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American Agriculture— The First 300 Years

by EVERETT E. EDWARDS¹

TO UNDERSTAND the form and the spirit, the successes and the problems of agriculture in the United States, it is necessary to go back into the past and study its history from the beginning; for conditions were at work from the start that have left their mark on our practices and institutions until the present day. Here are the highlights of the story from colonial times until the World War—a varied tale of great ambitions and achievements, mistakes and failures, and not a little native American rebellion. At the end the author sums up the influence of agriculture as a dynamic force shaping governmental policy in many fields.

THE COLONIAL PERIOD

FROM the political viewpoint alone the colonial period of American history covered approximately two centuries, and from the point of view of economic and social structures it lasted even longer. To delineate the major characteristics of the colonial era is therefore difficult, owing to the changing conditions involved in such an expanse of time and the wide diversity in the geographical settings of the Thirteen English Colonies along the Atlantic coast of North America.

Two general characteristics, however, do stand out. The social and

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economic structure of all the Colonies was predominantly agricultural. Even in New England, where commerce and industry were most developed, at least nine-tenths of the population were engaged in farming. In the other Colonies the proportion was even greater. The economic life of the southern Colonies ultimately came to be based on large holdings of land, slave labor, and the production of surpluses of exportable staples. The plantation system determined their economy, and the planters dominated the colonial governments; yet the small farmers far outnumbered them, and the economy of this vast group was largely one of self-sufficiency.

In the small-scale farmer of the colonial period were developed and epitomized the attitudