsh, and cut-over lands.[1] It is this 60 to 70 per cent of the land area that is causing the fiscal troubles of the local communities. The study of Bayfield County lands, by ownership and delinquency, indicated that farms, resorts, and valuable timber had from 8 to 10 per cent of their taxes delinquent, and in most cases these taxes were paid before the owner lost his land. However, on the cut-over land the delinquency ranged from 27 to 60 per cent, depending on the type of ownership, and very little such land was redeemed by the owner or bought for taxes by private purchasers.

Tax delinquency has been charged to the present depression in agriculture, and no doubt much of it is due to this cause. But it was inevitable, although this fact was obscured by the period of inflation before and during the World War. It could not have been avoided on the land submarginal for agriculture, unless this land had been used for forests and recreation, and no effort was made to use it for forests. Until recently sentiment was all in favor of private forestry, but private enterprise did little or nothing to keep lands on the tax rolls until the forest-crop law was enacted in 1927. Since then 402,833 acres have been entered under this law; but this is only a small fraction of the 13,000,000 acres of cut-over lands for which a productive utilization must be found. This law does not permit the entry of any land considered suitable for agriculture or recreation; the conservation commission is taking steps to reject all land submarginal for forestry.

This simply means that local governments must expect to have on their hands thousands of acres of swamps, marshes, and sandy and rocky soils, which are submarginal for forests as well as for agriculture. No taxes can be expected from these lands, and repeated tax delinquency will eventually make them the property of the county.

In the second place, tax delinquency was inevitable because the period between the time when the original timber was cut and the time when the land could be put into farms was too great, supposing that the land could have been used for farms. Even at the best rate of development Wisconsin ever experienced, it would have taken 400 years to settle the cut-over lands of the northern area; or if only the best lands were to be settled, at least a century would have elapsed before the last acre would be ready for the plow. No owner or set of owners could afford to pay taxes, interest, and other carrying charges with the hope of recouping all these costs in the selling price of the land. It is said in northern Wisconsin that even in normal times a speculator usually lost money if he had to hold land for more than five years.

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[1] The Forest Service estimates the forest and cut-over land area of the entire State of Wisconsin at 17,800,000 acres, of which 12 per cent is virgin timber, 21 per cent merchantable second growth, 29 per cent small second growth, and 38 per cent nonstocking. Approximately 13,000,000 acres are therefore in the last two classes. It is necessary in this paper to refer to the 17 northern counties because of a special study made here. These counties had 7,408,858 acres of cut-over lands in 1928, or 65.2 per cent of their area. See the following publications:

HARTMAN, W. A., and BLACK, J. D. ECONOMIC ASPECTS OF LAND SETTLEMENT IN THE CUT-OVER REGION OF THE GREAT LAKES STATES. U. S. Dept. Agr. Cir. 160, p. 24. 1931.

HIBBARD, B. H., SWENEHART, J., HARTMAN, W. A., and ALLIN, B. W. TAX DELINQUENCY IN NORTHERN WISCONSIN. Wis. Agr. Expt. Sta. Bul. 399, p. 6. 1928.

There is general agreement on the statement that land not suited for agriculture should be kept out of this use, and also that land suited for this purpose should not be put into forests. That is the purpose of the forest-crop law, and is the test applied to areas being considered for State and Federal forests and to the lands for sale by counties which have taken title to tax-delinquent lands. However, under the present condition of agriculture, the improved technic and the slowing up of population growth, not all the land physically suitable for farming will be needed for this purpose. To rule it out of forest use with the hope that it will somehow become farm land simply puts it on the waiting list of nonincome-producing land headed for tax delinquency.

The hope for productive utilization of the land is growing with the development of public forests. The Federal Forest Service has been able to secure all and even more than the land allotted to it. The State of Wisconsin is acquiring land, and several of the counties, notably Marinette County, are blocking up into county forests the lands acquired through tax delinquency. But public land is exempt from taxation, and every increase in public land means a decrease in the area of private taxable land. This adds to the fiscal problem of local communities. I said they could take title after three years, but counties have refused to take title to delinquent land in the vain hope that the owner will redeem his land or the tax certificates will be purchased by private individuals. Some counties have reduced the assessment on the cut-over lands to induce owners to keep on paying taxes; others have compromised, saying they will clear the slate if the owners will pay a lump sum.

This willingness to compromise, to use all possible means of keeping land on the tax roll instead of taking title promptly, is due in part to the relation of the town to the county in the Wisconsin form of government. The town can turn over to the county all tax-delinquent lands, but this privilege ceases when these lands are converted into county or other public lands. For this reason the chairmen of the towns, when they are assembled as members of the county board, generally oppose taking tax title to lands within their towns. Remember, under our system of government the chairman of the town, who is an executive officer there, becomes a legislative officer when he goes to the county seat of the county board. The town chairman always represents the interests of his town, therefore he will block the attempt to form any forest-creating tax-exempt land within his town if he can. On the other hand, the county is financially better off if it takes title promptly and has less bookkeeping to do, but these lands are not under full control of this unit of government. The county can resell the land to private individuals for farming or forests, or to the State or Federal Governments, or enter them under the forest-crop law for county forests. Recent reports from the northern counties show that the taking of tax deeds is gaining ground.

With the above as a background, we can briefly sketch other fiscal problems of local governments.

(1) There is the shrinking of the tax base through delinquency. Because of the peculiar town and county set-up of government the burden of delinquency falls primarily on the county.

(2) There is a shrinkage in the tax base itself because of the decrease in area of the lands of intensive utilization and high values. During the last decade the small area of merchantable timber was being cut at the rate of about 200,000 acres a year. How much of a shrinkage in the tax base this can make is indicated by some figures obtained in Bayfield County. A 40-acre tract with exceptionally fine merchantable timber was assessed for $19,450, whereas a cut-over 40 next to it was assessed for $280. The taxes on the timbered 40 were $572, on the other, $8.24. Not only is there a reduction in taxes, but often lumber companies let their lands go delinquent as soon as the timber is cut, and in some instances, a year before it is removed. Abandoned farms are another source of loss in taxable acres and, as a rule, the land also becomes delinquent unless the farm reverts to some land company or mortgage company which keeps up the taxes in order to hold the property. If there is no increase in the demand for recreational property, there is danger of a decline in the value of the undeveloped recreational land.

(3) There is a shrinkage in the value of all lands, especially of the undeveloped lands. This decline is indicated by the general decrease in the assessed valuation of the northern counties.

(4) There has been a tendency to shift the burden of public expenditures from the poorer lands to the income-producing lands—the farms, resorts, standing timber, and especially the cities and villages. The increasing burden on such lands in itself induces more delinquency. It also means that there is a shift of the burden from the poorer towns to those with farms, forests, and resorts.

(5) In spite of a declining tax base, the burden of government has not been reduced; in fact, in most counties it has increased. New demands have been made upon local governments, and in most cases the county is made the unit. It is significant that we have county agents, county nurses, and county hospitals, etc., thus using the very unit of government which, in Wisconsin, has the most fiscal difficulties. Roads are making heavy demands upon local treasuries, especially in the tourist sections, where the demand for improved roads is loud and insistent. Between 1915 and 1928 the county-road levy for road purposes of Marinette County ranged from 28 to 65 per cent of the entire county levy. In the years 1927–1929 the average annual expenditures for highways and bridges in Ashland County were almost 28 per cent of the total revenues of the county. The figures for three other counties are 42, 38, and 47 per cent, respectively.

Some of these expenditures are due to the fact that during the period of expansion debts were incurred and now have to be paid. Schools were built with future expansion in mind which did not materialize. Roads were laid out and towns were created to suit the country as it was expected to be, and retrenchment is not easy.

One remedy suggested is the consolidation of towns and counties. This will undoubtedly help, but to be really effective it must be accompanied by changes in the forms and functions of local government. The cost of general county government is about 20 to 22 per cent of the total county receipts. Charities and corrections range from 18 to 30 per cent and protection about 6 per cent, whereas roads have taken from 30 to 40 per cent in most of the counties

studied. Consolidation of counties can touch the first item—general governmental costs—most of all, but the other items are more or less independent of the size of local governments.

Rearrangement of towns and counties is necessary if public reforestation programs are carried out. Every county will have publicly owned land within its borders, and some of the towns may find that three-fourths of their areas will consist of Federal, State, or county-owned lands. The remaining one-fourth may be too poor, or have too few inhabitants, to justify a town government.

For this reason the Wisconsin law permitting the zoning of county lands promises to be of considerable value. This law gives to the county boards the power to designate the areas to be used for agriculture, forestry, and recreation, and applies to private as well as to public lands. A recent decision of the attorney general gives his opinion that the law can legally be carried out. A properly zoned county not only would benefit the residents personally, but would reduce the cost of government. In the agricultural areas there would be a compact, closely knit settlement with schools, churches, cheese factories, and a market within easy reach of every settler. Roads can be laid out to suit the needs of the community at a small cost per person, and schools of the proper size can be maintained at a low cost per pupil. It might be a good thing to empower counties to move scattered settlers at public expense, and one or two such cases are on record in Wisconsin. A compact community of this type would have a minimum of unused land and therefore no tax delinquency worth noting.

In the forest zone there would be a minimum of agricultural settlers. This reduces the fire hazard and decreases the danger from stray pasturage and damage by game. Roads would be very few and probably laid out to serve as fire lanes as well as roads. Schools could be located to secure the maximum of pupils but would be very few. Thus two of the main items of cost—namely schools and roads—would be reduced to a minimum. The size and shape of the towns would have to be adjusted to secure an adequate tax base if there is much publicly owned forest land.

In an area predominantly recreational, there would be very valuable land and improvements, giving a town an adequate tax base. The expenses for schools would practically disappear because the children of summer residents attend city schools in the winter. Roads are important, especially in summer, but could be of the kind and built of the material to suit summer travel. In each case the size and function of the unit of government can be suited to the utilization of the land with a substantial reduction of the fiscal burdens upon towns and counties.

We have discussed the possibilities of zoning with the present town-county arrangement kept intact. Much more could be accomplished if changes were also made in the forms and functions of these governments. For instance, a county-unit school system making the county one large school district with the entire county as its tax base ought to supersede the present individual school-district plan. This paper is restricted to the relationship between land utilization and the fiscal problems of local government; time will not permit the discussion of the other phases of this problem.

ADJUSTMENTS FOR GREATER ECONOMY IN LOCAL PUBLIC EXPENDITURES

JOHN C. WATSON, *Director, Department of Taxation, Illinois Agricultural Association*

Important changes in the purposes for which land is utilized are produced as much by economic pressure as by deliberate choice. The great increase in soybean production in the central Corn Belt during the last two or three years was probably dictated quite as much by the low prices of oats as by concern about the nitrogen content of the soil. Sharply higher freight rates in 1921 and 1922 stopped the rapid increase in production of potatoes, in spite of their fine quality, in the western portions of the Dakotas.

Lands may be classified as marginal for one or more of many different reasons. They may become marginal by a loss of fertility that makes them unable to produce profitable crops. They may be fertile but be unable to return a profit in crops of low-priced, heavy commodities which, like the Dakota potatoes, require long-distance shipment at high cost. When infested with weeds or with insect pests, some lands may become unprofitable for certain crops. Other reasons compelling changes in the use of land could be cited. Examples of such changes which have already taken place or are now in progress could also be given.

Inequitable taxation is not usually mentioned as one of the important reasons why lands once valuable and profitably used become marginal and lose much of their value for the uses previously made of them. It is probable that no one will seriously question the unfavorable effect during recent years of the general property tax on owners of real estate. For 10 years or more farmers have been harassed by increase in the purchasing power of gold, accompanied by a corresponding and often greater decrease in the price of farm commodities, and by an almost constantly unfavorable ratio in the exchange value of farm commodities. As if these burdens were not enough, farm lands have tumbled in value not merely from the inflated values current in 1918 and 1919, but even, in many States, below pre-war values, in some States to points as low as the values current from 1905 to 1908. In spite of such rapid losses in values, and surely adding to them, general taxes on farm property increased rapidly during and for a few years after the World War, increased more slowly during the last few years, and in most of the States have receded little, if any, from the highest point. The almost exclusive dependence of our American States upon grossly inequitable general property taxes for most public purposes is one of the important reasons for the great increase in marginal production by agriculture in recent years.

One example, drawn from the State of Illinois, may be given to show how unfair to agriculture almost exclusive dependence upon the general property tax can be. All authorities on taxation agree that the portion of the cost of government which can fairly be laid upon any class of people or property must be related in a reasonable way to the ability of such persons or property to carry the load. How does the taxing system of the State of Illinois satisfy this test?

In the year 1921 about 17 per cent of the total population of the State were living on farms. If we include other households who did not live on the farms but who received a portion of the farm net income in the form of cash or share rent, we have probably about 22 or 23 per cent of the population receiving the total farm net income. This total included all net returns not only from the property used but also from the labor, skill, and management of all farm operators and the unpaid labor of members of their families in the production of such net income, and included the value of all farm commodities consumed on the farms. After deducting 30 per cent of all taxes paid by agriculture, the National Bureau of Economic Research estimated total farm net income in 1921 as 4.4 per cent of the current or realized net income of the entire population, not including any allowance for the net rental value of farm residences occupied by owners. Farm taxes not deducted would certainly exceed the net rental value of farm residences occupied by owners. In 1921, farm property paid about 24 per cent of all taxes for State purposes, the only purpose for which a fair comparison can be made.

We may summarize this example as follows: Seventeen per cent of the entire population of Illinois and the farm property they operated and occupied, produced, for not over 22 or 23 per cent of the population including themselves, not more than 4.4 per cent of the total net income of the entire population. It would be unfair to credit all of the net income to the property operated, but if it were so credited it would still be grossly unjust to require property producing so small a portion of total net income to pay 24 per cent of all taxes for State purposes.

Since 1921 the farm population has declined to about 13 per cent of the total population of the State. Gross farm income increased somewhat in certain years up to the year 1929, since which time it has fallen below the gross income produced in 1921. We may reasonably believe that economic necessity has cut many production costs on the farms, so that up to and including the year 1929 farm net income before payment of taxes probably increased somewhat over that received in 1921. Farm taxes have also increased, so that net income after payment of farm taxes in any year up to 1929 probably varied little from what it was in 1921. Nonfarm income greatly increased. In the years 1930 and 1931 farm net income has surely fallen much below the figure for 1921. Other income also has fallen heavily. Farm valuations have fallen somewhat relative to other property, but we may summarize the present situation about as follows: 13 per cent of the entire population of Illinois and the farm property they operate and occupy has produced, in recent years, for not over 18 or 19 per cent of the population, including themselves, not more than 4 or 4½ per cent of the total net income of the entire population. Farm property is still required to pay at least 20 per cent of all taxes for State purposes.

Such is an approximate comparison for the State of Illinois. A similar comparison, sometimes indicating as great a degree of unfairness, could be made for other States.

The subject assigned to me is, Adjustments for Greater Economy in Local Public Expenditures. Lest it be thought that this topic

has been ignored thus far, it is proper to say that discussion of the general problems of taxation is closely related to the subject assigned. Personally, I have little faith in any system of taxation which exempts any large percentage of the population from direct participation in meeting the cost of government. In any populous industrial State or community almost exclusive dependence upon the general property tax exempts therefrom a large portion of the population. Again let the State of Illinois serve as an example. Every part of the State has a very large number of people who own no real estate and little or no tangible personal property but who receive substantial income from intangible property or from wages, salaries, fees, and commissions. These people have taxable capacity but pay little or no direct tax.

In the State of Illinois as a whole there can be no doubt that nontaxpaying voters make up the greater portion of the adult population. This is a system of wholesale exemption which pauperizes the civil conscience of the recipients of its favors. It is easy to train people to believe that they have a vested right to all the benefits and protection of government without any direct contribution to the costs thereof. It is easy for nontaxpayers to sooth their consciences with the doubtful claim that they pay their full amount of taxes indirectly.

It is in the greatest cities that the general property tax exempts much the larger portion of the adult population. In Chicago the adult population numbers more than 2,200,000. A few years ago all the real estate in the city, according to real-estate dealers, was owned by between 210,000 and 215,000 persons and corporations. This is a ratio of one owner (if all owners are counted as persons) to each 10 persons of the population. If every owner were married it would mean one person to each five households. In 1930 less than 27 per cent of the population lived in their own homes. In personal property the record is far worse. Out of about 900,000 households, corporations, unincorporated industrial and mercantile establishments, and offices, in the city of Chicago, not over 40,000 in any recent year have paid any personal property taxes. And let me add that of the 1929 taxes (which were collected only in May, 1931), on real estate and personal property in the city of Chicago, to-day less than 15,000 units of personal property taxes have been paid.

Is it any wonder that Chicago has had a checkered record of misgovernment, extravagance, and corruption? Is it any wonder that real estate has been so overburdened with taxes that tens of thousands of the owners are unable or refuse to pay the taxes levied thereon? The situation is little, if any, better in New York City, where tenancy is higher and where high personal exemptions in the income tax place most of the population in the class of nontaxpayers.

Wholesale exemption of the population from direct participation in paying for the cost of government is un-American, is not consistent with the principles of a democracy, and does not promote economy in expenditures. It promotes favoritism, evasion of civic responsibility, misgovernment, and extravagance. If continued, it can lead only to destruction of the values of real estate and a complete breakdown of the general property tax.

Owners of real estate and other heavy-taxpaying property can not escape carrying most of the burdens of taxation until they secure a readjustment and a more equitable distribution of the cost of government. But owners of real estate, especially farm real estate, can do themselves and their communities a substantial service by urging consolidation of taxing districts, fewer and more competent officials, and the use of approved business methods in the administration of public functions. In some States certain of these changes must await constitutional amendments.

It is not too much to say that in the organization of their local taxing districts, most States, especially the older States, are still in the days of the slow and lumbering oxcart that painfully made its way over unimproved roads, rather than in the days of the swift motor car on modern and well-kept highways. Why is this true? There are probably other reasons, but the most important are the opposition of an army of petty office holders; unwillingness to lose control of the seat of government, which is regarded as a business asset; and the almost universal idea that there is always some advantage in maintaining so-called local autonomy.

In all of the older States the size of the counties was determined by the distance that a horse could be ridden or driven from a remote portion of the county to the county seat and make the return in a single day. After bitter battles in many counties, courthouses and jails were built, and the cities and villages selected as county seats acquired what they regarded and still regard as vested and inalienable rights. The constitutions of the States established a certain number of county officers, regardless of whether the duties of these officers were such as to require all of their time. The coming of the motor car and hard roads have had little effect as yet in consolidating counties. Many counties are so small and have such small values in taxable property that the cost of county government is excessive. Consolidation would reduce the cost of maintaining unnecessary courthouses and jails. Each consolidation would dispense with one set of county offices and officers. Under a proper system of budget control and auditing, supervised by State officers, better administration than is possible in the present system could be secured. And I use the word "supervised" here with some hesitation. I don't mean dictating.

In old times the town meeting in New England had a real function. It serves few, if any, real needs in modern times. Most town meetings are purely perfunctory. With properly controlled and supervised county government and county assessors, and larger units in the improvement and maintenance of highways, referred to in a later paragraph, townships could well be abolished.

Belief in the advantage of local autonomy is most strongly entrenched in the small taxing districts, and nowhere more strongly than in the townships. The impossibility of securing a uniform assessment throughout a county through locally elected assessors has been so often pointed out as to require no comment. Even with the most competent local assessors, as many standards of value would be used as there were assessors. Town collectors of taxes have been found to be a needless expense and their office has already been abolished in most States.

In early years the township or district was usually a necessary unit in improvement of the highways. In these modern days of powerful tractors and highway machinery the township unit is wholly inadequate. Roads are no longer purely local. Traffic surveys in various States have proved that there are few highways, few unimproved highways even, that are not used by more persons from outside the locality than from the locality itself. Hence the rapidly crystallizing sentiment that the improvement and maintenance of highways is a function of the county and State. Hence also the rapid increase in the requirement of road-user taxes in the form of license fees and gasoline taxes and the use of the funds so collected in improving and maintaining a constantly increasing mileage of highways.

Public sentiment seems to be moving rapidly to the decision that the proper unit in highway expenditures is the State, with the counties as subdivisions. It is only in this way that a well-coordinated system of highways can be established, in which the roads to be improved and the types of improvement will be determined solely by traffic needs. The increasing requirement of road-user taxes entitles them to the most efficient use of the funds so collected. The township or road district is not an efficient unit for this purpose. Abolition of local highway units might not result in lower expenditures, especially at first, but it should result in more rapid improvement and better maintenance of the highways. It is still true that road users pay for good roads whether they have them or not.

In most States the distance that a child could be expected to walk to and from school determined the size of the elementary school districts. In early days large families were the rule rather than the exception. Even small districts usually had in the winter term 30 or 40 or more pupils of all ages in an ungraded school. It was a rather general practice to have a 7-month session in country schools each year. The spring term was usually attended by younger pupils, and the same was often true of the fall term, or the first two months of the winter term if a single fall-and-winter term of school was offered.

The passing of large families has left most country schools comparatively small. Many have only 12 to 15 pupils, and some have as few as 5 or 6. I lived in one of the Western States for several years and I know that there they have even more serious problems which make it seem almost impossible to avoid a very small number of pupils in the school. Under such conditions either the per capita cost is excessive or an inexperienced and perhaps untrained teacher is employed.

In many States and parts of States, especially where the richest soils and the fewest deposits of material suitable for road improvements are found, the prevalence of unimproved or dirt roads, impassable for motor cars or almost any other wheeled vehicles in certain seasons of the year, has preserved the small country-school districts. Consolidation of country-school districts is still largely dependent upon proper improvement of the roads. Whenever the main highways are improved sufficiently to insure the safe and rapid transport of pupils at any season of the year, consolidation is feasible. Even then the districts should not be so large as to in-

crease unduly the cost of transporting pupils, which cost has been relatively high in most large districts. In consolidating school districts, lower costs usually can not be expected until the necessary improvements are paid for. In many cases the result of consolidation has not been lower costs, but has been better schools and instruction.

The boundaries of high-school districts should also be determined largely by the condition of the highways, rather than the distance from school. A high school should not be established for fewer than 75 or 100 pupils unless it can be combined with an elementary school under the same supervision. If the number of high-school pupils falls much below 50, usually not more than two or three years of the 4-year course should be given. It is not advisable to offer teaching of high-school grade to only a few pupils.

The suggestions offered here probably will be opposed by the extreme advocates of local autonomy, who will doubtless point out that in some cases it does not mean reduction in expenditures. That is true, but increased efficiency for the same expenditures is one form of economy. The most costly element of government is inefficiency. It makes no adequate return to taxpayers. If the people of the local taxing districts clearly understood that local autonomy too often means inefficiency, there is little doubt that their views would change. Good schools and roads are too important to justify neglect on the part of the State. Good fiscal and administrative methods, helpful supervision and advice, and an equitable and universal taxing system are the only ways by which economy in local expenditures can be secured and maintained.

SHOULD OTHER INDUSTRIES HELP BEAR THE FINANCIAL BURDEN OF MAINTAINING A RURAL CIVILIZATION?

C. V. Gregory, *Editor, The Prairie Farmer*

I do not know what was in the minds of the makers of this program in selecting this particular subject, nor even what relation it has to the general subject of land utilization. If we are to infer from the subject that other industries are now helping to bear the burden of maintaining a rural civilization, I wish to state in the beginning that I do not agree that that is the case. Neither do I believe that it should be the case in the future.

Rural America can pay its own way. That it is having difficulty in doing so just now is due to unfair contributions which it is compelled to make to other classes and industries.

The index figure of the United States Department of Agriculture on the purchasing power of farm products in terms of other commodities is 54, taking the 5-year pre-war period as normal. That means that the farmer must sell nearly twice the volume of products to pay his expenses and buy his supplies as before the World War. Since he is not producing twice as much, it is obvious that the difference must be taken out of his standard of living.

If agriculture could be restored to its pre-war relationship with other industries, it would be able to maintain a high standard of rural civilization without outside help. Some of the factors which have caused the present relative disadvantage of agriculture are:

(1) High labor costs in industry. These high costs are the result of the Adamson Act in the case of the railroads and the result of the growing strength of union labor in other industries. Racketeering has played a not inconsiderable part in increasing labor costs in a number of industries. Since the war it has been the policy of industry generally to meet the demands of labor for wage scales and working conditions and to pass the increased cost along to the consumer. Immigration laws have greatly increased the power of labor to resist deflation.

(2) Increased cost of capital. Inflation of the capital structure of leading industries by means of stock dividends, holding companies, and other devices has built up a capital charge which in many cases is wholly unwarranted by the actual investment, and which adds still further to the cost of the finished product.

(3) Maintenance of artificial price levels. Prices of many if not most manufactured products have been maintained at artifically high levels since the war. This has been made possible by tariffs and by mergers. In many industries, such as steel, one company dominates the situation and fixes price and production policies for the entire industry.

(4) Taxation. Farmers bear an undue proportion of the tax burden for two reasons: (*a*) Farm property is of such nature that it can not be hidden, while a large proportion of city property can be and is hidden. (*b*) Industry passes a considerable part of its burden in taxes on to the consumer in the price of its products, while agriculture can not do so.

The unfair proportion of the Nation's tax bill which is paid by agriculture has a direct bearing on the question of land utilization. Heavy taxation drives land into more intensive use. Millions of acres in the Corn Belt would revert from crops to grazing if excessive taxation did not make that course impossible.

The whole matter can be summed up by saying that industry, with a few exceptions, has sold its products at a price level which has been maintained by artificial means and with a large measure of Government help at a point substantially above the world price level. Agriculture, with a few exceptions, has sold its products on a world price level.

Belated attempts have been made to give the farmer governmental assistance in raising his price level. Although there is much to commend in these efforts, and although the results in the future may be considerable, it is not unfair to say that to date the efforts have added little to the farmer's income.

The statement is often made that the millions spent in irrigation projects and to maintain the United States Department of Agriculture and the land-grant colleges and experiment stations represent a direct contribution by taxpayers in general to agriculture. I have never seen any convincing figures to prove this statement. Irrigation projects have only created more competition for established farmers and have been a direct disadvantage to farmers. The work of the United States Department of Agriculture and of the agricultural colleges and experiment stations has added considerably to farm efficiency. While some of the more progressive farmers have profited thereby, agriculture as a whole has not. Consumers have benefited

immensely. Every increase in efficiency is translated quickly into lower prices. The cost of maintaining agricultural colleges and experiment stations represents a contribution of taxpayers to consumers, not to agricultural producers.

In Illinois a special session of the State legislature is considering a State income tax, the proceeds to be used for the support of the public schools. Chicago newspapers maintain that such a tax, which would be paid largely by Chicagoans, will be a gift from the city to the country. That is not true for two reasons. (1) A large proportion of the boys and girls educated in country schools go to Chicago or other cities when they are ready to enter into the productive period of their lives. At present the country is paying the cost of raising and educating these boys and girls, and the cities are getting the benefit of their services. (2) The income of Chicago industries comes from the country as well as from the city, and it is only fair that taxes on such incomes should be used to help pay governmental costs in the country as well as in the city.

If we could maintain a rural civilization in this country only by means of a subsidy from the city, there would still be many valid arguments for adopting that course.

I have tried to indicate briefly some of the reasons why such a subsidy is unnecessary. If all artificial interferences with prices and wages in the cities are removed, or if farmers are given similarly effective artificial advantages, rural America will be amply able to take care of itself.

I am not sure that rural civilization can be measured in terms of money and labor income. I am not sure that we are thinking sanely when we discuss this question from the basis of cold-blooded efficiency. From that standpoint we can justify moving families from marginal land into the cities, there to live precariously and in constant fear of that destitution that follows loss of a job. I am not sure that I want to be a party to a national plan for agriculture that contemplates moving thousands of marginal farmers to town in order that other farmers may be relieved of this competition.

One of the greatest of human desires is the desire for security. The experience of the past two years has given us a new appreciation of the value of security.

If a certain portion of our population, perhaps not well fitted for the struggle for existence in the city, is willing to get along with a small income in exchange for the security that goes with a plot of land—even of marginal land—in the country, who are we to tell them that they must not do so?

It is not so hard to be poor in the country as it is in the city, and it is possible to have a high standard of civilization in a cottage. True civilization is a matter of development of the human soul. It can not be measured by counting the number of bathtubs to the square mile.

The country school has been vilified and held up to scorn as evidence of a decadent rural civilization. Yet I am not sure but that the individualistic education of the country school, supplemented by the priceless education in initiative and responsibility that is the heritage of every country child, does not turn out a better product than the mass-production educational methods of the city. Cer-

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tainly a debunking of many of our educational ideas is past due, and we might well start by exploding the idea that the efficiency of a school can be measured by its cost.

Surely we may well have a national land policy. But let us consider carefully what the objectives of that policy should be. The objective should not be to create a rural civilization that is a copy of city civilization. God forbid that we should make that mistake. The objective should not be to secure the highest possible efficiency in production regardless of other considerations.

Rather the objective should be to make it possible for more rather than fewer people to live on the land, to preserve the sanity and sense of real values that characterize country life, to build up the rural civilization of the future on the principle that human happiness and the development of human character is more important than stock quotations and bank balances.

ADJUSTING THE TAX BURDEN TO THE TAX-PAYING ABILITY OF THE TAX BEARER

RICHARD T. ELY, *President, Institute for Economic Research*

May I make a few introductory remarks before I take up the subject assigned to me. As I read the program for this 3-day Conference on Land Utilization I felt greatly cheered. Perhaps it would not be an exaggeration to say that I experienced a sense of exhilaration. Many years ago, back in the nineties of the last century and even earlier, I began urging on my students the grand opportunity that lay before some young man to develop agricultural economics in this country. In Germany I had learned that there was such a thing as agricultural economics, and I felt that in the United States there was a need for the development of that field. For years, however, I was a voice crying in the wilderness. At that time, and even later, I found no sympathetic response to my message in the United States Department of Agriculture. Quite the contrary. Secretary Wilson told me that he wanted no economics in the Department of Agriculture and promptly stopped some work that I was doing in the department in connection with irrigation. A generation later, Secretary Wallace, in a conference I had with him in Washington, said, "There is nothing I have so much at heart in the Department of Agriculture as economics."

Now as I look at this program of this 3-day conference, I feel that I am in sight of the promised land. A splendid program it is. The inspiring idea is that it is called by the United States Department of Agriculture under the leadership of the splendid Bureau of Agricultural Economics, together with the land-grant colleges of the United States. I cast my eye down at the speakers and I find one after another who has long been doing fine work, and most of them are comparatively young men who have many years before them. Dr. Henry C. Taylor, who back in the nineties listened to my message and began his career in agricultural economics and who is still an active man, is often called the father of agricultural economics in the United States. Let me mention an incident showing the astonishing development in one generation. Secretary of Agriculture Wilson, learn-

ing that Doctor Taylor was devoting himself to agricultural economics, said to him something like this:

Henry, you are a young man—some day you will want to get married and be in a position to support a family. Why not give up agricultural economics, which will never afford you a livelihood, and go into something practical, like agricultural chemistry or bacteriology. Then I will give you a job in the Department of Agriculture!

It may be of interest to know that earlier my father, a civil engineer, had said almost precisely the same thing to me with respect to general economics when he learned that I proposed to devote myself to this broader field.

On our program I find the names of other students of whom I am proud on account of the work that they are doing in agricultural economics, as well as in other fields. May I mention particularly Dr. George S. Wehrwein, my fellowworker who was with me at the very beginning in the development of the Institute for Economic Research. (At first we called it the Institute for Research in Land Economics.) Although the scope of our activities has been expanded, our interest still centers in land economics.

Preceding me on this program I find this topic for discussion by C. V. Gregory, Should Other Industries Help Bear the Financial Burden of Maintaining a Rural Civilization? The first reaction to come to me in reading the title given to Mr. Gregory was this: In taxation as well as otherwise, the farmers have been bearing a great deal more than their proper share of maintaining our rural civilization. In the burden of taxation that they have been carrying they have been bearing an undue share of the burden of urban civilization. For one thing they have been paying for the education of the young rural generation whereas a large proportion of the young people, after being brought up on the farms and educated in schools paid for by local taxation, have left the farms just at the moment their services have become economically productive. The farmers have paid the costs and the cities have received the benefit of the service of the young people who have left the farms for the cities.

Then I am inclined to believe that in many cases the farmers have borne an undue share of costs of improving our highways. These highways have not infrequently benefited the city at the expense of the farmers. If the farmers of our country had had to bear only their proper share of taxation, a share based upon their paying ability, it is quite possible that the question presented in the topic of the previous speaker might not be on our program at all.

The taxation of farmers is not in proportion to their ability to pay. On the contrary it is such a heavy burden that in hundreds of thousands of cases it is downright confiscation. If taxation is not to lessen our wealth and prosperity, taxes should normally and regularly come out of income. If they absorb capital values they tend to the impoverishment of the taxpayer. All sound tax policies aim in one way or another to reach a proper proportion of income. We can not pay all the expenses of government directly out of income, and we have to reach income by all sorts of roundabout methods. Always, however, we should consider any particular tax in its bearing upon income, and we should aim to bring it about that all the taxes put together should take only a proportionate share of income.

Now in our country, as you all know, taxes on farm lands are based upon the selling value of the land. This should be satisfactory if there were a closer relationship between the selling value of the land and the income that the land yields and if the tax took only a proper proportion of the income. By a proper proportion of the income I mean the right relationship between the burden resting on the farmer and the burden resting on other classes of the community.

In our country the selling value of land has been based less upon the income that the land yields, than upon hope. If we consider what has taken place in this great agricultural region, in the midst of which we are meeting, I think that a still stronger expression may be used. Selling values have been based not merely upon hope but upon illusion in regard to the future, and the illusion may often be designated as fantastic.

For this excessive valuation of land upon which taxation has been based, English economic theory must bear a heavy share of responsibility. As you all know, English economic theory of the classical school assumed as a premise a constantly growing population pressing upon the means of subsistence. This pressure, it was held, was sufficient to bring about a growing increment in land values. The farmer, we were taught, as well as the owner of urban land, had simply to wait in order to secure for himself the growing increment in land values. The farmer thought that the value of his property was increasing while he was sleeping in his bed. When value was marked up, even if this rested upon illusion, his taxes mounted.

For a number of decades, in the Middle West the theory seemed to hold good. An era of expansion occurred in the latter part of the last century and the early part of this century when values were shifted from the East and South to the West, and the theory was apparently sound. Middle-western land sold for higher and higher prices and these prices were based upon hope of future gains. We are all familiar with selling values of land so high that, in normal times, the income yield of the land was a good deal less than 4 per cent. Hundreds of thousands of farms changed hands at $300 and $400 an acre, although based upon actual income they were worth not over $200 an acre if the selling value were based upon the capitalization of the income yielded by the property. When I say this I mean the income yielded by the property as distinct from the income resulting from toil and moil and managerial ability of the farmer. In other words, taxation has been based upon inflated selling values and has been so based for a long, long time. The tax burden has not been adjusted to the tax-paying ability of the tax bearer.

Let me dwell for a minute or two upon the English economic theory. I wish I had time to develop the extent to which, in my opinion, English economic theory, based upon temporary conditions in England, is responsible for the plight of the farmer, as well as the plight of the owner of urban land. I must, however, defer that for some other occasion. But I do want to say that it is unfortunate that we did not develop an American theory of land values which might have given us a different system of taxing land. In our early history, American economists did begin to develop theories of land values. They made a good beginning, but our academic

economists, for the most part, turned away from the work that had been done by American economists and devoted themselves to an elaboration of the English theory of land values, and to making propaganda for this theory. I think particularly of Henry C. Carey who did some excellent work but who has been neglected for the most part by academic economists. He taught that we did not go regularly from the best land to land less good; he taught that values of land depended upon reproduction costs; he taught a theory of population which did not involve pressure of population upon subsistence. His forecasts have had remarkable confirmation in what has been happening in this country during the present century. If his theories had been made the foundation of later American economics we should not have based our ideas upon the theory of a constantly growing and unearned increment in land values. A logical conclusion of his theories would be to estimate the farmers' land values upon actual income and to adjust our taxation to the farmers' ability to pay taxes as expressed in the farmers' income.

The farmer will not get out of hard times until, in some way or another, farm taxation is adjusted to the ability of the farmer to pay—and that means income. A great many farmers are now demanding that taxation be based upon annual-use values and not upon selling values. I admit freely that it is not easy to pass over from a system of taxation on capital value to a system of taxing annual values. If we are obliged to retain capital values as a basis of our taxation we must learn to base capital value upon annual value, which represents capacity to pay. We must get away from illusion and pass over to actualities. I mean facts and not hopes.

I have not given you statistics, which can be supplied in abundance by the workers in the Bureau of Agricultural Economics and by men in our agricultural colleges, like Hibbard, Wehrwein, and many others.

We shall not be prosperous until we have a planned life with respect to land uses, both urban and rural. It is a mistake to take up one to the exclusion of the others. Exactly the same forces that have reduced farm-land values are now reducing urban-land values. On account of this unanticipated fall in value country banks began failing several years ago and now the city banks are failing.

Instead of the complicated plans in 5 and 10 year programs to bring about prosperity in the future, we need a plan based upon land uses of all kinds, including forests. My idea is expressed in a topic upon which, for another purpose, I am now working. The title is "The Depression and the 150-Year Plan."

REDISTRIBUTION OF THE RESPONSIBILITY FOR SUPPORTING GOVERNMENTAL FUNCTIONS

FRED BRENCKMAN, *Washington Representative, The National Grange*

Support of local government largely by taxes levied on general property can not be justified on the basis of benefit or of tax-paying ability. Yet, approximately four-fifths of the cost of local government is defrayed by such taxes.

On account of our unfair and unbalanced revenue system, farmers and home owners of small income are subject to a tax burden that

is almost unbearable. According to the United States Department of Agriculture, farmers on the average will this year have to sell three times as much produce with which to pay their taxes as they did in 1913. This statement rests upon the fact that average farm real estate taxes per acre in 1930 were two and one-half times as high as in 1913, while farm prices are only three-fourths of the pre-war level.

Nominally, most of the farmers' tax is a local tax. Some have interpreted this to mean that where the local government is a farmers' government it is within the power of the farmers to cut their taxes in half if they wish. The understanding of the meaning of the term "local government" which this betrays was perhaps good enough a century ago when aid, interference, and regulation by State and Federal authority were at a minimum. Local government, home rule, self-determination, or whatever we wish to call it, was relatively more important then than now. State authority has progressively reduced the field of discretion for local authority by adding various new functions to the existing functions of local government. Minimum salaries for school teachers, and other requirements designed to insure what the State considers minimum educational opportunity, have been set.

Nor is that all that makes local government no longer "local". The automobile and the industrial development of the Nation have revolutionized economic and social life. Communities formerly self-sufficing are now merely interdependent parts of a larger community. Roads, always one of the major concerns of local government, were formerly paid for and used almost exclusively by local people. To-day they are used by everyone; and the responsibility of the State in the matter of highway finance is being increasingly recognized not only in the form of State aids derived from motor-fuel taxes, but also in increasing State participation in highway administration.

Education, another major concern of local government, was formerly supported entirely by local funds. At that time a considerable portion of the surplus farm population carved new farms out of the wilderness. To-day that surplus goes to the cities. There is no justice in requiring farmers to pay the entire cost of rural-school education for a substantial part of the future population of cities—especially when a considerable portion of the tax-paying ability in cities bears relatively light taxes compared with taxes levied in the rural districts. The responsibility of the States in the matter of school finance is being increasingly recognized not only through State aids derived from sources other than the general property tax, but also in increasing State participation in school administration.

In many States there is need for these developments to proceed much farther, but there are other States in which developments have already gone a long way. North Carolina, for example, has greatly broadened and changed its tax base for schools and roads. The 1931 legislature provided that all roads in the State (with certain minor exceptions) should henceforth be maintained by funds derived exclusively from motorists. Not one cent will be levied on property for future maintenance of these roads. Besides this, $7,000,000 of revenue from increased income, and franchise and business taxes, will be used to reduce school taxes on general property. It is estimated that

the road and school legislation combined will reduce the average tax on property by almost one-third.

Another thing, however, happened in North Carolina at the same time. Not only was the tax base broadened, and changed, but administration was highly centralized. A survey of the road situation, jointly conducted by the State Tax Commission, the State Highway Commission, and the United States Bureau of Public Roads, convinced Governor Gardner that more relief could be given to the taxpayer by having the State take over the roads than by increasing State grants to be expended locally.

There was also a distinct centralization of administration for the 6-month school term. All teachers and other employees of these schools became employees of the State. Supplies are to be purchased through a State purchasing agency, small schools are to be consolidated as soon as possible, and highways over which school busses are routed are to be given special attention.

From all this it would appear that the taxpayers of North Carolina are more interested in tax relief than in "home rule." This situation, nevertheless, brings up some fundamental questions which will be raised in other States: (1) To what extent can responsibility for supporting governmental functions be spread over broader and different tax bases without undue centralization of administration? (2) What price are the taxpayers paying for home rule? (3) What degree of home rule is worth the price?

Clearly, redistribution of responsibility for supporting the functions of local government by broadening the tax base can be accomplished without overcentralization of administration. Wisconsin, for example, has taken important steps in redistributing authority without centralization of administration. The school-equalization law of that State gives substantial aid to poor school districts, and the 1931 legislature increased the township's share of gasoline-tax revenues from $25 to $50 per mile of township roads. The school-district aid is derived chiefly from the State income tax and sources other than general-property taxes. New York is another State that grants substantial aids.

In Pennsylvania, approximately 20,000 miles of township dirt roads were added to the State highway system by act of the 1931 legislature. Henceforth the upkeep of these roads will be paid out of the State gasoline-tax fund. Pennsylvania could further lighten the local tax burden for roads and schools by levies on certain forms of property which are now exempted from State taxation. As an example, for many years Pennsylvania has placed no tax on the capital stock of manufacturing corporations, although railroads and other public-utility corporations are required to pay such a tax. While there is no State tax on land in Pennsylvania, heavy local taxes are levied upon the home, which is the nursery of childhood and the refuge of old age, but manufacturing corporations, organized and conducted for profit, go scot free, so far as State taxation is concerned.

While seeking a further development of State aid for roads and schools derived from sources other than the general property tax, the National Grange doubts the wisdom of centralized control of the affairs of the minor subdivisions of government.

We must endeavor to preserve the demonstrated values of home rule, which foster public consciousness and make America a democracy. It can not be too strongly emphasized that in the same proportion that we deprive the people of the right of participation in the affairs of government, they lose all knowledge of government. Nothing could be worse than that, particularly in a country the fundamental charter of which is based on the proposition that the people shall rule.

CHANGES IN TAXATION REQUISITE FOR A SOUND PROGRAM OF LAND UTILIZATION

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Adequate treatment of this subject would require definite knowledge of two things: (1) The specific elements of a sound program of land utilization; (2) the economic effects of various forms and amounts of taxation upon the utilization of land. Knowledge of both is necessary before we can prescribe definite changes in taxation that would promote the desired land utilization and be sound in principle and administratively workable.

We could hardly assume that we know all the general elements, much less the details of sound land policy. The formulation of such a program is the ultimate purpose of this conference. Moreover, there is a wide gap between conjecture and specific knowledge on the effect of various kinds of taxes on land utilization. For these reasons the subject, "Changes in Taxation Requisite to a Sound Program of Land Utilization," can be treated only in general terms.

A program of land utilization, particularly with reference to agricultural land, has two objectives: (1) To put land to uses that will promote the economic welfare of the present rural population, with due regard to the general public interest; and (2) to conserve the soil and other land resources, thus safeguarding the national interest and the well-being of future generations of farmers.

It may not be amiss at this point to digress a little by saying a word in behalf of humbleness of spirit. We are confronted with gigantic problems in land utilization, agricultural policy, and economic planning generally. It would be a mistake to take ourselves so seriously as to assume that we can prescribe definite programs and plans that will hold good for many generations.

Till now, the heart of our land policy has been to put land into use as rapidly as possible in the belief that private ownership of land and uncontrolled expansion of the cultivated area were more conducive to the public welfare than controlled expansion and public ownership. It appears that this has proved a mistaken policy, in the light of recent developments and present needs. Nevertheless, it should not be assumed that those who formulated our early land policies necessarily acted unwisely in the light of economic and political conditions and national aspirations of their time. We should not be too certain that students, three-quarters of a century from now, will regard our present efforts in policy making as reflecting greater wisdom on our part than we now attribute to Lincoln's contemporaries in their formulation of the land policies that culminated in the homestead act.

Yesterday it was suggested that the homestead act should be repealed. No matter how adequate a plan was years ago, it is, no doubt, well to repeal it if it has served its purpose. The ability and the courage to repeal outworn measures suggests a healthy situation in the body politic.

It is essential to a sound policy of land utilization, including taxation, that land should be classified according to the uses to which it is best suited. Any such classification necessarily would be subject to modification in response to changes in demand, in regional and international competition, and in technological processes. Elasticity in land classification is necessary because of our inability to foresee accurately the changes that will affect land utilization in the next generation or two. A program of land utilization is largely a matter of generations, not of months and seasons.

If land generally were classified into its economic categories, our problem of taxation in relation to land utilization would be to prescribe such changes in kind and amount of tax levies as would remove the hindrance which present taxes impose on wise utilization and to substitute taxes that would promote such utilization of land.

This would involve far-reaching changes in the prevailing system of taxation, including important departures from the present general-property tax. In this we must face the practical fact that attempts to put tax revision beyond the talking stage and into action will meet stubborn realities, both political and economic. Practical attempts at tax revision must begin with the status quo; that is, we must face the fact that the present system is deeply rooted in law and custom and that many economic adjustments have been made consciously or unconsciously in accordance with the present system. Extensive changes in that system, therefore, would mean many new problems of readjustment.

The first requisite of an adequate system of taxation is that it produce the necessary revenue. In addition, tax levies have economic consequences, and in a program of taxation for sound land utilization we are primarily concerned with economic consequences. We are setting out deliberately to use the taxing power not only to raise revenue with the minimum of harmful economic effects but also to produce the desired effects on uses of land.

Tax revision in the interest of better land utilization now means tax reduction. The word "adjustment" has come into wide use recently. It serves many purposes. One purpose is that you can throw an idea into full speed forward, or into slow speed, or into reverse, with less embarrassment under the term "adjustment." But I want to make it perfectly plain that by tax "adjustment" in this connection I mean tax reduction. Take, for example, changes in taxation to aid reforestation. Changes thus far proposed have meant lower taxes on forest property. Relief from the present general-property tax has been the keynote of proposed adjustments to help stimulate reforestation and forest conservation under private enterprise. Incidentally it is an open question whether taxation is the limiting factor to private enterprise in this field, or merely one of several limiting factors.

When land is classified as forest land and taxes are reduced at least for a period sufficient to produce a crop of timber, we are confronted with the problem of revenue for the communities affected.

The same is true when land is bought by the public and set aside for forest purposes. When we urge that the public interest demands preferential tax treatment or public acquisition of land for forest production, for farm-surplus control, conservation, beautification or what not, we must at the same time acknowledge a general public responsibility toward the particular communities whose tax base will be reduced as a result of such a policy.

There are two practical ways of meeting that responsibility—either by purchasing the remaining farms and homes in the community so that the people can afford to move out, or by helping to finance the roads, the schools and the other essential institutions in the community. Both mean higher and perhaps new taxes on

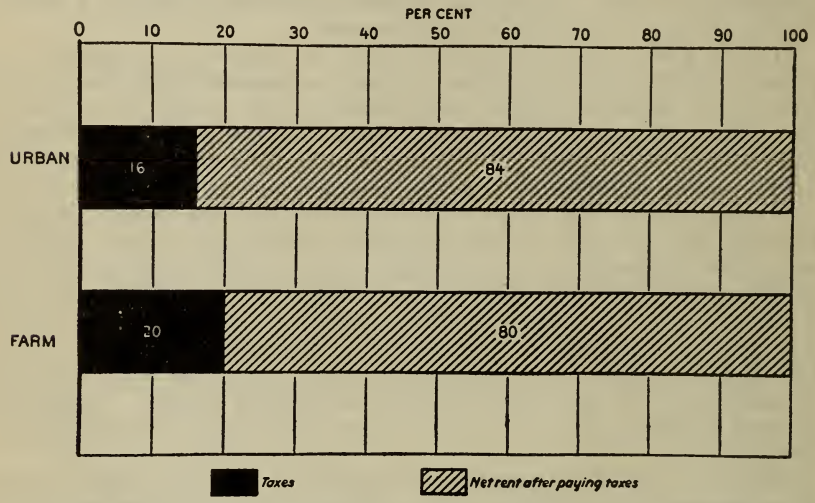

FIGURE 19.—REAL ESTATE TAXES TOOK 20 CENTS OUT OF EVERY DOLLAR OF FARM RENT AND 16 CENTS OUT OF EVERY DOLLAR OF URBAN RENT

Real estate taxes in relation to net rent of urban and farm properties in Virginia are based upon a study conducted cooperatively by the Virginia Agricultural Experiment Station and the Bureau of Agricultural Economics, and reported in Virginia Bulletin No. 268. This study includes 889 urban properties and 1,093 rural properties well distributed throughout the State. It will be of special interest to compare the relation of taxes to value as shown in this study with ratios found in 14 other States as shown in Figure 23. Also, it should be noted in Figures 25 and 26 that the ratio of taxes to value of farm and real estate in Virginia, as shown by the United States census of 1930, is lower than in other States in the eastern half of the United States and lower than in most States through the country.

wealth outside the community, unless the State subventions to the submarginal area already exceed the cost of buying the remaining farms. The forest taxation inquiry soon will supply a body of data with analysis and conclusions on forest taxation beyond anything heretofore available. We anticipate that these findings will point a way for such adjustments in taxation as will aid forestry.

Similar problems arise in the case of lands classified for game preserves or for recreational uses. Here, too, we are confronted with the same alternatives—outright public ownership or private ownership with property taxes low enough to stimulate, or at least not to forbid, the utilization for which the land is classified. Either alternative means a new fiscal problem for the community, unless some special business tax on commercialized recreation should yield the

needed revenue. If local revenues are insufficient, the general public, in whose real or supposed interest the land was classified for game preserve or for recreation, is obligated to help meet the necessary public expense in the community.

Again, the same problem arises in the case of land classified for grazing and subjected to lower property taxes or to some other form of taxation calculated to induce the owners to keep the land in grass. When this is done to check or retard expansion of the cultivated area in the interest of farmers on the better land or to promote conservation for the general public good, the public incurs a fiscal obligation toward the remnants of community life in the area.

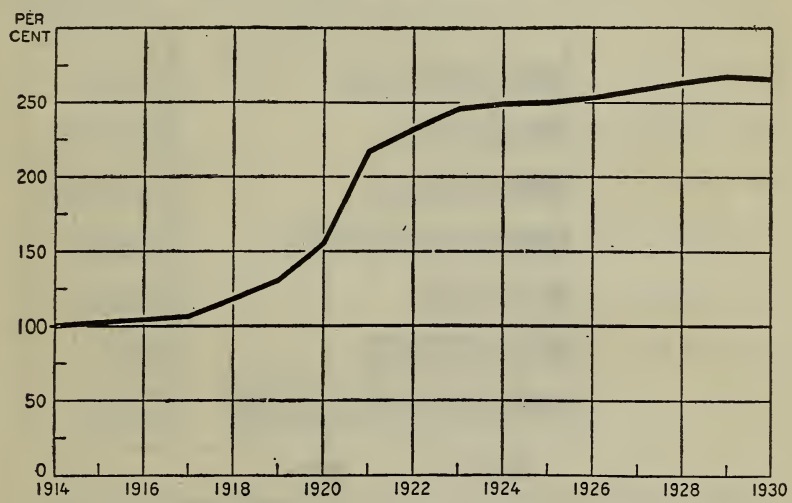

FIGURE 20.—ESTIMATED TOTAL TAXES PAID ON ALL FARM PROPERTY

The percentage increase in estimated total taxes on all farm property in the United States from 1914 to 1930 was very great. There was a slight decline from 1929 to 1930, and scattered returns for 1931 indicate that under the pressure of a rapidly declining general price level and a severe drop in farm prices, taxes on farm property have declined further in some areas. It is significant that taxes continued to rise after the beginning of the agricultural depression in 1920, although the rate of increase diminished materially after 1923. This increase in property taxes is due primarily to increased expenditures for education and for roads, together with extensive reliance on the general property tax, which accounts for approximately four-fifths of all State and local taxes. The Bureau of Agricultural Economics has in preparation an index showing farm real estate taxes per acre by years from 1913 to date, based on taxes levied each year on more than 15,000 identical farms throughout the United States. It is believed that an index of taxes per acre will be more significant than the estimated trend of total taxes on all farm property, shown in the above illustration.

These examples suffice to illustrate the point that adjustment in taxation in the interest of a sound program of land utilization now means (1) the lowering or eliminating of taxes on land classified for purposes other than the production of farm crops and (2) far-reaching changes in State and local taxation. The problems involved differ greatly among the various States in so far as they are State problems. For instance, it is one thing to launch and carry out a program of land utilization and farm-tax reduction in New York or in any other State of vast taxable resources, and quite another matter in a State with limited taxable capacity based largely or almost exclusively on agriculture.

Property taxes per acre of farm land in the United States generally have advanced about 150 per cent since 1914 and are now a heavier burden than much of our good farm land can bear under present conditions. Problems of taxation in relation to land utilization are not confined to land at or below the margin of cultivation. There is at least a possibility that the rapidly mounting real-estate taxes, especially from 1917 to 1925, helped to stimulate expansion of the cultivated area, thereby adding to the surplus problem. It would be difficult if not impossible to prove this statistically, but there seem to be logical reasons in support of it.

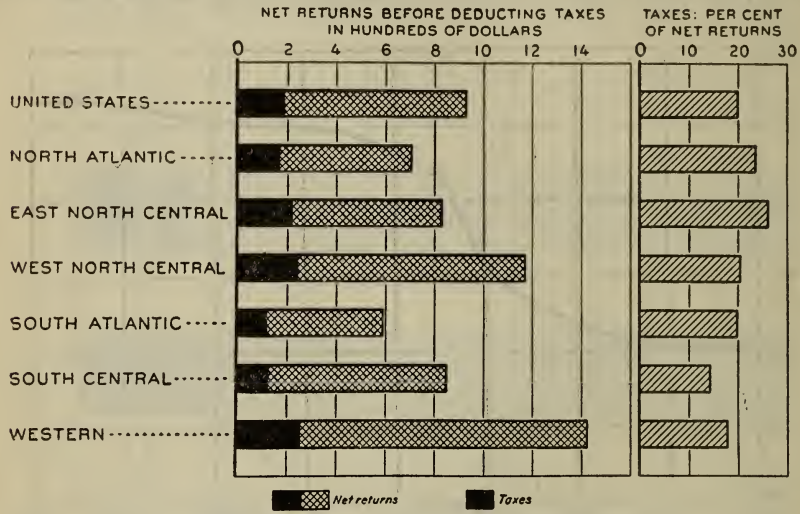

FIGURE 21.—TAXES AND NET RETURNS ON OWNER-OPERATED FARMS, AVERAGE, 1924-1928

From 1924 to 1928 taxes took about 20 per cent of the net returns of owner-operated farms in the United States. These data are based on 12,000 to 15,000 reports each year by farmers to the Bureau of Agricultural Economics. The net income includes not only cash returns, but also an estimated value of products of the farm consumed in the farm home and changes in inventory value of personal property. Because of the difficulty of calculating farm income on a basis comparable with urban income, it should not be assumed that these ratios of taxes to net farm returns in the various parts of the country are strictly comparable to other tax ratios, as for instance the relation of taxes to income of city people. These data on taxes in relation to farm returns, however, are generally consistent with other data on farm taxes and are believed to be one significant general indication of farm-tax burdens in the various sections of the country. It should be noted, for instance, that the East North Central States have the highest ratio of taxes to net returns of owner-operated farms, and also have a very high ratio of taxes to value of farm real estate in 1929, as shown by census returns.

The increasing taxes were additions to and became a part of, the landowner's overhead costs. The increase in taxes took place very rapidly. This greatly restricted the opportunity for capitalizing the land tax in the transfer of land. The tax became in effect an addition to the cost of the land factor in production. This in turn helped to induce the owner to put the land to higher use when doing so held out any promise of greater returns. For instance, farmers on the western edge of the wheat belt have told me that they plowed up their grassland and seeded it to wheat, having decided that they could no longer afford to keep the land in grass on account of the heavy taxes. There were, of course, other and stronger causes of the

westward expansion of the cultivated area, but the rapidly increasing taxes probably were a contributing factor. When the owner believed that taxes reached or exceeded the limit of profitable utilization, he abandoned the land. This accounts for much of the tax delinquency and for many of the tax sales of farm property.

This is closely related to the intricate question of the shifting and the incidence of taxation. Of all classes of producers the farmers are probably least able to shift their taxes to others. Assessed valuation of their tangible assets is the basis on which direct taxes are determined. Land is the principal part of these assets. Since taxes are shifted through prices of products and services, the tax levied

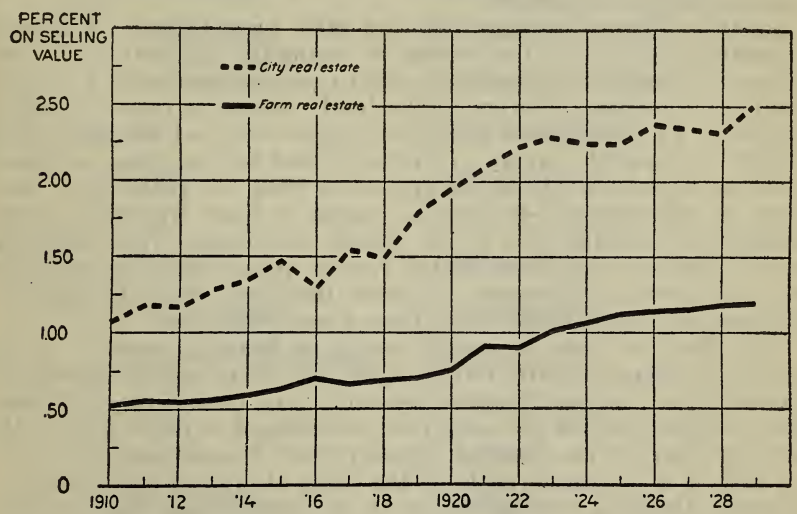

FIGURE 22.—TAXES ON FARM AND ON CITY REAL ESTATE IN KANSAS

The relation of taxes to value of both farm and city real estate in Kansas in 1929 was approximately two and a half times as high as in 1910. While in the case of city real estate the ratio was much higher throughout the whole period, it should be remembered that a large part of the taxes on city real estate falls on improvements. In a period of growing urban development and strong demand for improvements, taxes levied on the assessed value of the improvements are shifted, at least to a large extent, while taxes on farm real estate are not shifted. Moreover, the income of farmers is more dependent upon the farm property, whereas the income of urban property owners usually depends to a large extent on sources other than real estate. Moreover, urban taxes are the means of providing many services not often enjoyed in farm communities. Therefore, the comparative ratios of taxes to value of the rural and urban property should not be construed as representing the relative burdensomeness of real-estate taxes to farmers and to city people.

on farm land could not be shifted unless it caused a decrease in the quantity and consequently an increase in the price of farm products.

Two general causes are responsible for the increase in farm taxes: The universal increase in public expenditures and our excessive reliance on the general-property tax. A few days ago I read a treatise written many years before the present acute problem of farm taxation came upon us. I found in it the most severe condemnation of a general-property tax I have ever read. Even long ago the people were faced with the same problem and yet we adhere to the general-property tax. This may indicate that we are a practical people, in Disraeli's sense. He is reported to have said in a debate: "The practical man is the man who practices the errors of his forefathers."

Let us not be too severe in condemnation of our practice in taxation. It seems obvious that in this, perhaps more than in any other field of public policy, there is a very wide gap between knowledge and practice. The reason seems clear. In taxation and in a number of other fields of public policy, we can not apply what we know without first "selling the idea" to the people. In other words, no matter how good a plan may have been worked out in taxation it will be of little practical value until it gains the political acceptance of the people. By that I mean the indorsement and active support of dominant public opinion. Therefore, it is quite as important that we should bestir ourselves on the educational phases of plans as on the making of plans themselves.

As expenditures increased, the tax rates grew higher. This was a growing inducement for owners of intangible property and other forms of hideable or movable wealth to escape taxation. A shrinkage in the tax base relative to the total volume of taxable wealth, resulted. As the tax rate increased, people who had not previously sought the possible avenues of escape tried to find those avenues. Someone explained this on the ground of what was called the "elasticity of conscience"—it takes so much to bend it. Since given amounts of revenue had to be raised, this escape from taxation caused further increase in the tax rate on property on the tax rolls and still more inducement to escape taxation, until the general-property tax became little more than a real estate tax.

The effect has been especially severe in farming, because of the direct dependence of farm returns upon real estate and other tangible property and because farmers generally are unable to shift their taxes to others and at the same time are obliged to pay a part of the taxes of others in the form of higher prices of goods and services.

I believe it is demonstrable on the basis of ancient and honorable economic theories, and sometimes it is charged that these theories are more ancient than honorable—that in the great game of "passing the buck," that is, of passing the taxes, the American farmer stands about the last man in the line.

As a remedy for the farmers' tax troubles, it has been proposed that land should be taxed on the basis of annual income and not on capital value. Shifting from the capital value to the annual income is sometimes recommended by itself, giving the impression that it alone would accomplish the purpose. That is less promising than it sounds unless a great deal more is done. Taxes for local purposes alone constitute by far the greater share of total taxes for both State and local purposes. Of the local taxes alone nearly nine-tenths is represented by the general-property tax, which is largely a tax on real estate.

It is hardly to be supposed that annual income can be estimated more easily or more equitably than capital value. It would benefit the real-estate owners very little if the revenue requirements of a rural community were met by taxes levied on the estimated annual income instead of on the estimated capital value unless at the same time effective means were developed for securing a substantially larger share of State and local revenues from sources other than property.

Under the economic conditions now confronting agriculture, it is evident that the most essential "adjustment" in taxation is reduction in taxes on farm property, not a mere substitution of estimated income for estimated capital value in the tax equation.

Substantial reduction in farm taxes can be brought about in one or all of three ways: Improvement in the administration of existing

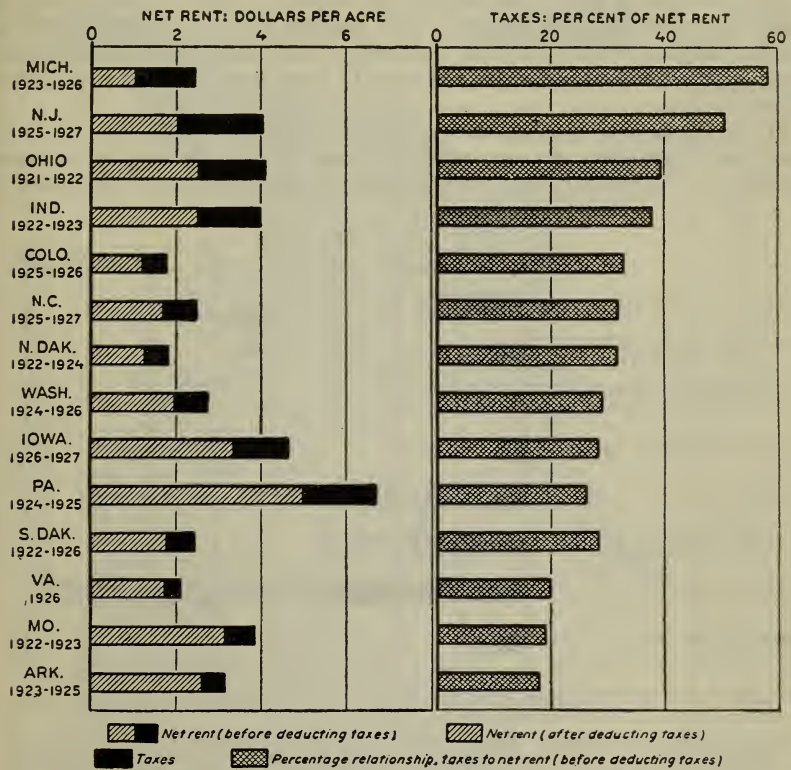

FIGURE 23.—GENERAL PROPERTY TAX AND NET RENT, SELECTED FARMS IN 14 STATES, SELECTED YEARS, 1921-1927

Studies made in representative localities of 14 States from 1922 to 1927 showed that taxes paid by farm owners averaged from 18 per cent of net rent in Arkansas to as high as 58 per cent in Michigan. In both Michigan and New Jersey taxes took more than one-half of the net rent of land. Because of a drastic decline in prices of farm products and a further increase in taxes since the years covered by this study, the relation of taxes to net rent no doubt is materially higher at the present time. By comparing this illustration with Figure 25, showing the ratio of taxes to value of farm real estate, a general consistency is found in the concentration of tax burdens. Of the 14 States included in the above illustration, Michigan, New Jersey, Ohio, and Indiana had the higher ratio of taxes to net rent, and Arkansas, Missouri, and Virginia a comparatively lower ratio. An examination of Figure 25 will reveal a very high ratio of taxes to value in 1929 in the first group of four States and a relatively low ratio in the group of three States.

tax laws; reduction in State and local expenditures; and revision of our tax system to require farm property to bear less, and other forms of wealth more, of the cost of State and local government. The following outline may serve to emphasize these ways of reducing farm taxes:

(1) Improvement in the administration of existing tax laws. In States that do not have a strong central tax commission or commis-

sioner, such authority should be established with ample legal powers and with sufficient means and personnel to perform its administrative functions effectively. This could do much to put on the tax rolls property which is legally taxable but which now escapes taxation, and would help to reduce taxes on farms, homes, and other property now bearing the burden.

(2) Economy and curtailment of expenditures. Some form of budgetary control is desirable. The control of the budget should be lodged largely with a central authority, preferably the tax commission, so constituted as to be reasonably free from partisan political interference.

In every taxing jurisdiction, careful analysis should be made of proposed new expenditures whether they are to be met by current taxation or by bond issues. Such analysis should indicate specifically

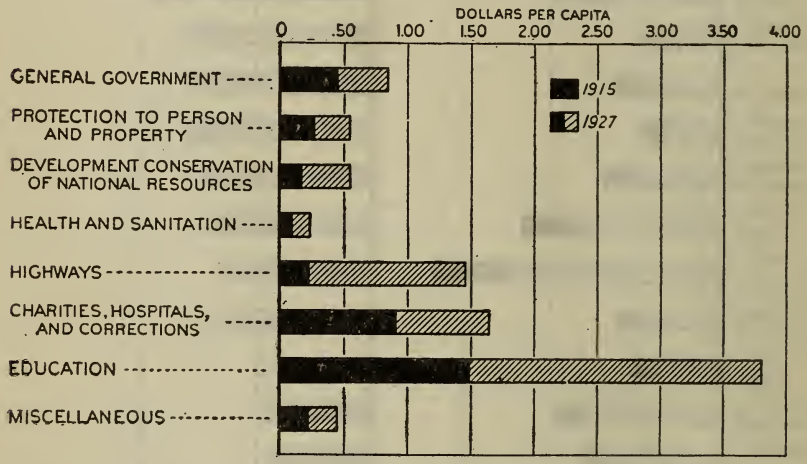

FIGURE 24.—STATE GOVERNMENT EXPENDITURES PER CAPITA, UNITED STATES, 1915 AND 1927

The importance of expenditures for education and for highways, in the increased expenditures and taxes generally, is illustrated by data showing functional distribution of per capita expenditures by all State governments in the United States in 1915 and in 1927. It should be noted that highways, education, and charities, hospitals, and corrections, account for 74.5 per cent of the increase in governmental cost payments. Increased expenditures for education and highways accounted for more than 60 per cent of the total increase in per capita expenditures by the State governments.

the meaning of the proposed expenditures in terms of tax levies and should be given wide publicity in the plainest terms possible, before the community is definitely committed to the proposed expenditure. When proposed improvements are to be financed by borrowing, a substantial sum should be made available out of current revenues to finance a part of such improvements. This would have a sobering effect. It would be an application to public affairs of the principle of down-payments for private purchases on the installment plan.

Studies looking toward the reorganization of local governmental units and reallocation of their functions should be undertaken on a more extensive scale than at present to show where and how economies may be effected.

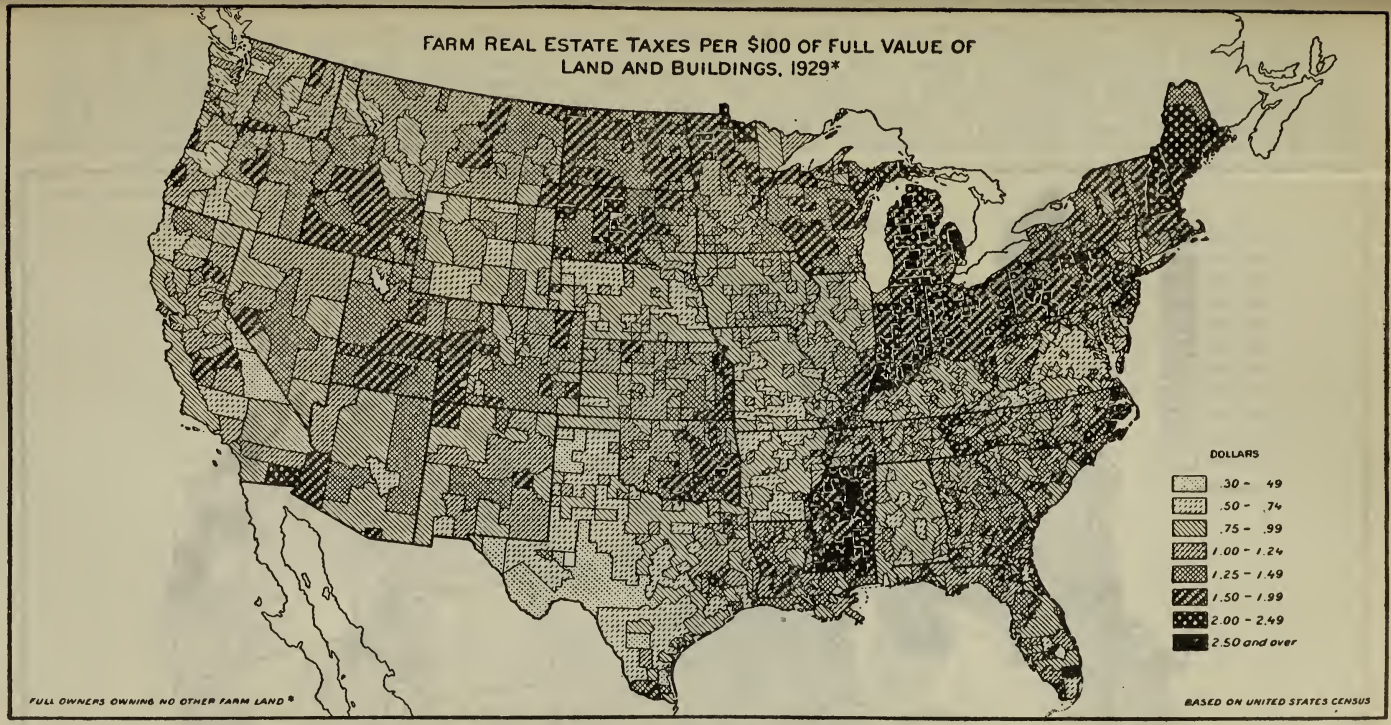

FIGURE 25.—Farm real estate taxes in 1929 per $100 of full value of land and buildings vary greatly in different parts of the country. This map is based on data compiled on a county basis by the United States census of 1930, and represents 2,019,000 farms including 245,280,000 acres. These were farms operated by full owners owning no other land and reporting both real estate taxes and total taxes on all property in their farms. Farm real estate taxes and land values are not altogether independent variables, since taxes influence the value of land. It has been estimated that property taxes per acre of farm real estate in 1929 were nearly 150 per cent higher than in 1914. This no doubt has contributed to the decline in land values, from about 70 per cent above the pre-war level in 1920 to only 3 per cent above that level at the beginning of 1931. The ratio of taxes to value is increased not only because of the mounting taxes as such but also because of their depressing effect on land values. Although mounting taxes have been an important cause of the decline in land value, the principal cause must be attributed to fall in prices of farm products and the disparity between prices received and prices paid by farmers

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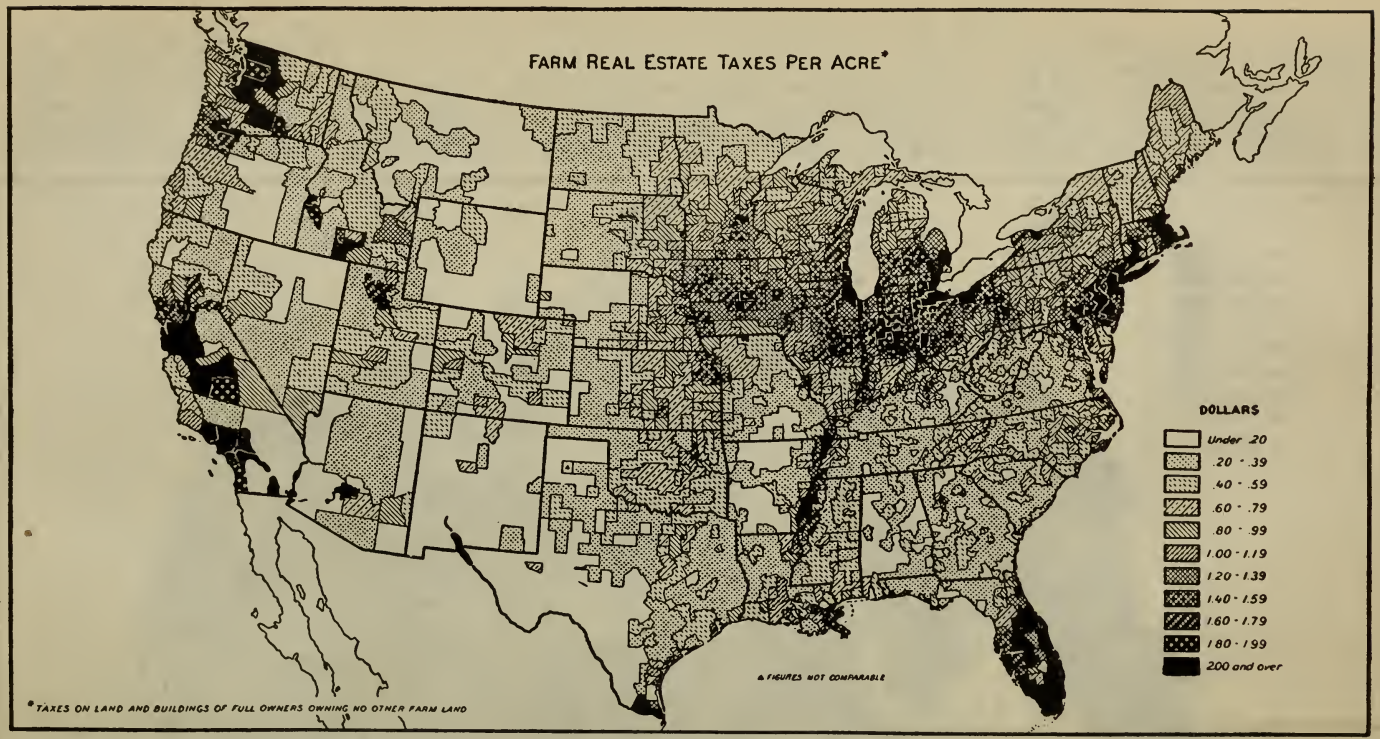

FIGURE 26.—Farm real estate taxes per acre in 1929 are especially high in certain areas, including farming areas near the large centers of population; in Florida, where the census returns include farms and orchards of high per-acre value (and high taxes), and in certain areas of the West, where the concentration of taxes per acre also may be due to special circumstances, such as exceptional high-value-per-acre properties included in the census data. Where the concentration of shades in this illustration is greater than in Figure 25 and shows taxes in relation to value, it follows that the farm properties included in the census report on taxes had comparatively high value per acre in 1930. The same farms are represented in both maps. It should be noted that in a large part of the Middle West and in substantial areas along the Mississippi River high taxes per acre are shown in this illustration and a high ratio of taxes to value is shown in Figure 25, indicating that, despite the generally high quality of the agricultural land in these sections, taxes have become a very heavy burden on land values

Under fiscal conditions now confronting many communities, local taxpayers' committees should scrutinize present and proposed expenditures to determine where curtailment may be made in public improvements and services with least injury to the public service. A flat percentage reduction in expenditures for all purposes may be more injurious to the public service than necessary.

It is problematical how much reduction is possible by the means enumerated above, in view of the common resistance to governmental reorganization and the well-known public urge for more instead of less improvements and services.

With hard times come many additional demands upon the public treasury. We should bear in mind that one reason for the increase in taxes, in spite of the universal and age-old popularity of tax reduction, is simply this: The general idea and the general popularity of tax reduction are no match against the sum total of the

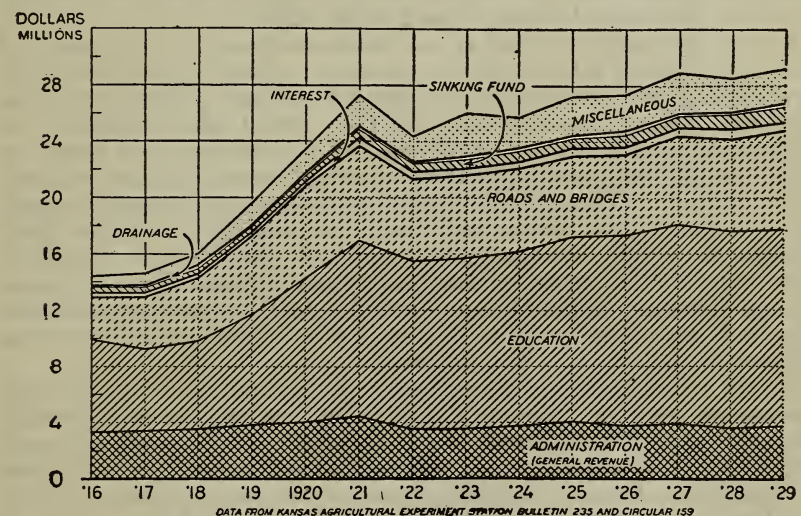

FIGURE 27.—The importance of expenditures for education and roads, in accounting for the increase in farm taxes, is illustrated by taxes on all farm real estate in Kansas for specific public purposes from 1916 to 1929. (Data from Kansas Bulletin No. 235 and Circular No. 159.) Expenditures for general administration in the State and in the subdivisions did not increase materially from 1916 to 1929. The increased expenditures for education and for roads, on the other hand, accounted for approximately three-fourths of the increase in total taxes on farm real estate

strength of individual demands for this and that and other improvements and services. Public officials, especially those here, elected on tax-reduction programs, and who honestly tried to carry out their promises, know this is true.

(3) Tax revision to secure a more equitable distribution of taxes in accordance with some reasonable interpretation of "ability to pay." Such revision must rest upon the principle that personal income is a practical measure of ability to pay and that every citizen having taxable capacity should contribute to the support of the government under which he lives and from which he derives daily benefits. A strong tax on this basis not only would yield substantial

revenues, but also would help to emphasize the individual citizen's personal responsibility for his State and local government.

We should remember that the popular urge to increase expenditures rests on the right to vote and not on the duty of conscious contribution to the support of government. I believe it would be decidedly in the interest of public policy and good citizenship for every citizen to contribute something, if only a little, to the support of State and local government. The most sensitive nerve is the pocketbook nerve, and people might be more sensitive to the well-being and effective organization of their State and local governments if the duty of direct contribution to the support of government were more general. To say that every citizen should contribute some direct tax is fully consistent with any reasonable interpretation of the principle of ability to pay and with the principle of progressive taxation.

In any substantial tax revision Federal and State relationships should be worked out carefully so as to avoid harmful double taxation with detrimental economic and social effects.

Among the things needed are a clarification and a restatement of State and Federal relationships in taxation. This is essential to any far-reaching readjustment in the present system of State and local taxation. In such a readjustment the central aim should be to achieve ultimately a revenue system for the country as a whole in which local, State, and Federal taxes would be coordinated under a logical scheme. This should recognize the essential economic unity of the country as a whole and should be consistent with the basic differences among national, State, and local jurisdictions from the standpoint of effective and economical administration of various taxes.

Some taxes are distinctly more suitable to Federal administration than to State administration. There is now a widespread movement in favor of luxury taxes in the States.

In the absence of something better such taxes may be desirable, because we need to supplement and replace a part of the general-property tax. But we should not forget that certain taxes are much more easily, economically, and effectively administered by the Federal Government. That is especially true in the case of many of the so-called luxury taxes, or if you don't like the word "luxury," say "taxes on goods of wide use but not of first importance." If a definite policy of coordination were established, each taxing authority could adjust its taxes accordingly. For instance, the Federal Government could gradually recede from some forms of taxation that are relatively better suited to State administration and control.

It is not the cost of government as such that causes increases in taxes, but rather the increase in the public improvements, and services, which we demand of government. As the functions of government become more and more of a service character, it would be well for us to use, wherever we can reasonably do so, the principle of taxation according to benefits received. The gasoline tax is perhaps the outstanding example of a tax levied in accordance with that principle, without running counter to the ability theory of taxation.

Finally, to summarize briefly: Adjustment in taxation to bring about better utilization of land according to some classification of land means reduction in taxes on the land so classified. That reduction in turn creates other fiscal problems and responsibilities which

demand far-reaching adjustment in the present system of taxation. Moreover, that readjustment is urgently needed in the interest of economic justice to the present rural population. Finally, when we face those adjustments we should carefully seek to bring about a better coordination between the revenue systems of the local, State, and Federal Governments.

SOME WAYS OF RELIEVING THE EXCESSIVE BURDEN ON FARM LAND

MARK GRAVES, *Director of the Budget, New York State*

This farm-tax problem is simply one phase of the general real estate tax situation which in turn is just another phase of the subject of trying to distribute the tax load in such a way that it will not be too burdensome on anyone. If you want a horse to carry a load or to transport a load for you, the ease with which the horse does it and the progress that he makes depend very largely on how the load is attached. If you tie it on his leg or suspend it from his neck, or attach it to his tail, the horse will not be able to make much progress, but he can carry a small load on his back or draw a larger load on a cart without much difficulty. So it is in taxation. The harm, the detriment, the slowing-up of speed in economic and social progress depends largely on how we impose the tax load on the body politic.

In the case of the farmer, as I see it, it is something like this: He is suffering because the load is spread over the body politic in such a way as to be very difficult to carry, and, more than that, the farmer is called upon to carry more than his fair share of the load. The result is that he can proceed but slowly, and as he proceeds but slowly he slows up the entire procession. The manufacturer suffers, the railroad is hurt, the banker loses, and all other elements of our industrial organization are bound to lose, just because one link in the chain is strained or cracked or broken. These conditions are due to no one thing. They are due to a combination of circumstances. No one remedy can possibly solve the farmer's tax problem. Before I left New York, I drafted eight points, as seemingly a necessary program if the farmer is going to obtain any substantial relief. Incidentally, the same program would help the rural taxpayers and general-property taxpayers, whether rural or urban to a very great extent.

(1) The first point I would stress and emphasize is the need for abolishing or consolidating unnecessary units of local government or those that are too small or too poor in tax-paying ability to afford the luxury of a government. We have any number of examples of that throughout the country. Every State has those municipalities which are either too small or too poor, many of the States have those which are superfluous. The outstanding example in New York State is this: New York City is composed of five boroughs and of five counties, each county being a borough. We are still maintaining in New York City five county governments, and paralleling those five county governments are five borough governments.

We think of Chicago as a great city, something after the fashion of other great cities, but it is scarcely more than a federation of many taxing units and of commissions, each with authority to make budgets and to levy taxes, and to determine how much shall be expended.

Then, we have the case in your State and in mine of a school district with a taxable value of, say, $50,000. No school district can afford to exist unless it has more assets with a greater taxable value than $50,000. There are more than 700 school districts in New York State, each of which has a school population of from 1 to 5 pupils. We have some 525 villages in New York, many of which have populations of less than 500 each. There is no real need for an incorporated village with a population so small. As the governor of our State expressed it not long ago, "We have too many layers of government."

(2) I urge that we need to abolish unnecesary offices and services. If we reduce the number of municipalities, incidentally we shall reduce the number of officers. Perhaps I ought not to talk to you this way because of my background—because you might refer to me as a professional in public life. I have spent virtually all of my adult life in the public service, but that has never caused me to lose sight of the unnecessary expenditures, the inefficiency, the number of useless positions and offices which I detect and observe as I go along. I am like the colored fellow down South who was testifying in an experience meeting in the church. He told how wicked he had been; he said, "I have cussed and I have sworn, and I have stolen chickens, and I have slashed with razors, and I have got drunk, but," he said, "I never have lost my religion." So, I never have lost the faculty of looking the situation squarely in the face and deciding that this thing is unnecessary or is unnecessarily expensive.

Night before last I closed budget hearings in New York State; I might draw on some of the things that have happened this week to illustrate the point I am making. Day before yesterday the superintendent of one of the reformatories of New York was up for a hearing on his budget. He had proposed to the then budget director last year that he be allowed six additional guards, guards of the type of high-school graduates or young men who had been in college for a year or two, his idea being to convert those guards into instructors for the boys confined in his institution. He frankly admitted to me that it didn't work out so well, that the guards didn't make good instructors, so he was now asking for four teachers. I said, "How about the six guards you got last year?" "We need all the guards," he said. I said, "I'll tell you what you can do. You can have the four teachers, but we will take off the six guards that you got last year for instructors." It is by that process of nibbling and accretion that budgets everywhere work out. The same superintendent wanted a dentist for his institution. I said, "You have had dental work done for the boys in the past." He said, "Yes." "How was that done?" "We hired a dentist to come in two days a week and paid him $20 a day." I said, "From what fund do you pay that?" "Special fund for medical and surgical treatment." "Well," I said, "you can have this dentist for $2,500 a year but we will take $2,500 off the special fund." He didn't want to do that and said, "You can take $1,000 off the special fund." So I scratched out the dentist's position and he is going to get the work done the same way he did last year.

I recall that 15 years ago I occupied another position in the State service that called for auditing and examining work. It had been started back in the nineties because of some scandals which were raised at that time in connection with court and trust funds, money

deposited in court for infants or incompetent people. I repeatedly told my immediate superior in that service: "This service is costing you $75,000 a year; now, any time you want that done for $25,000 you just whisper it to me and give me a free hand, and I will get it done for $25,000." It is still costing the State of New York $75,000 to do the job, principally because the men who are doing the work are State committee patronists. Whenever administrations change, a new gang is appointed and the men have to be educated in the work. I could repeat many instances of that kind. But I was encouraged by an incident I heard of the other day. A group of farmers in Wisconsin, I believe, banded together and refused to pay their taxes unless some items which they believed unnecessary were taken out of the budget. That is a wholesome thing to do. It is a wholesome thing for you people and the people in your communities to watch the budget. We are continually adding services to government, we are continually adding positions to government. Frequently they are necessary because of changed conditions but those very same changed conditions may make obsolete or unnecessary some other positions or services in the government.

(3) It is highly important that every governmental unit have a budget. When I say a budget, I mean a formal, complete, financial program taking into consideration the income and the probable outgo. We need that in order that we may be required to think and plan not only for the forthcoming year but for the years to come.

(4) We need to insist, in season and out of season, in times of prosperity and in times of business depression, that strictest economy be practiced. We have gone through a wonderful period of inflation in business. Money was easy. It came relatively easy to many of us. The income of government went up just as our incomes increased more or less rapidly. It required a lot of self-restraint on the part of public officials to try to keep their budgets down. They were importuned from every quarter for this or that innovation or for increasing this activity or that activity. Too frequently we were not strong enough to resist the appeals that were made to us. The result is that the Federal Government is in a very serious predicament in a financial way, and the governments of many of our States are facing deficits and are trying to figure out how to raise new taxes; and in our localities they are struggling with budgets and trying to hold them down. They too are, in the main, facing increased taxes. All of that could have been guarded against if in the years of prosperity we had resisted, as some of us did as individuals, the inclination or disposition to increase our current living expenses. The man who did resist that impulse during the past five or six years is not worrying now about curtailing his establishment and trying to see how few servants he can dismiss or how few cars he has to lay up.

(5) Oppose having your State or your locality try to "keep up with the Joneses." You know what that means in private life. It means the same in public life. What one locality can afford without a serious drain on its treasury, another municipality can not, and what applies to municipalities applies to States as well. The State from which I come is perhaps one of the fortunate States of the Union. We can spend more on roads, we can perhaps be more luxurious in building bridges and in building schoolhouses, than can

Vermont, or New Mexico, or Utah, or some of the other States. In New York one of our wealthy cities of 30,000 inhabitants will build a million-dollar school building. The people in another city of the same size but with half the taxable wealth will think they must have a million-dollar school building too. That sort of thing leads to much overspending, much extravagance. So I say to you, counsel and advise, and keep your municipality and your State from trying to keep up with the Joneses.

(6) Use special tax measures which are based on sound economic principles, rather than those which make a plausible appeal to one's reasoning at the moment. Economic laws are just like the laws of nature, they can not be counteracted or overcome by man-made statutes.

(7) Perhaps I should have confined my talk to this point: The possible means of relieving the farmer from some of the taxes. That can be accomplished only by a redistribution and equalization of the tax load. Before that is done, I think we need to review and reexamine the functions of government. Conditions have changed in the last 150 years. We are no longer leading community lives. As man's radius of travel has been enlarged, the benefits which he receives from government outside of the immediate community in which he was domiciled have also been enlarged. We have to take those matters into consideration. We have done something of that sort in New York. I mention it, not because I think it is the only plan or the best plan, but rather for the purpose of laying before you concretely what we have undertaken in a small way, perhaps, in the Empire State. Some two or three years ago we surveyed the situation, and we decided that the State, as a State, should assume a larger responsibility for many highway functions. We had a State highway system, but we required the localities to pay 35 per cent of the cost of the roads. That worked out this way: In a rich county the taxpayers could pay their share of the cost of completing the highways by paying 30 cents on $1,000 of valuation, while in another poor, rural, farming community a taxpayer would have to pay $42 per thousand. That was a range from 30 cents to $42 on a $1,000 valuation. A man owning a $10,000 farm in a rich county would pay $3, and a man owning a $10,000 farm in a poor county would pay $425 for the completion of the State highway system. We equalized that by relieving both counties from paying anything, and paying it out of the State treasury. You see the beauty of the plan was the taxpayers in the poor county got more relief than those in the larger or wealthier counties.

We are doing the same thing with bridges—we took the same action regarding them. Previously we had been requiring the taxpayers in the towns through which State highways ran to pay $50 a mile toward the upkeep of the highway. Fifty dollars a mile seems like a small sum, but if you have a town in which the average taxable wealth per mile of highway is $5,000, it just means an added $1 to the tax rate on each thousand dollars of valuation, for every farmer in that town. So the State assumed that burden. Then the question of snow removal came up; I don't think we have written the final chapter of that story, but New York State is paying one-half the cost of snow removal.

We turn then to the local highways. We have county systems of highways in New York. Three years ago when we reviewed the situation, the State was giving in 57 rural counties of New York about $8,000,000 to help build up their county highway systems, but as a part of this program, we inaugurated a gasoline tax, and that gave them approximately $6,500,000 to $8,000,000 in addition. So now the counties in New York are receiving $15,000,000 or $16,000,000 a year out of the State treasury to build up their county highway systems, systems secondary to the State highway system proper. But we didn't stop there. We still had 50,000 miles of dirt road town highways, as we call them, in New York, used principally, it is true, by the local people. We found that the tax rate for town highway purposes ranged from $1 a thousand or less in some rich towns, up to $17 or $18 in some of the remote poor towns. So we devised a system of State aid, not to give every town so much for each mile of highway, but rather to base the amount of the gift on the value of taxable property in that town. The result is that in no town in New York State is it necessary to have a town highway tax exceeding $3 per thousand. Perhaps the poorest town in the State raises a tax equal to $15 for each mile of highway, because the valuation in that town is an average of $5,000 per mile. Such a town raises $15 and the State gives them $85, so that they will have $100 with which to keep up each mile of town highway. If the town happens to be a notch better off and has $10,000 of taxable wealth per mile of highway, it has to raise $30, $3 on each thousand, $30 for each mile of highway, and the State gives it $70. That has had the effect of very greatly equalizing the tax load as between different towns and of giving measurable tax relief to the farmers.

Then we turned our attention to the school situation. For many years we had been giving State aid in New York State for the support of public schools. In fact, in 1925, we worked out a program for equalizing taxes in school districts that employ five or more teachers, but we had left alone the rural schools employing one to four teachers. Now we brought into play the same theory that we had brought into play in the town highway proposition. We said: These school districts are not all of the same taxable ability, they are not all equally able to support their local schools, therefore we will give the poorest school the most, and the next poorest school the next highest amount, and so on. We do it in this fashion. We first require the school district to raise a tax of $4 a thousand for school purposes; then we give that district the difference between the yield of such a tax and what it stands for in maintaining its school, providing the expenditure does not exceed $1,500. If they get extravagant and go above $1,500, they have to add it to their own tax rate. It worked out this way in our State: The town which was having to pay a tax of $16 or $17 or $18 per thousand for highway purposes was also having to pay approximately $20 for the support of the schools; now, that kind of a town has to raise at most, say, $7 a thousand.

Schools and highways are not the only things that lend themselves to this sort of treatment. There are still other functions of government which New York might well consider taking over and supporting wholly or partly. I presume that is true of the States from

which you come. I will mention one or two such functions. In the main, we require in New York that the town, city, or county, support all of its own poor. I see no particular reason why the support of the poor, particularly the permanently poor people, should not be a State charge.

I do not believe we have gone so far as we should in the matter of highways. I am very much interested in the movement started in North Carolina this year when the State took over as a State charge all of the highways in North Carolina. Incidentally, they did the same thing about the schools. I am hopeful that within the next decade the State of New York is going to assume a larger and larger responsibility and a larger share of the cost of the support of the common schools in the State. I believe that it is by this means of reexamining and reallocating the functions of government that the farmer is going to profit most and benefit most.

Thus far, I have spoken only of the possibilities within States such as New York. Mr. Englund called your attention to the fact that what New York does along that line is not necessarily an index or a guide to what Arizona or New Mexico should do. Our vast wealth, our great social income, make it possible for us to do things which some other States might not be able to do. There is where it becomes important for us to look beyond the borders of our own State and view the thing as a national problem. I am fully aware of the fact that we have Federal aid for highways, but I doubt if that has gone as far as it might well go.

I do not belong to the school of thought that deplores the fact that New York State paid more into the Federal aid fund than it gets out of it. I have no sympathy with my friends in Massachusetts and Pennsylvania, and some of the other States, who are constantly advocating reduction in Federal aid because our States are the ones that are hit and because our dollars are helping to build roads in some of the remote sections of the country. I view, as I know Mr. Englund does, this country as one great economic unit, and I am aware that for New York to be truly prosperous, it is necessary that every one of the other 47 States of the Union be prosperous. It does not hurt my feelings a bit to have New York dollars spent in building highways in other States in the Union, so long as the money is efficiently and properly expended, because I believe that if the people in those other States are prosperous, prosperity is going to be reflected in New York. We shall be correspondingly prosperous and shall not miss the dollars.

Perhaps I am treading on dangerous ground now, because apparently thought is not very far advanced in that direction. I know the theory that each State should control its own educational system, but I am not at all convinced that Federal aid should not be granted in all public education just as it is with roads. If education adds to the assets of this country, as I believe it does, then it is important for Illinois, Pennsylvania, Ohio, and New York, and all of the other States, that there be a high standard of education in all these States. If some of the States are too poor and their taxpayers can ill afford to support an adequate and proper system of public education, then the larger and wealthier States ought to help them. The only means

of doing this that I can figure out is through a system of Federal aid for public education.

(8) The eighth point of my program is not the least important. I speak feelingly on it from my more than eight years' experience as a tax commissioner. It always pains me as a tax commissioner to see some groups of taxpayers able to get out from under, able to evade taxes, not only because it implies illegality but because it means not making a decent contribution toward the support of government in the aggregate. You may not have thought of it in this light, but I tell you frankly as a tax commissioner, the very organization of our country—a Federal Government with 48 independent States, each with independent taxing power—makes it extremely difficult in these days of national business, national commerce, national transportation, national means of communication, to reach all groups of taxpayers in such a way as to require each to make his fair contribution. The State of Illinois undertakes to tax tangible personal property of the manufacturer, with what success I do not know; I doubt if it is very successful. Ohio tries to do the same thing.

Several years ago New York embraced the income-tax method of taxing business corporations. New Jersey taxes personal property except such as is engaged in manufacture, and Pennsylvania exempts property used in manufacture. It so happens that just by reason of the divergence of these laws, some manufacturers, some commercial businesses, by a system of corporate set-up, by the use of subsidiary companies organized under the laws of some State that does not tax them on their income, and by intercontractual relations between the corporations, can "milk" all of the profits into a State where there is no tax and where the company has no tangible personal property whatever. Again, we have seen the investment companies and the holding companies develop wonderfully in the past few years.

It is entirely possible for New York men and New York capital to organize under the laws of Delaware or Maryland and establish a business office in New Jersey, and make immense profits, as they did during the good years, yet virtually pay no taxes to anyone. It is entirely possible for a man of great wealth who has made all of his money in New York or Chicago or elsewhere to migrate to the State of Florida, where they have a constitutional provision that no income tax shall ever be levied, and where they have not started taxing personal property to any extent. He thereby escapes making any contribution to the government under which he has lived and through whose opportunities it was possible for him to accumulate this fortune. You have no notion, unless you have administered tax laws (we have a most complicated situation in New York) the amount of perfectly legal tax avoidance that is practiced in the United States to-day, and that is going to continue until we obtain greater uniformity in State and local taxation.

Now, please don't understand me as saying that I think the other 47 States ought to conform their tax laws to the tax laws of the State of New York. I am not saying that for a moment. But I say that until we do have greater uniformity in the tax laws of the several States, some people are going to be able to dodge hither and thither according to their particular set-up or situation, and virtually escape

making any contribution to any State government or to any local government, for that matter.

We had that condition in a very acute degree in the matter of inheritance taxation a few years ago, about 1925 or 1926. You will recall that Florida amended its constitution to provide that no inheritance tax should ever be levied in the State. California was all ready to repeal its law, to go into competition with Florida for the retired people of great wealth. Nevada and Alabama had no inheritance tax. The District of Columbia by the way, is a haven of refuge for people of wealth, because they have no inheritance tax there. We were able to overcome that by synchronizing our State statutes with the Federal inheritance tax. It is more or less technical detail, and I will not go into the legal aspects of it except to say this: To-day it doesn't matter in what State a man dies or in what State he is a resident at the time, or in what State he has a domicile at the time; if he dies under the Stars and Stripes, his estate is going to pay just so much money. That is because of an 80 per cent credit provision in the Federal estate tax law.

My personal opinion is that we need to do the same thing with our taxes on business and on personal income. I should like to have you think that over. I have given hours and weeks and months of thought to this in the past eight years, and the more I think about it the more I am convinced that a thing of that sort is necessary. If we can get all of the people paying or contributing according to ability or benefits or whatever criterion we employ, it will make your taxes and my taxes lower. It is through these various methods that I have mentioned that I see some solution for the farmers' tax problem and some salvation for him.

GENERAL DISCUSSION

Doctor GILBERT. A gentleman whom we all know and respect has come into the room. I am sure we should like to hear a word from him. I refer to Mr. Legge, the former chairman of the Federal Farm Board.

Mr. LEGGE. Mr. Chairman, I notice you have seven speakers scheduled for this morning; if I were to impose on their time it would be too bad. I haven't anything to say. I am not on your program. I am mighty glad to see you tackling a subject which we have all talked about for a lifetime. My friend Monroe from the North Dakota college said to me the other day, "The only thing that is wrong with this convention is that it should have been held 75 years ago." What a different position we might be in to-day if we had had some sane, carefully thought-out program instead of the indiscriminate catch-as-catch-can basis on which we have developed the agriculture of this country. It is far more difficult to deal with the problem now than it would have been if we had started right. But you are not the only people that have such problems to contend with. We all have to back up and start over again. I am mighty glad to see you at it; I hope you will keep at it until we get a really constructive program. The old story that all these things should begin at home, is involved in this question of a sane, sound, well-balanced production. We shall not have any need of relief, or legislation, or anything else of the kind, when we attain

that standard. I am not going into discussion of the subject further than to say that I believe in it. You are not going to settle the problem this morning, because it is just a little broad, but you may make a start, and from that start we may get the problem settled in the course of time.

ADJUSTMENTS IN FARMING IN THE BETTER FARMING AREAS

Presiding, L. E. CALL, *Dean, Division of Agriculture, Kansas State College*

Mr. CALL. Mr. Nourse, who was to preside at this meeting, has found it impossible to be here, and I have been asked to preside in his place. The general theme for discussion this afternoon is, Adjustments in Farming in the Better Farming Areas. A national policy of land utilization would be incomplete if limited to those areas of our country that are low in productivity. Problems of proper land utilization occur in our best farming regions. These problems are of at least two types: (1) Problems of farm adjustment; (2) problems of soil conservation. Secretary Hyde in his address yesterday pointed out that even on the best agricultural land of this country, some farms are submarginal because conditions produce a size and type of organization unsuited to economic conditions. He said: "In some areas, a program of consolidation is called for; in others, a program of subdivision." It seems to me that such problems of farm adjustment in the better farming areas should receive consideration in the development of a national policy of land utilization. Likewise, the problem of soil conservation is pressing in many of the better farming areas. Improper soil management can quickly reduce a farm from a productive condition to an unproductive one. Thus, problems of soil conservation should also receive consideration in the development of a national policy of land utilization. The program this afternoon, therefore, is devoted to a discussion of these two problems in considering adjustments in the better farming areas.

SOIL CONSERVATION A MAJOR PROBLEM OF AGRICULTURAL READJUSTMENT

Dr. H. G. KNIGHT, *Chief, Bureau of Chemistry and Soils, United States Department of Agriculture*

Problems of land utilization have been of primary interest to the Department of Agriculture for many years. In the work of the soil survey, as early as 25 years ago, it was recognized that large areas had gone out of cultivation. As the West was settled it was found that land was abandoned in the Eastern States, not so much because of ruinous competition as because of the destruction of the workable surface of the land itself. The situation was not sufficiently acute at the time to arouse public interest, but recent investigations have served to bring to our attention the enormous aggregate acreage which has been abandoned for agricultural purposes as the result of destructive rainwash. Owing in large measure to destructive soil erosion, not only throughout the older settled Eastern States but throughout the entire Nation, the subject can no longer be ignored. Serious and irreparable damage has already been done. The effects

of destructive erosion are cumulative, and if no effort is made to retard its ravages land abandonment may increase at a more rapid rate in the future than in the past.

Some three years ago, under the leadership of H. H. Bennett, of the Bureau of Chemistry and Soils, a reconnaissance survey was made to develop information which would give us a clear picture of the extent of soil wastage by erosion. This information was gathered in part by rapid, extensive reconnaissance surveys and in part by a study of soil maps produced by the bureau over a period of more than 30 years.

The results obtained do not speak well for the permanency of American agriculture nor for the men in whose hands has been placed in trust this basic wealth of the Nation. Too often those lands used for agricultural production which gave the lowest economic returns suffered most. In thousands of cases the returns from the land were not sufficiently great to pay the cost of preventive measures and at the same time support the farm family, even at a low standard of living. Agriculture under these conditions was a process of soil robbing and mining. On the other hand the more productive lands have not escaped this mighty scourge. Results of unrestrained erosion on such land have been less spectacular but none the less productive of serious consequences.

Of our heritage of something over 650,000,000 acres of more or less readily arable land, it is conservatively estimated that 17,500,000 acres formerly cultivated have been irreparably destroyed by gullying or so severely washed that farmers can not attempt their cultivation or reclamation. This exceeds the total area of arable land in Japan. Further, it is estimated that fully 3,000,000 acres of bottom lands have been destroyed by sand, gravel, and other débris brought by flood waters from upper levels, making a grand total of at least 21,000,000 acres which have gone out of cultivation because of destructive erosion alone. This does not include other millions of acres which have had large portions of the fertile topsoil removed by the slow process of sheet erosion, thus materially reducing the productive power of the land and at the same time increasing the cost of crop production.

On the Piedmont Plateau, including the shale Piedmont, which comprises an area of 51,000,000 acres extending through Alabama, Georgia, North Carolina, South Carolina, Virginia, Maryland, Pennsylvania, and New Jersey, about 2,600,000 acres of land formerly in cultivation have been destroyed by gullying and from 4 to 18 inches of topsoil have been washed from fully 65 per cent of the cultivated portion of this area. A single county in this region in one of the Southern States was found by actual survey to contain 90,000 acres of formerly cultivated land which has now been permanently ruined by excessive washing and gullying—even down to the bedrock in many cases. A survey of another county in the same area shows that a total of 297,000 acres, or 50 per cent of the total area, has largely lost its surface soil since the clearing of the land. This once was loam and sandy loam, productive mellow soil, easy to till. It now consists of clay and clay loam, far less productive and much more difficult to till, much more susceptible to baking and to the effects of drought, and requiring heavy fertilization for

anything like satisfactory yields. In addition, 23,000 acres of formerly good bottom land in the same county have been converted into swamp and semiswamp or covered with relatively infertile sand through the deposition of erosional material.

In the Appalachian Mountain area, which totals about 78,000,000 acres, between 10,000,000 and 15,000,000 acres have been seriously eroded, approximately 2,000,000 acres of which have been permanently ruined in so far as farming is concerned, by gullying. For the most part this area is extremely rough and mountainous with very steep slopes. The sandy lands of Alabama, Mississippi, and Georgia, an area totalling 27,000,000 acres, showed severe erosion on at least 5,000,000 acres, about 1,500,000 acres of which was completely destroyed by gullying. The southern brown loam region, comprising 17,000,000 acres of formerly very fertile land in Missis-

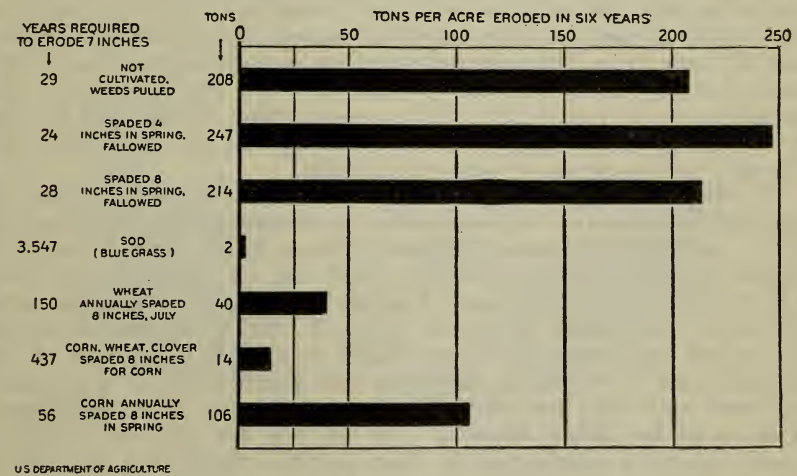

FIGURE 28.—EROSION OF A GENTLY SLOPING FIELD NEAR COLUMBIA, MO., UNDER DIFFERENT TREATMENTS

The chart shows the striking variations in degree of erosion under different methods of treatment. The soil type in question is very susceptible to erosion under favorable conditions, but the amount of erosion is more than a hundred times as great (for instance, when the soil is fallowed after spading in spring) than when it is in bluegrass sod.

sippi, Tennessee, Kentucky, Arkansas, and Missouri, has lost most of the soil from about 8,000,000 acres and probably 3,000,000 acres have been permanently ruined by gullying. The sandy lands of Texas, Arkansas, and Louisiana, comprising about 33,000,000 acres, have 10,000,000 acres severely eroded, with 1,500,000 acres ruined by gullying. Of the 12,000,000 acres comprising the black belt of Texas, Alabama, and Mississippi, erosion has been severe over 4,500,000 acres, with a loss of from 4 to 30 inches of soil, and at least 250,000 acres have been completely ruined. Of the 36,000,000 acres comprising the red plains of Texas, Oklahoma, and Kansas, 8,000,000 acres have been severely eroded and approximately 1,200,000 acres have been utterly ruined by erosion. As the result of a recent erosion survey the Oklahoma State Experiment Station says that the total acreage abandoned in that State in the past four years

is 1,700,000 acres of which 1,350,000 acres have gone out of cultivation because of destructive erosion alone.

When anybody tells you that soil erosion is not producing damage, just refer them to these figures.

Within the past two years the Department of Agriculture has established nine regional erosion experiment stations for the purpose of studying the principles underlying erosion processes and for working out practical methods of erosion control. The national program calls for the extension of these experiment stations into 19 or more major regions in which extensive soil washing is known to occur. Although the time has been short, some very valuable information has already been obtained.

Investigations of the Texas Agricultural Experiment Station have shown that in western Texas, on the Miles clay loam of the red plains region (a very important cotton and grain-sorghum soil) the annual loss of topsoil from a 2 per cent slope amounts to 12.6 tons per acre from ground used continuously for cotton, 18.6 tons from fallow, and 3.8 tons from the soil protected by a buffalo-grass sod. The corresponding losses of water by run-off were 19.5 per cent of the annual rainfall from cotton, 32.6 per cent from fallow, and 6.1 per cent from grass. The loss of moisture by run-off is of vital importance in this region of limited rainfall.

The Missouri Agricultural Experiment Station reports that on the Shelby loam (an important and extensive glacial-drift soil of the Corn Belt) the measurements, representing 12-year averages, showed for a 3.6 per cent slope topsoil loss of 44.4 tons per acre; from fallow ground cultivated 4 inches deep; from continuous corn, 20.5 tons; and from bluegrass sod, 0.35 ton. The differences in the run-off are startling. From fallow ground 32.6 per cent of the rainfall passed into the drain; from continuous corn, 32.02 per cent, and from sod, 14.21 per cent. Much greater losses have been shown at some of the other stations. At our erosion station in central Texas, during a single rain on May 10, 1930, there was recorded a loss of 23 tons of soil per acre from Houston black clay loam having about 4 per cent slope, while 96 per cent of the rainfall, amounting to approximately 5 inches, was lost as surface run-off.

Not all of our vast area of crop land is washing as rapidly as the experiments in Texas and Missouri show. However, topographic maps, soil surveys, and field observations indicate that not less than 75 per cent of continental United States has a slope as steep or steeper than 2 per cent, which is approximately the slope on the land experimented with in western Texas, where 12.6 tons of soil per acre was lost in a single year. Probably at least 60 to 65 per cent of the cultivated land in the United States is as steep or steeper than that represented by the 3.6 per cent slope used for experimental purposes in Missouri, which is losing 20 to 25 tons of topsoil per acre every year while planted to corn. Already, over a great portion of the Piedmont region, practically all the topsoil has been washed away and farming is now carried on upon the subsoil, which is less fertile, more difficult to work, much more easily eroded, and less retentive of moisture.

Recently a detailed survey was made of an average farm in the rolling section of the red plains near Guthrie, Okla. The tract con-

tained 160 acres, 74 acres having been put into cultivation during the past 30 years. Sixty-eight acres, or 92 per cent of this, had lost topsoil and subsoil to depths ranging from about 3 to 96 inches. Much of the land had been abandoned. Twenty-five and one-half acres had lost an average of 8 inches of soil, 23 acres had lost 13 inches, 5 acres had lost 20 inches of soil and subsoil, 1¼ acres had lost 42 inches, and 1 acre had lost 5 feet of topsoil and subsoil—all this within a period of one generation of soil exploitation.

Where the topsoil is lost the surface soil can not be restored except by the slow process of nature. However, with proper handling and use of liberal additions of organic matter and fertilizers, the yields can be largely increased in many instances and indeed it is possible in some cases to obtain better yields than the original soil produced without such treatment. This renewal treatment, however, is expensive, and it should be remembered that if such treatments had been

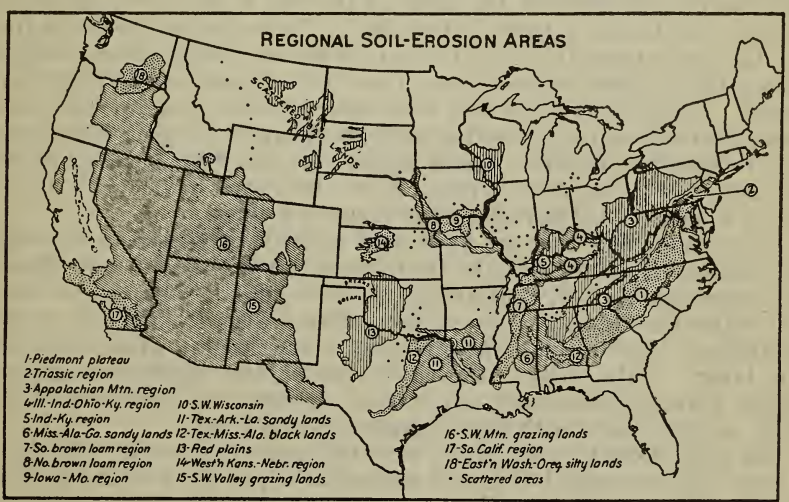

FIGURE 29.—Although soil erosion is occurring in nearly all parts of the United States, particularly on cultivated land, it has become most serious in the South and Southwest. Erosion has already caused the abandonment of nearly 20,000,000 acres of land formerly in crops, and led to the abandonment also of several million acres of bottom lands that have been buried under sand and gravel washed down from lands above. As yet erosion is remaking mostly the surface soil, but gullying of the subsoil has started. On millions of acres—and in a period of time varying with conditions of soil, slope, and climate from a few decades to a century—it appears almost certain that these lands will be lost to cultivation unless prompt action is taken to retard the erosional process

given the original topsoil the yields probably would have been increased in much greater proportion than is possible upon the reclaimed subsoil. It should be remembered also that so-called abandoned or worn-out land is frequently nothing more than eroded land that has lost part or all of its surface soil by sheet erosion, the character of the soil having been markedly changed. In fact, in our soil resurveys in many instances we have found it necessary to reclassify the soil because of the changes effected by long-continued erosion.

Experiments conducted in North Carolina gave the rate of erosion as four hundred and fifteen times as rapid on bare ground as on

grasslands of the same slope and soil, while at the Missouri Agricultural Experiment Station the rate of wash-off from bare ground plowed 4 inches deep was one hundred and thirty-seven times as rapid as from sod land; 98.5 per cent of the precipitation remained on the sod land, whereas only 65 per cent remained on bare ground. In the latter instance the rate of erosion for bare ground was 7 inches in 24 years, and for bluegrass 7 inches in about 3,000 years. We may assume for purposes of discussion that the bluegrass lands represented fairly well the approximate stable natural conditions before the advent of the white man. During this preagricultural period the soil was eroded probably about as rapidly as it was being reproduced, but what it took nature 3,000 years to produce, man is now destroying in the short period of one generation.

Having realized the seriousness of losing the topsoil, the Federal Land Bank of Houston, Tex., has established the policy of lending its money to farmers on the basis of the top 6 inches of soil representing the farmer's principal capital. If the bank discovers that the farmer is permitting his fields to wash at a rate greater than 6 inches in 35 years on a 35-year loan, foreclosure proceedings may ensue. Fortunately very few foreclosures have been necessary because the bank employs a soil-conservation expert to teach the farmer how to hold his topsoil. And I might add that the extension forces of Texas are doing their part in this. But what is 35 years in the life of a nation? What about the years to follow!

It seems strange that we have paid so little attention to the vital importance of the topsoil, the thin humus layer charged with decaying vegetable matter, containing the bulk of available plant food, and being the abiding place of incredible hosts of beneficial microorganisms. Some of our neighboring countries lay great stress on this layer. Cuba calls it the capa vegetal, the vegetable cap, and Cuban planters frequently adjust their varieties of sugarcane to the fields in accordance with the thickness of this layer.

But why should we bother to save this enormous area? We have a very large overproduction of agricultural products at the present time, and apparently with the developments of science and our knowledge concerning the needs of plants, etc., we are able to make the soil produce almost at will. It would be an easy course to allow destroying agencies to continue their work of reducing the arable acreage until a balance between production and consumption is reached. Nature would force, in fact is forcing now, a readjustment of our agriculture. We have been pursuing this policy up to the present time; not for the reason given but rather because of lack of information as to the true situation, and further because we have always been wasteful of our national resources.

We have pointed fingers of warning toward China as a terrifying example of wasted agricultural lands. The devastation in that ancient country has indeed been appalling. The timber was cleared from the uplands and the slopes were stripped of their natural protection, and in cultivating the land millions of acres of once-productive soil eventually became worthless because of erosion. Gradually the population was forced to leave the eroded slopes and concentrate upon the flat valley lands where every available foot of ground is used for crops. In spite of 4,000 years of levee building and canal

digging, the Yellow River of China, which in that country is known as the "Scourge of the Sons of Han," broke over its banks in 1877 to drown 1,000,000 human beings. This mighty river, during the great flood of 1852, changed its channel to enter the Yellow Sea 300 miles north of its former mouth. The sea itself derives its name from water that is colored yellow with the débris of erosion brought down from the still-wasting slopes far up the valleys.

But we have been no less wasteful. We have been so abundantly provided for by nature that there seemed to be no end of fertile acres and, therefore, no need to practice economy. We have used lavishly and destroyed ruthlessly much of our wealth of timber. We have gutted our coal supplies in a manner that may be considered criminal. Gas wells have been allowed to burn for months and years without thought or hindrance, our metal deposits have in many instances been stripped to obtain only the highest grade of ore, but the greatest crime of them all is that we have raided and robbed the soil which must forever be the mainstay and inheritance of man in the building of nations.

To meet a present emergency by accepting a policy that permits soil destruction would prove us to be short-sighted indeed! Future generations would very properly condemn us for our selfishness in terms far beyond my feeble powers to express. We should be branded for what we would be, freebooters and robbers, destroyers of that which we can not use, spreading desolation in our path, and making of our country a second China. The appalling wholesale destruction of life and property by Genghis Kahn and his vast, moving, ruthless, savage hordes, throughout Asia, pales into insignificance in comparison, for new and virile nations could and did rise on the ashes of that destruction, while we would be destroying the very substance upon which nations are builded.

We have had the problem of overproduction to deal with before. There are ways of adjusting such conditions and avoiding their economic consequences without resorting to or even permitting wholesale destruction of that which can not be replaced, even though a proper and satisfactory solution may not be immediately in sight.

The time will come when we shall need every available acre of productive land. With that need in mind, an intelligent and comprehensive land policy having in view the conservation of our soil resources, should be adopted now. We should not, must not, allow present economic considerations, private interests, or political differences to cloud the issue. Land values to the States and Nation can not be measured in terms of money, present demands, or even in terms of present productive power, but rather in terms of security to the commonwealth now and for all time to come.

What effect is soil wastage by erosion exerting upon land utilization? I have already indicated that some 21,000,000 acres of formerly cultivated lands have been abandoned because of soil destruction. Part of this area is now growing timber or is used for pasturage, and part lies idle, growing up with weeds. Throughout the southeastern Cotton Belt States increasing areas are being occupied by pine, while cotton growing, because of soil erosion and other major causes, is shifting to lands that still retain a part of the productive topsoil. Already the black lands of central Texas, representing some

of the best cotton soil of the Lone Star State, have shown sharply decreased yields. The decreased acre yields of wheat in parts of the Wheat Belt, the decreased acre yields of corn in many sections of the Corn Belt, and the decreased acre yields of cotton in numerous localities in the Cotton Belt can not all be attributed to the loss of plant food to the crops harvested, in the face of the enormously greater loss from soil washing.

The task of developing and putting into consistent operation an intelligent land conservation and utilization policy is not an easy one. Most of the land is now privately owned, and the method of handling it and the use to which it is put are considered very much the business of the owner so long as they do not interfere with the community or with the general interest of the public. While we do recognize in principle that one may not harbor a nuisance or a menace to public welfare, such as an insect pest or a disease, and we further recognize State and national authority in dealing with such matters even to the extent of supervision of agricultural practices, still we have not as yet reached the stage where the State or Federal agencies may control the use or abuse of lands in private hands. Whether the State and Nation should assume such authority in the interest of the public weal is a debatable question.

As the matter stands, if a landowner desired to destroy a piece of agricultural land for no good reason whatsoever by covering it, say, with 6 feet of granite bowlders, it would be recognized as within his right to do so without interference by any authority or agency, and figuratively at least just such action has happened time and again.

It is evident, therefore, that any land-conservation policy can not, and probably should not, be developed and put into effect by taking advantage of the regulatory power of the States and Nation. Rather it is a problem that should be handled through a process of education and a process of land withdrawal to be placed under State and Federal control. Certain lands are best adapted to timber or nut culture and other lands are best adapted to permanent pasture. Where such farming is practicable in the Southern States, turpentine farming may be advocated as part of the general agricultural programs; this would take the poorer and rougher lands out of cultivation. In the Western States much land can go into the grazing areas and into timber reserves, and in the Northern and Eastern States into forest reserves, recreational parks, etc.

Sufficient information is now in hand through the published maps and reports of the soil survey so that land classification for at least half of the agricultural area is possible and requires only a reconsideration of the work already performed with this in view by specialists who are trained for this purpose. Soil experts and land economists would be required in shaping such a program. Of the 350,000,000 to 360,000,000 acres of land from which crops are annually harvested in this country, it is estimated that certainly one-fifth and probably one-fourth is of marginal or submarginal character.

Of an additional area of approximately 300,000,000 acres now physically suitable to be plowed, a considerably larger proportion is marginal and submarginal, certainly one-third and probably one-half. A considerable part of this latter area lies in the subhumid region; of

this, the greater part not physically suitable for the use of farm machinery represents low-grade crop land. The information we now have indicates that of the 650,000,000 acres comprising the area of present crop land, plus the additional area mentioned, about 200,000,000 acres or one-fourth to one-third is of marginal or submarginal character and should not be used for cultivated crops. Actually, our better crop land is practically all in cultivation and has been for some time.

It has been seriously advocated that these marginal and submarginal lands should be withdrawn by State and Federal agencies from production, as there is reason to believe it is these lands which are seriously disturbing the balance between supply and demand of agricultural commodities. Certainly they are not needed at the present time. In favorable years, these lands create surpluses which are disastrous to the whole agricultural structure, while in years of drought or other unfavorable conditions they create serious hardships for those working on them. The hazard of uncertain production upon the marginal and submarginal lands makes farming quite generally a gamble. As already stated, we have good reason to believe that with the practical application of the scientific knowledge we now possess we can make the more favorable areas produce almost at will to meet the needs of our expanding population for many years to come, provided we give due protection to the erosive areas of these better lands. And the scientist is still pulling other tricks from the mystery bag to add assurance to these statements. So this suggestion is not as fantastic as it may seem.

If these submarginal lands were withdrawn from production by private interests under favorable legislation or placed under the control of State or Federal agencies to be used for the purposes for which they are best suited, at the same time conserving the soil, a great step forward would be taken in solving many of our agricultural problems.

This suggestion is not new by any means. Several States have been pursuing the policy of withdrawing the less productive lands from agricultural use either by purchase or through delinquency of taxes, although this may be mainly for other economic reasons than conserving the soil or diminishing production. A community can actually be an economic loss to the State since to maintain certain standards more public funds must be poured into the community for schools, roads, and other public improvements than may be received in taxes. If this loss is too great, it may actually be profitable to the State to encourage emigration of the people to more favorable localities. These lands may then be used for growing forests and as recreational grounds, and in that way made to pay fair returns for the investment in them. The rougher lands of the country probably lend themselves best to these purposes, while marginal and submarginal lands of other character, such as are found in large areas in the West and in various parts of the East, might find other uses, such as for grazing livestock and or growing timber not only for wood but for protective purposes.

By the use of soil maps, topographic maps, and economic surveys it is possible to make a land classification over a considerable area of the United States. This work has already been undertaken by

several States. The lands of the Nation fall into four rather well-defined groups:

(1) Nonarable lands—lands too steep, too stony, too wet (or subject to overflow), or too gullied to plow.

(2) Marginal lands—lands too poor and droughty, as deep loose sands; too arid, as portions of the western edge of the wheat belt; too difficult to plow, as the stiff acid clays; or too subject to intermittent wet and dry conditions for cropping, as the gray savannas of the Southeast.

(3) Lands hazardous from the standpoint of erosion—lands the surface soil of which has been thinned by sheet washing to within less than plow depth from intractable clay, excessively loose and droughty material, or soft material subject to essentially uncontrolable erosion, and lands subject to excessively advanced stages of sheet erosion or gullying following cultivation or overgrazing on slopes steeper than certain determined gradients.

(4) Lands satisfactory for general agricultural purposes.

The lands of the first three groups would be protected by throwing them into forest, grazing areas, wild life refuges, hunting preserves, and recreational areas, leaving lands in group 4 upon which to expend our best efforts in the formulation of a land-utilization program.

Under our agricultural extension agencies' present policy of striving for great returns of agricultural products for human labor expended at the smallest cost per unit; with the rapid improvement in farm machinery and its application to other operations now manually performed; with the production of cheaper, more highly concentrated, and more efficient fertilizers and the improvement of fertilizer machinery; with a better understanding of the relation of plants to their environment; and with new strains of plants better adapted to their environment and to our needs, we may expect that the spread in cost of production between the more desirable and less desirable lands will become greater, calling for added work for extension and teaching agencies and research organizations in meeting the desire for information to cope with the changing conditions. Those lands which, because of their topography or for other reasons, are giving inadequate returns, may either go into other crops or go out of cultivation. This process will undoubtedly proceed at a more rapid rate for the next quarter of a century than it has for the last.

But, unfortunately, in this process of readjustment the poorer lands as well as the more sloping areas of the productive lands are being neglected, and with this neglect because of soil wastage they are becoming less productive and less valuable as time goes on. Any delay, therefore, becomes a serious matter if we are to save our heritage. The time is ripe for developing a conservative, sound, and satisfactory policy for conservation of our soil resources, a policy which will stand the test of time, and any plan of agricultural readjustment should have this as a prime consideration. Our millions of acres that are not actually needed for production at the present time should be carefully conserved for future use and the acres that are required should be protected from needless destruction.

SOIL CLASSIFICATION A BASIS OF AGRICULTURAL ADJUSTMENTS

Dr. J. G. Lipman, *Dean, New Jersey Agricultural College*

The ability to support vegetation is inherent in every soil. This ability is a variable factor. Given a supply of water and suitable temperatures, few soils will fail to grow crops. Such exceptions as do occur may be traced to chemical deficiencies, to the presence of toxic substances, to defective texture and structure, or to faulty drainage. We may well ignore these abnormal soils, quantitatively unimportant, and consider the differences and their range as found in our arable and potentially arable land.

For any class of soils crop yields may be raised or lowered by favorable or adverse treatment. But whatever the treatment, it must lie within economic limits and, therefore, it can seldom change the inherent characteristics and properties of soils. We know that soils differ widely in their chemical attributes. Some have vast resources of plant nutrients and others have a slender store. Some soils are sour and others are sweet. Quantitatively soils may be rich, qualitatively they may be unbalanced or deficient in one or more of the elements of phosphorus, nitrogen, potassium, sulphur, magnesium, calcium, iron, manganese, copper, boron, iodine, and others.

There are soils with an excessive accumulation of soluble salts. There are soils of a texture so heavy as to make their tillage difficult and costly. At the other extreme are soils so open and porous as to make them ill fitted to retain either water or plant nutrients. Between the two extremes we find clay, silt, and sandy loams of varying quality. The ability to store and move water; temperature and ventilation; the movement of soluble salts; the oxygen supply for plant roots and microorganisms; and some other properties find expression in crop adaptations and yields. Thus there is a direct relation between the chemical, physical, and biological properties of any soil and its economic value. It is a relation based on internal and inherent qualities.

The economic value of soils may be affected by conditions not attached to the soil material itself. These conditions, which we shall call external, include topography, climate, and location. Topography and erosion are closely related. There is a like relation between climate and leaching, between the maturing of soils and their deterioration. Gravitation, water, and temperature join forces to move soil material in suspension and solution. The force of gravity may do something by itself, as rock débris move down the mountain and hillside. Air currents make some contributions to this movement. The net result of it all is the flow of soil material to the sea and the havoc wrought by land erosion the seriousness of which we have not yet fully grasped. We do know, however, that land subject to erosion must be protected, whether it be by a permanent cover of forest or grass, by terracing, by rotations, or by other expedients. Thus soil erosion and soil leaching become factors of major importance when we attempt to classify land for economic and social purposes.

Climate and crop distribution are directly related. Thus the distribution of cotton and tobacco, of wheat and bluegrass, of corn and

grain sorghums, of flax, potatoes, alfalfa, citrus, beans, and what not, is the integral of soil and climate. To some extent we may modify temperature and water supply, lengthen the growing season, and expand the limits of our crop zones, yet soil classification for economic purposes must reckon with water, heat, and sunshine as the external attributes of any soil type.

In formulating plans of soil classification as a basis for agricultural adjustments we must take into consideration the factor of location. A soil may be too heavy for growing vegetables, but if located within a few miles of a large city, it may justify a substantial outlay on drainage, manuring, and liming, to adapt it to vegetable growing. Generally speaking, draining, irrigating, terracing, manuring, liming, fertilizing, or even sanding and claying, may be economic procedures in one location but not in another.

Location is a factor related to the costs of transportation and distribution. It may cost a dollar to bring a box of apples to New York from one locality and 10 cents from another. We readily find similar differences in transportation costs in the case of milk, potatoes, watermelons, peaches, corn, wheat, cotton, alfalfa hay, and numerous other agricultural commodities. Everything else being equal, the dairyman who is compelled to pay 3 cents a quart for the transportation of his milk must put up with a lower standard of living than that of his competitor whose transportation charges are less than 1 cent a quart.

The subject before us calls for still another consideration. Corn, cotton, tobacco, or other crops may differ in nutritional or industrial qualities from soil to soil, from season to season, and from climate to climate. The time of maturity and season of shipment represent still another factor. Uniformity in the quality of the soil and subsoil affect the economics of crop production and distribution. These are likewise affected by the human factor as determined by racial antecedents, education, and training.

The magnitude and complexity of our land and soil problem call for the most careful analysis of the individual factors that affect it. References have already been made to most of these factors. With these in view, the following suggestions may be offered:

Steps should be taken to prepare an inventory of our land and soil resources on the basis of information already available, and that to be obtained in future surveys.

There should be elaborated a national policy in keeping with which land subject to erosion should be placed under forest or grass cover.

Provision should be made for eliminating from tillage all other land not capable, under existing conditions, of yielding economic returns.

Taxation systems should be so modified as to permit the taxation of agricultural land in keeping with its inherent production capacity.

Systems of farming should be planned for each soil region. Such systems should be best suited for each soil type, climate, and location.

Production should be intensified in areas the soils of which are capable of yielding higher economic returns.

Specialized production by soil areas and climatic zones should be encouraged wherever such specialization would be in the national interest. On the other hand, diversification should be urged where specialized or single-crop farming is detrimental to the land and to the economic and social interests of our farm population.

Regional planning related to water supplies, flood control, and recreation facilities should be coordinated with the rational use of the land for farm purposes.

There should be made available a series of soil maps containing information as to the inherent agricultural capacity, crop adaptations, relation to erosion and leaching, and present potential returns, of each soil type.

THE OUTLOOK A BASIS FOR ADJUSTMENTS IN THE BETTER FARMING AREAS

H. R. Tolley, *Director, Giannini Foundation, University of California*

So far, in this conference, not much attention has been paid to conditions in better farming areas. Areas which are generally accepted as being unsuitable for agriculture, and to which considerable discussion has already been devoted, are responsible for only a small proportion of the total agricultural production of this country.

While it is highly important that a rational program for utilization of areas unsuited to agriculture be developed and put into effect in every part of the country at the earliest possible moment, an undertaking of equal importance is to develop plans for the better farming areas as well. This will involve (1) determining the systems of farming and methods of production in each area which will yield the best returns in the years ahead ("in the years ahead" implies a knowledge of the outlook, a knowledge of the economic conditions), (2) determining what changes and adjustments will be needed in these areas as economic conditions change, and (3) developing ways and means of supplying the present and future farmers in these areas with information that will guide them in making the proper changes and adjustments at the proper time. As Secretary Hyde said yesterday: "We know far too little about what to produce, how much to produce, and for how much it is going to be sold." I take it he was thinking primarily of these better farming areas. Secretary Hyde also stressed the fact that plans for agriculture can not be made once for all—they must be modified as economic conditions change.

If economic conditions were static, or if they changed only slowly, the farmers in the different parts of the country might be able to work out for themselves—by the process of trial and error—the best systems of farming and the best methods of production for their farms. But economic conditions are changing continuously. The demand for farm products changes. The supplies of all agricultural commodities change. These changes are reflected in the prices that farmers receive. As agriculture is now organized, farmers do not have facilities to provide for themselves the nation-wide and world-wide information needed to show the changes that are taking place in the demand for and the supply of the commodities they produce. Nor do farmers have facilities for obtaining information that will enable them to judge the trends of supply and demand in the years ahead. And, what is more important, most farmers are not equipped to appraise the effect which a change in supply or a change in demand will have upon the prices they may expect for their products. Thus, even if complete information on present and prospective changes in the supply and demand for all farm

products were available to farmers, they would still need the services of the best-trained and most competent economic and statistical analysts to determine the influence which these changes will have on the returns to be expected for different agricultural commodities in different parts of the country.

Recognizing the need for a service of this kind, the United States Department of Agriculture and the State colleges of agriculture have embarked on an ambitious program of "outlook work." This program, initiated less than a decade ago, has developed into one of the most important lines of work of the Federal department and the colleges. And when I say "important" I mean one of the lines of work that has been receiving the most attention in the department and in the colleges. The primary object of the outlook service and the outlook reports has been to make available to farmers information on the prospective course of prices of the different agricultural commodities in the different parts of the country. The service has been developed to the point where a great many farmers are acquainted with it, believe in it, and are using it in making their farming plans. The Federal department and the State colleges now have resources and experienced personnel with which they can provide, if they will, a much broader and more helpful outlook service than they have been able to provide in the past.

The Federal Department of Agriculture and the State colleges have worked out a division of labor in the outlook work whereby the Federal department has accepted the primary responsibility for collecting and analyzing information dealing with national and international situations and for preparing periodic statements. The outlook reports represent the best judgment of the economists of the department as to the trend of supplies, demand, and prices for different commodities in the years ahead. The State colleges have concerned themselves primarily with determining the changes and adjustments in the agriculture of their respective States which are needed in the light of the outlook, and with disseminating the conclusions among farmers.

However, the latest "outlook reports" issued by the Federal department have been woefully lacking in information that will be helpful in planning production. In fact, they have been outlook reports in name only. They have contained no statements whatever on the supply outlook, or the demand outlook, or the price outlook. Let me illustrate with the outlook reports on just one commodity—wheat. In August, 1930, a year ago, the department prepared and issued an excellent report which stated that an analysis of all the information then available indicated that returns from wheat in the years just ahead would be considerably lower than they had been in the years just preceding 1930. Information of that kind is essential if wheat production in different parts of the country is to be planned intelligently. And, of course, I might add that information of that kind is essential for other commodities if production of other commodities is to be planned intelligently.

Contrast the report of 1930 with the outlook report on wheat issued by the department on September 5, 1931. This report contained no mention whatever of the probable future trend of returns from wheat. The opening sentence of the report (I have it with me)

was: "Wheat prices in the principal United States markets reached the lowest levels in the history of those markets during July and August"—a fact which every wheat producer knew only too well long before this so-called outlook report was issued. Every statement in the report was just as unilluminating as the opening sentence.

The wheat growers of the country and all agencies interested in wheat production wanted to know whether the returns from wheat must be expected to remain at these disastrously low levels which prevailed at that time. We all realize, of course, that the present unsettled economic conditions make it difficult for even the best minds to gage the future trends of supply, demand, and price, for any commodity, but the Department of Agriculture has more information on the trend of world wheat supplies and consumption than has ever before been available to any one agency, and it has a number of price analysts who have made exhaustive studies of the course of wheat prices and the causes of fluctuations in prices. Is not the public entitled to know what all this information and the studies of all these men indicate concerning the trend of returns for wheat in 1932 and the years thereafter? And would not this be of material help to farmers and to others in all the wheat-producing areas of the country in making their plans for the years ahead?

This statement on wheat is not the only one of the kind that has been issued in recent months. I have with me one on beef cattle, another on sheep and wool, and so on. In other words, all these recent reports have been outlook reports in name only.

To-morrow's session of this conference is to be devoted to further discussion of the subjects being covered in yesterday's and to-day's programs in an effort to reach some conclusions as to lines of action, both public and private, which will aid in the development of a more prosperous and stable agriculture. I trust one of the conclusions will be that a continuation and expansion of the program of outlook work in the Federal department and the State colleges is highly desirable and that a vital part of the program is the preparation and publication at frequent intervals of national, State, and regional outlook reports containing unequivocal and understandable statements, representing the best judgment of national, State, and local outlook workers concerning the returns to be expected for the different agricultural commodities in the various parts of the country during the years ahead.

Mr. Call. I think we are indebted to Mr. Tolley for bringing out this suggestion. Those of us who have occasional need for using the outlook material in the State institutions recognize the need for just the thing that Mr. Tolley has suggested.

A REGIONAL APPROACH TO THE PROBLEMS OF FARM ADJUSTMENTS

C. L. Holmes, *In Charge, Division of Farm Management and Costs, Bureau of Agricultural Economics, United States Department of Agriculture*

The title assigned me presupposes a real need for the reorganization of American farms. The British have a term "rationalization of agriculture" which seems to fit the conception that we label reorganization. The profound changes in the economic conditions

and forces affecting American agriculture which have come during the past decade include not only a curtailment of our foreign markets and significant shifts in the consumption habits of our own population, but also greatly increased competition from foreign agricultural countries. There has also occurred a profound revolution in the competitive relations within our own agriculture, brought about by the remarkable progress which has been made in the mechanization of American farms and in the development of agricultural technic.

These factors have created a need for sweeping changes in the program of production and in the farming methods of considerable areas of our agricultural territory. These changes are necessary in order to meet the new competition and to maintain a desirable degree of efficiency and profitable operation, the object of which is to maintain an adequate standard of living upon American farms.

The situation just described is what one might term the normal condition as a result of the last 10 years' development. Now comes the severe depression of the last two years, creating a condition in which all energy is needed merely to hang on and weather the storm. We need to distinguish sharply between these two types of problems, that of the immediate emergency in which all farmers must do their utmost to reduce costs by deferring replacements, curtailing their use of labor, fertilizer, and other out-of-pocket expenditures in order to keep within their shrunken incomes; and the other, and longer-time problem, of remaking American agriculture.

The title also raises the question of the nature of the regional approach. What is an agricultural region? What agencies within it or outside of it are to do the readjusting? What processes are to be applied in the readjustment?

In the following discussion I plan (1) to evaluate certain theories of agricultural readjustment which have received much emphasis during the last 10 years; (2) to discuss the prerequisites and processes of readjustment; and (3) to outline a program of research and education looking toward facilitating this readjustment process. This program recognizes the importance of regional differentiation in agriculture, both in terms of the actual farming and the agricultural resources which support it as well as differences in the human element which direct and carry on agriculture.

THEORIES OF FARM REORGANIZATION

Many theories of farm reorganization and of agrarian reform, and many plans based upon these theories, have been evolved during the period since the World War. Most of these are collective in nature. They attack the farm problem from the outside and essay to solve its problems en masse. They are peculiarly similar in their omission of any careful consideration of the farmer himself in the whole problem. Practically none of these plans contemplate the active participation of the individual farmer in helping to make his own adjustments and realize his own economic destiny.

The first of these theories may be termed the scarcity theory of economic prosperity. It is based on the assumption of a steadily increasing population and a more or less strictly limited supply of usable agricultural land. This hypothesis, if correct, would mean a constantly expanding demand for agricultural products with rather

sharp limits on the expansion of the supply; thus creating a tendency for the price level of agricultural commodities to rise with distinctly greater rapidity than that of nonagricultural commodities. As a matter of fact, even in the brief history of American agriculture, we have had periods when this very thing has been happening. These periods, however, have been interspersed with other periods when the supply of agricultural commodities increased more rapidly than the demand for them, with resulting serious depressions of agricultural prices. The period following the Civil War was one of rapidly expanding farm area in this country and correspondingly rapid increase in agricultural output. The agricultural depression of the nineties was an acutely distressing result of this sort of development. Following 1896, however, there was a turn in the tide, and from that date until the close of the World War agricultural commodity prices were rising rapidly and agricultural prosperity became a reality as reflected in an expanding standard of expenditure by farm families, increasing values of farm lands, and a rising protest from our urban population against the increased cost of living.

Whatever may be the ultimate vindication of this scarcity theory we realize that we have now entered upon a new period of overabundant supply of agricultural commodities and with it a diminution in the rate of population growth which, sociologists believe, means a stationary or declining population in this country within a few decades rather than the rapidly increasing population to which we have become accustomed. This, together with the tremendous expansion in the output of such staples as cotton and wheat, made possible by the use of new machines and new farming methods, not only in this country but in all the leading agricultural countries, has placed American agriculture for an indefinite period in a state of surplus rather than scarcity. Like the nonagricultural industries, agriculture has a plant with a capacity far beyond that which is needed to meet current demand. There is no hope therefore for an immediate restoration of agricultural prosperity through any limitation of output due to scarcity of agricultural resources.

Another theory of agricultural readjustment which has gained wide support during the past 10 years is that of relieving a depressed condition in agriculture by a progressive transference of unneeded farm population from agricultural into industrial pursuits. Just such a process has, indeed, characterized the years from 1920 to 1929. A net movement of farm population to cities of from 2,000,000 to 3,000,000, and possibly more took place between those dates. However, with the coming of the depression this migration was reduced, and during the past year there may have been a net movement in the other direction. Such a reversal is easily understood when one considers the comparative lot of the unemployed industrial worker and that of the farmer, even under the most adverse circumstances. The poorest farm, with the most unsatisfactory market, offers at least shelter and an opportunity to produce food. In other words, it provides something of a job in the place of unemployment and support from charity. It is natural therefore that there should be a back flow of those urban workers of recent standing who have agricultural background and farm experience.

But the situation in this regard is more serious than the results of a presumably temporary depression. Mechanization in agriculture,

which is in large measure responsible for sloughing off so much of our agricultural population, has had its parallel in industry in the past 10 years. Indeed, it is probable that mechanization in highway construction, in the building trades, and even in manufacturing, has gone much farther since the World War than similar developments have gone in agriculture. Technological unemployment is a real and significant thing. It brings back again the conditions prevalent after similar periods of technical development beginning with the industrial revolution of a century and a half ago. Until human wants expand and thoroughgoing readjustment has taken place in industry and in the relative volume of output of the various types of commodities, agriculture can hope for but little in the way of drawing off surplus population into profitable industrial employment.

Is there any basis, then, for a readjustment by which farming can emerge from its present unsatisfactory and unprofitable condition? As I have already remarked, we must distinguish sharply between the present emergency of extremely low prices and the longer problem of fundamental readjustment. Farmers throughout the United States are now making presumably temporary adjustment to the emergency by cutting costs at every opportunity, practicing a dig-in policy which will enable them to tide over a period of short receipts with the hope that the present depression will pass and better price relations will obtain. In one of our farm-management projects in the Cotton Belt our field agent recently stated that his cooperating farmers were reporting a volume of expenditures so much lower that he believed they were growing careless in their accounts. A very careful check-up of the 150 farmers involved showed that they were keeping their accounts as faithfully as ever, but that they were drastically cutting their expenditures. This is typical of what is going on in all parts of the country and represents a rational reaction. Coupled with this is the increasing tendency on the part of most farmers to grow and prepare for consumption a much larger percentage of their own food supply than they are accustomed to do under more prosperous conditions.

This type of adjustment, while essential and unavoidable, does not reach the more fundamental problem which I think is of major interest to us in this conference; that of readjusting our whole agricultural resources and their use to the new alignment of economic and technical conditions in which American agriculture finds itself. Whose task is this larger problem? What preparations for it are necessary? It would seem that first and foremost it is the task of the individual farmer himself. He alone has the responsibility of determining the use of his own land, labor, and equipment. He takes the risk and the reward or punishment, whichever it may be. Secondarily, public agencies, those of us who, supported by public funds, have the responsibility of studying the farmer's problems, of developing an educational program for agriculture, carry the responsibility of working out the general lines along which this reorganization should go and of assisting the individual farmer through information and, as far as possible, through education. These public agencies, as we all realize, are made up of a group of workers beginning with the county agent who is the farmer's immediate point of contact, running up through the State experiment

stations and agricultural colleges, the system of agricultural instruction under the Smith-Hughes Act, and to the more remote portions represented in Federal agencies. It is our job, first of all, to understand as thoroughly and intimately as possible the nature of these new conditions, the lines of adjustment that offer greatest promise, and the modes by which this information and point of view can be made most effective for use by the farmer himself.

No one now has clear enough vision to foresee accurately what will be the outcome of the process of readjustment which most certainly will characterize the next decade or two in American farming. However, there are certain probabilities which it may be well to point out. In the first place it seems evident even now that there are possibilities of profitable farming even in a period of low prices and on a declining price level. It seems likely also that large-scale farming, about which we have heard so much during these past 10 years, is not to become universal or even typical in American agriculture. It is more likely that the family farm, enlarged somewhat by reason of the greater capacity which the new machines and the new technics have given the individual farmer, and involving a greater investment of capital, will be the prevailing type in our best agricultural areas. But there seems to be evidence that we may look for quite another type of American farm and for its continuance in considerable numbers during a rather long period. For lack of a better term we may call it the subsistence farm. It represents the refuge of the less efficient or less well-endowed farmer who as yet has not found his niche in nonagricultural industry and who finds the small farm with limited income and limited standard of consumption a refuge from greater economic ills. This is the type of farm which now characterizes considerable areas of our agricultural domain. Such farms occupy types of land which we are wont to assume should be taken out of agriculture and devoted to forestry or other uses less intensive than farming. It seems evident now, however, that the complete elimination of this type of farm must await developments in the indefinite future. Our hope is that the capitalistic family farm, providing a reasonable standard of living, will come progressively into the ascendancy in this period of readjustment, whereas the subsistence farm will as progressively diminish in importance.

THE REGIONAL APPROACH

Before saying anything in support of the regional approach to the problem of farm reorganization, it may be well to get before us the conception of an agricultural region and the economic significance of geographic differences in farming and farm resources. We are accustomed to thinking of agricultural regions in an offhand way as represented by our great production belts, such as the Corn Belt, the Cotton Belt, and the Dairy Belt. We think of these belts as characterized by generally similar conditions of climate, soil, surface, and location which give them certain natural and economic advantages for the production of certain commodities or groups of commodities.

In general there is a marked degree of regional specialization in agriculture, but the agriculture of these large sections of the country is much less homogeneous both in the nature of the land and in the

agricultural development than is popularly supposed. In order to make a regional treatment significant these belts must be further subdivided into subregions, areas, and subareas. Only in this way are we enabled to say much of significance about agricultural adjustment problems in terms of their geographic differentiation. Even on the smallest geographic unit feasible in a study of agricultural problems, there is much diversity in the nature of the farm land and the farming development upon it. In fact every farm constitutes an economic problem in itself. Nevertheless, the regional idea has its usefulness in a study of farm-organization problems and can be made of distinct service in the research and educational program necessary to facilitating the farm reorganization that must take place in order to adjust our agriculture better to the new alignment of national and international economic conditions.

For the purposes of our present discussion we may define an agricultural region as a major tract in our agricultural domain, possessing in its significant characteristics sufficient similarity to make it possible to obtain and interpret enough important economic information on conditions common to the whole region, to be of use in solving economic programs of the farms contained in the region. Similarly, we may define smaller geographic units—areas or subareas—as portions of the agricultural region on which still more detailed facts and considerations involved in the common problems of the unit can be sought out and made use of. The danger in using this basis for a program of economic research lies in the temptation to make generalizations which are too sweeping and to overemphasize the homogenity of conditions and the similarity of agricultural development which may be expected to represent the best and most profitable types of farm organization and farm operation, and to ignore important differences.

As a further preliminary, we should consider the degree to which the interests of the farmers in a region or area are common and the degree to which they are conflicting. Competition is one of the basic economic relationships upon which agriculture in this country has developed. We frequently lose sight of this fact in considering the common problems of an area. We are accustomed to think that the economic interests of all the farmers in a producing region, such as the wheat belt of the Great Plains, are common. As a matter of fact, all of these farmers are in active competition among themselves as well as with producers of wheat in other areas of this country and abroad.

It is true that the producers of a single commodity, particularly if they are located in a well-defined production belt, may find considerable advantage in a high degree of concerted action in meeting many of their producing as well as marketing problems. However, farm economy is essentially a competitive economy. The farmers of the eastern Cotton Belt are quite as vitally interested in the production advantages of the producers in the Delta and in the high plains of Texas as they are in those of their competitors across the sea. Similarly, dairy farmers in the Great Lakes States, with their advantages of low feed costs, constitute an acute problem for the producers in the northeastern dairy States who have disadvantages in higher production costs to counteract their superior advantage in proximity to market. The idea of competition is, therefore, of first

importance in farm readjustment under our prevailing economic system. To be sure, under another economic system—for example, such as the one which is being developed in Russia—collective control, worked out in terms of regional fitness for the varying lines of production, might simplify the problem of farm reorganization through regional adjustment. But we seem not yet ready to sacrifice the principles of individualism and private initiative in order to gain such advantages as the other system may offer.

As already noted, the regional approach discussed in this paper is that of research and education necessary for the encouragement and furthering of a rational reorganization of our agriculture. Let us first consider the research side of the program. There are certain advantages to be gained by the organization of a program based upon regional agricultural differences.

In the first place, there is prime necessity for concrete and specific information and interpretation of the basic elements in agricultural development, such as the nature of agricultural resources, the nature of farming that has developed on these resources, and the trends of development that are under way. There has been too great a tendency in the past to make sweeping generalizations not particularized to specific conditions and to apply the findings of study in one area to conditions in another area which may be fundamentally different. For example, such basic measures of farm efficiency as yield per acre of the crops, the rate or efficiency in the feeding of livestock, and effectiveness in the use of farm labor have been presented as outstanding considerations looking toward better farming. Important as these things are, the question still remains as to the degree of these things which is most economic and profitable under a specific set of circumstances made up of type of land, level of prices of products, and rates of costs. We can be much more specific, and therefore much more helpful, if our research program, particularly along farm-management lines, is set in terms of the peculiar conditions of the area in which it is to be applied.

Again, there is considerable economy and effectiveness to be gained in our research program from the specialization of a group of workers on a limited range of problems such as are presented by the agriculture of a limited area. Research men need to acquaint themselves intimately, concretely, and in detail, with conditions and problems of the area with which they are concerned, and to work out rational programs of readjustment for these limited areas and limited sets of conditions. To be sure, they need constantly to maintain the broader point of view which prevents their being blinded by the things closest to their eyes; but there is no substitute for the intimate understanding of farm problems which specialization by limited areas can afford. This sort of specialization is in considerable measure realized by virtue of the fact that State investigators work within limited territory; nevertheless a mapping out of regional differences even in a small State as a basis for a detailed research program has its undoubted advantages.

What are the lines of information needed in an adequate program of farm readjustment? In the first place, certain general types of information are essential. Farmers and their advisers need to know

the nature of the competition against which they are projecting their production. They need to know not only the relative competitive advantage of the farmers in distant regions engaged in the same lines of production, but also the relative advantages of the different combinations of conditions within their own areas, in order to measure their relative power in the competitive game. Farmers also need to know the factors and conditions that are shaping demand for the various products and to have the benefit of the skilled interpretation of these conditions, both on the demand and on the supply side, in order to gage in some measure the prospect for prices and profits of the future.

On the local side there are needed minute information and understanding of all of the types of farming prevailing—what they are,

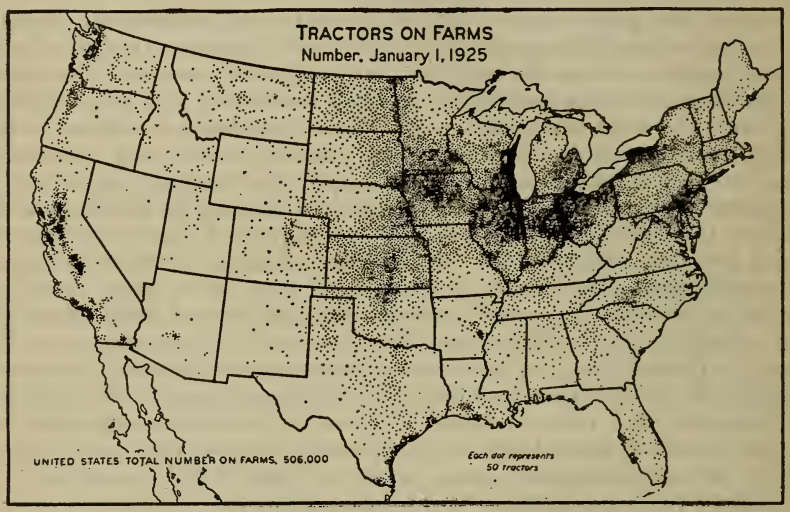

FIGURE 30.—The tractor has been a large factor in the regional shifts in crop production previously noted. In association with the combine it has permitted the production of the small grains, notably wheat, at a low cost on the semiarid portions of the Great Plains, and thereby caused a contraction in acreage on the smaller and often more rolling farms in the Eastern States. The feed released by the horses it has displaced has made production of corn and hay in the Eastern and Southern States less profitable. This has tended to increase cotton in the South and dairying in the North, but much, perhaps most, of the land formerly devoted to wheat, corn, and hay lies idle. (Fig. 9)

why they have developed as they have, what local variations and differences there are, and what accounts for these differences. In other words, the start toward an adequate body of local information is a picture and a description of the farming as it is and as it has evolved. This will throw considerable light on the trends of development and go a considerable way in determining whether these trends are rational.

But more important than a mere description is a study of the causal relationships that exist and have existed between the actual farming and the natural and economic conditions that have shaped that farming. What are the relations of soil, climate, and surface, as well as the economic conditions which are so rapidly changing, to the actual development of types of farming in the area? It is from this sort of study we can best draw dependable conclusions as to what

a given projected change in the economic situation demands in the way of readjustment in order to keep our agriculture rationalized and on the most profitable basis. The results of economic research are of greatest use as a basis for forming dependable judgments; and judgments as to what is best in the way of production programs and farm practice are at the bottom of whatever adjustments are in prospect.

The last 15 years have seen the introduction of many new machines and new farm practices. The problem now presents itself of determining how this new technic is going to affect the new farming; not only in terms of the local utilization of these things, but also in the increased severity of competition from other areas and from other farms where utilization of the new technic may prove profitable. In

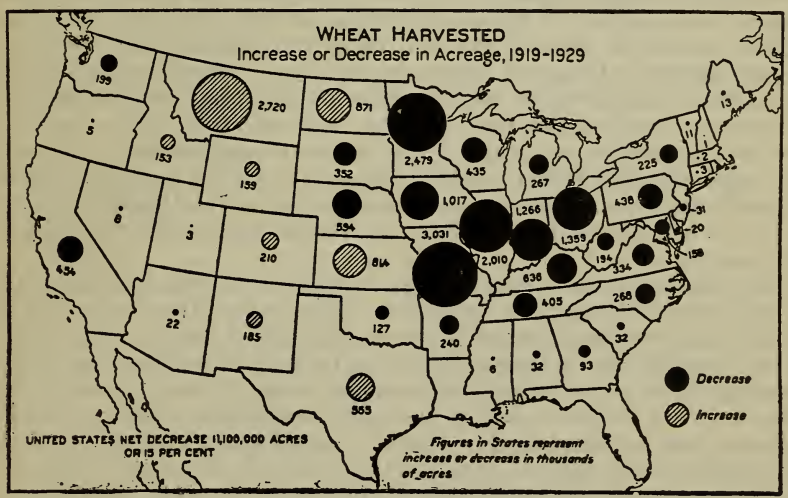

FIGURE 31.—The great advances in mechanization of grain production since the World War have caused a notable expansion of wheat production on the level lands of the Great Plains area, particularly the semiarid portions, with an accompanying contraction in the Corn Belt and the hay and dairy States, notably in Minnesota. In 1919 wheat acreage in the United States was the highest ever reached, owing to war-period prices. In 1929, a more normal year, there were about 11,000,000 fewer acres in wheat in the United States as a whole than in 1919

the past, farm-management research has largely taken the direction of careful study of actual farms, their production program, their size, and their farm practices, with a view of determining what has proved best and most profitable. This is an entirely rational and effective approach to the problems of farm efficiency. But there are elements in the present situation which such study can not be expected to reveal. New situations are constantly developing and new forces entering into the field. The research man, with his broader point of view and intimate knowledge of a wide range of conditions within the area, and with his knowledge of general forces and conditions, should be able to visualize new situations and new types of organization which the farmer himself is not in position to see. He should thus be able to save expensive and painful trial and error experience for the farmer.

We now need to consider the specific forms of research entering into this regional approach to the problems of farm reorganization. The general information and analysis, it would seem, need not be so greatly regionalized. It can be collected by research bodies and analyzed, at least in many of its aspects, in such ways as to be generally applicable to a wide range of conditions. However, its significance to the specific area needs to be worked out by those who have specialized on the problems of the locality and to be given full consideration in projecting the changes that should be made. On the side of specific local information a first approach which is proving very effective is that known as "the type-of-farming study." It utilizes all of the available general information such as census statistics and other general data as a means of depicting and describing the agriculture of the area or region. It moves from this stage to an analysis of the effect which various local conditions and general economic forces have had upon the shaping of these types of agriculture. It lays a broad basis for an understanding of the agriculture of the region and for determining what further detailed research is required for the intimate understanding of the farming problems which is necessary for a rational readjustment. It is in this type of study that the historical point of view and the outlook point of view come together and combine in an intelligent interpretation of the future possibilities and limitations of the farming of the area.

Supplementing this broad general study, we need detailed study of farm organization and operation. This is the direct attack upon the internal-organization problems of individual farms. The results of such study are indispensable to a proper understanding of the farming as it is, and a proper interpretation of what it should become under a projected set of economic conditions. Such problems involve detailed information from a considerable sample of farms and require most careful analysis and synthesis in order to give dependable results. It would seem that such projects should be a prominent part of the research programs of each type-of-farming area. Such studies are tedious and expensive, but in my view their results are indispensable.

Of late, considerable attention has been directed to the desirability of actual experimentation on the organization and operation of farms. The Montana experiment on the Fairway Farms has been outstanding in this field. Provisions for the guidance of farm reorganization in many areas might be greatly enhanced by the results of carefully planned experimentation on size, production program, equipment, and operating practices worked out by actual experiment. Undoubtedly, such experimentation, which under most circumstances will involve heavy expenditure of funds, should be preceded by ample investigation along the lines already projected.

We turn now to the educational aspect of the regional approach. The objective of such a research program is certainly not mere publication of bulletins, nor is it primarily to supply subject matter for formal instruction in the economy of farm organization and management in our educational institutions, important as that objective is. It should be primarily to supply those workers who are on the firing line, in actual contact with farmers, with information,

point of view, understanding, and methods of analysis of the problems of individual farmers.

As to educational agencies, in addition to those engaged in formal instruction of our future farmer in schools and colleges whose work, in the long run, is of such basic importance, we have county agents, Smith-Hughes agricultural instructors, and extension specialists. These are the men through whom results of a regional research program must find their way to the farmer and thus assist him in his judgment-forming function in the process of farm reorganization. The problem, first of all, therefore, is the education of those who are the middlemen between the research worker and the farmer. It is being generally realized now that one of the greatest needs in facilitating farm reorganization is arousing the county agents of the country to the importance of the economic phases of the agricultural problem and training them in the processes of thinking through which the farmer must pass in meeting his own individual economic problems. Gratifying beginnings have already been made in this direction through the localization of the outlook work in the extension programs of the various States. One group of workers in a strategic position with reference to farm reorganization is the Smith-Hughes teachers. Through their evening classes for adult farmers they have contact of a permanent nature with the best and most alert farmers of their communities and thus are given an unparalleled opportunity to transmit to them information and point of view, as well as business-analysis methods by which farmers can set about the problem of thinking themselves through an adjusted program of production. The county agents and the Smith-Hughes teachers, together with the extension specialists, are the primary educational agencies through which the results of a regional research program must meet our objective.

Finally, something needs to be said with reference to the specific educational processes by which results of a regional research program may be finally translated into action through the efforts of the farmers themselves. It goes without saying that no general prescription may be written and no general recommendations will be very effective. The important objective is to train the farmer to do his own thinking and to supply him with adequate information upon which to base his thinking.

Making information available, developing methods of analysis, and educating the farmer in the use of these methods, would seem to be the rational procedure. The individual farmer's problem is and always will be complex and unique for each farm.

THE RÔLE OF THE SMALL FARM IN FUTURE LAND UTILIZATION IN THE UNITED STATES

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My task is not to make a case for the small farm in American agriculture, but to forecast the rôle which it will play. Forecasting is a hazardous task; especially is this true of the sort of long-range forecasting which is here required. If, in 1900, some one had undertaken to forecast what our agriculture would be like to-day, how nearly would he have come to the truth? How nearly can any rea-

sonable person be expected to come to telling what it will be like in 1940—and in the year 2000?

As a matter of fact, about all that one can do is to present some of the factors that seem of major significance as affecting in one way or another the position of the small farm in the future; and possibly also to undertake to assign relative weights to them. When, 30 years hence, some curious person digs up the proceedings of this conference and comes upon this paper, the only fair way for him to appraise what he reads is to say that this is what one person thought to be the destined rôle of the small farm in the light of conditions then prevailing.

A very large fraction of the American public, especially the urban public, has come to take it for granted that the small farm is destined to die a slow, lingering death, giving place to the same large-scale production which they assume has largely taken possession of industry. Among those who think this are a few so filled with the zeal of reformers as to be greatly disturbed that transition to large-scale agricultural production is taking place so slowly, who see no real salvation for agriculture till it has taken place, and who would ask that vigorous public measures be taken to speed the change.

The idea that in this respect industry furnishes an example which agriculture must follow is not held exclusively in the United States. At the meeting of the Agricultural Economics Society of Great Britain at Cambridge, England, last summer, Prof. D. H. MacGregor read a paper under the title "The Industrial Rationalization of Agriculture" in which he asked why, if 1,400 units was too many for coal mining in England, as the Samuel Commission on the coal industry had stated, was not 300,000 units too many for agriculture in England?

It may be helpful for a moment to consider just what is the example of industry in this respect. In the recent report called "Survey of Recent Economic Changes," prepared by the National Bureau of Economic Research, under instruction of one of the Hoover commissions, Prof. Willard Thorp analyzes changes in size of units in industry since 1914, and concludes as follows:

> When industries are compared according to number of wage earners per establishment, wide differences appear. There is no noticeable trend toward production on a larger scale. The tendency is rather for the extremes to move toward the middle, and points of concentration are appearing about 20 workers per establishment and 100 workers per establishment (p. 216).

As a matter of fact, Professor Thorp found that of the 321 industries classified in the Census of Manufacturers (such as boots and shoes, motor vehicles, roofing materials, baking powder, sewing machines), 155 had increased in number of wage earners employed between 1914 and 1925, 157 had decreased, and 9 had made no change (p. 172). There was, it is true, a marked increase in horsepower per establishment, but this no doubt represents in part the substitution of machines for labor and only in part a real increase in size of business. The surprising thing about the evidence on the subject is the large number of small plants—90,000 employing fewer than 6 wage earners in 1923, 55,000 employing from 6 to 20, and 25,000 employing between 21 and 50, as compared with 29,000 for all larger plants. The number of these small plants does not decline (p. 168).

An even more striking presentation could be made if data were available for merchandising. It is probable that the numbers of retail establishments in the United States have kept fully up with the growth in population; also the numbers of hotels and restaurants and similar enterprises.

One principal reason for this failure of distribution to concentrate in fewer and fewer units is the factor of distance. People will not travel far to get what they want when they can get it for only a little more, closer by. Near-by plants also have pronounced advantages in the production and sale of many types of manufactured products—particularly those raising raw materials, like farm products, whose production is distributed over a considerable area. When merchandising or manufacturing enterprises of many types reach a certain size, they begin to encounter some competitive disadvantages associated with the greater distances involved.

A second check on growth in size is the importance of personal contacts and attention to details in many lines of production and distribution.

Changes in transportation are of course affecting such developments. But their influence is by no means all in one direction. With good roads and modern trucks, the products of small plants are marketed advantageously in the surrounding territory. The automobile and the motor bus are thinning out our city population and creating a need for more and more neighborhood stores in the outlying districts.

Industry and distribution, we must conclude, if taken as wholes, do not furnish us with as good examples of growth in size as has commonly been assumed. There are particular industries in which plants have expanded very greatly, for example, those having to do with motor vehicles and parts, aircraft and parts, engines, fountain pens, washing machines. And there are particular plants in nearly all industries which have grown in size. Somehow or other, it is these that have caught our attention, and not the more usual conditions. Similarly, in merchandising we have focused our vision on the department stores and mail-order houses, and not on the multitude of small distributing units, whose numbers fail not.

Moreover, the very factors which have kept operating units small in many industries and in distribution, particularly distance and the need for attention to details, have an important influence in the same direction in agriculture. In the past, they surely have contributed heavily toward keeping farms small. We have no reason to think that they will not contribute in the same manner in the future, although not necessarily with the same net effect.

Surely the foregoing must raise valid doubts as to whether the popular opinion that small farms must disappear has sufficient warrant in so far as based on developments in industry and distribution. But there are developments within agriculture itself that must be taken into account. There are good reasons for thinking that the scale of production will increase in many lines of agricultural production in spite of factors, such as the foregoing, that operate in the other direction. Most important of these reasons are the opportunities for better cultural and feeding practices on the larger farms—for making use of what science has discovered for agricul-

ture. Next are the opportunities for more economical utilization of modern power units. Third come the opportunities for applying the new technics in management to agriculture.

What do the census figures show as to trends in farm sizes? For the United States as a whole, an increase from 134 acres in 1880 to 148 acres in 1920. But this is explained in large part by an expansion of agriculture into the western prairies which more than offset the decrease in acres per farm in the Southern States with the continuing breaking up of the plantations. Between 1920 and 1930, of the 48 States, 30 showed increases in acres per farm, 14 showed decreases, and 4 showed no change. The decreases were in the Southern States and in New Jersey, Minnesota, South Dakota, Washington, and California. The only large increases were in the Mountain States and in North Dakota and Oregon. In the Corn Belt States, the increases were from 1 acre in Iowa to 8 acres in Illinois. The great wheat States of Kansas and Nebraska reported increases of only 8 and 6 acres, respectively.

But one can select groups of counties in western Kansas and Nebraska, as well as in other States, in which the influences of mechanization on the size of farms is clearly shown, as it is for Montana as a whole and in other semiarid States. Furthermore, the number of large farms really did increase in most of the Corn Belt and Wheat Belt States—in Iowa and Ohio, those over 175 acres increased in numbers; in Kansas, those over 260 acres increased; in Montana and Oklahoma, those over 500 acres. But in many of the States there was an increase in the number of small farms which brought the average down nearly to its former level. In Iowa, for example, the three size-groups under 20 acres clearly increased in numbers; in Kansas, the four size-groups under 50 acres; in Oklahoma and Montana, the five groups under 100 acres. Obviously the changes in number of small farms were affected by the method of taking the census; but there is evidence that not all of the change is due to this cause. The size-groups in which the decreases most commonly occurred were in the middle: 20 to 175 acres in Iowa; 50 to 260 in Kansas; and 175 to 500 in Montana and Oklahoma. It was in these middle groups that the number of farms in these States was increasing before 1920. The change is significant. These States are taken as examples. The same trends are to be observed in most of the States in the same sections of the country. In the East and South the trends are more confused and are not all in the same directions.

My forecast is that future changes will continue along present lines. Two kinds of farms principally will increase in numbers, the small family-residence type of farm, and the farm of from a few hundred to a few thousand acres, depending upon the type of agriculture, that is best described as the "tractorized" family farm. The large farms that have increased in numbers in the last 10 years are not big factory farms, but farms of such size that an average-sized farm family, or a farmer and a helper or two, can handle them by using adequate power units and other facilities. In Montana, apparently, if one may judge by the census data, this means an area of 1,000 acres or more; in much of Kansas, from 500 to 1,000 acres; in much of Iowa, 260 to 500 acres. The census figures also show

increases above and below these ranges; but this may reflect merely the wide variety of conditions occurring within any one of these States; or a cross-section taken at a point of transition.

My judgment is that such farms as these will increase in numbers not only in the Corn Belt and the Wheat Belt, but wherever the land is sufficiently level so that it can be thrown into fields of necessary size, and sufficiently free of stones, ravines, soft spots, and other obstructions that it can be worked with power machines without too great expense for land improvement. In many sections the farming system will combine livestock with crop production. and this will greatly affect the size in acres of the tractorized unit.

As to factory farms of several thousand acres or more, these will have their place in the picture also—in my judgment, an increasing place. But they will tend, as in the past, to be confined to single-crop systems, specialty products, and ranching.

A word must be said about two other types of farm organization; the integrated farming unit of the type that Mr. Jeffers has developed on the Walker-Gordon farms in New Jersey, and the chain-farming type of unit. In both of them, the essential unit of operation is a family farm. Mr. Jeffers has tied together in one organization a variety of family-farm units, some engaged in producing milkers, some in producing feed for milking herds, some in caring for herds of milkers, each farm operating under a contract that reserves to it the gains from its own good management. The chain type of organization also preserves the family-farm unit in most cases. The Collins farms in Iowa are in considerable part an exception to this statement; but they are not really chain farms. The important features of these two systems of organization are (1) that the unit of operation is the family farm, while the unit of control for a number of the important functions of management—for example, buying and selling, planning, developing methods and practices—is much larger; and (2) that much of the advantage of individual incentive is preserved in the management. These two developments closely parallel important developments in industry and distribution. Professor Thorp devotes a part of his chapter entitled "Structure of Industry" in the report, Survey of Recent Economic Changes, to tracing the enlargement of control as distinguished from the enlargement of the unit of operation. We are all familiar with the increase of combination in industry, and with the chain-store development in distribution. No doubt, many have confused large-scale management with large-scale production. The distinction is one of great importance for agriculture as well as for industry and distribution.

At this point, it should be indicated that cooperative organization of farmers is a development of this same general type. Applied to marketing, such organization takes the function of selling, in whole or in part, away from the individual producer and centralizes it in a larger unit of control; the same is true where such organization is applied to buying farm supplies. Many look forward to the time when it will be applied in somewhat similar ways to certain of the important managerial functions connected with production, to the end that production will be made more orderly and will be better adjusted to the market.

Having provided in our picture of future farming in America a large and commodious place for mechanized production and for enlargement of the unit of management, and with these some considerable increase in the scale of technical production, we are now ready to consider the future importance of the other type of farm that seems to be increasing in numbers, namely, the family-residence type of farm. Here we at once encounter a difference of opinion as to the scope of such farms. One group of students of the problem would confine them to the following types:

(1) Part-time farms of which the operators have major occupations off the farm which they carry on along with their farm work.

(2) Farms operated by families living in part on accumulated wealth, pensions, and the like.

(3) Country homes occupied either all the year or part of it by families having other sources of income, the farming operations being merely incidental pastime.

(4) Farms belonging to families who live wholly on such income as they can derive from small farms, and hence, according to the opinions of this group of students, live adequately. These farm families are the American counterparts of the small holders of Europe, to whom governments have loaned billions upon billions in the last 50 years in order to increase their numbers.

The other group of students do not look upon this fourth type of farm so unfavorably. They think that it is capable of providing a living that compares to advantage with that obtained by several millions of families engaged in ordinary city occupations in the United States—with that of most factory workers' families, with that earned in most ordinary white-collar jobs in stores, in most minor clerical positions and the like, and that earned at most common labor in cities, of which there is such a vast quantity.[2] They do not see why all families living in the country should expect to be either operators of tractor farms or laborers upon them. They see a happier life for millions of these people on farms of from 20 to 100 acres, depending upon the kind of farming practiced, where the head of the family is his own master, and the children find useful work to do, and the income from sale of crops and livestock products only supplements the living obtained from the farm.

The studies that have been made of farm-family living commonly underestimate the importance of the living obtained from the farm. They value farm produce at what it would sell for at the farm. This procedure is valid for certain purposes and if the results are properly interpreted; but it is a procedure totally unfitted to comparisons of the relative advantages of working in a factory with living on a small holding. Let us consider some of the items:

Food—the amounts furnished the family on each of 1,331 farms in Kansas, Missouri, Kentucky, and Ohio were roughly as follows:[3] Meat, 670 pounds; eggs, 300 pounds; milk, 2,300 pounds; cream, 150 pounds; butter, 130 pounds; lard, 75 pounds; flour, 200 pounds; fruit, 430 pounds; potatoes, 720 pounds; other vegetables, 1,000 pounds.

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[2] Coming out on the train from Cambridge I engaged in conversation with an eastern salesmanager for electric refrigerators, who told me that the average earnings of salesmen on his staff this year would be less than $1,000, and that this was little below normal.

[3] HAWLEY, E. AVERAGE QUANTITY, COST, AND NUTRITIVE VALUE OF FOOD CONSUMED BY FARM FAMILIES. FOOD CONSUMED DURING ONE YEAR BY 1,331 FARM FAMILIES OF SELECTED LOCALITIES IN KANSAS, KENTUCKY, MISSOURI, AND OHIO . . . U. S. Dept. Agr., Bur. Home Econ. [Rpt.]. 29 p. 1926. [Mimeographed.]

These reports are for families that average the equivalent of 4.3 adult males. These families were by no means all small holders, as the term is above used; but the food obtained from these farms is probably very little more than that obtained upon small farms generally, leaving out certain submarginal areas where undernourishment prevails. Converted into calories, this food equals about two-thirds of the 2,740 calories reported by the Bureau of Labor Statistics for 11,900 city workingmen's families. It is about half the ordinary farm consumption of food.[4] It represents a better diet than that which most workingmen have, with relatively more protein in it, more good proteins, and more vitamins. How much does a city workingman's family pay for the equivalent of this food when it is able to buy it? Probably at least $500.

Fuel.—A variable amount, averaging the equivalent of between $40 and $60.

Use of dwelling.—For a house the equal of one that a small farm can provide, except for the difference in location, the city worker will surely pay between $300 and $500 annual rent.

Use of Automobile.—By no means do all our present small farms provide their owners' families with automobiles. About 40 per cent of farmers in the United States are without motor vehicles. But the time is fast approaching when few small farms will not be so equipped. The farm family has free use of this automobile, except in so far as it may need to save in the use of gasoline, and many families on small farms will need to save in this way.

These amounts total up to well over $1,000 for the ordinary small farmer outside of the strictly submarginal areas. This is more than the total yearly income of many city workers. The estimate of $1,000 will no doubt be high for the living obtained from small farms in considerable sections in the South; but we must remember that city workers have proportionately lower incomes in these sections.

Supplied with good means of transportation, an automobile on good roads, a farmer can usually get to a trading center in less than 15 or 25 minutes. He can get to a fairly large trading center in less than an hour. These times do not compare to disadvantage with those spent on the way by people who live in cities. Many millions of city dwellers spend from an hour to an hour and a half a day going to and from work.

Except for the old-line theater, almost the same amusements are within reach of country people and of city people—the moving-picture theater and the radio have brought them there. It must be admitted, of course, that country people do not use their advantages of this sort so fully as do city people. Most of them would not think of spending an hour on the way to a theater, as millions of city folks do weekly as a matter of course.

We have too commonly in the past thought of good roads and modern transportation as providing a way for people to get to the city. We are just beginning to think of them as providing a way for people to live away from the city. There is no longer very much that country people need or want that they must move to the city in

[4] More careful studies made recently by the Bureau of Home Economics, U. S. Department of Agriculture, indicate that the earlier figures of over 4,000 calories are considerably too high.

order to obtain. They are now beginning to find that they can get a better combination of things they like and need by living in the country and driving to town occasionally, than by the contrary arrangement. The cityward movement of the last decade, in so far as it was more rapid than usual, was prompted more by the lack of jobs in the country than by anything else. The mechanization movement robbed farm workers of their jobs. The most significant thing about the data relating to this movement is not the net movement away from the farms, but the large flow in both directions. Millions of city people have been looking for a better living in the country, while country people have been looking for a better living in the city.

Just now their numbers are greatly increased, but I do not wish to take account of the present abnormal situation in city employments. When I began to write this paper, I resolved to analyze my problem in terms of what we can expect under more normal circumstances. Our forecast is a long-time forecast.

There is a considerable disparity, of course, between what I have described and the life of the small farmer as it is actually lived today in the United States. Hundreds of thousands of such farmers do not live on the kind of roads needed; they do not have the kind of schools needed; they do not have adequate medical facilities. Neither do they have good markets for their products. In many cases the reasons are found in the personal deficiencies of the families. The rural districts have their slum neighborhoods and slum folks the same as the cities. They will continue to have them for a long time. Conditions in such areas have developed out of a long past, and can be righted only slowly.

Also it will be admitted that small farmers will never have much ready cash. They can own an automobile if they are halfway efficient; but they will not be able to use it as freely as they would like. They will take few trips to Europe. They will not drive to the larger cities for the better movies whenever they would like to. But neither do workers' families in the cities have these things whenever they want them.

Any program of land utilization must recognize the place of small farmers such as have been described in our social organization. We shall provide for our national population more adequately than otherwise if we encourage a few million families to work out their destinies in this way. But we must not let the small-farm development drift. It needs guidance very much. Land-utilization surveys must show us the areas that give promise of providing the right opportunities for small farmers and the surveys must be followed with plans for organization and development. Areas in which small holders have the opportunities which good citizenship demands must be sought out, studied, and then assisted in various ways. No doubt the surveys will reveal in many cases that the remedy needed is gradual abandonment of the area.

Nothing has been said about part-time farmers. They have probably been increasing in numbers more rapidly than the full-time small farmers. The study of part-time farming made in Massachusetts by Doctor Rozman, of the Massachusetts Agricultural Experiment Station, indicates that there is much more of it in the country than the

census data show. Land-utilization plans must provide for them also. As industry decentralizes, as it surely should be encouraged to do, there will be an increasing percentage of our population combining farming with other occupations. Factories located in smaller cities, so that more of the workers can live outside of the city limits, are coming to have an increasing advantage in competition. There is need for social planning on such a scale that it will assist in locating industries away from the large cities.

It must be made absolutely clear that such small farms are not "subsistence" farms, if by the term subsistence is understood living at a level fairly close to subsistence. It seems highly probable that the term will ordinarily be so understood, and hence we had better omit using it. The living on most of these farms is farther above subsistence than that in many millions of city workers' homes.

The Bureau of the Census, in its report on types of farming in Delaware, used the term "self-sufficing," putting in this group all farms for which the farm value of products used by the family was over half the total value of products. This term has the disadvantage of implying complete self-sufficiency; but this is an evil of far less consequence than that of damning all small farms with the implication that their operators obtain only a subsistence living from them.

When the census reports on types of farming are published, we shall have data for the whole country on the number of self-sufficing farms, as the term is above defined, and as to the number of part-time farms. The data will underestimate the importance of the former because the measure of 50 per cent does not include fuel and use of dwelling and automobile, and because the food provided is valued at what it sells for at the farm. Only those farms are called part time of which the operator works 150 days or more off the farm each year.

There is another group of students of such problems who would add a fifth group of farmers, intermediate somewhere between the small holdings just mentioned and the tractorized family farms above described. They believe that by no means all family farms will become completely tractorized; that many will continue to be essentially livestock farms, particularly dairy and poultry farms, and will use tractor equipment only to a degree; and many will be middle-sized farms of various other descriptions. Obviously what this group is saying is that the decline in the middle-size groups above noted will not continue indefinitely, but will begin to halt after awhile. Their notion is that much farm land in the United States, and many types of agricultural production, are of such nature that the farmers using them can and should take advantage of the new economies made possible with modern motor power, and that we can look forward to such a transition where these conditions prevail; but that more of the land is not of such type. They think that topography will restrain such developments over the major portion of the agricultural area of the United States. They point out that even Iowa has a large area in its northwest sector, and another area down toward Missouri, in which tractorized farming will meet with serious obstacles. They can see tractors used to some extent on farms in such areas but they think the major dependence

must be on systems of farming based on livestock and on keeping the land in grass most of the time to prevent erosion.

The tractor-farming advocates take the position that farming will cease on a large part of such land; that costs of production will be so low on the mechanized farms of the United States, Russia, and other countries that farming will no longer be possible on any but our fairly level lands. All will readily grant that agriculture will disappear in a large area of rough or stony land now in farms. But it seems reasonable to believe that most of the land that is intermediate in topography will continue to be used in farms, and probably in farms intermediate in size. There will be shifts in farm organization, changes in methods of production, changes in size—increases, no doubt. But the farms will remain, and remain intermediate farms—neither tractorized farms nor small holdings.

Such farms will persist in part for the same reasons that the small holdings will persist, because of the value of the livings obtained from them. Farming is still a mode of living as well as a business, and will continue to be so. Our people must live somewhere. Large numbers of them are going to prefer to live on the land; if for no other reason, than that it affords them a better living than would any city occupation to which they might turn.

We can scarcely consider too seriously the possibilities even now of making the living both on small farms and on middle-sized farms much more desirable than in most sections of cities. With modern roads, motor vehicles, daily mail, and parcel deliveries, ready access to city libraries, modern home comforts and conveniences, consolidated schools, the radio, there is very little that the city offers that can not be made available to farm families. And with these are all the great advantages of life in the open country. It is far easier to bring to the country what it lacks to make it a satisfactory place in which to live, than it is to bring to the major portions of our modern cities what they need to make them satisfactory places in which to live. But of course much work is required to bring to life on such farms the satisfactions above described. This is a major problem of national agricultural policy.

It should be pointed out that although the intermediate farmers have decreased in numbers in the last 10 years in most States, they are still by far the most numerous group of farmers in the United States. In most States over half the farmers are in this class. The outlook is that even after the needed readjustments in size are made, there will still be a very large group of such farmers in most States—in some States such farmers will be the most numerous.

The foregoing discussion may imply that farms can be made to fall into clearly defined classes—part-time farms, small holdings, intermediate farms, tractorized farms, factory farms, etc. Nothing could be farther from the truth. These are names for types. Large numbers of farms can be found which fit fairly closely to these type descriptions. There probably will be some tendency for farms to concentrate near the norms for these types. Public policy will probably assist in this direction. But there will always be large numbers which are mixtures of these types, or situated somewhere in the scale between them. For example, we shall never be able to draw any-

thing but an arbitrary line between a small farm and an intermediate one. These types must not be conceived as quantitative statistical concepts, although it may be necessary to reduce them to this basis for census purposes.

It helps somewhat to think of the European counterparts of some of these types. The small holding is found everywhere throughout Europe, in part evolved simply by historical processes, in part provided for by legislative enactment. The middle-sized farm is best represented by the middle-sized farm of Denmark. But the conditions under which these European types have been developed have been so different from conditions in this country that one must not trade very hard on what semblances there are.

We may summarize by saying that the agricultural land-utilization map of the future will show more large-scale factory-type farms than now; more farms that are operating units in chain systems; above all, many more mechanized family farms two and three times the size of present family farms. But that it will also show more small farms of the family-residence type where the family depends on cash receipts and produce from the farm as almost sole sources of income; also it will show many more part-time farms. As for the middle-size farms, they will decrease in numbers, but will persist in very great numbers in most of our States.

Programs in land utilization must therefore provide for all these types of farms. Our national agricultural policy must be directed toward assisting all these groups of farmers. The small holders and middle-size farmers are always going to be more in need of public aid than the larger farmers. They need the help that cooperative buying and cooperative selling can give more than do the larger farmers. Just at present they are peculiarly in need of aid because so many of them are living in areas where readjustments are badly needed.

Such is the best forecast that I can make now after weighing the relative importance of the various factors now visible to us. Ten years from now, new factors may have come out into the foreground that will call for a considerably revised forecast. Such are the chances that any forecaster must take. But we would do better to plan for the future on the basis of the best forecasts that we can make now, than to proceed without any forecast or plan whatever, as in our aimless past.

HOW CAN MECHANIZATION AND SCIENTIFIC MANAGEMENT STRENGTHEN THE COMPETITIVE POSITION OF AMERICAN AGRICULTURE?

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For this afternoon's discussion, I single out but three of the many important forces which are producing new and difficult problems in farming:

(1) Mechanization—the impact of the machine age on agriculture.

(2) Scientific production, technology, or the effect of scientific development on farm practices.

(3) Scientific farm management which results from operating under a money economy and the reaction of the business age.

If we characterize the agricultural era prior to and during the World War as one of expansion, land hunger, and land speculation, by the same token we will have to characterize the last 15 years in some other manner. There is a good deal of evidence that mechanization, scientific technology, and scientific farm management set in motion new forces which would have caused great readjustments in farming had there been no agricultural depression. The changes that have taken place so far have operated even though agriculture has been in a relatively unfavorable situation.

These forces have caused and are causing changes in the attitude of farmers toward farming. Farming is still a mode of life but a mode different from what it was 25 years ago during the time of the kerosene lamp, the horse and buggy, and the weekly newspaper. The automobile and the desire for consumers' goods of one kind or another have pulled hard on the farmers' net income. Who knows but that the age-old desire for the ownership of land is, in the minds of many farm people, being shifted imperceptibly to desires for automobiles, entertainment, enjoyment—in fact, for immediate-consumption goods. In other words, are the new wants created by the machine age causing farmers to value their living standards higher than land and thus to spend rather than save? If this be true, it is of great significance.

Whether it is for good or bad, during the past 15 years a great shift from self-contained farms to commercialism in agriculture has taken place in those areas of the United States that are adapted to commercial agriculture. Many farmers now buy the transportation which was formerly raised on their farms. The farmer buys food, clothing, and entertainment that formerly were produced in his own household. He lives in a community with improved roads and good schools. This commercialism requires larger and larger money income. While the present terrific economic depression has temporarily tended to obscure some of this farm commercialism, no one doubts that it will return as soon as there is recovery in prices and prosperity. To meet these new forces, American farmers must transfer the superb intelligence which they exhibited during the pioneer, self-sufficing stage into new attitudes of economic understanding, education, and cooperative activity.

These new conditions tend to place the productive capacities of land in positions relatively different from those they occupied in the past. Although little change in the productive capacity of the land itself is anticipated, the human and economic relationships may be expected to be in a state of flux if we are to continue in the path of progress.

MECHANIZATION IN AGRICULTURE

Mechanization is indeed a poor word to characterize what I have in mind. Rather it is the application of engineering to agriculture. The agricultural engineer cares little for tradition and has as his ultimate objective efficient production and low-cost output. While unhampered by custom, he seeks ratios of efficiency through control of natural and mechanical forces. The engineering point of view is comparatively new in agriculture. It has made tremendous strides

in the last 15 years. We have no reason to doubt that it will have the same importance in agricultural production in the future as it has in other phases of industry. Neither is there any justification for thinking that it has reached its ultimate goal; rather the best engineering judgment is that it has a great many things in store which will continue to modify agricultural practice, the lives of farm people, and the business organization of farms in the future.

Internal-combustion motors have caused and will continue to cause great readjustments in farm organization and operations. It is roughly estimated that in 1920 there were 250,000 tractors on the farms in the United States. In five years these had doubled and reached the 500,000 mark and in 1930 had reached in round numbers 1,000,000.

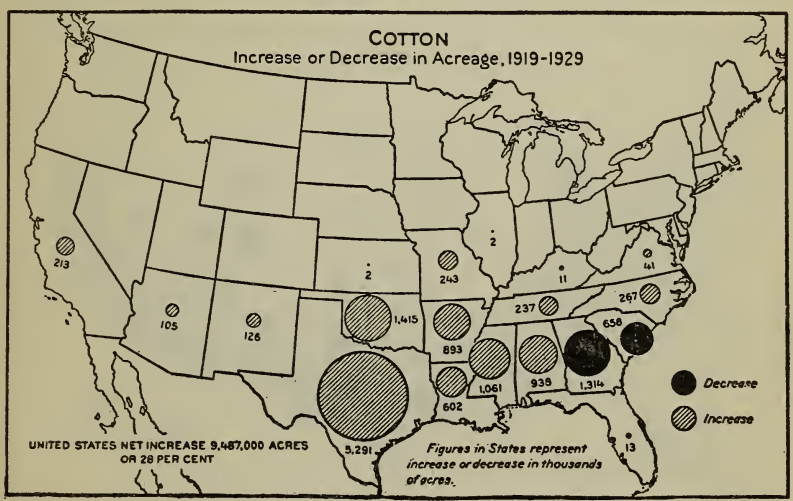

FIGURE 32.—The great decrease of corn acreage in the South, the result partly of the great increase in corn production in the States from Kansas northward to Minnesota and Montana, and the greatly decreased quantity required for horse feed tended to increase cotton acreage, and this trend was aided by a fairly good price for cotton until 1926. The increase of cotton acreage was greatest in western Texas and Oklahoma, where more or less freedom from boll-weevil damage, as well as the prevalence of large farms of level land adapted to the use of machinery, permitted production at a lower price than in the Eastern States. Georgia and South Carolina suffered especially from the handicap of recent invasion by the boll weevil

Dr. O. E. Baker, of the Bureau of Agricultural Economics, estimates that the elimination of 9,000,000 horses and mules from the farms and cities of the United States by the internal-combustion motors has released approximately 25,000,000 acres of land scattered over the United States from producing feed with which to supply these horses and mules, and has resulted in a 12 per cent increase in land available for other crops. Although there is much to be said in favor of the use of horses and mules, especially in times of low feed cost, nevertheless, the tendency toward the replacement of horses by tractors appears inevitable for several years to come. Less than half enough colts are being raised to replace the horses and mules that die or become incapacitated yearly. The 1931 outlook

report of the Bureau of Agricultural Economics says that the total number of all horses and mules, which was 25,000,000 in 1920, will be reduced to 10,000,000 by 1940 providing births continue at the present rate. If motorization is to continue, it will tend to concentrate certain types of production on level lands adapted to tractor operation, and a vast reorganization of farms and farm operations all over the United States will be inevitable.

In general, we may say that amortization and mechanical development have produced new levels and margins of competition in the major crops such as wheat, corn, and cotton. The results of this machinery change are well known. Cost-of-production figures of agricultural commodities are always difficult and complicated because of the many intangibles in farming. It is, therefore, difficult to use any set of cost figures as a complete basis for comparison.

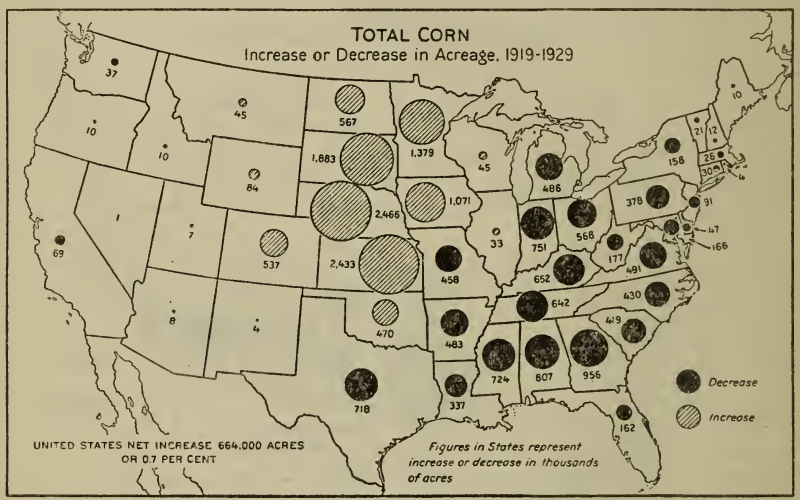

FIGURE 33.—The decrease in wheat acreage between 1919 and 1929 in the Corn Belt and adjacent regions released land for other crops or to lie idle. Some of this land went into corn, notably in Iowa and Minnesota. But in all the States east of the Mississippi River, except Illinois and Wisconsin, the acreage of corn also decreased. Corn acreage increased greatly in the States from Oklahoma to Minnesota and North Dakota, a region orginally prairie, while a decrease occurred in every originally forested State except Wisconsin. The production of pork and milk, like that of corn, has increased greatly in the States from Kansas to Missouri and North Dakota

But during the last decade, the engineering developments in connection with power farm equipment and farm organization have greatly reduced labor requirements and unit costs. In the Great Plains of the United States and Canada a unit of land and a unit of machinery, consisting of tractor, combine harvester-thresher, tractor drill, tractor tillage implements, and truck, produce wheat at new low levels of cost and new high levels of efficiency. The Mississippi Delta Experiment Station, at Stonesville, Miss., gives the following variations in costs between hand tools and mechanical equipment in producing cotton—labor, power, and machinery cost per acre:

1-mule ½-row equipment	$14.20
2-mule 1-row equipment	10.78
Tractor 2-row equipment	6.78
Tractor 4-row equipment	5.20

Changes in harvesting and processing cotton are under way. Likewise the general-purpose tractor with its complemental unit of corn equipment—3 and 4 row planters, cultivators, 2-row picker, etc.—tends to produce new competitive levels and to require reorganized farms.

Truck transportation and good roads are producing a revolution as well. The United States Department of Agriculture states that motor trucks are hauling 15 per cent of the total shipments of fresh fruits and vegetables that are transported 20 miles or more to markets. They are now delivering 27.3 per cent of the total livestock receipts; 17,000,000 head of cattle, hogs, and sheep went to market in trucks during 1930. This was an increase of 17 per cent over truck shipments in 1929 and the equivalent of 275,000 single-deck freight-car shipments.

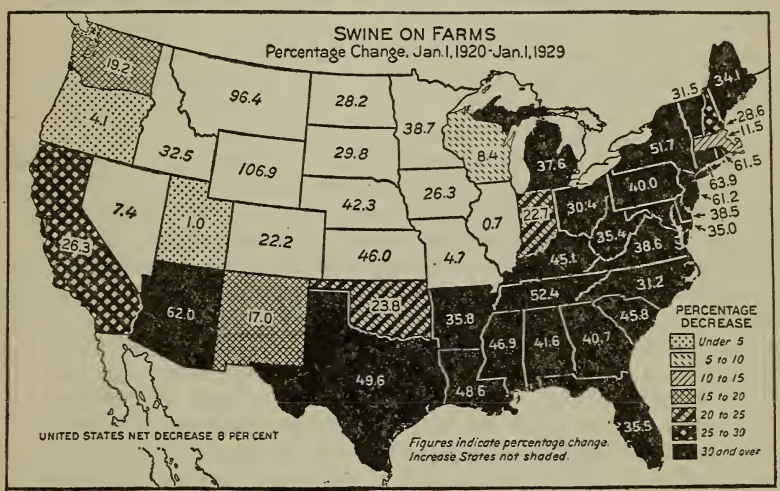

FIGURE 34.—The percentage change in number of hogs on farms between 1920 and 1929 brings out profound geographic shifts in the industry. In the Cotton Belt the decrease in most States exceeds 40 per cent. The decrease is almost as great in Virginia, Maryland, and Pennsylvania, and is even greater in New Jersey and New York. On the other hand, from Missouri to Colorado and northward a notable increase has occurred, exceeding 40 per cent in Kansas and Nebraska, and mounting to about 100 per cent in Wyoming and Montana

These changes resulting from agricultural engineering are by no means confined to cotton, wheat, and corn. They are to be found all over the agricultural field. As an example, Dr. H. C. Gardiner, of Montana, operates an alfalfa-sheep ranch upon which the problem of making alfalfa hay and feeding it to ewes and lambs during the winter has been greatly modified as a result of the enginering approach. This farm has developed what might be called a new hay-making and hay-feeding system. The hay is chopped into small lengths in the field, is stored, and automatically fed through specially constructed self-feeders. When the hay is so fed the manure is free from coarse, strawy material and can be dumped into irrigation ditches and thus distributed over the land by means of the irrigation water. Not only has this new system increased the efficiencies in hay-making, the handling from the field to the feed lot, feeding, distribution of manure, etc., but the costs have been reduced 40 per cent.

Unless agriculture becomes static and dormant we may anticipate changes, due to the introduction of the engineering aspect of agriculture, with greater force in the future than in the past. It is a safe assumption that industrial development in other fields will have an important bearing on the evolution just described. No one as yet knows what may be the effect of the new light steel alloys which are being developed. The specific gravity of steel is about 7.70. New alloys, which are one-fourth as heavy and have the properties of steel, are being developed. In agriculture, machinery and equipment must of necessity be transported over the land. If these new alloys are adaptable to the manufacture of agricultural equipment, then only experimentation and the engineers can forecast what will be the effect of lightening the weight of equipment by 75 per cent.

New developments are taking place in track-type tractors and in fitting flexible rubber-fabric tires to wheel tractors so as to give greater traction and cause relatively little soil packing.

No one knows what industrial chemistry has in store for agriculture. It is within the limits of chemical possibility that fuels and cellulose products may become important by-products, or, for that matter, main products, of commercial agriculture.

It is highly probable that agricultural engineering and technology will develop new and more efficient low-cost processes and tools for the control of weeds, soil tillage, planting and harvesting crops; in fact, for all operations that are subject to mechanical manipulation.

During the past 150 years the application of engineering to industry, or the machine age, if you please, has produced great changes and, by and large, great advances in standards of living. This progress has been at a price, and that price has often been temporary unemployment and human misery. But the machine age has done much for agriculture. In the past its shocks have been absorbed by movement to free lands and by expanding European markets. If we are to look forward, however, to an increasing influence of the machine age on agriculture, and if we are to learn anything from history we must be prepared for difficult readjustments, and our research agencies must be in a position to supply the type of facts whereby farmers can make these adjustments at the least social cost. While I shall point out later that these changes do not necessarily mean the passing of family farming, they certainly do mean realignments in the use of land, managerial abilities, and capacities of farmers, and they emphasize new comparative advantages.

SCIENTIFIC TECHNOLOGY

Scientific research in agriculture is continually increasing the complexity and skill required in farming practices. The net results of research and experimentation relative to crops, soils, livestock, and all phases of agriculture, tend to replace custom and habit with complex ways of doing things, requiring knowledge and skill and a high level of education and intelligence. Many examples of these changed practices that have taken place in the last 10 years may be cited. They are to be found in every field of agriculture.

Under the best of conditions there is a lag in the acceptance of new technology by farmers. Recently a survey was made by a Corn Belt experiment station of a group of townships in which intensive ex-

tension work has been carried on for 7 years in connection with hog sanitation and feeding. At the end of a 7-year period of intensive extension and demonstration work it was found that only 37.6 per cent of the farmers raising hogs were practicing some phase of the sanitation system, only about 1.5 per cent were practicing the recommended system of feeding and sanitation in its entirety, 18 per cent have discontinued raising hogs during the 7 years because of disease, parasitism, small litters, no profit, etc. I could go on at endless length pointing out illustrations of just this type, indicating under normal conditions, the widening of the competitive advantage of some farmers and some areas against others. If our agricultural research institutions are to be maintained and the flow of scientific knowledge is to be as great in the future as in the past, we may anticipate at least as great changes from this source in the future as in the past.

SCIENTIFIC FARM MANAGEMENT

Each change in farming that takes place as a result of the application of engineering, mechanization, or technological science, results in new economic problems for the farmers. They require readjustments in the farm organization and operation and present problem of management. The tendency also is to increase the capital required for farms, but not necessarily to require a greater investment per acre. It is quite probable that the machinery used in agricultural production in the future will be of such a nature that it will require a unit or given amount of land to go with a unit of machinery.

Scientific management requires budgetary methods, accounting control, and farming plans in keeping with production practice, standards of accomplishment, and future economic conditions which are to be ascertained from the outlook service of the United States Department of Agriculture and the colleges.

There will no doubt be a tendency in many cases for farms to be adjusted so as to give the most economic use of mechanical equipment and individual managerial ability. To what extent will the foreclosure of farms and loss of operator ownership which is taking place during the present depression affect this movement for the consolidation of holdings after agriculture starts on the upgrade? Is there a possibility that agricultural finance in the future will have a tendency to expand the credit of the money-making type of farm and contract the credit of the farm which is unable to make this kind of adjustment? If such is the case, this adjustment in the size of farms may take place at a rapid rate.

During the past few years there have been springing up throughout the United States new forms of managerial assistance. They range all the way from a cooperative farm-management service (such as the county farm-management associations in Illinois that cooperate with the farm-management division of the college of agriculture) which has a system of accounting and which advises on the reorganization of farms, to systems under which numerous farms are operated under the general supervision of a specialized manager. Without doubt the present depression, unless prices rise shortly, will greatly reduce the number of owner-operated farms and will increase the number of tenants. Will the new owners of these

lands, acquired through foreclosure, have a tendency to develop some system of supervision? Who knows but that possibly we are on the verge of some new type of cooperative managerial agricultural organization? I am informed by G. Howard Doane, president of the American Society of Farm Managers, that this type of service is greatly on the increase.

By way of summary: American agriculture is not only in the depths of depression but in the grip of intense competitive struggle, both internally and internationally. Looking beyond the immediate depression we see the following:

(1) An increasing differential between the better grades of land and the poorer grades of land and constant pressure of the low-cost acres on the high-cost acres. There is no reason for gloom so far as the low-cost regions are concerned.

(2) In the low-cost areas a well-managed, efficient agriculture, producing at reasonable cost, with adapted farm equipment and livestock. Engineering and technology changes will make the obsolete farm more obsolete for commercial production as time goes on.

(3) In the international competitive field we may look for the same adjustments taking place, providing nationalistic aims, tariffs, national self-sufficiency, etc., do not arbitrarily curtail or prevent international trade. If they do not, I am sure that with our efficiency, due to mechanization, scientific production practices, and management, we can successfully compete as far as our low-cost regions are concerned.

(4) The adjustments in the offing require all the foresight and planning that we can muster in relation to land policies and utilization for the long-time period, and adjustments in individual farm organization and management for the short-time period.

HELPING THE FARMER TRANSLATE ECONOMIC INFORMATION INTO ACTION

C. W. Warburton, *Director of Extension Work, United States Department of Agriculture*

Mr. Tolley, Doctor Holmes, and others have told you of the research activities which are bringing together information on farm management, the agricultural outlook and other phases of agricultural economics. The mere bringing together of stores of economic information by the Department of Agriculture, the State experiment stations and other agencies has little value, however, unless this economic information is translated into action by farmers.

More than anyone else, the county agricultural agent is responsible for bringing this economic material to the attention of farmers and is aiding them to utilize it on their farms. We have in the United States nearly 2,900 counties in each of which 300 or more farmers live. In those 2,900 counties there are about 2,600 county agricultural agents and assistants, serving between 2,400 and 2,500 counties; leaving about 400 agricultural counties that do not have county extension agents. Back of these county agents is a competent corps of economic and commodity specialists, whose function it is to carry research information from the Department of Agriculture, the State experiment stations, and other sources, to the county agents and through the agents to the farmers. The teachers of vocational agri-

culture are also important factors in translating economic information into action, both through training the future farmers and through contacts with those actually engaged in farming. And Mr. Wilson mentioned a third group, what we might call the professional farm managers, who are quite an important factor in some portions of the United States.

GETTING THE OUTLOOK TO THE FARMER

The outlook material is brought to the attention of the farmer in a wide variety of ways. The national outlook report is pubished each year by the Department of Agriculture, copies of it being sent to State and county extension workers, the press, and to interested farmers. Last year a popular edition was prepared and given wide distribution. Last spring, two editions were printed—the detailed outlook of 91 pages and the popular edition of 16 pages entitled "Facts for Farmers." Altogether, 375,000 copies of these two publications were issued. The department also issues timely outlook statements during the year on special topics, such as the Wheat Outlook, which is issued in the summer well in advance of the winter wheat-planting date, the Hog Outlook, and the Beef Cattle Outlook. I take it from what Mr. Tolley said earlier in the afternoon he thinks that the department is now outlooking through the back door.

As the national outlook report must necessarily discuss many topics not of interest to any individual farmer and can not be sufficiently localized to be of greatest benefit to the individual, the department has urged the States to use the national material and supplement it in the preparation of State outlook statements. In 1928, 36 of the States issued State outlook reports, this number gradually increasing until I am glad to say that this year every State issued such a report. This State outlook is prepared by the research and extension economists at the State college of agriculture, some of whom have been in attendance at the national outlook conference or the regional conferences, and are therefore familiar with the material on which these outlook statements are based. It is their job to take out of the national outlook the material of interest and value to the farmers in their State, supplementing it and interpreting it according to the particular conditions that prevail therein.

MONTHLY OUTLOOK STATEMENTS

Here, for instance, is the New York State Outlook for 1931, which is a publication of 32 pages. Many States supplement the annual outlook report with periodical statements on specific commodities, or are issuing monthly outlook bulletins. Illustrative of this type of publication is this little 4-page circular entitled "Timely Economic Information for Ohio Farmers," which is issued monthly by the Department of Rural Economics of Ohio State University. This issue, which is for July, 1931, discusses the hog outlook, particularly with reference to the marketing of hogs in the fall of 1931 and prospects for the winter and spring of 1932. It also discusses briefly the sheep and lamb situation and the outlook for corn, wheat, and hay; it gives figures on the prospective production in Ohio and in the United States of the most important crops grown in Ohio, and in short tables it presents information on cold-storage holdings

of pork, beef, lard, poultry, eggs and butter, and the average prices of important farm products on various dates. This review of the contents of this little 4-page folder will convince you that it is crammed full of information of value to all farmers, that what is said is concise and to the point. I need hardly assure you that farmers generally welcome and utilize the material which comes to them in Timely Economic Information. The Bureau of Agricultural Economics issues the monthly entitled "The Agricultural Situation,"—the blue sheet which is probably more carefully read by extension workers and by farmers who receive it than is any other department publication.

OUTLOOK MEETINGS

The outlook is presented not only in publications but in thousands of meetings over the United States in which county agricultural agents, economic and production specialists, and leading farmers bring this material to the attention of hundreds of thousands of farmers, bankers, and local business men—and unfortunately it has been for a considerable time a blue sheet in more than one respect. We are hoping that the time is coming before very long when the color will change. Not only is the outlook material presented in these meetings but there is extended and interested discussion of it, and many farmers determine for themselves how they can best apply this information on their particular farms. As an indication of the growing interest in outlook meetings, fewer than 3,000 such meetings were held in 1928, with an attendance of about 135,000, while in 1931 about 12,000 meetings were held with an estimated attendance of 845,000. Already plans are being made in most of the Southern States for county and community outlook meetings to discuss the outlook information for the South brought together at the regional conference held at Memphis last week. In the stress of the present depression farmers are showing greater interest than ever before in this outlook information and without question the attendance at the meetings in 1932 will greatly surpass that at the meetings held last year. I think it is entirely safe to say that more than 1,000,000 farmers will attend outlook meetings in 1932.

Publications, press articles, talks at meetings, all bring the outlook to the attention of a very large number of farmers. A still larger audience is reached through radio talks given by representatives of the Department of Agriculture on nation-wide hook-ups, by State research and extension workers, and by county agents on local stations throughout the country. This year some 2,000 radio talks presenting outlook material were given by Federal, State, and county economic workers.

WHAT FARMERS SAY ABOUT OUTLOOK INFORMATION

Do farmers really use outlook information? The Illinois Extension Service last spring sent a questionnaire to 1,000 farmers who attended 21 district outlook meetings held by the staff of the college during February. Of 360 farmers who replied, two-thirds recorded actual changes made in their farm operations as a result of outlook information. For instance, 29 had increased their hog production, 20 had reduced their wheat acreage, 19 had employed better mar-

keting methods, 15 had increased poultry production, 7 had culled poultry and livestock more closely than usual, 5 had made changes in the amount of dairy production, 10 had increased pasture or hay crops, 21 had lowered cost of production.

Brief quotations from the replies of some of these farmers will be of interest:

Have tried to produce more cream, eggs, and grain at less cost.

Cut costs, provided plenty of pasture, raised canning crops, with the price fixed in advance of planting.

Raised more hogs and chickens, more clover and more soybean hay.

Less hired help and at cheaper wages; less wheat acreage and more and better pork.

Sold corn early, increased hogs, quit wheat.

Because of predicted large peach crops to be harvested north of me did not nitrate my trees heavily and let the fruit be harvested sooner which gave better prices.

Raised as many chicks as possible because of favorable egg prices predicted this fall.

Have lowered cost of production, using horses as much as possible, doing more work myself.

FARM-MANAGEMENT STUDIES

The outlook is only one of the numerous phases of economic work which specialists and county agents are bringing to the attention of many thousands of farmers. During the past year and a half the number of economic specialists in the States has more than doubled, the number now being 192. Eighty-nine of these specialists are engaged in farm-management studies and in helping farmers to apply these studies to the reorganization of their own farms. Doctor Holmes has told you something of the farm-management research work and the way in which this is applied to the reorganization of farm plans. It is the job of the State specialists and the county extension agent to translate this information into terms of the individual farm, working with the farmer himself. To a considerable extent the basis for farm-management work and for the application of farm-management information to the farm is through the medium of keeping farm accounts by the farmer himself. All over the United States farmers in practically every county are keeping farm accounts on forms supplied by the extension service, determining for themselves which crops or enterprises are profitable and which, under present conditions, are not profitable. With this knowledge the farmer is in a better position to adjust his farming operations and to make changes which will either eliminate the unprofitable enterprises or transfer them to the right side of the ledger.

FARM-ENTERPRISE ACCOUNTS

In some instances complete farm accounts are kept. In others, especially where some particular enterprise is of major importance, accounts of only that one enterprise are kept. California has done especially good work in this field of enterprise studies. By bringing together the figures on cost and returns of a large number of farmers growing the same product under similar conditions it is possible to determine the production methods most likely to bring satisfactory returns and to point out wherein individual farmers have fallen below the average of the more successful operators. For instance, it was found that many farmers cultivated their peach

orchards more frequently than was necessary in order to obtain the most profitable production. Through these farm-management studies the peach growers of California have been able to reduce their cultivation costs to less than one-half the figure that was common a few years ago. Again, poultry-enterprise studies have shown the size of flock that must be kept if an individual operator is to expect reasonable return for his labor and his investment, how much this flock must be increased if one man is to be employed, and much other information essential to profitable operation.

SPECIAL FARM-MANAGEMENT SERVICE

Last night President Burr of the American Society of Agronomy called attention to the fact that 20 or 25 years ago farmers in the Great Plains were cultivating their land 20 times or more during the year to maintain a dust mulch. Now, with more modern agronomic theory, agronomic rather than economic, the number of cultivations is reduced to 4 or 5, and farmers very generally are applying that practice.

For the last several years the Illinois Extension Service has been working with limited groups of farmers in a special farm-account and farm-management service. The major part of the cost of this service is paid by the farmers themselves, each of them subscribing $15 or more a year. In return for this contribution a representative of the university visits each farm every three months, assists the operator in keeping his accounts, counsels with him about his operations, and at the end of the year reviews his results in comparison with those of all the other farmers in the circuit. Last September a meeting of one of these farm-maagement rings was held in central Illinois and was attended by several hundred farmers and their wives, all of whom listened with close attention from early morning until late afternoon to a summary of these farm-management records given by the farm-management specialist, the county agents, and some of the leading farmers themselves. This kind of service has recently been put into effect in several additional States, and while its direct results are confined to a comparatively small number of individuals, the spread of changed practices no doubt is very much greater because the farmers who are members of these farm-management rings are leaders in their communities and their changes in practice are certain to be imitated within a few years by a considerable number of their neighbors and friends.

PLANNING AGRICULTURAL PROGRAMS

More and more each year economic information is being used as a basis for the planning of extension programs for the community, the county, and the State. Several years ago some of the States began holding State conferences to which came leading farmers, bankers, business men, and others interested in agriculture, to consider the outlook for various agricultural enterprises, the conditions which made the State specially suited to the production of some particular commodity, the competition from other areas, and a vast store of other economic information out of which committees of farmers and business men prepared an agricultural program for the State. Here, for instance, is a 5-year program for the development

of Virginia's agriculture, worked out by the Virginia Agricultural Advisory Council composed of representatives of some 30 or more organizations and agencies concerned with the agriculture of the State. The program contains reports of committees on agronomy, dairying, animal husbandry, truck crops, horticulture, agricultural engineering, agricultural economics, marketing, agricultural investigation, and rural home development.

COUNTY EXTENSION WORK

In most cases where a State program was prepared, the county agent and the representatives from the county who attended the State meeting held county meetings of the farmers and their wives, at which the State program on the particular topics of interest in the county was discussed and applied to that particular county. The farmers themselves determined what changes in the agriculture of the county were desirable for the good of all concerned. In Oregon, for instance, after the State program for agriculture was agreed upon, county agricultural programs were prepared and printed in many of the counties. In some cases the recommendations in the county program were quite at variance from those in the State programs, and rightly so. Thus, the Oregon State program called attention to the large acreage of apples coming into bearing and cautioned against further planting of apple trees. In certain counties, however, where limited areas were specially adapted to the production of varieties of apples of high quality and for which there was an expanding market, the county recommendation was for the increase of apple planting on certain soils or in particular localities. These county programs became the bases for the programs of the county agricultural agents and the farmers with whom they worked.

MARKET GRADES AND STANDARDS

For the past 15 or 20 years the Bureau of Agricultural Economics has been preparing and issuing grades and standards for agricultural products. The job of the extension agent is to translate information on grades of agricultural products which bring the best returns on the market into action by the farmer, leading to the production of commodities of these particular grades. For instance, the farmer first must understand what a United States No. 1 grade potato is, and, second, what changes he must make in his farming methods in order that a large portion of his potato crop will grade United States No. 1. These changes may involve confining his planting of potatoes to some particular type of soil on his farm, proper preparation of the land, the use of more or different fertilizers, the selection of the variety best suited to his conditions, the use of disease-free seed, cultivation at the right time and in the right way, control treatment for insects and diseases, the adoption of satisfactory harvesting methods, and, finally, the grading and packing of the crop in such a way that he will obtain the desired grade when his crop is marketed. All this in an area where the production of potatoes for market is important may mean some very material changes in production practices by individual farmers or even by all the farmers in the community. In bringing about these changes, the production and marketing specialists from the State college of agriculture, the county

agricultural agent, and some of the leading farmers of the county on whose farms demonstrations in potato production, harvesting, and grading are conducted are all important factors. Similarly, information on grading and marketing livestock, poultry, eggs, fruits, vegetables, and field crops may be translated into action.

MARKETING

Sometimes the translating of economic information into action by the farmers is made particularly difficult by the marketing system that prevails. A case in point is the local-buyer system of marketing cotton in the South, which has made it practically impossible for the farmer who grows good cotton to get any better price for it than the farmer who grows the shortest and poorest cotton in the neighborhood. To most cotton buyers a bale of cotton is a bale of cotton, and the price paid by the buyer is the same no matter what the quality or condition. Apparently the only practical way to remedy this condition is to bring together a sufficient quantity of cotton under one sales management so that it can be properly graded, classed, and sorted in even-running lots, the sales agency then returning to the grower a price in accordance with the value of the particular cotton which he produced. The agency which appears to be in best position to make return to the grower in accordance with the grade and quality of his product is the cooperative marketing association. Extension agents, therefore, have been active in many localities in fostering the formation of cooperative marketing associations as an effective means of helping the farmer to translate economic information into action.

WHAT OF THE FUTURE?

Good progress has been achieved in recent years in making economic information available to farmers, but we are still reaching too small a percentage of the total number of farmers. Even with the great interest which was shown in outlook meetings last spring and the efforts which were made by extension workers to bring economic information to every community, not more than one farmer in every seven was reached, and too small a percentage of those reached actually put the information into practice. We realize that the use of outlook information and the use of other economic facts are comparatively new to farmers and that quite properly the farmer must first be convinced of the accuracy and value of this information before any large proportion of them can be expected to put it to use. The farmer who makes a shift in his farm operations on the basis of the outlook or other economic information is risking a part of his income for the year on that shift. It may mean the difference between loss and profit to him, but he must be convinced that the change will result in profit and not loss before he is likely to utilize economic information to any large extent. This result can be brought about only gradually, as our economists gain in the accuracy of their information and as farmers, from their own experience, learn that the facts and figures brought to them can be translated into real values in their farm operations.

GENERAL DISCUSSION

Mr. CALL. While the hour is late, I believe we can have a few minutes for discussion or for suggestions to the committee on summaries and conclusions.

Mr. HERBERT of Michigan. There has been no mention made here to-day of integration efforts toward forest and farm utilization. Mr. Gregory said we should move the people from the farm. Doctor Black said the part-time farms are a good thing. How are we going to keep the people there that want to make a living and a good living? I presume Doctor Black referred to people who live near town and work in town. How about the marginal communities located a long way from a town? The only possible chance is by coordinating this work in the forest with that on the farm. That means that a man in these marginal communities will continue to live on the farm, and will raise farm produce for his own use and probably to sell to tourists and campers; he will act as a guide to hunters, and will work in the woods on fire protection, in planting forest trees, and in the administration of forestation. In that way people in communities may be able to make a living. Concentrate them in one locality so we can reduce the school and road costs. That is the only possibility that has not been mentioned yet.

Mr. BLACKWELL of Oklahoma. I should like to add emphasis to one point which has been made more than once, with reference to soil erosion and its effect in increasing the amount of marginal and submarginal land. In Oklahoma we have found, by a very careful erosion survey of the State, that more than 13,000,000 of our 16,000,000 acres of land in cultivation are being seriously affected by erosion, and it seems to me that if this committee could give emphasis to the ways and means of stopping erosion so as to prevent so much of this land becoming submarginal it would be a great service, perhaps not only in getting the question before the public, but in strengthening the hands of those who are attempting to stop erosion; and that is an important matter, not only in preventing soil erosion, but in preventing floods, or in helping control floods. If it is necessary to present a resolution to get that before the committee, I should like to do so. I take it that the committee will probably consider that anyway, but would it be proper to suggest it to the committee for consideration?

Mr. CALL. There is no objection. That suggestion will be made to the committee on summaries and conclusions. Are there any further discussions?

Mr. HERBERT of Michigan. Mr. Chairman, May I be permitted to discuss one thing discussed this morning? Mr. Englund said that we pass the buck in taxes down to the farmer and that he is down at the end of the line. There is still one fellow below the farmer, still further down the line, and that is the landowner, especially if he happens to be an absentee landowner. Doctor Wehrwein spoke of all that delinquent land—it would not have been delinquent if the farmers in that community had not been passing the buck to the cut-over landowner and the absentee owner. That is what has happened. Long-term delinquency is a function not of nonutilization; it is a function of the maladministration of property tax.

What has happened to those communities is that the farmer assesses his own property rather lightly, and he assesses the cut-over property and the property of the nonresident owner even two, three, or four times as high as his own. If we could get our property assessed at what it should be according to the law at the present time, there probably would be no more long-term delinquency on that type of property than there would be on farm property.

CREDIT PROBLEMS IN THE READJUSTMENT OF LAND UTILIZATION AND FARM ORGANIZATION

Presiding—C. O. Moser, *President, National Cooperative Council*

FUNCTIONS OF FARM-MORTGAGE AGENCIES IN AGRICULTURAL READJUSTMENT

S. J. Westbrook, *Vice President, Aetna Insurance Co.*

It is impossible to cover within the scope of a paper of moderate length the true functions of a farm-mortgage agency in agricultural adjustment. Conceptions of these functions differ with the individuals analyzing them, but as a result of the illuminating experiences of the past decade, thought on the subject is clearly moving along lines far more comprehensive than the thought of the war and prewar decades. In those decades of peace, plenty, and rugged individualism the mortgagee's problem apparently was purely and simply a financial one. Land evalutions consisted in the main of an appraisement of neighborhood opinion, and during a period of constantly rising sales prices—a price movement which up to a point of time and development was entirely justified—such methods, although not basically sound, showed no glaring fallacies. During this period of unrestricted immigration, of restless migration, and of constantly expanding domestic and foreign markets, any such guess, no matter how optimistic, became an established value with the march of time and events. It is a reflection on the word "financial" to say that the problem, or the function (because there was no problem), was a financial one; rather, it was the function of collection—collection of interest and occasionally of principal.

Viewed impersonally and dispassionately from the vantage point of the year 1931, it must be patent that the success of farm mortgages up to the year 1920 was the result of the amazing development of a virgin, untouched, unbelievably fertile, agricultural country by several races of recently emancipated people ranging from the pioneer stock of colonial or postcolonial days to the eager Europeans of more recent and unrestricted immigrations. The genius of the dispensers of credit, while aiding in this development, contributed little to any formula of success. There was no such formula, although it came to be believed by the dispensers individually that such was the case and that their methods of operation must be kept sacredly secret.

Coincident with the development of a new country there came supplies of capital in constantly increasing quantities—more than adequate for the need—and there was set up a vicious competition which, in the light of success already experienced, poured money into fields considered invulnerable. I am by no means confining my thought in this connection to life-insurance companies nor to lenders of

money on farm mortgages alone, but am including in my thought those groups which have financed and are financing agriculture whether it be the land, the crops, or the products, and whether the agency be national in scope as are insurance companies and land banks, or a more local institution like regional banks and trust companies, State credit organizations, or private investors. During times of constantly rising basic prices chances of failure from inadequate margins on loans are slight and until the year 1920 prices of agricultural lands had been increasing without interruption since Civil War days. Whether or not the price level reached in 1920 was ridiculously high is beside the question. The mere fact that the trend of land prices since that time has been generally downward—and that rapidly—has accomplished an invaluable mission in that it has shaken credit agencies from their former attitude of complacency into the knowledge that they by themselves alone can not hope to serve the agricultural industry intelligently. There is no coordinated thought on the subject among these agencies, for in large measure they are still attacking their problems of readjustment and their plans for future lending as independent and distinct individuals or companies, although there is a marked tendency toward free conference and honest exchange of opinion.

It would be superfluous and in repetition of previous papers to point out in detail the revolutionary changes effected by the ending of the great war, the removal of price guaranties, and the return of the agricultural industry to unrestricted world competition. It is sufficient to point out the three major obstacles with which the farmer in different degrees and in different combinations, was faced. He found (1) that the price of his commodity had tumbled from war levels to a point even below pre-war levels. He found (2) that his burden of debt (land debt, operating debt, and taxes) had mounted precipitously, and he discovered that this debt must be paid in cash. He found (3) that, owing to the urge to grow grain and cotton to the exclusion of all else, he had literally driven his fertility out the front gate and that his yields per acre had shrunk to disastrously low levels. In spite of these prominent danger signals credit agencies continued to loan money, principally on land, at war or near war levels.

The complacency engendered by a half century of successful operation had blinded us to patent and potent dangers. Perhaps such a development was no more than human because on all sides there is such constant evidence of our susceptibility to extremely emotional reactions. Our honest belief in 1919–20 was that agricultural land would never stop going up in price. Was it any different from our belief in regard to the stock market in 1928–29?

Our honest belief in 1929–30 was that agricultural land would never stop going down in price. Is it any different from our belief in regard to the stock market in 1930–31?

A sane perspective has been sadly lacking. First we are swayed by the inordinate greed of speculative orgies and next by the insane panic of cyclical depressions. If I have given an unwarrantably pessimistic analysis of agricultural conditions at the close of the war it will be helpful and will contribute to the attainment of a sane perspective if I repeat to you a few rough statistics.

In 1929, for the first time in life-insurance investment history, representatives of a substantial group of life-insurance companies met to consider the farm-loan situation. In this group were most of the largest lenders of insurance money on farm lands. In order to provide a background for future possible development, aggregate figures were compiled to show the size, nature, and extent of the investment—and of the trouble. The compilation brought out certain facts which have to a large extent reshaped the thoughts of these investment officials themselves and should go a long way toward dispelling the unspeakable gloom with which the man of the street views insurance farm investments. In giving these figures I am attempting to bring them up to date and to a slight extent they are estimated. The actual figures of January 1, 1931, are somewhat better than those I am about to give you.

Distressingly low commodity prices coupled with world-wide depression have adversely affected this record, and I am taking full cognizance of this in telling you that according to the experience of these 14 companies whose total admitted assets are about $11,500,000,000, they have an aggregate of $1,300,000,000 in farm lands and loans, or about 11.3 per cent. This covers the entire investment—good, bad, or indifferent. Of this investment, $125,000,000 is in the form of land obtained through the foreclosure of mortgages, or about an even 1 per cent of the assets. There is likewise about $45,000,000 of loans under foreclosure or 0.4 per cent of the assets. Viewed solely as a business by itself and considered separately from the large total assets of which it is a small part, our compilation shows that of the total farm land and loan investment, 87 per cent is in good shape, with interest and taxes paid, 9.6 per cent is in the form of land, and 3.4 per cent in the form of loans under foreclosure—a situation somewhat better than some of the alleged friends of the farmer would have us believe.

This situation is the result of 10 years of unusually difficult conditions. It shows (in spite of the adverse combination of low commodity prices, high debt, and decreased fertility, to which I might add continued unwise and undirected credits) that the industry is basically healthy and that it has survived to a degree somewhat better than have many other basic industries.

This analysis is admittedly a limited one. Insurance-company investments, although important, are at the same time but a small part of the whole farm-loan investment, but for want of anything more indicative they must be taken as authoritative. Government statistics indicate that not more than 60 per cent of all farm land is mortgaged. On that basis I believe that it is fair to assume that of the 40 per cent that is not mortgaged about half is good farm land profitably operated and the other half is marginal land which is not mortgageable. This assumption is of course an arbitrary one. However, using this as a starting point and combining this assumption with the percentages I have just quoted, it is interesting to note that of every 100 farmers typical in cross section of the 6,000,000 or more farmers in the country, 20 farmers are free and clear of debt and in a position of more or less affluence; 20 never were and never will be any good; and of the remaining 60, strugglers if you please, 87 per cent, or 52 individuals, have been getting by, many

succeeding splendidly; 6 have definitely failed during the past 10 years; and 2 more are on the verge of failure now. In other words, of every 100 farmers, 72—the backbone of the industry—are carrying on most impressively and 20 were never of much account, leaving 8 as the evidence of agriculture's most difficult decade. It is a splendid record.

The basic attitude of insurance money toward farm investments, from its very nature, must be different from that of most farm-credit agencies. Academically, farm-loan investments are but one of many fields. Judgments are based largely, and not always soundly, as I have indicated, on an analysis of the past. First comes the permanence of the enterprise. There is nothing in this phase to disturb our faith in land and housing loans. Public utility, transportation, and communication enterprises, with their investors, have been changing constantly through the ages from the candle to the whale-oil lamp, from the coal-oil lamp to gas and electricity; from the stagecoach and toll road to the canal and waterway, to the steam railroad, to the electric interurban, and finally to the internal-combustion motor with its automobile, truck, and airplane; from the pony express to the Government-operated mails, to the telegraph and telephone, and finally to the wireless and radio. What changes are there in store for the future? The same question can be asked about power production and transmission.

But investments with agricultural lands as a security have remained constant in their integrity through the ages. Contingent conditions have changed and will change, necessitating a constant alertness on the part of the investor, whether that investor be a purchaser of land or a collateral lender on it. It is in elaboration of that one word "alertness" that I believe the functions of the farm-mortgage agencies can best be conceived and expounded.

Who are we that we should express any lack of confidence in land as a security for a debt? Is there anyone more qualified than we are to express a lack of confidence in the customary methods of incurring that debt? Having expressed and acted on that basic feeling toward land investments, and disregarding for the purposes of this discussion our academic choice, it becomes evident that our attitude toward agriculture is no different from that of other farm-mortgage agencies formed specifically for dispensing credit to the farmer. It appears then that we have two main functions to consider—(1) the rules that should govern our procedure as dispensers of credit during readjustment, and (2) the rules that should govern our procedure after readjustment and when agriculture has again gotten away to a fair start.

I have attempted to confine my thoughts to the first function, which was assigned to me, but as I proceed toward it I am deeply conscious of a merging of the two—of the fact that readjustment never has and probably never will cease, that there never will be anything more than a transitory status quo. I am conscious that at the moment, our problem is one of stationary or decreasing land prices, with the resulting accumulation of land titles through foreclosure; but as I examine further into the situation I am convinced that this has come about in turn by unwise loaning methods which

have had the effect of withholding from the borrower and landowner incentive sufficient to inspire him to hold his land through thick and thin.

Our dual problem is: (1) To handle this situation in such a manner that these lands may be returned in an orderly way into the hands of men and women who by instinct and training are tillers of the soil and far better able than we unwilling owners to operate as farmers; (2) to set up a program which, in the future, will assure to the investor, either purchaser or lender, an attitude of alertness as contrasted with the habitual complacence in the past; which will assure an intelligent, well-rounded conception of the basic factors influencing the industry—economic, technical, and social; and which finally will bring about a closely coordinated plan of action not only among these economic, technical, and social groups of specialists but, most important of all, coordination among the individuals of whom these groups are composed.

I can speak with knowledge of only one group and of a comparatively small part even of that group, the farm-land credit agencies as portrayed by the insurance companies, and my intimate knowledge is of my own company only. But it seems to be typical of the credit group as a whole. Into the hands of that group have been placed the immense power and the sacred responsibility of financial credit. As holds true with every industry, this credit takes three main forms: (1) land credits in which insurance companies, land banks, local banks, and trust companies have been primarily interested; (2) operating or production credit usually handled by local banking institutions, which during the past few years have become seriously impaired, and in some localities entirely wiped out; (3) commodity or marketing credits such as are provided by private marketing agencies, the exchanges, and—more recently and more effectively for the farmer—the farmer's cooperatives as sponsored by the Federal Farm Board.

In analyzing the situation dispassionately it becomes patent that the dispensing of this credit has been along no preconceived, thought-through plan; it has been directed by thousands of individuals all exercising their inherent rights of individual freedom of action, all in glorious but in utterly ruinous competition with one another, all mindful of the fact that it has been their own hides which they must save, that it is their own survival for which they must be fit, that it is their own fortune which they must make, and seemingly unmindful of the fact they are but small cogs in a machine of which credit should be but the governor or regulator.

The handling of foreclosed lands is convincing evidence of the necessity of coordinated action among the owners of those lands. The panicky attitude which has been and is characterizing this handling has contributed immeasurably to the acuteness of the whole foreclosure problem. Where is the economic incentive to the farmer to continue paying interest and principal on a loan of $50 an acre when the farm of equal grade next door has just been sold for $25 an acre on ridiculously easy terms? In some instances the farm next door may be worth only $25 an acre, but in the overwhelming majority of cases sales prices of foreclosed lands have been determined by the fear of competition, by an effort to reach a reluctant

purchaser before some one else gets to him. Such a procedure is devastating in its effect, not only on other land in the neighborhood that is unwillingly owned but, far more important, on land underlying loans and on land held free and clear by willing, responsible operators. The proverbial dignity of land ownership has suffered immeasurably at the hands of people who should be the first to uphold it and contribute to it.

I am quite conscious that the question almost asks itself "How?" I can tell you only of what has been done. This same group of insurance companies, the figures of which I have quoted, while realizing that the problem has its definite national aspects, recognized that the problem could be attacked only on a local or regional basis, and that interests other than insurance companies were unquestionably involved. With that in mind, nine associations of unwilling owners of farm real estate have been set up, with three or four more in process of formation. These are located in sections which seem to have been the most seriously affected. In each group, which already includes many interests other than insurance, there is provided an open forum for the discussion of all the phases of the land situation, beginning with the factors that govern foreclosure and including such other factors as land appraisals, leases, management and operation, and sales. Such an association provides a medium through which opinions and ideas can operate, and while no member is bound by any agreement, sound ideas have already prevailed in the older associations, most of which are less than 1 year old. The subject of foreclosure has been discussed exhaustively, and all manner of ways and means have been suggested in the effort to keep on the land the owner-borrower, but it all seems to simmer down to this program:

(1) That where the farm has been abandoned there is no choice but foreclosure.

(2) That where the farmer has lost his equipment and livestock and has let his improvements depreciate unduly, and where he has little or no equity and is faced with a staggering burden of debt, there is but little choice in the matter, and foreclosure is all but mandatory.

(3) That where the farmer has his equipment and livestock, even though mortgaged, and has kept up his buildings and has a real equity in the land and, most important of all, has a willingness to work, to cooperate, and to allow his farm to provide his essential sustenance—under those conditions every effort should be made by the mortgagee to keep that farmer on that land even to the extent of funding his senior liens into a new debt and allowing him to start afresh.

The subject of marginal and submarginal lands owned by credit agencies has been discussed. We realize the logic of the recommendations that have been made and recognize the importance of a well-thought-out program. The main difficulty seems to be in classifying these lands intelligently. Only three weeks ago I visited a farm in the Kiamichi Mountains in Oklahoma—80 acres on which we had loaned $25 per acre. The man was delinquent in 1930, taxes and interest amounting to about $150. The land was so definitely submarginal that even I recognized the fact. He was about to be delinquent again this year. At the time of the visit, however, I discovered

that he had raised on his farm every ounce of food that his family had consumed during the year and that he had enough to last him almost indefinitely; that he owed no money except his debt to us, largely because there was no one from whom he could borrow; that he and his family had themselves picked the 60 acres of cotton which ran nearly half a bale to the acre; that he had sold more than 12,000 pounds at about 5 cents a pound; that every cent he had received was his; and that he was prepared to discharge his delinquencies and his current obligations and pay $200 on the principal. Most assuredly the loan never should have been made, but the fact remains that it was made and that it nearly became a title; it may yet. But am I discharging my obligations to the policyholders of my company, which is my first responsibility, if I dump overboard even a farm like that for little or nothing? It is an individual problem on which I and all others like me sorely need advice. That is not an isolated case, although it is more spectacular than the ordinary.

So far as my company is concerned, practically all the farms that we are selling are submarginal. We are holding the better farms off the market because we are unwilling to sell at present prices. And on the submarginal lands we are nearly breaking even. All such plans and programs are exceedingly difficult of accomplishment on a purely individual basis.

One company, even a substantial group of companies such as the one I have mentioned, can not hope to make real accomplishments by itself. It is a national problem which, as we have seen, has gone beyond the purely financial or economic stage and even beyond the technical stage, and has become social in its aspects. The machinery for returning this industry to orderly production and orderly marketing is here if only it can be assembled and put into smooth working order. Sound education and clear thought must come from the recognized leaders, of whom this audience is representative. But education in itself is not enough. Back of the teacher must be the qualities of leadership and authority. The use of the rod is seldom necessary in the schoolroom if it is on the desk in plain view. Financial credit is that rod in the work of disseminating information to those seeking credit.

In the good old days when individualism was really rugged, when most of our forebears were farmers, and when each farm supplied to the resident family all that was necessary in food, shelter, and clothing, each head of the family was an independent autocrat and cash and credit were all but unknown. But with vanishing free lands, with startling developments in transportation and communication, and with the specialization of industry and labor came the need for cash and eventually for credit, and with that need came the end of the ruggedness of that individualism—for a silent partner had entered the enterprise.

With a closely coordinated plan of action among such agencies as the insurance companies, the land banks both Federal and joint-stock, the local trust companies and banks, and the State credit organizations two main objects can be achieved. (1) The present land holdings can be returned to private ownership in an orderly way and with a minimum of disturbance of the 72 per cent of all farmers whom I mentioned some time ago. (2) We can build a

program for future loaning based on principles laid down by economic, technical, and social experts rather than by the chaotic vaggaries of unrestricted competition.

This achievement will tend to restore a better balance between agriculture and industry in our seats of government and on our trading floors. It will render more possible a considerate and intelligent hearing of the problems of agriculture in councils in which organized industry has a loud voice. Properly directed, it will have a powerful influence in inducing the farmers to band together in cooperatives so that they may trade with organized industry on a more equitable basis. Is it too much for which to hope?

Mr. MOSER. I am sure we are all glad to see the attitude of the insurance companies, the land-mortgage bankers generally, in recognizing the need for cooperation among farmers and cooperation between farmers and their bankers.

THE MANAGEMENT OF FARM LANDS HELD BY CREDIT AGENCIES

ELBERT S. BRIGHAM, *Chairman of Committee on Finance, National Life Insurance Co., of Vermont, and formerly Member of Congress from Vermont*

Estimates based upon the census of the United States indicate that there is outstanding upon the Nation's farms a mortgage indebtedness of approximately $9,400,000,000, or about 20 per cent of the total value of its farm properties.

The credit agencies that hold these mortgages are life-insurance companies, banks, trustees of institutions and estates, and private investors.

After the recovery from the depression of 1893 the price level of agricultural products rose, and a rapid increase in the value of land occurred. During the years from 1900 to 1920 the farm mortgage was considered by credit agencies as the safest and most stable security for loans. The experience of the company with which I am connected is typical. During the 27 years, from 1897 to 1924, this company loaned over $100,000,000 on farm property without loss of principal or interest on the total invested or on any loan.

You students of the agricultural problem are familiar with what happened after the close of the World War. It is estimated that $380,000,000,000 of capital was destroyed in that conflict. It left in its wake tremendous public debts which have ultimately had to be faced. Provision has been made for their payment. Taxes levied for the support of Government have everywhere increased, and in some instances these increases have been manifold. Trade was disrupted and the purchasing power of consumers lessened. Coincident with this revolutionary changes in agricultural methods have occurred with consequences which as yet can not be estimated. Some lands previously considered submarginal can now be cultivated at profit, while others that were considered valuable are now submarginal. The tractor, truck, and automobile have supplanted horses and mules and lessened the demand for farm products, while at the same time it has been made possible for the individual farmer to increase his production materially. The recent industrial depression has further curtailed consumption.

All these factors have combined to produce since 1920 a depression in the agricultural industries which culminated in October of this year in an average price level on all groups of agricultural products only 68 per cent of the average for the 5-year pre-war period 1909–1914. Out in Republic County, Kans., it is said that a farmer with a sense of humor put this sign in the ravine beside his road: "*Ten dollars fine for dumping wheat here.*"

Under these conditions many farmers have found it impossible to pay the taxes levied against their farms, to meet living expenses, and to pay interest on a loan of even 50 per cent of a fair valuation of their land.

The credit agencies have been obliged, under these adverse circumstances, to foreclose many mortgages and have become the unwilling owners of a large number of farms. These it is their duty to handle in a way which will best conserve the interests of those for whom they are trustees, namely, the policyholders of life insurance companies, depositors in banks, and the beneficiaries of trusts. I need not call your attention to the fact that these credit agencies do not desire to continue as the owners and managers of farm lands; their desire is to sell the farms they have acquired to actual farmers as soon as the farms can be marketed at a price that will return the principal sum of the investment. The credit agencies desire to resume their normal relations as investors rather than as farm operators.

The methods devised by these credit agencies for handling their acquired farms may be classified as follows:

(1) Immediate sale.
(2) Abandonment.
(3) Sale upon contract.
(4) Consolidated management.
(5) Rental and improvement.

I shall discuss these methods briefly and refer more particularly to the policy adopted by the company I represent.

IMMEDIATE SALE

Some credit institutions, particularly the Federal farm land banks and the joint-stock land banks have followed the procedure of selling acquired farms for what they will bring and writing their investment in such properties off their books as soon as possible. In times of normal real-estate demand this policy is perhaps the best for credit agencies to follow. However, we are not in a normal period, and the farms in distress are so numerous that forcing a large number of them on the market for sale to the highest bidder would result in sacrifice prices. If all credit agencies were to offer their acquired farms at what they would bring at auction under present conditions, farmers on adjacent farms who are keeping their loans in good standing would find it to their advantage to surrender their properties and buy from the credit agencies an adjoining farm at a much lower figure than the amount of their present loan. The general adoption by credit agencies of the immediate-sale method would lead to a widespread destruction of real-estate values and the acquisition of a large amount of additional property.

ABANDONMENT

Some private investors and financial institutions pay taxes on their lands and allow them to lie idle if they can not be rented without further investment for improvements. Any buildings on farms so abandoned are destroyed in a short time, and the land grows up to weeds. If conditions improve to such extent that farms are again salable, these abandoned farms will be the last to be moved, because large expenditures for their rehabilitation will be necessary. In the meantime, tax payments make a constant outgo for which there is no return. Some properties are abandoned altogether and revert to the local government for taxes. Undoubtedly credit agencies now hold some farms which for one reason or another have become submarginal and therefore should be abandoned, but as a general policy abandonment promises little hope of recovering the principal sum invested, and is not seriously considered a desirable method by credit agencies.

SALES-CONTRACT METHOD

The sales-contract method consists of sale to a purchaser at a fair price without down payments but with payment secured by a crop mortgage. In many States the procedure of reacquiring title to farms sold on a contract of this kind, provided the purchaser does not meet the terms of the contract, requires the same process and time as the original mortgage foreclosure. During this interval the property may deteriorate and the credit agency derives no income from it. If the purchaser has a previous record as a farmer which entitles him to credit, or if he has acquired sufficient working capital so that he has a chance to succeed, credit agencies may successfully sell a few farms according to this method, but as a general practice it is not to be commended. Those who have tried it have not found it to be successful.

CONSOLIDATED-MANAGEMENT METHOD

The consolidated-management method consists in a pooling by financial institutions of their acquired property. In the Dominion of Canada credit agencies have formed a stock company that has taken title to the farm properties which they hold; they have assumed all responsibilities for the management and sale of these farms. Duplication is avoided by having one field man service all the farms in a region. Much more expert service can be rendered with less expense, and the system has much to commend it, particularly for institutions with relatively small and scattered holdings. However, it has not been widely adopted in this country.

THE RENTAL AND IMPROVEMENT METHOD

The rental and improvement method consists in maintaining or improving acquired farms so that they will be attractive homes and afford their operators an opportunity for a fair degree of financial success and renting these properties on the best terms possible. This method has been most widely adopted by insurance companies and banks. I will describe it somewhat in detail, as practiced by our company.

First of all we group our farms into five classes. In the first two are placed the better farms and in the others the less desirable ones.

Our first-class farms include those having the number of acres of good productive land and the necessary buildings to make a good family farm if modern machinery is used. The acreage will differ with the type of farming. In the grain-growing regions it will be larger than in the Corn Belt or the truck-farming or dairy regions. We consider a good house necessary. The home must be one in which comfortable living is possible. We have repaired many run-down houses and built many new ones. We provide good water supplies and suitable barns. New fencing has been liberally provided and the fields have been rearranged for the use of modern machinery. A survey is made to determine the proper crop changes and rotations. In the plans for crop rotations we have regard for weed control and the improvement of soil fertility. In the small-grain farming country we require that not less than one-fourth of the land be in sweet-clover each year, and we furnish the seed to our farmers free of charge. The guiding thought in our rehabilitation work is to put the unit into such shape that a reasonably competent family can take over the property and make money enough from the start to pay taxes and interest and have enough left for a decent and respectable life. It is our hope that farmers who are now our tenants will succeed in making enough money when prices improve so that they can purchase these farms from us. We believe that the family farm will be in the future, as it has been in the past, the best and most stable asset of our country. It is our desire in this period of our trusteeship of a large amount of land to do everything possible to conserve that asset.

In our second-class group we place farms too large for single-family farms. The management of these properties requires farmers with considerable executive ability and a large amount of capital. We try to secure such farmers and give them an opportunity for financial success. We plan to improve the soil and keep buildings in good repair. We must either divide such farms into smaller family farms or carry them until more prosperous times again attract men with considerable capital into large farming operations. In a few cases we have entered into partnership on a share basis with farmers having large families. One of these farmers has five sons who are intensely interested, with him, in the farm, and each has charge of a particular line of work: Cattle, sheep, hogs, horses, and machinery. The daughter has a large poultry department. They have improved the productive capacity of this farm immensely and with favorable prices will be able to buy it even though the investment will total $60,000.

Our farms grouped in the inferior classes we shall improve and make into first-class family farms or shall dispose of at the best possible price.

In the formulation of our plans we work in the closest cooperation with agricultural college and experiment station officials, and we have received from them many helpful suggestions which we have successfully adapted.

We are now in a period of agricultural depression such as has not been experienced for a generation. Some of us who remember the

depression of the nineties find this to be an experience not altogether new. As recovery and prosperity followed that depression, so do we believe that recovery and prosperity will follow these dark days of 1931. The officers of our company have faith in the fundamental values of farm lands that possess the qualities essential for the production of good crops. We believe that an industry that furnishes the food needed daily by all our people and that furnishes employment to one-fourth of them will not always be depressed. Having full regard for the nature of our trusteeship of the funds placed in our care, we believe that a policy based upon faith in the essential value of the farms of the United States is the only one for us to adopt, and we are prepared to follow it with full confidence in its ultimate success.

SOME PROBLEMS IN FINANCING NEEDED READJUSTMENTS IN LAND UTILIZATION AND FARM ORGANIZATION

NORMAN J. WALL, *Senior Economist, Bureau of Agricultural Economics, United States Department of Agriculture*

Economic changes since the World War have served to emphasize the importance of credit in the many agricultural problems which are awaiting solution. The rapid advance in farm commodity prices to 235 per cent of the pre-war level resulted in a material increase in farm-land values. These values, according to an index computed by the Department of Agriculture, advanced 70 per cent from 1913 to 1920. On the basis of this increased valuation, farmers increased their mortgage indebtedness from $3,320,470,000 in 1910 to $7,857,-700,000 in 1920. In addition there was a considerable expansion in the volume of short-term borrowings, and substantial commitments were entered into for farm equipment or for high-priced livestock.

The deflation which began in 1920 materially altered this picture. Farm commodity prices declined 53 per cent in one year, recovering again in 1922, and in the following seven years fluctuated around an average of 137 per cent of the pre-war average. In 1929–30 a further reduction took place, and in October of the current year the level of farm commodity prices was down to 68.5 per cent of the pre-war level. Land values in the meantime have declined in each year since 1920, and in March, 1931, were only 6 per cent above the pre-war level.

The decided curtailment of farm income resulting from the lower price level and the dwindling equities in mortgaged farms have brought serious difficulties both to the farmer and to those who financed him. Largely as the result of refunding short-term obligations, total mortgage indebtedness further increased from $7,857,-000,000 in 1920 to $9,468,562,000 in 1928. The volume of farm foreclosures has increased considerably, and a new class of unwilling owners has come into existence.

Local banks whose assets represented a large percentage of the advances to farmers for short-term periods have felt the impact of the decreased farm income and shrunken real-estate values in a marked degree. Approximately 8,000 banks have failed in the United States since 1920, and the majority of these were in small centers serving agricultural areas. As a consequence of the resulting impairment of short-term credit facilities in many areas, farmers have

experienced difficulty in financing needed adjustments in their farming program.

When gross returns of any enterprise are inadequate in meeting current operating costs and fixed charges on the capital invested, it is certain that readjustment must be effected either in the production program or in the capitalization of such an enterprise. As a result of the marked decline in commodity prices and its consequent influence upon farm income, a considerable proportion of the farming area is confronted with the necessity for such readjustments.

Farm units faced with this readjustment as a result of economic developments in the postwar period may be classified in a general way as follows:

(1) Farms which under normal conditions can not be profitably cultivated, but which, as a result of speculative enthusiasm or war-time prices have been brought under cultivation.

(2) Farms which under earlier conditions yielded a fair return upon a nominal capitalization, but whose capitalized value has been confiscated by the rise in taxation.

(3) Farms which yield a return over and above current production costs, but which are burdened not only by increased taxes but by heavy fixed charges resulting from capital expenditures and obligations representing mistaken judgment in calculating future returns from such investment.

(4) Farms where the operators' personal credit obligations, as distinguished from those obligations contracted in connection with the direct operation of the farm enterprise, have made it impossible to meet fixed charges.

Many farms, of the two types first mentioned above, have been acquired by unwilling owners. The efficient utilization of these lands may, in many cases, require the joint action of the States and of the Federal Government in formulating an effective program for their future use. Some of them, upon being combined into larger units, probably can be utilized in more extensive types of farming. However, in many instances, adjustments in taxation will be required in order to avoid fixed charges excessive in relation to the monetary returns which can be obtained. The quality of much of this land is such that ordinary farming is not economically justified, and other alternatives, such as reforestation or grazing, must be given consideration.

Where submarginal lands of this character are acquired by lending agencies, a difficult problem is encountered in their disposal. If such farm units are submarginal from the standpoint of profitable farm production, it is obviously an injustice to induce new operators to take over their ownership for ordinary farm purposes. It seems quite clear that acquired farms falling within this classification must encounter a material reduction in their existing capitalization. If that reduction in capitalized value is made, it is possible that some of these "distress" farms may profitably be combined with other farm units, or perhaps find utilization as grazing or forest lands.

In the second group of farms, representing land capable of producing a satisfactory average net return on a reasonably capitalized value, the credit problems are distinctly different. They are chiefly the problems of making such needed readjustments in the farming program as will produce the maximum net return which can be obtained with the proper combinations of land, labor, and capital. The capitalized value of such lands will, of course, have to conform to the net returns available after effecting such needed readjustments.

Each of the readjustments which have already been discussed by other speakers at this conference involves its own particular financing problems. We may approach the general subject, however, by separating those credit requirements which relate to financing the fixed investment in the land itself from those which involve financing for needed additions to operating capital.

Financing the sales of foreclosed farms is one of the important problems that may be included under the first category. As a result of the rapid change in economic events in recent years, there are many thousands of individual farmers, former farm owners and tenants, who would welcome the opportunity of farm ownership. Their inability to meet even nominal down payments, however, precludes them from becoming farm owners at this time. The possibility of utilizing efficient farmers of this type in absorbing a portion of the supply of distress land overhanging the market deserves further consideration. The development of a contract of sale based

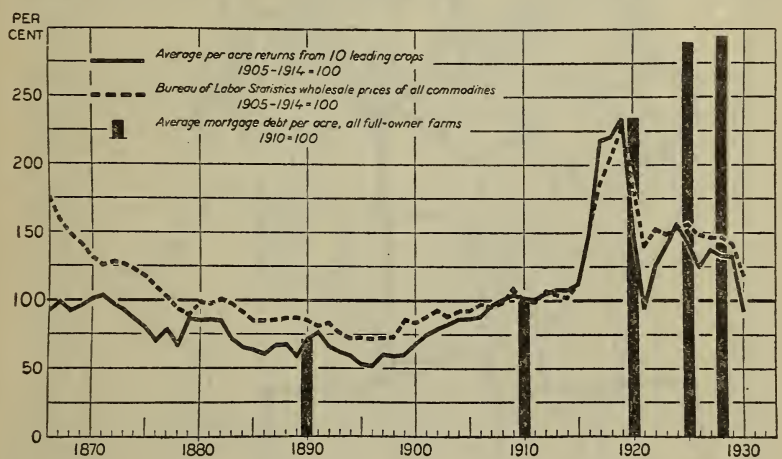

FIGURE 35.—RETURNS PER ACRE OF 10 LEADING CROPS, PRICE LEVEL, AND AVERAGE MORTGAGE DEBT PER ACRE

The value of returns from the 10 leading crops has shown a fairly close relation to the general price level from 1866 to 1930. The amount of indebtedness per acre of owner-operated farms also showed a close relation to the general price level from 1890 to 1920. Thereafter the debt increased while prices fell. The result was an increased burden with the means of carrying it reduced nearly one-half.

upon crop shares has been used with some degree of success in some areas. It it probable that a broader contract providing for a joint ownership of the operating capital of each farmer, particularly in relation to livestock, would provide the basis for a more efficiently organized farm program, and thus enhance the ability of the contract holder to amortize the purchase price.

The mounting volume of foreclosed lands is naturally a matter of serious concern to those who become its unwilling owners. The latter have been faced with the decision as to whether it is more expedient to dispose of these lands as promptly as possible, shouldering whatever loss is necessary to effect such transfers, or, on the other hand, to hold them for a more favorable market, operating them in the meantime as efficiently as possible. Different agencies have, of course, attempted various solutions of these problems—such

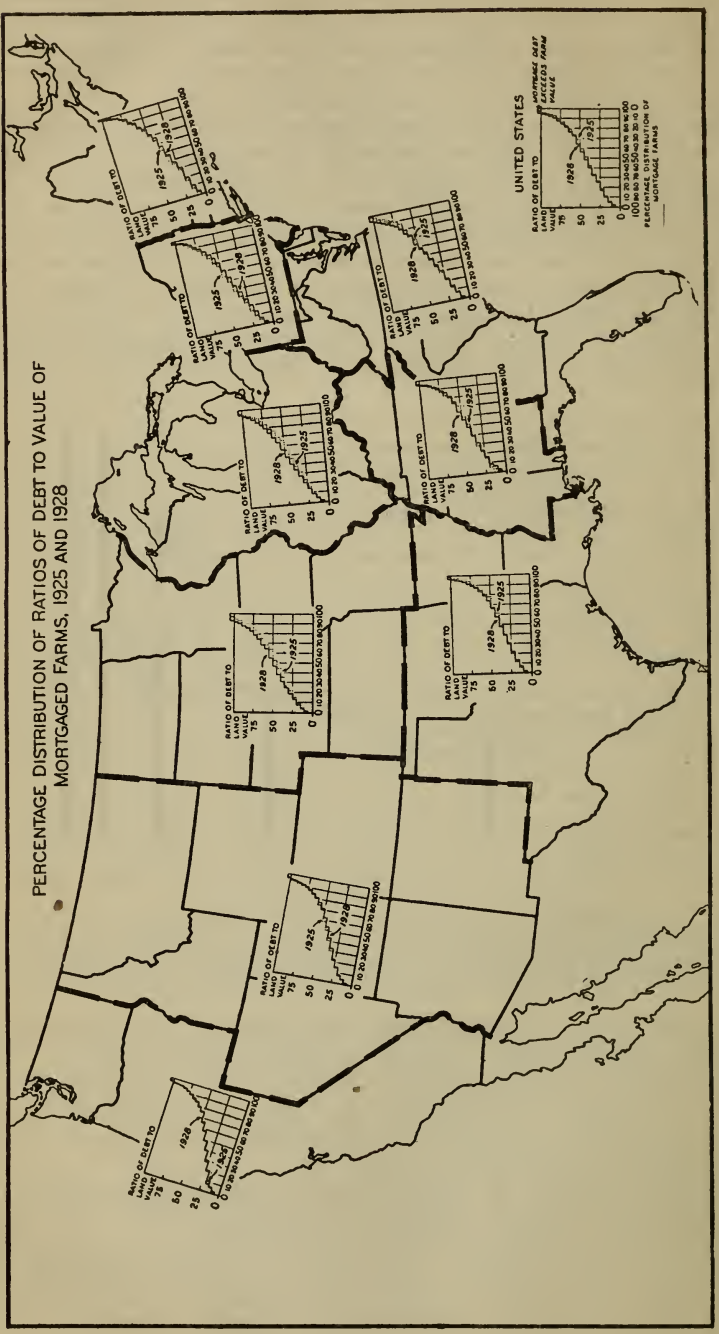

FIGURE 36.—In both 1925 and 1928 over 30 per cent of mortgaged farms had indebtedness amounting to over half of the land's value as declared by the owner. Over 12 per cent of the mortgaged farms had debt amounting to 75 per cent of the value of the land, and over 4 per cent of the farms had debt excess of the value of the land. The largest number of high ratios was found in the West North Central States, while the lowest was in England

solutions being influenced in part by the type of real estate so acquired. It seems probable, however, that real progress towards effecting an efficient utilization of land and, incidentally, towards stabilizing land values, will be achieved only when all such lands acquired under foreclosures are generally classified as to their productive value and when suitable policies are adopted for handling each type of land so classified. Reference has already been made to some of the difficulties encountered in disposing of the distress farms which fall into the category of submarginal land. Our further attention will, therefore, be devoted to a consideration of that group of foreclosed farms which represent land capable of producing, under normal conditions, a satisfactory net return upon a reasonable capitalized value.

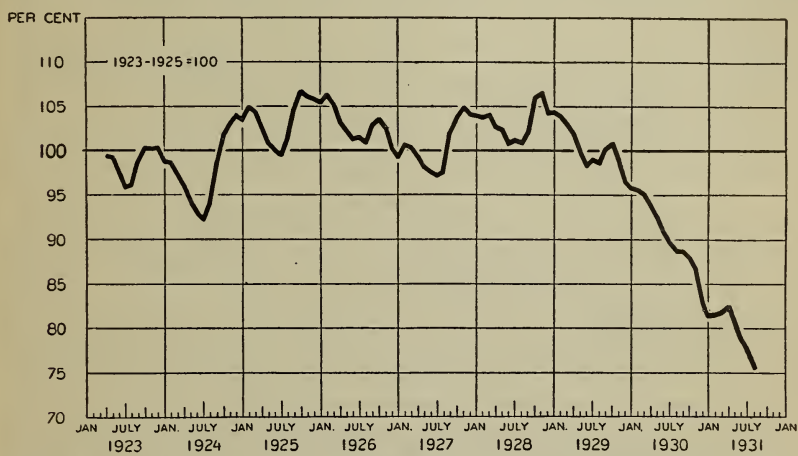

FIGURE 37.—AGRICULTURAL PURCHASING POWER, DEMAND DEPOSITS IN PLACES UNDER 15,000 POPULATION IN 20 LEADING AGRICULTURAL STATES. (AVERAGE OF 19 STATES ONLY; WEIGHTED ON BASIS OF VALUE OF AGRICULTURAL PRODUCTION)

Demand deposits of country banks reflect closely changes in farm income. The effect of the low level of farm commodity prices in 1923 and of low cotton prices in 1926 are clearly discernible on the chart. The sharp drop in the price level since 1929 is reflected in the substantial reduction in the volume of deposits in 1930 and 1931. Deposits data included in the above index represent member banks of the Federal reserve system, located in centers under 15,000 population in the 20 leading agricultural States (California excluded).

With the unsatisfactory state of the farm real estate market, the sacrifice sale of these lands can not have any other effect than to further depress the general level of farm land prices. If such a practice is continued, the security of existing loans now in good standing will be further impaired. The curtailment in the equity value of farms in general will reduce the basis upon which farmers can obtain credit and, therefore, will contribute further difficulties in effecting needed readjustments in farming. From the standpoint of the general interests of agriculture, therefore, it seems highly desirable that farms of this type should not be forced upon the market until there is such an improvement in the general agricultural situation as would indicate the possibility of their more profitable disposal.

From the standpoint of the unwilling owners of these properties, however, there are certain other factors that must influence their decisions. If these lands are to be held for an additional period, suitable policies for their operation and supervision must be developed. The weight of the property tax on particular parcels of land must be taken into consideration. Of particular importance is the fact that agencies investing their funds in real estate loans frequently are adverse to adopting any policies which will tend to increase the volume of real estate included among their assets.

There is thus an apparent conflict in reconciling policies which appear to be to the best interest of the farming industry and those which seem most expedient from the standpoint of the respective agencies holding these properties. Inasmuch as the forced selling of these properties has a depressing effect upon real-estate values

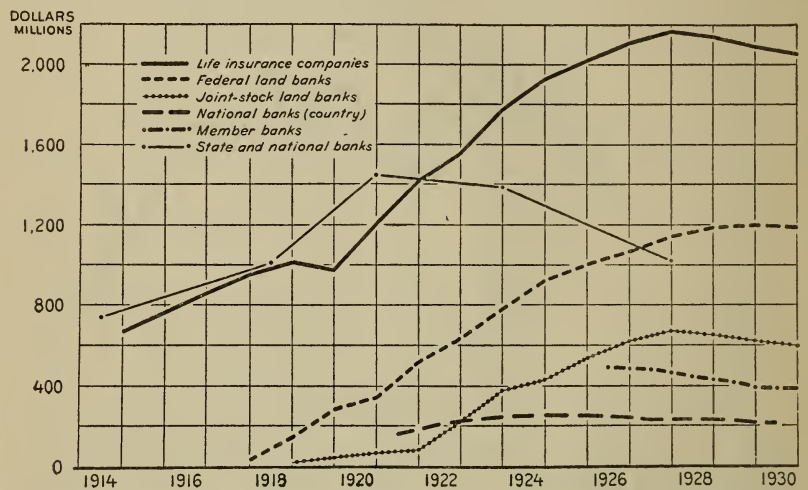

FIGURE 38.—FARM-MORTGAGE HOLDINGS OF PRINCIPAL LENDING AGENCIES, 1914-1931

The volume of farm-mortgage loans held by all lenders moved steadily upward until the depression following 1920. Extensive refunding of mortgages held by commercial banks began a decline in their holdings but contributed to the continued rise of loans held by life-insurance companies and the Federal and joint-stock land banks. The loans of insurance companies and the joint-stock land banks reached a peak in 1928; the loans of the Federal land banks continued slightly upward until the middle of 1929.

in general, tending to impair the value of the security of other loans now in good standing, it seems highly important that a practicable policy should be formulated to make allowances for these conflicting interests.

Many farmers have encountered difficulties in obtaining renewals of their mortgages except upon the basis of a curtailment of principal or by agreeing to make a substantial reduction through annual payments. With the depreciation in land values, it is probably only logical that lenders should thus endeavor to strengthen their position. On the other hand, such a policy may in the end defeat the best interests of the lender. In many cases these reductions in principal can be paid by the mortgagor only through postponing needed improvements, or through adopting crop practices that reduce

the fertility of the soil, or through diverting funds which are required to adjust his farm operations to a more profitable basis.

The unfavorable agricultural situation has made it difficult in many areas to obtain loans on farm real estate except upon an extremely conservative basis. In the interests of giving a greater stability to the real-estate market and at the same time protecting the security back of existing loans, it seems that some modification of this loan policy would be within the bounds of prudent lending. Such modification might follow along the lines of raising the loan valuations upon the more desirable types of farms within each loan area. It appears that the former policy of keeping loan values in given areas within a narrow range, without making full allowance for differences in productive capacity or the desirability of particular tracts as farm homes, probably contributed materially to the present mortgage difficulties. A reversal of that policy which would stress very strongly the better types of farms, would tend to support the values of the more desirable agricultural lands. At the same time, the emphasis placed upon the marked differences existing between different farm units would, in the long run, tend to direct the flow of investment into farm land upon the basis of its efficient utilization.

That credit agencies have no small responsibility for the difficulties in which many farmers now find themselves, can scarcely be denied. The managers of these agencies have in general a better training and a wider opportunity for broad observation than has the average farmer. It might reasonably be expected that credit should act as a balance wheel in regulating farm appraisals and farm values. Too often during the boom period of the World War, such was not the case. Loans on a grossly inflated value basis were not only granted, but in many cases, even encouraged. Price cycles, as well as climatic cycles, with special reference to rainfall in the semi-arid regions, merit more serious consideration from lending agencies than they have hitherto received

A second type of credit problems which are encountered in effecting needed readjustments in land utilization and farm organization is the provision of adequate facilities for financing the requirements of operating capital. In the past the local country bank has been the chief source of short term and intermediate-term credit. The large number of failures among these institutions since 1920, however, has brought about a situation under which credit facilities have definitely broken down in many communities and in many areas of the country. These suspensions not only have frequently occasioned a forced liquidation of loans obtained from the failed institutions, but have eliminated local credit facilities entirely. The often unwarranted use of credit by farmers in many areas before this epidemic of bank failures has undoubtedly increased the difficulties of making the readjustments necessitated by the realignment of the price structure. Credit has both its uses and abuses. Legitimate demands for credit must be met if the individual farm unit is to be efficiently operated.

Credit for the purchase of fertilizer, for the payment of labor hire and miscellaneous operating expenses, and for feeder stock, is frequently necessary for the individual farmer in order to obtain

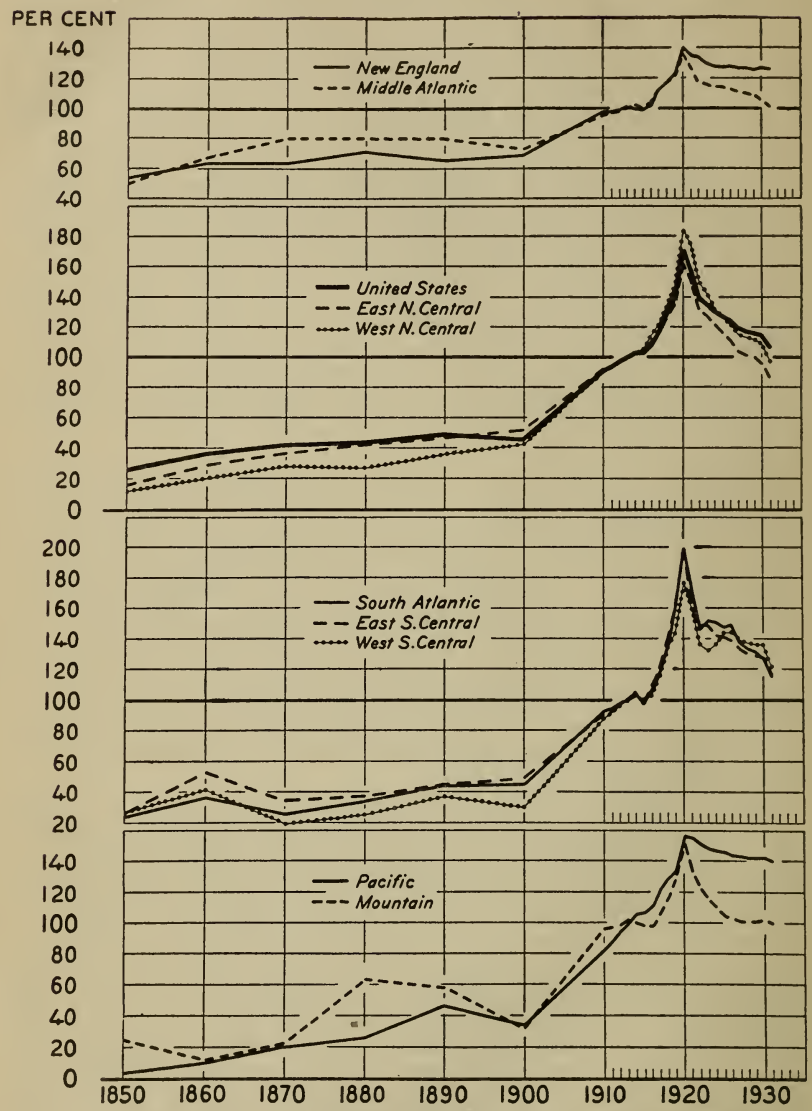

FIGURE 39.—VALUE PER ACRE OF FARM REAL ESTATE (LAND AND BUILDINGS), 1850–1931. INDEX NUMBERS, 1912–1914=100

Farm real-estate values rose slowly from 1850 to 1900, the rise in the Western States from 1850 to 1890 receding somewhat by 1900. Values increased rapidly in the next 15 years and sharply during the war and 1920. The decline in the decade following left average values in 1931 nearly at pre-war levels save in New England and the Pacific States.

a maximum net return. The inability of farmers to obtain this type of credit from the usual sources has consequently handicapped the efficient planning of their farm operations. The shortage of local credit facilities has been strikingly shown in the past year, as evidenced by the large demand for loans under the Government's emergency appropriations for seed, feed, and fertilizer loans. In 32 States in the 1930 drought-affected areas, the Department of Agriculture has granted loans to over 300,000 individual farmers, totaling approximately $47,000,000. Loans of this character, however, can be considered only as a temporary stop-gap, and there is need for a constructive plan of financing this type of credit requirement which will be of a more permanent character.

A considerable portion of the Federal advances for the purchase of seed, feed, and fertilizer has been made to farmers who can not

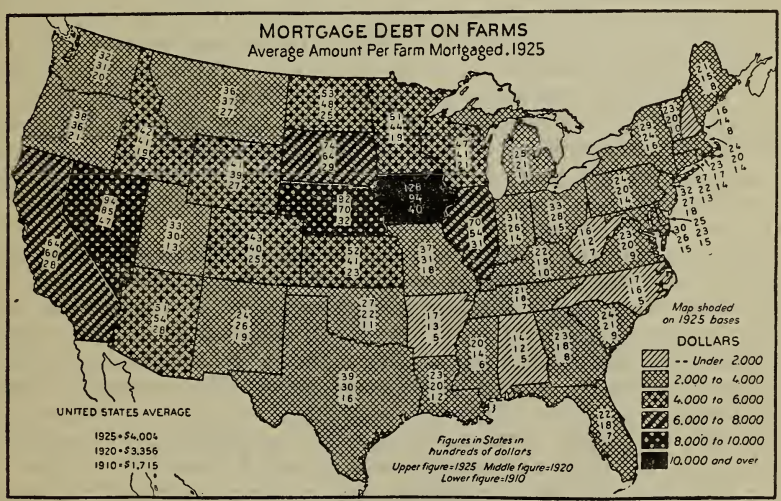

FIGURE 40.—The principal volume of farm-mortgage debt is found in States of the Mississippi Valley and north of the Ohio River, with substantial amounts in California and Texas. The East North Central group had 20.6 per cent of the total debt in 1928, the West North Central 42.8 per cent, while Iowa alone had 14.8 per cent of the total mortgage debt of the country. The South and the Mountain States have the smallest parts of the total. A general correspondence between debt and land value is apparent

ordinarily qualify for credit from the usual commercial channels. In many areas, particularly in the South, there are large numbers of individuals operating farm units which are not economically profitable, judged by the usual standards of efficient farm operation. Operators of these farms, however, are content to accept a lower standard of living in order to maintain their status as home owners. Transferring these farmers to lands capable of more efficient utilization or even rapidly assimilating a considerable portion of them into industry does not seem to be practicable. In the past, this type of farmer has been dependent upon credit from sources which have involved high financing costs.

It seems probable that the chief hope of economic improvement lies in making these farm units as self-sufficing as possible. In fol-

lowing this policy, the dependence upon expensive forms of credit will be lessened. At the same time, in those cases where credit can be profitably employed, the status of the individual farmer as a credit risk will be materially improved. In making emergency advances for the purchase of seed, feed, and fertilizer, the Department of Agriculture has insisted that borrowers readjust their crop acreage so as to provide ample supplies of food for the farm family and feed for livestock. The results of this policy have shown clearly that credit, properly directed, can bring about substantial improvement in the economic status of the individual farmer, raising his standard of living and decreasing his dependence upon credit advances.

In addition to the usual short-term credit advances required by the farmer in his annual farm-production program, there are frequently a number of other expenditures which can not be repaid within the period characteristic of the usual short-term loans. These credit requirements, therefore, require loans with maturities longer than the usual advances extended by country banks and shorter than the usual maturities prevalent in loans extended by farm mortgage agencies. Falling between these two types of credit, this credit is consequently termed intermediate credit. The purchase of farm machinery, the undertaking of improvements such as tiling or fencing, the acquisition of a dairy herd, stockers, or range cattle are representative examples of types of expenditures which require financing of an intermediate character.

The wise use of this type of credit, where the need exists, may make an important difference in the net returns obtained upon the individual farm unit. This is particularly true in connection with plans for the reorganization of the farm program to obtain a better utilization of the labor time of the farm operator and his helpers. The production of certain additional crops whose seasonal labor requirements conflict with the existing cropping program can frequently be made practicable by the acquisition of improved machinery. With the new equipment it may be possible to care for the additional field work without any increase in labor. On many farms, additional livestock can be profitably utilized as a means of marketing feed supplies. In the so-called 1-crop regions, a considerable reduction in the "out-of-pocket" expenses can be obtained by producing a larger proportion of the feed and food supplies required upon the farm. In order to do this, however, it is frequently necessary to increase the investment in livestock, and possibly to provide adequate shelter for such livestock. The production capacity of many farm units may often be increased through tiling, terracing, and the application of special fertilizers such as lime.

In the past loans for financing adjustments and improvements of this type were obtained chiefly from country banks. Livestock-loan companies and farm-implement companies were supplementary sources of such credit. In 1923 a new set of agencies was established to provide this type of loans—the Federal intermediate credit banks. The intermediate credit extended by these agencies, however, has supplied only a minor part of farmers' requirements for advances of this character. On September 30 of this year, the outstanding rediscounts of these institutions totaled $81,000,000. In addition to this amount, direct loans for marketing purposes totaled $47,000,000.

The breakdown of existing local credit facilities in many areas has severely handicapped readjustments in the farming program which are necessary as a result of the changed economic conditions. The lack of credit for operating purposes has undoubtedly had its reaction upon the ability of many farmers to meet the charges on fixed indebtedness. The shortage of local credit facilities is, therefore, interrelated with the problem of farm-mortgage delinquencies.

In considering the adequacy of local credit facilities certain factors should be borne in mind. In general, we may say that the cost of credit for agricultural purposes comprises four main elements:

(1) The initial cost which must be paid by an agency to obtain funds for advances to farmers. This may be the amount of interest paid to depositors of a local country bank, or the overhead cost necessary to provide facilities for attracting and maintaining deposit accounts, or a combination of both. In the Federal intermediate credit system, it is the amount paid as interest on its debentures sold in the open market.

(2) The overhead cost of maintaining an organization which can receive and pass upon local applications, service the loans when granted, and make collections.

(3) The risk of loss involved in financing a particular type of agricultural production. The risk of loss in financing the purchase of a carload of feeder steers, for example, would normally be much less than that in financing the production of a crop such as cotton or wheat.

(4) The risk of loss involved in the moral hazard of the individual borrower. The possibility of dishonesty and carelessness in utilizing the borrowed funds must be contended with and entered as an element of cost.

Keeping in mind these elements of cost, it is proper that we should (1) survey existing credit facilities to ascertain to what extent they are meeting current requirements on reasonable terms, (2) we should explore the possibilities of strengthening the existing agencies so as to increase their effectiveness in meeting the actual credit requirements of farmers. When these two phases of the question have been carefully canvassed, it should be possible to determine what, if any, additional credit facilities are required.

Approaching the problem from this general standpoint, it seems probable that the country bank, despite the serious gaps which have been made in the system as a result of failures, will continue to be a principal source of operating credit for farmers. When we consider the elements of cost of providing credit for farmers, it is apparent that management and volume of operations were exceedingly important in keeping costs to a minimum. The risk of loss involved in the hazards of financing a particular type of agricultural production can be materially reduced by the application of certain safeguards, such as: Limiting the amount of credit to the individual borrower's capacity to repay as demonstrated by the latter's past experience in using credit efficiently; requiring the borrower to diversify his production program where that policy is desirable; and supervising disbursements of the loan proceeds so that they may be expended to the best advantage. Likewise, the risk involved in the moral hazard can be reduced by a careful sifting of loan applications by those competent to exercise that judgment. In both of these respects, the country banks which have weathered the trying economic developments since 1920 should be preeminently qualified. In general, the volume of their operations is sufficiently large to keep overhead costs of operation at reasonable levels.

In some areas, however, the adequacy of local banks as credit agencies is impaired by the fact that their loan policies are largely dependent upon the flow of income into their respective communities. In years of meager farm returns, the revolving character of this local loan fund representing the deposits of the bank's customers, becomes impaired as a result of the inability of many farmers to repay their loans from the year's income. Frequently, therefore, legitimate requirements for new advances must be refused.

An additional handicap may also be mentioned in this connection. Due to the extremely seasonal fluctuations in their deposit liabilities, country banks are frequently able to grant only a nominal amount of loans for intermediate periods such as are necessary for effecting many needed readjustments in the farming program.

As indicated previously, the volume of loans made by the Federal intermediate credit banks has represented only a nominal portion of the requirements for this type of credit. Certain inherent difficulties have been encountered in making these credit facilities available to the farmer.

With a view to giving the farmers credit through this source at reasonable rates, the Federal intermediate credit banks were limited by statute to a rate of interest on rediscounts which can not exceed by more than 1 per cent the interest rate borne on their last issue of debentures. It is, of course, through the sale of such debentures that the Federal intermediate credit banks obtain the funds with which to conduct their operations. These banks are not permitted to make direct loans to farmers for general production purposes, but merely to rediscount loans submitted by agricultural-credit corporations, livestock-loan companies, and certain designated types of financial institutions. These latter rediscounting agencies were originally allowed a maximum spread of 1½ per cent between the rediscount rate and the rate charged the borrower on his loan. This spread, however, has recently been increased to 3 per cent.

The experience of credit corporations which have been formed specifically to utilize the credit facilities of the Federal intermediate credit banks indicates that the successful operation of such an agency, as in the case of the country bank, is chiefly dependent upon the type of management obtained and upon the volume of loan operations. With the limited operating income and the relatively high cost of making and collecting numerous small loans, it is necessary that advances be made upon a conservative basis. In as much as the cost of making loans and the element of risk differ considerably from area to area, a uniform spread permitted to rediscounting agencies is likely to be inadequate in many areas to compensate for the various risk factors. A spread which is ample for livestock-loan companies in some sections may be inadequate for similar companies operating in other areas. Furthermore, the costs and risks involved in making small loans upon crops that are yet to be produced and harvested are by no means the same as those involved in making loans on livestock. In actual practice the uniform operating spread has served to obstruct the channels through which Federal intermediate bank credit might flow into agricultural communities, and particularly into those areas where the risk factor is relatively high. In such areas the cost of credit from the prevailing sources has been consistently higher than the average cost to farmers throughout the

country, having embodied a recognition of the higher risk factors involved.

The effective utilization of Federal intermediate credit bank facilities appears to be dependent, therefore, upon the possibility of making funds available upon a basis which makes full allowance for the economic costs involved in bringing such facilities to the farmer. It seems probable that if such a program were adopted, the rediscount facilities would be utilized to a greater extent by country banks, either directly or through subsidiaries. The additional credit facilities would thereby increase the liquidity of the individual banks and at the same time increase their ability to meet the justifiable credit requirements of their respective communities.

In summarizing, it may be said that the credit problems of the farming industry are not easy of solution. There are many conflicting factors which must be given consideration before a constructive program can be definitely formulated. At the same time, the importance of credit in effecting needed readjustments in our programs of land utilization and farm organization is so great that we can well afford to devote considerable effort toward reconstructing our agricultural credit system.

The problems of the disposal and efficient utilization of foreclosed lands, financing needed readjustments in size and operating equipment of farms, and providing short-term and intermediate-term credit facilities which will enable farmers to organize their individual farm units upon the most profitable earnings basis, will require the effective cooperation of all the credit agencies concerned. The possibilities of successfully prosecuting an effective program of this character are probably greater than at any time since our agricultural credit difficulties assumed their serious character. There is some reason for believing that the full impact of the credit readjustments required as a result of the immediate postwar deflation had largely spent itself by 1928. Beginning with 1929, however, there was superimposed an additional cyclical readjustment brought about by a worldwide business depression which has continued to the present time. In 1930, also, additional difficulties were imposed as a result of a widespread drought in agricultural States. Many things indicate, however, that we can not now be far away from a period of recovery. With the volume of forced liquidation reduced and with the increased earning from farm operations, the possibilities of successfully bringing about the credit readjustments which we have discussed, will be materially enhanced.

RESULTS OF DIRECTED AGRICULTURAL-CREDIT MOVEMENT: GEORGIA, 1931

J. Phil Campbell, *Director of Extension, Georgia Agricultural College*

The Georgia State Bankers Association in annual convention June 7, 1930, passed the following resolution:

> Whereas the incoming president of the Georgia Bankers Association has accomplished outstanding results through common-sense farm-financing methods; and
>
> Whereas the future prosperity of Georgia farmers is largely regulated by their ability to produce their own feed and food, with cotton and other cash crops as a clear surplus: Therefore be it

Resolved, That one major activity of the incoming administration shall be the promotion of farm-financing methods as presented at the spring group meetings and separately indorsed by each of the five groups composing this association (the farm-financing method as adopted at the group meetings is that bankers should require of their farmer customers a program that will first take care of the consumptive needs of the farm, and second provide more than one cash crop); and be it further

Resolved, That the responsibility of carrying out the extension of the farm financing methods above described be imposed on the executive council and the agricultural committee, with such assistance as they may require from group and zone officers, clearing houses, county associations, and the Georgia State College of Agriculture.

The incoming president, John Graham, president of the National City Bank of Rome, Ga., has conducted a 10-year demonstration of the directed-credit plan with his Floyd County farmers. Nine years of the ten are recorded below—1930 being the tenth year and the records not being completed at that time:

Increased production of food and feed crops on every farm, diversification of products, and the planting of cotton only as a surplus crop are the factors that have aided Floyd County in working out its economic salvation and is the plan presented at the group meeting together with the banking results.

IS IT GOOD BANKING?

Loans for production of crops:	
Total amount of crop-production loans	$249,984.41
Amount of loans carried over	$1,560.08
Amount of loans charged off as loss	$122.42
Percentage of loans carried over	.0062
Percentage of loans charged off	.0005

IS IT GOOD FARMING?

Farmers' savings accounts:	
Number of accounts	178
Amount of accounts	$177,752.52

NOTE.—Farmers' checking accounts are not included. Of these 178 farmers, we do not find one who does not raise food and feed stuffs for his own farm.

It should be said that Floyd County is one of the sections of Georgia that has suffered least from the boll weevil and has not, therefore, been forced out of an all-cotton program as is the case with some other sections of the State. Therefore, the more remarkable is the success of the demonstration.

W. C. Vereen, a past president of the association, has also conducted a 10-year demonstration in directed credits in the building of a diversified farm program.

At the close of 1930, Mr. Vereen had the following to say:

Our farmers would not know there had been a depression this year if they had not read about it in the newspapers. They have meat in the smokehouse, money in the banks, corn in the cribs, peanuts for the hogs to eat, as well as to sell; hay and oats and velvetbeans in plenty; chickens and eggs to ship, butter and cream to sell, beef cattle for the packing house, sweetpotatoes, cane, sorghum, and millet crops making ready for the harvest.

He gives the reason as a balanced agricultural program and the fact that the county seat provides a cash market every day in the year for every product of the farm.

After the World War and the drop in the price of cotton, many of the Colquitt County farmers found themselves unable to meet their obligations. Bankers agreed to renew their notes but made a condition to which the farmers agreed.

The bankers said that the farmers must adopt a program which met with their approval in order to obtain financial assistance. A mass meeting at the courthouse heard the details discussed and accepted it unanimously.

Diversification has reached such a point in this county that the failure of no one or two crops can bring depression.

The experience of these two bankers was of some benefit to the extension workers who were charged with the administration of the seed-loan funds in 1929. County agents in a number of counties required applicants to show a farm program or plan that would take care of the food and feed necessities of the farm. All of the agents who followed this plan of administering the seed-loan fund in 1929 changed the food and feed situations in their counties, and many of these counties at the end of 1929 shipped corn and hay to other sections of the State as well as to outside territory. In 1930, the agents redoubled their efforts in the use of the seed-loan money as directed credit. They were of course handicapped by not having the law and the regulations of the Department of Agriculture to back them up. The seed-loan office was in sympathy but they could go no further than to require no increase in the cash crops over the previous year, according to their interpretation of the appropriation act.

Since a banker was on every loan committee for dispensing of the seed-loan funds, the experience of these bankers with this fund placed them in a receptive attitude in regard to Mr. Graham's proposition and the passage of the resolution at the State convention, June 7, 1930.

When Mr. Graham was made president, he secured as chairman of his agricultural committee, Walter Harrison, a small-town banker of Lavonia, Ga., in a county of 3,000 farmers and no industrial or commercial interests of note. Mr. Harrison himself had a 10-year record that is the envy of every small-town banker—he will collect more than 95 per cent of loans to 200 farmers in 1930 in spite of the fact that the agriculture in one small section of his territory was almost completely destroyed by drought and another small section by hail, and this too in the face of 6-cent cotton. In 1920 he started a credit policy similar to Mr. Graham's—that no farmer could borrow money for the purchase of food for the family or feed for the livestock. He has a demonstration on one farm of 39 tenant farmers and the landowner. During the past 10 years this farm has paid a mortgage debt of $40,000, has become a self-sustaining farm, has changed from an "all-cotton" system to cotton as a surplus money crop only, and to-day neither landlord nor tenants are in debt.

In a recent conversation this landlord told me that some of his tenants could live and produce a crop next year without borrowing a dollar, even in the face of 6-cent cotton. It was a source of inspiration to listen to this man talk about how Walter Harrison had supported him in the $40,000 deficit of 1920 and how year after year they had worked out until in 1930 they owed no man a dollar. Their requirements were: From 1 to 2 milk cows per family; 50 laying hens; 1 to 2 brood sows per family; a pasture on every farm; the production of all the wheat, corn, oats, and hay necessary for

carrying the farm. This program has won. You can secure from these tenant farmers to-day some surpluses of corn, oats, hay, wheat, pigs, lambs, calves, and poultry products. On July 4, 1931, the landowner gave a barbecue to all of his tenants at which he made the proposition that he would sell to any tenant the farm on which he lived, on a 20-year payment plan and would accept commodities in lieu of cash in payment.

When John Graham, W. C. Vereen, and Walter Harrison joined forces and called on the extension service of the State College of Agriculture to help put over the program, we divided the State into four districts with one member of the agricultural committee in charge of each district. Each district was divided into four sections of 10 counties each—the counties grouped according to the agricultural conditions, needs and programs of the sections—with a section chairman in charge of each. This chairman and the county agents, bankers, and editors were organized into groups for building and distributing the program. The agreement reached in each section was a general outline of a development program for the section which could be adapted to the conditions in each county. The county agent and county bankers outlined a farm program for each county, similar to the following for Candler County, which is applicable to that section of the State but not to the entire State:

TWO-HORSE FARM—60 ACRES IN CULTIVATION

Home supplies—3 acres:
- Garden—1 acre.
- Sweetpotatoes for home consumption and pigs—1 acre.
- Sugarcane for syrup, sorghum, or millet for milk cows—1 acre.

Corn—25 acres:
- Interplanted with peanuts, soybeans, or velvetbeans.

Oats—10 acres. Followed by hay crop.

Tobacco—5 acres.

Cotton—10 acres.

Special Crops—7 acres:
- Watermelons, sweetpotatoes, truck crops. Acreage to be determined in lieu of cotton or tobacco or both, or together with these crops.

Two milk cows.

One or more brood sows.

Fifty hens.

Permanent pasture—10 acres. Carpet grass and Lespedeza.

A home orchard on every farm.

Program for the main Cotton Belt. Where tobacco and special crops are eliminated, 20 acres of cotton is added.

After the county agent and the county agricultural board, which the bankers are helping to develop, had adopted a suggested program, on a 1-horse or 2-horse unit basis for each farm, farmers were called into mass meeting to discuss the suggested program, make revisions, and adopt it. After the adoption of the program by a mass meeting of the farmers in the county, the bankers printed and distributed copies of the program and announced to the farmers that they would lend money on that basis only. Any exception to that program would have to be approved by the county agent—the farmer to show that the condition of his soil, the method of farming (spe-

cialized, etc.) made it necessary for him to diverge from the program set up for the county as a whole.

In 117 out of 160 counties in the State, these programs were adopted. No other campaigns were made for reducing cotton or for readjusting acreages of other crops. The farmers themselves had a part in working out the program and have adopted it. The results of this movement, according to the figures of the crop estimating bureau, are as follows:

	Per cent
Total increase in acreage under the plow, 1931 compared to 1930	2
Decrease in cotton acreage	12
Decrease in tobacco acreage	18
Increase in food and feed crops	15

It may be stated that the low price of cotton and tobacco, and the drought conditions—not the movement of the bankers—caused this crop-acreage change. We are willing to give due credit to the drought, as other States have done, but it must be remembered that Georgia led the South in 1930 in crop production and especially production of food and feed crops. In nearly one-half the State, these crops were in excess of the needs of the locality, including the towns and cities as well as the farms. In only a small portion of the State was the drought detrimental to the cotton crop—our average yield being 197 pounds per acre or about 20 per cent above the average. No credit, therefore, can be given to the drought. We are willing to give credit to the low prices of tobacco and cotton, but no more credit should be given to the low prices of these products for the reduction of 12 per cent in cotton and the 18 per cent in tobacco than in other cotton States.

It was not altogether the force exercised in directed credit that brought results, but the cooperative nature of the work. Bankers, farmers, editors, county agents, vocational teachers, and business interests throughout the State got together on a program, which is briefly as follows: One-third of the acreage in cotton; one-third devoted to live-at-home crops; and one-third to other crops for the production of livestock or for a cash market. It's a simple program! In some localities the last third for cash crops or feed for livestock is simple. In other localities, composed of practically all cotton farmers, the adjustment is most difficult. The State as a whole is not quite down to this basis, having yet about 31.5 per cent of its cultivated lands in cotton—but we will be there in 1932, and some parts of the State have gone far beyond it.

The slogan adopted everywhere is, "Food for the family, feed for the livestock, and food for the soil," as soil building is considered a part of the "live-at-home" program.

When the bankers of Georgia issued an edict to the farmers of Georgia that they must "live at home," cotton was selling for 16 cents per pound. To-day it is 6 cents per pound. No one knew then that cotton would break down. Certainly the Georgia bankers did not, but to-day's results of their movement and the farmers' response can make one declare that a miracle has been performed.

BROADENING THE MARKET FOR FEDERAL INTERMEDIATE CREDIT BANK DEBENTURES

E. H. Thomson, *President, Federal Land Bank and Intermediate Credit Bank of Springfield, Mass.*

I want to take this occasion to commend the Secretary of Agriculture and the executive committee of the land-grant colleges for calling attention to this important subject of land utilization. I should much prefer to discuss some of these problems of land utilization as I see them working out through the credit agencies I represent. I refer more especially to the danger of charging marginal land and the question of productivity alone without due regard for the market for the products produced. But this committee has assigned to me a subject of a rather technical character, I must apologize to you if it proves to be of that type.

SOURCE OF FUNDS

The 12 Federal intermediate credit banks depend mainly upon the investment market for the supply of funds used in their loaning operations. Of the $60,000,000 of capital subscribed by the United States Treasury, one-half, or $30,000,000, has been paid in; the balance remains in the Treasury subject to call by the banks on 30 days' notice. With loans and discounts amounting to about $128,000,000, it means that approximately $100,000,000 of the same must be financed through the medium of debentures or through rediscounting with other financial agencies.

That we may have a better picture of how these debentures fit into the investment channels, a word of explanation as to their character is necessary. Each of the 12 Federal intermediate credit banks has the power, subject to the approval of the Federal Farm Loan Board, to issue and to sell collateral trust debentures or other similar obligations with a maturity at time of issue of not more than five years and which shall be secured by at least a like face amount of cash, or notes, or other such obligations discounted or purchased or representing loans made under sections governing such operations. Each Federal intermediate credit bank issuing debentures is primarily liable therefor and is also liable for the interest payments due upon any such debentures issued by other intermediate credit banks. In effect, therefore, the intermediate credit bank debentures are obligations of the 12 institutions and are secured directly or indirectly by the resources of the banks, which amount to more than one and one-half times the obligations outstanding.

SECURITY

The total loans and rediscounts outstanding through the 12 banks, as taken from the last available report of September 30, 1931, amounted to $128,402,709. Of this amount approximately $47,000,000 was in loans to cooperative marketing organizations secured by warehouse receipts on staple agricultural commodities, and $81,000,000 represented rediscounts from banks, trust companies, agricultural-credit corporations, and livestock-loan companies. It is apparent, therefore, that over one-third of the loans are secured in precisely

the same manner and at least to the same extent as are many bankers' acceptances which enjoy a favorable market. The uncalled capital subscribed by the United States Treasury alone amounts to more than 25 per cent of the debentures outstanding. A thorough survey among the leading bankers and investment houses in the large financial centers shows conclusively that the safety of the intermediate credit bank debentures is not questioned by those who are familiar with the facts.

MATURITIES

The maturities of the debentures offered vary according to the needs of the bank and the type of financing undertaken by the several institutions. For the most part the maturities are from 3 to 6 months, a few for 9 months, and (in a favorable market) some for 12 months. This short maturity, together with the exemption from taxation, places these securities in the class of investments purchased by banks and large corporations seeking temporary investment for current funds.

METHOD OF DISTRIBUTION

Since the establishment of the Federal intermediate credit banks in 1923 debentures in the sum of $995,000,000 (and of this amount nearly $500,000,000 in the last two and one-half years) have been issued and sold to banks, corporations, and investors. The distribution of these has been through the medium of a fiscal agency established by the 12 banks and located in New York City. For the 12 months ended September 30, 1931, debentures in the sum of $196,000,000 were sold in this manner and at a rate, including all selling charges, to yield less than 3 per cent for the funds. While many sales have been made direct by the banks themselves, the usual procedure has been for the central fiscal agency to distribute these securities each month through the medium of large central banks and investment houses handling short-term paper. The reserve banks have authority to buy debentures and have been helpful in this matter. They have not made a practice of buying from member banks or in the open market, which step, if followed, would be a very important factor in establishing a secondary market. Some of the reserve banks, however, have rediscounted considerable paper for various intermediate credit banks.

SECONDARY MARKET

Under this system of financing and distribution of the debentures, the intermediate credit banks have had funds for all demands made upon them. It has been recognized for some time, however, that there was an inherent weakness in the debenture market. There are three fundamentals of investment—security, rate, and marketability. The debentures meet all requirements as to security and rate. They do not, however, possess ready marketability because of the absence of a secondary market. If such securities are to prove attractive, especially to banks, they must possess a good secondary market or liquidity. It has taken the troublesome days of the last two months to establish the importance of this feature. Since from one-third to one-half of the loans of the intermediate credit banks are on the same products and secured in much the same manner as the collateral

underlying bankers' acceptances, it is worth noting the present standing of this form of bank paper.

On September 9 of this year [1931], there were outstanding approximately $1,000,000,000 in amount of bankers' acceptances, of which the Federal reserve banks held for their own account approximately $200,000,000 and about as much more for the account of foreign correspondents. Late in September and continuing through October, or inside of 60 days, the holdings of the Federal reserve banks of bankers' acceptances increased to over $700,000,000 which, together with the amount bought for foreign correspondents, amounted to approximately 80 per cent of the total outstanding bills.

During this same period the market for commercial paper and short-term municipals, all of which enjoy the same field of distribution as intermediate credit bank debentures, practically dried up. Municipalities with well-established credit suddenly found themselves paying 4¼ per cent to even 5½ per cent on 90-day notes, whereas they had been enjoying rates of one-half that amount. The desire of large banks, investors, and everyone else was for liquidity; securities not having extreme liquidity were not wanted. The result has been that the market for intermediate credit bank debentures suddenly narrowed even though they possessed the necessary security and carried a satisfactory rate. Not being eligible for rediscount by the Federal reserve banks nor eligible as collateral for 15-day loans for member banks with Federal reserve banks, they were not attractive to banks during this period. Much of the September and October offerings of debentures was taken direct by the Federal reserve banks, but debentures in the hands of a Federal reserve bank constitute a direct offset to its gold reserve as it is thought they are not eligible for note issue the same as other classes of paper described under Section XIII of the Federal reserve act. If this temporary assistance had not been given by the reserve banks during this most abnormal period in the short-term paper market, the loaning facilities of the intermediate credit banks would have been seriously restricted, and during a period when their services were most needed by banks in the country districts. Thus, while large investors have purchased intermediate credit bank debentures as a satisfactory, tax-exempt, short-term paper, they are not freely traded in as are Liberty Bonds or even Federal land bank obligations. The absence of trading in these debentures is not unnatural. They are analogous to commercial paper and have until recently sold closely in relation to rates for that form of investment. They do not lend themselves to exchange trading any more than does commercial paper. If handled by bill brokers or syndicates they should command a very favorable rate in comparison with commercial-paper rates or prime names. This is because of the margin of security behind them and the close supervision which they enjoy.

SIMILARITY TO ELIGIBLE PAPER

As already indicated, debentures have never been especially attractive to bill brokers owing to one serious deficiency as compared with prime commercial paper. They are neither eligible for rediscount in the way that commercial paper is eligible when indorsed by a member bank, nor are they eligible as collateral for 15-day loans

by Federal reserve banks to member banks. In this respect we find the curious anomaly of notes or bankers' acceptances drawn by cooperative marketing agencies secured by staple agricultural commodities being eligible for rediscount at a Federal reserve bank when indorsed by a member bank with liabilities averaging eight times the equity of its stockholders. At the same time a similar note with the same collateral, when deposited with a trustee to secure a debenture of 60 per cent of its amount, will not make such debenture eligible. On the other hand, the same paper held by a Federal intermediate credit bank may be sold to a member bank of the Federal reserve system, which bank may in turn rediscount this with a Federal reserve bank and such paper be entirely eligible for note issue under Sections XIII and XVI of the Federal reserve act.

It would seem that it was the intent of Congress to harmonize the Federal intermediate credit system with the Federal reserve system, as is clearly apparent through the several amendments. The statute is specific as to the eligibility of the collateral underlying debentures when offered by a member bank for rediscount by the Federal reserve bank. In the same way the power granted to Federal reserve banks to buy debentures is further evidence of the intent of Congress to provide them with a secondary market through the medium of the Federal reserve system. Unfortunately, the amendments referred to are not specific as to placing Federal intermediate credit bank debentures alongside notes, drafts, and bills as defined under Section XIII of the Federal reserve act. Therefore, any purchase by the Federal reserve banks of such debentures precludes their use as a basis for note issue and replaces just so much gold.

It is interesting to note that Congress, in providing for the War Finance Corporation, granted the right to issue debentures nearly 15 times the amount of intermediate credit bank debentures now outstanding, and the further right for the War Finance Corporation notes and debentures to be eligible for collateral on 15-day loans by the Federal reserve banks to member banks. Thus, the War Finance Corporation notes which might have had a possible maturity up to five years, were to have a strong secondary market through the Federal reserve system and be placed on the same basis as eligible paper.

STEPS TO BROADEN MARKET

Several steps might be taken to broaden the market for intermediate credit bank debentures. The first of these is an educational campaign to better acquaint bankers and investors with the character and nature of this investment security. There should be a wider distribution among the interior banks, including country banks.

To make these securities more attractive to bankers, every effort should be made to build up a secondary market. This can be done by legislation making debentures of 6 months maturity or less, eligible as a basis for rediscount with the Federal reserve banks and carrying the same privileges as given other paper in Section XIII of the reserve act, or as a basis for 15-day collateral loans to member banks by reserve banks. Either one of these steps would give the debentures a secondary market and provide that degree of liquidity so necessary in bank paper and which they do not now enjoy. If either of these provisions were enacted, it is very doubtful whether

the Federal reserve banks would be called upon to purchase any considerable amount of debentures from member banks, since they constitute an excellent investment in the hands of the original holders.

With the passing of this most abnormal period in both the banking and the investment fields, there is every reason to believe that the intermediate credit banks can continue to finance themselves in the same manner as heretofore, but their financing position can be greatly strengthened if some step can be taken as previously mentioned. And it should be said that for a new system of agricultural banks with no governmental guaranty of their obligations to be able to sell in the past eight years in a highly competitive field almost a billion dollars of short-term obligations representing agricultural security, is no mean accomplishment.

The theoretical lending power of $660,000,000 on the part of the Federal intermediate credit banks can never be achieved, even to a small degree, until the debentures, through which their loans are financed, enjoy a stronger market position. In achieving this end the intermediate credit banks themselves must keep clearly in mind that any obligation enjoying the privileges common to this class of investments must maintain its security position unquestioned. To this end the banks must continue to govern their lending operations in a safe and conservative manner.

Mr. Moser. Probably from the standpoint of the individual farmer there is nothing more important to agriculture, down through the ownership of land, the marketing of farm products, and the operation of the cooperative associations, than the proper functioning of the land and intermediate credit banks.

INCREASING THE USEFULNESS OF THE INTERMEDIATE CREDIT SYSTEM AS A SUPPLEMENT TO THE COUNTRY BANK

Wood Netherland, *President, Federal Land Bank and Intermediate Credit Bank of St. Louis, Mo.*

Because of the lateness of the hour and because this subject has been covered to some extent, I may take one or two liberties, the first is making it short and snappy, and the second is probably deviating from the subject as much as I care to.

The intermediate credit banks, for some reason have been looked upon as emergency institutions. As a matter of fact, it was purposed, in establishing them, that they should be a permanent part of our financial structure. However, they have served in many emergency situations, notably the flood crisis on the Mississippi in 1927, the cotton crisis in 1926, and then the drought of 1930. But they are presumed to provide primarily an intermediate credit between that of the commercial bank and that of the long-time farm-loan agency.

While Congress in establishing these banks did not in any preamble specify the purpose for which they were established, in the discussions before the establishment of the banks and in the discussion that has taken place since then, it is apparent that Congress intended that their services should be to the individual farmer. Now, if we are to discuss how much they may be useful to the country bank,

then we must presume that we are interested in that subject only in so far as it reaches through and helps the individual farmer.

Professor Gile, of the University of Arkansas, has made a very thorough study of the intermediate credit bank system with the credit corporations, and has this to say:

> Many farmers have been perplexed by their inability to obtain a loan as the credit facilities of the Federal intermediate credit banks have not been readily, and in many cases even remotely, available to them. Under the law, an individual can not obtain a direct loan * * *. There are, however, eight institutions (types) to which a farmer may go for a loan, all of which are eligible to discount his note with an intermediate credit bank or to use it as collateral for a loan. Among these the more important are agricultural-credit corporations, national and State banks, savings banks and trust companies, cooperative livestock-loan companies, and cooperative marketing associations. If farmers have found it difficult to connect themselves with the system it must be that the institutions from which the Federal intermediate credit banks stand ready to take agricultural paper have failed to function properly.

I have just two points that I want to leave with you. Those points relate to the development of the local point of contact and the interest rates.

The Federal Farm Loan Board has endeavored in an intensive way to adjust the rules and regulations of the board so far as is possible under the terms of the act, in such a manner as to make itself most useful to agriculture. That these improvements have served to extend the usefulness of the intermediate credit system is very apparent by the fact that in the first nine months of this year these institutions served 430 agencies that were eligible for service, as against 295 in a like period last year. Although improvement is naturally in order in the banks themselves and in any financial set-up, it is my opinion that any radical changes in the Federal intermediate credit bank act and in the banks themselves are unnecessary, with the probable exception of broadening the debenture market as just discussed by Mr. Thomson. If changes are necessary in the whole set-up to amplify the services of the bank, those changes are necessary in the local point of contact to which the individual farmer must go. It is because of my firm conviction on this point that I want to stress it more than any other one thing.

As country bank deposits have contracted during the last year or two, the officers and directors of these banks are now more interested than they have ever been in agricultural-credit corporations. And therefore in considering how we may help the country bank and how these people are interested, we must think of this indirect service to them as well as the indirect service to the farmer.

For a number of years commercial banks have educated the depositing public to the fact that bills payable or rediscounts appearing in their statements were a sign of weakness. Some of our country bankers are afraid to show any rediscounts in their published bank statements. This was carried so far that the public unfortunately became immediately suspicious of a bank that had rediscounts or bills payable. Now, instead of being a sign of weakness, bills payable or rediscounts in a bank's statement may well be a badge of merit in the well-managed bank. They may indicate that the bank is making an effort to take care of the community. I don't mean that I would advise rediscounting or borrowing by a

bank for the deliberate purpose of relending. That is open for debate; but be that as it may, and regardless of what our opinion may be, the fact remains that the depositing public is suspicious of rediscounts and bills payable, and it will be a long time before bankers will deliberately show those two items.

How, then, are we going to distribute this country-bank credit for operating purposes? My feeling is that it should be done through agricultural-credit corporations and that the bankers themselves, the credit men of the community, should organize these corporations. Why? We used to have the feeling, in the early days of these banks, that they must be separated entirely from the commercial banks because that unloading proposition might be adopted. But we have now come to the conclusion—at least we have in our bank at St. Louis—that the credit business of the community is the business of the credit men, who are the bankers; that the farming business of the community is the business of the farmers; and the law business is the business of the lawyers; and so on. If we are to have successful operation of these credit agencies, they must be operated by credit men.

The problem as to whether they unload any undesirable paper is an operating problem for the banks themselves. That unloading or dumping has not been noticeable in recent years. In the early days of the system, a few credit corporations were formed by bankers for that deliberate purpose, but they have now learned that the intermediate credit banks will not accept paper that is not sound. Inadequately secured paper, therefore, is not being offered.

I am not going to follow all of these things to their conclusion, because it is late, but you can see that the organization of a community credit corporation brings into the community additional funds from the outside, and at the same time it permits the local commercial bank to maintain its desired liquidity. While the act permits a maximum of 10 times the capital stock to be rediscounted by any corporation, the line is usually fixed in proportion to the efficiency of management. In actual practice, the ratio varies from three to eight times the unimpaired paid-in capital and surplus. A credit corporation that is organized in a local community by one or more of its banks should be just as acceptable in our financial structure as are the investment affiliates of one of our larger commercial banking institutions.

One gentleman asked me this afternoon about the matter of taking capital stock: Should borrowers take capital stock, or should the capital stock be paid in by borrowers? Frankly, in our experience, that is seldom a desirable situation, for the reason that the capital-stock feature, tied into the loan of the local credit corporation, sometimes creates problems which are difficult for the local managers to take care of.

One other point about how to amplify the services of the intermediate credit banks, and that is a more practicable and workable arrangement with regard to interest. You have just been told that the spread between that which the debentures bear and that which the bank may charge the credit corporation on its rediscounts was 1 per cent. The spread is now 3 per cent, with the maximum of 3 per cent that the credit corporation may charge the borrower. It is

wholly desirable and essential that adequate funds at low interest rates be always available to agriculture, but our desire to supply this low-cost credit should not lead us into the practice of insisting upon such low costs as would not be commensurate with the risk involved. To do so means only to disturb the interest structure of a whole community, to gain the antagonism of all financial institutions operating therein, and to preclude the ability to accumulate adequate reserves. Moreover, the cost of money rises and falls the same as the cost of any other commodity, and it is usually beyond the control of local conditions.

If the intermediate credit banks are to be operated on a safe and sound basis (and they should not be operated any other way) their rates must be reasonable rates. The aim should be to stabilize rates by supplying sufficient money at reasonable levels, but rates that are abnormally low are just as dangerous as rates that are abnormally high. I think, after all, our farming people want fair interest rates; we should get away from the idea (I may be bold to say that) that those of us who are engaged in agricultural finance should exist on rates that are entirely out of line with rates of other lines of business, but we should insist that the farmer be accorded at least as good treatment in the matter of interest rates as applies to any other industry. Adequate profits are necessary to any financial institution if it is to build responsible reserves. After all, the first obligation that any financial institution owes to its community or to its constituents is that of remaining sound and solid.

The handicap of the interest rates (that is, their inflexibility) in the early days of the system kept a good many commercial banks from rediscounting with the Federal intermediate credit banks. For this reason, banks do not usually make loans with the idea of having to rediscount them. The result was that when emergencies arose and these banks found they had to rediscount, the rate they had charged the borrower was slightly in excess of that which made the loan eligible to the intermediate credit bank. In their efforts to serve agriculture some of the intermediate credit banks sought to remedy that situation by agreeing to take those notes when that bank had refunded to the maker a sufficient amount of interest to make the paper eligible. But that was a cumbrous proposition, which involved a lot of detail; because of that necessity commercial banks didn't rediscount as much as they otherwise would.

The Farm Loan Board, early this year, increased the permissible spread from 2 to 3 per cent, which action has gone a long ways toward curing that situation. I want to plant this in your minds because this always enters into our farm finance: Interest rates can not as a rule be successfully maintained at uniform levels in such a large and diversified country as these United States. Interest rates in various localities are predicated on the cost of doing business and are commensurate with the risk involved, size of loan, distances to be traveled, density of population, and many other factors. Most States have recognized this old and sound economic principle by fixing the maximum interest rates that may be charged, and no system of finance that fails to recognize it can meet with full measure of success.

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In other words, a new State realizes that if it is to attract outside capital to a State in which the distances are great and in which the risks involved are greater than in more densely populated areas, it must offer some differential in the interest rate. Moreover, losses are larger in sparsely settled areas; the expense of operation is larger; and no system which fails to take these facts into consideration can be wholly successful.

Therefore, in conclusion, I would recommend just two things: One is that we devote intensive study to developing the local point of contact for the intermediate-credit bank. I don't think the banks, aside from a wider distribution of debentures, need any particular change.

I haven't attempted to review the progress of the intermediate-credit bank, but in view of Mr. Wall's statement as to its limited service I should like to make some observations. The records of these banks show that since organization they have loaned more than $1,250,000,000, and the total charge-off has been only about 0.3 per cent. I think that is very gratifying.

At the present time (or on October 30, the date of the last report) the outstandings, as Mr. Thomson and Mr. Wall told you, were around $128,000,000.

Neither have I mentioned service by the intermediate-credit banks to cooperative marketing associations on commodities secured by warehouse receipts. More than 118 cooperative marketing associations, with a total membership of 1,500,000 persons, have been served by these banks since their organization. The magnitude of this service alone is an interesting topic for discussion.

That there needed to be improvement, we admit; but banking systems are the outgrowth of experience and are perfected only by evolution over a long period of time. This is fully exemplified by the national bank act which was written by Mr. Chase in 1863, further amplified or strengthened by the Federal reserve act of 1914. The original act written in 1865 has had to be amended and amended and amended during these 66 years. And yet to-day, in regard to the approaching session of Congress, we all wonder whether our commercial banking system needs further amplification. So it seems to me that in a brief eight years the Federal intermediate-credit bank has proved to be worth while, that its progress over that short space of time needs no apology, and that it is gradually taking its place in the financial structure of our country.

I want to make three or four general observations which are rather off my subject, but they are the reflection of the impressions I have received since we have been at this conference.

To my mind, a meeting of this nature is one of the most important things that has occurred in recent years. We don't want to keep rushing but up to now we have had no generally correlated plan. We have all been working at the same thing, but in rather different directions. But I want to say, in so far as the credit systems for agriculture are concerned, we first had the national bank act, which in many ways was oriented so that it would especially serve agri-

culture, then came the Federal reserve act, which also made special provision for agriculture, then came the Federal Farm Board and the Federal intermediate-credit bank, and then the emergency fund which Secretary Hyde disbursed this year.

All of those things have been provided for agriculture, but it doesn't make any difference how many credit systems you get for the farmer unless out of some leadership such as is represented by you men here, an economic plan is devised whereby the farmer's dollar is worth more than 54 cents. As Mr. Gregory said this morning, and he is correct, we are not going to get the farmer out of his difficulties. But, in my opinion, the present economic situation is nothing more or less than the result of pyramiding our expenditures and debts to a point where the structure became top-heavy, and fell over.

I think that normalcy will return when we have adjusted our corporate, individual, and governmental budgets so that we are living within our income, and for some reason I can not subscribe to the program of limited production. It seems to me that as long as there are so many people in the world who are hungry, and as long as there are little children who are cold, we have failed in our twentieth-century civilization if in answer to that we put the ax to our fruit trees and burn up our wheat fields. It seems to me we are capable of a greater solution of the problem than that. It seems to me that we have translated our progress in science and invention into increased stock certificates instead of into the human equation.

But I want to say this before I close: It is the obligation of you leaders here, I think, notwithstanding the difficulties through which we are passing, to go back to the farming people and help to keep alive within them the faith in our own country and its institutions. I heard a speaker say not long ago: "England lost every battle except the last one." These depressions may be worse now than formerly, but we are also provided with more recuperative power, and I think, after all, we should remember we enjoy a life that is not enjoyed by any other people in the world.

Mr. Moser. I think the talk Mr. Netherland made is a fitting climax to a fine 2-day session, but I do want to remind him and all of us that while it is the hope of all of us that we may continue production to the point where every man, woman, and child may have everything they want, as long as prices are made by the law of supply and demand and not by the needs of those who are unable to buy, you are going to have to try to adjust supply to demand in agriculture as we have done in every other industry. I think Will Rogers came nearer hitting the thing on the head than anybody, in his comical wisdom, which is a challenge to every leader in this country, when he says, "We are starving with a warehouse filled with everything good to eat. Imagine a bunch of monkeys starving in the South Sea Islands with a tree full of coconuts!" That is what we have been doing. And it is a question of whether we have as much sense as we think we have in comparison with the monkeys.

A NATIONAL LAND-UTILIZATION PROGRAM

SUMMARIES AND CONCLUSIONS

Presiding—ARTHUR M. HYDE, *Secretary of Agriculture*

Secretary HYDE. Regardless of what may occur from now until the conclusion of this conference I think we can forecast the conclusion well enough at this time to congratulate ourselves upon having a very successful meeting. For your information, upwards of 350 members have registered at this conference. Considering the character of the delegates and the organizations which they represent, I am inclined to think that that sort of registration not only is an evidence of rather widespread knowledge of the various problems which have been discussed here, but is a remarkable tribute to the recognition of the importance of these various topics by those who are fundamentally charged with the job of thinking on agricultural subjects.

I want also to express, not only for the United States Department of Agriculture, but, if I may, for the land-grant colleges, our very deep sense of gratitude to all the men who have taken a part in this program, who have taken time to prepare these remarkable papers, which treat in such a clarifying way of some of the problems we have to deal with in this Nation.

Now, as you know, the first day a committee was constituted, of which Mr. Cobb of Atlanta was chairman, to formulate some sort of suggestions. I believe the Latin derivatives in which the committee was described was the committee on summaries and conclusions, whatever that means. Mr. Cobb is here, and the report is ready. Without any other order of business, I am going to declare the report of the committee in order.

CULLY A. COBB. Chairman. Mr. Secretary and gentlemen, I think it is only fair to the group that is here this morning that you know the composition of the committee itself, its personnel, and exactly what is represented in the committee that has attempted to bring in the conclusions of this group. (The list of names is at conclusion of the following report.)

REPORT OF COMMITTEE ON SUMMARIES AND CONCLUSIONS, AS AMENDED AND ADOPTED BY THE CONFERENCE

The following recommendations, submitted to the 350 or more registered delegates attending the Land Utilization Conference were approved as the majority sentiment of the conference. A viva voce vote was called for after the reading of each recommendation. The personnel of the committee which drew up the recommendations appears at the end of the report.

The committee report, as amended and approved, follows in full:

PREAMBLE

Our Federal and State land policies have, in the main, encouraged the rapid transfer of public lands to private ownership with little regard given to the uses to which the land was best adapted or to the demand for its products. The economic and social difficulties in agriculture which are so widely recognized at present, are in considerable degree traceable to the effects of these policies. It therefore be-

comes imperative for all groups connected with land use to cooperate in formulating new policies which shall be actively addressed, through adequate and unified organization and coordination, to the intelligent use of all publicly and privately owned land whether or not it be submarginal or supermarginal. The central purposes of these policies should be to develop and conserve our land resources in such manner as to provide adequately for our present and future needs. Any adequate land policy must provide for the preservation of soil fertility, must aid toward adjustment of production to demand, must provide for economic use of marginal lands, and in other ways must make for the security of agriculture.

The following were among the many topics considered by the committee and furnished much of the basis for its recommendations: An inventory of land resources as a basis of land use; the indication of crop areas and their limits; indication of range economic returns by soil regions; intensification of production; acquisition of land by the public; management of public lands; population; taxation; reclamation; and rural credits.

Looking definitely to the establishment of a rational land-use policy the committee offers the following recommendations:

RECOMMENDATION NO. 1—ADMINISTRATION OF PUBLIC DOMAIN

It is recommended that in order to obtain conservation and rehabilitation of the grazing ranges of the public domain these lands be organized into public ranges to be administered by a Federal agency in a manner similar to and in coordination with the national forests. Such public ranges should include lands withdrawn for minerals or for other purposes when the use of such lands for grazing is not inconsistent with the purposes of withdrawal.

RECOMMENDATION NO. 2—WATERSHED PROTECTION

It is recognized that throughout the Rocky Mountain regions and the Pacific coastal regions hundreds of communities are directly dependent on near-by watersheds for their supply of water for irrigation and other purposes and in many cases this dependence is interstate in scope due to the watersheds being in one State and the irrigation use in another State, and also due to the fact that the irrigation water of one State must often be stored in another State. In as much as these facts can not be changed, due to the geography of the region, it is recommended that lands valuable for watershed protection should be administered under the supervision of the Federal Government.

RECOMMENDATION NO. 3—PROTECTION OF SCHOOL LANDS

In the Western States, lands granted to the States for school purposes usually included either two or four sections in each township distributed over the major part of the State's area. In as much as proper administration of land thus scattered has been impracticable, it is recommended that for the protection of the State in the interest of the school lands that remain, efforts be made to have laws enacted which will permit the exchange of the present school lands for others equal in value, and that school land be collected in blocks of such sized units as to be economical grazing areas, thereby protecting the school lands for the continued benefit of the public schools.

RECOMMENDATION NO. 4—AGRICULTURAL CREDIT

It is recommended that the Secretary of Agriculture call into conference representatives of various credit agencies engaged in making loans to farmers. This meeting should include representatives of Federal land bank, joint-stock land banks, Federal intermediate credit banks, State and national banks, and other financial institutions having a substantial volume of loans advanced to agriculture. The purpose of this conference should be to formulate a definite and coordinate program which credit agencies may adopt to assist in bringing about immediate readjustment in land utilization and farm organization.

RECOMMENDATION NO. 5—OUTLOOK WORK

It is imperative that the program of outlook work of the United States Department of Agriculture and of the State colleges be continued and expanded in order to provide a sound economic basis for planning the use of land for agricultural purposes, for determining the changes and adjustments of land use that will be required as economic conditions change, and for determining desirable readjustments in areas devoted to agriculture as a vital part of the outlook program. We recommend the preparation and publication at frequent intervals of national and local outlook reports containing unequivocal and understandable statements representing the best judgment of national, State, and local outlook workers concerning the trend of supply and demand for the dfferent agricultural commodities in the different parts of the country in the years ahead.

RECOMMENDATION NO. 6—THE ECONOMIC INVENTORY OF LAND RESOURCES AND CLASSIFICATION OF SOILS

The economic use of agricultural land is directly affected by topography, climate, texture and chemical properties, biological defects, and location. These major factors usually determine the value of the land for production and taxation purposes. It is recommended therefore that a national inventory be made of our land resources, that soils be classified on the basis of their agricultural value, and that our land-taxation system and practices be readjusted accordingly. Sufficient information as to particular soil types is now available to permit prompt and effective initial action.

RECOMMENDATION NO. 7—HOMESTEAD INTEREST

It is recommended that the several homestead acts be administered in the future with more careful supervision of land available for home making; that the lands opened for homestead entry be carefully classified at an early date and only those which after economic study promise a satisfactory standard of living, be made available for entry. Lands classed as marginal or submarginal should be withdrawn from homestead entry and definitely added to the public range.

RECOMMENDATION NO. 8—TAXATION

In view of the necessity of a more equitable distribution of the tax burden, we recommend the following: (1) The States take effective steps to revise their systems of taxation to the end that

every person having ability to pay taxes would be required to contribute directly to the support of State and local government through an income tax; (2) that total expenditures should be held in check and reduced wherever possible without serious injury to essential service through consolidation of counties and other units of local government in order to prevent the new revenues from becoming merely an additional total expenditure; (3) that greater coordination should be brought about between the Federal Government and the State in taxation to the end that each will rely primarily on those taxes that are relatively best suited to it from the standpoint of economic facts and administrative feasibility.

RECOMMENDATION NO. 9—LAND DEVELOPMENT

It is recommended that land development enterprises be licensed and regulated.

RECOMMENDATION NO. 10—REGIONAL COMPETITION

Since no determination of the best use of any type of land can safely be made without careful consideration of economic and technical feasibility of the various proposed uses and the profits likely to be derived from each, and since use for farming is in question on much so-called marginal and submarginal land, and changes in types of farming are called for on much of the better agricultural land, we recommend that increased attention be given to a study of all the factors affecting the feasibility of land for agricultural use and the type of agricultural use best suited to each specific kind of land. These factors include foreign and domestic competition in the production of all agricultural commodities and the development of methods of farming and types of equipment and their adaptability under various conditions, the feasibility of various forms of the organization of farms for production and the various methods of operation, as well as the outlook for the prices of various agricultural commodities.

RECOMMENDATION NO. 11—RECLAMATION

It is recommended that the Reclamation Service confine its efforts to finishing projects already started and to rehabilitating deficient water rights on lands now cultivated and occupied, but that new lands or new colonization projects be undertaken through neither irrigation nor drainage until they are justified by the agricultural needs of the Nation.

RECOMMENDATION NO. 12—USE OF MARGINAL LAND

This conference has devoted careful consideration to a group of problems with which our country has never adequately coped, namely, the extensive area of land which is in use or tends to be used for purposes to which it is not physically and economically adapted or that is virtually not used at all. These lands include:

(1) Occupied farm lands which because of technological or other changes in their competitive position are no longer capable of yielding a reasonable return to farmers.

(2) Range and other lands that tend to come in or go out of farming under the stimulus of variations in the price of rainfall cycles.

(3) Extensive areas of cut-over lands that are virtually idle.

(4) A large acreage of other land in addition to the above, that tends to be pushed into use for farming when economic conditions do not justify such use.

The lack of a program for such lands consistent with the public interest has resulted in consequences—such as numerous farm families struggling against hopeless obstacles—which we should no longer tolerate, an increasing number of abandoned farms, a rapidly growing area of tax-delinquent land which is being resold for the same uses under which it became tax delinquent, the wastage of soil resources through erosion or fire, the serious dislocation of the fiscal and institutional arrangements of units of local government through the disappearance of land from the tax rolls, a sparse and scattering population that can be supplied with adequate schools and roads only at great expense.

This conference urges and emphatically recommends that Federal and State agencies develop a coordinate program of land utilization for these extensive areas of idle or misused lands. We believe it to be a sound policy that before we undertake to retain or acquire land for public ownership every reasonable effort should be made to remove the conditions that discourage forms of private utilization not inconsistent with public welfare; plans for modifying such conditions should be an important part of a program for dealing with these areas. Among these conditions are the following: (1) A good deal of farm or forest lands can not be utilized profitably by private individuals because of an impossible tax burden. Certainly, States and counties should not force themselves to take over such lands if a modification in tax burden would avoid this necessity. A forest-tax law will frequently aid private owners to utilize lands for forests along sound lines. (2) In some forest, farming, or range and cut-over areas the consolidation of scattered tracts into units of economic operation will facilitate profitable private utilization. Private forest utilization can be maintained in many cases by better provision of fire protection; the supply of planting stock; and for small holdings by such measures as cooperative management, cutting, hauling, and marketing.

RECOMMENDATION NO. 13—PUBLIC RETENTION OR ACQUISITION OF LAND

After every effort has been made to promote a sound type of private utilization, there will remain extensive areas that are not adapted for private utilization or that for one reason or another should be under public ownership and management in order to prevent their misuse or for other reasons. With the exception of small areas acquired for special requirements Federal land acquisition through purchase at present is confined to the following main purposes:

(1) Forest lands for the protection of the headwaters of navigable streams.

(2) For growing timber (at present limited by appropriation and tacit understanding to the establishment of small areas of demon-

stration forests mainly in the South. The total program for this and the first-mentioned purpose is only about 15,000,000 acres).

(3) Bird and game refuges under the administration of the Bureau of Biological Survey.

(4) National parks and monuments (except for the reservation of land from the public domain, these are being developed partly on lands contributed by non-Federal agencies).

State land acquisition is confined mainly to the establishment of State parks and/or State forests; but the scope of this activity is not very considerable outside of New York, Pennsylvania, and the Lake States.

There appear to be a number of important objectives in public acquisition, in addition to those mentioned, some mainly of local interest and others of broader application, as follows:

(1) To withdraw from private ownership tracts occupied by sparse and scattered population, in order to economize State and local expenditures for public service.

(2) To provide for the permanent maintenance of local forests on which communities are dependent or may become dependent for part-time employment, markets, supplies of raw material for local industries, fuel, posts, and other supplies for farmers and other residents of the community, local refuges for game and local centers of recreation.

(3) To remove from private ownership lands that are periodically brought into temporary cultivation under the stimulus of high prices or favorable yields but are incapable of permanently profitable utilization, in order to remove the unfair competition of such lands with the established farming industry and to prevent the serious wastes and hardships incurred by their occupants after the temporarily favorable conditions have passed.

(4) To remove from private ownership lands that can not be utilized profitably by private individuals or concerns without serious wastage of the soil through erosion or other causes.

The objectives already adopted should also be materially amplified. The policy of watershed protection both on the public domain and other areas should be carried much further, and the provision for reforestation appears inadequate to forestall an ultimate shortage of timber.

The immediate task is to deal constructively with the areas that are becoming tax delinquent. There is very great variation at present in the policies followed in various States with regard to such lands. Only in a few States is existing policy in line with the requirements of a broad national land policy. Since the interests of the State and Federal Governments interpenetrate in the whole field of land acquisition, the Federal Government should take the lead in bringing about a definition and coordination of objectives with the States. Plans should contemplate a unification of policies for the disposition of tax-delinquent lands, as well as for other methods of acquisition.

We also recommend prompt coordinate Federal and State action in defining the principles, scope, and methods of public land acquisition and administration, and in determining what lands should soon or ultimately be acquired and by what agencies.

RECOMMENDATION NO. 14—SOIL CONSERVATION

Steps should be taken to outline and initiate a program of soil conservation whereby damage from erosion, leaching, increasing acidity, destruction of organic matter, deterioration of soil structure, overgrazing, flooding, and alkali accumulation may be reduced to a minimum.

RECOMMENDATION NO. 15—LAND CLASSIFICATION

An essential basis of economic investigation in land utilization is adequate physical data in the form of soil surveys, topographic surveys, weather records, etc. Some of the regions of the country where land-use problems are most acute are most inadequately covered by such surveys. There is obvious need for coordinating this survey work with the land-utilization surveys aimed at the development of a program of land utilization. This economic investigational work must obtain basic information with regard to the numerous economic and social conditions that must be taken into consideration in the formulation of a land-utilization program for a given area, such as the economic use for which the land is best adapted, tax burdens, local fiscal set-up of the area, and the relation of proposed changes in the use and ownership of land to fiscal and institutional arrangements. This type of research work should be carried out by the Federal and State agencies cooperating and would have to be much more adequately provided for. It is possible that in order to take care of the problem in States unable to make adequate financial contributions, some extension of the Purnell Act will be found necessary. The extent of the problems of idle lands and of the probable needs for public acquisition does not vary with the financial capacity of the various local and State governments to cope with them. Some of the States where these problems are most extensive are most lacking in financial resources. We should not permit a narrow theory of States' rights and obligations, under our system of dual sovereignty, to prevent an adequate provision for dealing with these problems wherever they occur.

We note with gratification the steps already taken by the State of New York in developing a program of land classification and acquisition.

RECOMMENDATION NO. 16—DECENTRALIZATION OF INDUSTRY AND ITS EFFECT UPON LAND UTILIZATION

We recommend that a study be made of possible decentralization of industry and population from the point of view of land utilization.

RECOMMENDATION NO. 17—REGIONAL CONFERENCES

In view of the influences of topography, climate, soil types, etc., on land utilization, and the need for enlisting regional and even local leadership in dealing with the many and varied phases of the subject, the committee recommends that the Secretary of Agriculture, in conjunction with the land-grant colleges and other agricultural agencies, call regional land-utilization conferences throughout the country at such places and at such times as may best serve the purpose of cooperating with the committees proposed by this con-

ference in initiating and consummating a sound and constructive national land-use policy.

RECOMMENDATION NO. 18—CREATION OF COMMITTEES

It is an accepted fact that the value and effectiveness of any plan depends upon the vigor and intelligence with which it is applied. To apply any plan effectively there must be adequate machinery. To that end we recommend the creation of two committees, one to be known as the national land use planning committee, and the other to be known as the national advisory and legislative committee on land use.

It is recommended that these committees be constituted and called together for organization as follows:

The national land use planning committee.—It is recommended that the membership of this committee consist of 5 representatives from the Department of Agriculture; 1 each from the Bureau of Agricultural Economics, the Bureau of Chemistry and Soils, the Bureau of Agricultural Engineering, the Forest Service, and the Extension Service; 1 from the Federal Farm Board; 3 from the Department of the Interior, 1 each from the Reclamation Service, the Geological Survey, and the Land Office; 1 from the Federal Farm Loan Board; 5 from the Land Grant College Association, so chosen as to represent the different agricultural regions of the country.

It is also moved that the conference request that the Secretary of Agriculture make the appointments from the Department of Agriculture; the Secretary of the Interior make the appointments from the Department of the Interior; the chairman of the Federal Farm Board make the appointment from the Farm Board; the chairman of the executive board of the Land Grant College Association make the appointment from the Land Grant College Association; and the chairman of the Farm Loan Board make the appointment from the Federal Farm Loan Board; and that the Secretary of Agriculture be requested to call the committee together for their first conference and to permit them to organize; and further request that the call shall be made at the earliest possible moment.

National advisory and legislative committee on land use.—It is recommended that the following organizations shall appoint the number of persons stated to comprise this committee and that this committee as thus named or formed may add such members to it as it will deem advisable and helpful, and that the committee shall be formed initially as follows: American Farm Bureau Federation, 4 members; National Grange, 4 members; Farmers' Educational and Co-operative Union of America, 4 members; Chamber of Commerce of the United States, 1 member; National Cooperative Council, 4 members; American Bankers Association, 1 member; National Association of Commissioners and Secretaries of Agriculture, 1 member; American Forestry Association, 1 member; the American Agricultural Editors Association, 3 members; National Sheep and Wool Growers Association, 1 member; American National Live Stock Association, 1 member; American Railway Development Association, 1 member.

The personnel of the committee which submits the above recommendations is as follows:

Cully A. Cobb, editor, The Progressive Farmer; Dr. William Peterson, director of extension, Utah Agricultural College; J. G. Lipman, dean, New Jersey Agricultural College; R. W. Reynolds, agricultural and industrial agent, Chicago, Milwaukee & St. Paul Railway; Charles E. Hearst, vice president American Farm Bureau Federation; Franklin Reed, secretary, American Society of Foresters; [5] H. R. Tolley, director, Gianinni Foundation, University of California; Fred Brenckman, Washington representative of the National Grange; Thomas P. Cooper, dean, Kentucky Agricultural College; C. O. Moser, president, National Cooperative Council; Elbert S. Brigham, chairman of the finance committee, National Insurance Co., of Vermont; E. H. Thomson, president, Federal Land Bank, Springfield, Mass.; Sherman M. Woodward, Iowa City, Iowa, representing American Society of Civil Engineers; Dan H. Otis, American Bankers' Association; John B. Bennett, Chamber of Commerce of the United States; M. L. Wilson, chairman, department of economics, Montana Agricultural College; W. C. Coffey, dean, Minnesota Agricultural College; C. E. Ladd, director of extension, Cornell University; W. W. Atwood, president, Clark University, and president, National Park Association; L. J. Fletcher, president, American Society of Agricultural Engineers; William A. Schoenfeld, dean, Oregon State Agricultural College.

DISCUSSION AND ADOPTION OF THE REPORT

Doctor Gilbert. In these recommendations no official recognition has been made of the State departments of agriculture, which I think, as a group, are as interested in this program as is any other group. I trust they will be very cooperative and useful in carrying out the work. Therefore, I move to amend that the State departments of agriculture be recognized in these recommendations. I also make a motion to include them as a part of this conference.

Mr. Cobb. Mr. Chairman, before you put the suggested amendment, let me answer by saying that they are provided for officially along with the other organizations of that type—as, for instance, the one I happen to belong to, as a matter of fact.

Secretary Hyde. Is that satisfactory, Doctor Gilbert?

Doctor Gilbert. I think it is, although it seems to me that they should be represented on this particular committee.

[Other representatives suggested that specific groups be mentioned, such as State departments of forestry, groups interested in conservation of various resources and of wild life, livestock and wool associations of State and national scope, groups concerned with urban uses of land, farmers' organizations, etc. Discussion revealed the fact that all the proposed groups would be represented in the development of a national land use program under the provisions for the membership of the National Advisory and Legislative Committee on Land Use which had been given authority to add such members as it may deem advisable. (Recommendation 18.) It also appeared that the preamble under discussion did not mention any agency by name, and that to undertake such specific mention would raise a serious problem as to where the line should be drawn.

[5] George D. Pratt, president, American Forestry Association, was also a member of the committee, but he was not able to remain until the report was formulated.

When the recommendation concerning the calling of a credit conference by the Secretary of Agriculture was read, Mr. John A. Simpson, president of the Farmers' Educational and Co-operative Union of America, protested that, as read, the recommendation did not adequately provide for representation by the debtor groups. He also stated that he had not been voting for the various recommendations, as read, inasmuch as he had not had opportunity in advance to consider the recommendations. He desired the record to show that he had voted only for the recommendation on taxation and the recommendation with regard to bringing no more new land under cultivation through irrigation and reclamation.]

Secretary HYDE. It might be well to say that as I understand the form of the motion under which each of these recommendations was adopted, no one in this conference is bound. The motion merely was that the majority sense of this conference was in accordance with the recommendation. I, myself, have some reservations. * * *

I think, gentlemen, that we are entitled to congratulate ourselves upon a step taken which, while probably not immediately effective in this emergency, may be a step that will make other conferences unnecessary by preventing future emergency. I want to thank every one of you for your attendance here and for your participation in this conference. It has been singularly free from controversy; it has shown an unusually constructive attitude. I think you can truthfully say that every man here has attempted to deal on the basis of the common denominator, to wit, the interest of the American farmer. In so far as any differences have appeared, I think you can resolve those differences merely by placing the national viewpoint in the ascendancy in the solution of the problem at issue. It is inevitable, of course, that local problems will be influential in local solutions. It is inevitable that local interests will be influential in the viewpoints of local people. We are not thinking of agriculture nowadays as a local problem. We must see this as a national problem and as a whole. That has been the prevailing tone of this conference, and upon that, from my heart, I want to congratulate you. I want to thank you again whether you were on this program or not for your contribution to the conference, and I want to assure you that, so far as it is possible for us to do so, we are going to follow this thing through.

The conference stands adjourned.

INSTITUTIONS AND ORGANIZATIONS REPRESENTED

AGRICULTURAL COLLEGES, UNIVERSITIES, AND AGRICULTURAL EXPERIMENT STATIONS

Alabama Agricultural College.
University of Arizona.
University of California.
University of Chicago.
Clemson Agricultural College, South Carolina.
Colorado Agricultural College.
Connecticut Agricultural College.
Cornell University, New York.
Dartmouth College, New Hampshire.
University of Delaware.
University of Florida.
Georgia State College of Agriculture and Mechanic Arts.
University of Idaho.
University of Illinois.
Iowa State College of Agriculture and Mechanic Arts.
Kansas State College.
University of Kentucky.
Louisiana State University.
University of Maine.
University of Maryland.
Massachusetts Agricultural College.
Michigan State College.
University of Michigan.
University of Minnesota.
Mississippi A. and M. College.
University of Missouri.
Montana State College.
University of Nebraska.
University of Nevada.
University of New Hampshire.
New Jersey Agricultural Experiment Station.
North Carolina State College.
North Dakota Agricultural College.
Ohio State University.
Oklahoma A. and M. College.
Oregon State College.
Pennsylvania State College.
Purdue University, Indiana.
Rhode Island State College.
South Dakota State College.
University of Tennessee.
Texas Agricultural Experiment Station.
Utah State College.
University of Vermont.
Virginia Polytechnic Institute.
State College of Washington.
West Virginia University.
University of Wisconsin.
University of Wyoming.

RAILROADS

New York Central Railroad.
St. Louis-San Francisco Railway.
Missouri Pacific Railroad.
Pennsylvania Railroad.
Chicago, Burlington & Quincy Railroad.
Minneapolis, St. Paul & Sault Ste. Marie Railway (Soo Line).
Northern Pacific Railway.
Louisville & Nashville Railroad.
Denver & Rio Grande Western Railroad.
Chesapeake & Ohio Railway.
Chicago & North Western Railway.
Great Northern Railway.
Seaboard Air Line Railway.
Chicago, Milwaukee & St. Paul Railway.
Baltimore & Ohio Railroad.
Atchison, Topeka & Santa Fe Railway.
Southern Railway.
Texas & Pacific Railway.
Union Pacific Railroad.

UNITED STATES GOVERNMENT BUREAUS AND COMMISSIONS

Bureau of Agricultural Economics.
Bureau of Agricultural Engineering.
Bureau of Chemistry and Soils.
Bureau of Home Economics.
Bureau of Public Roads.
Bureau of Biological Survey.
Extension Service.
Forest Service.
Grain Futures Administration.
Weather Bureau.
Bureau of Reclamation.
Federal Board for Vocational Education.
Federal Farm Board.
Federal Farm Loan Board.

OTHER ORGANIZATIONS

Agricultural Credit Corporation.
Agricultural Leaders Digest.
Agricultural News Service (Inc.).
American Agricultural Chemical Co.
American Agricultural Engineers Association.
American Investment Corporation.
American Society of Agricultural Engineers.
American Society of Civil Engineers.
American Bankers Association.
Association of Agricultural Commissioners.
American Farm Bureau Federation.

Associated Press.
Chamber of Commerce of the United States.
Farmers' Educational and Co-operative Union of America.
Federal Land Bank of St. Louis, Mo.
Federal Land Bank of Springfield, Mass.
Federal Land Bank of Wichita, Kans.
Federal Land Bank of Omaha, Neb.
Federal Reserve Bank of Minneapolis, Minn.
Great Lakes–St. Lawrence Tidewater Association.
Kansas State Board of Agriculture.
Illinois Agricultural Association.
Illinois Chamber of Commerce.
Investment Bankers Association of America.
Institute for Research in Land Economics and Public Utilities.
Jewish Agricultural Society (Inc.).
Michigan Land Economic Survey.
Minnesota Land Economic Survey.
National Grange.
National Association of Commissioners of Agriculture.
National Association of Farm Equipment Manufacturers.
National Broadcasting Co.
National Federation of Farmers.
National Fertilizer Association.
National Live Stock Exchange.
National Lumber Manufacturers Association.
Society of American Foresters.
Vermont Department of Agriculture.
Wisconsin Department of Agriculture and Markets.

In addition to the above a number of persons representing individual insurance companies, banks, newspapers, farm papers, and other private concerns, were present.

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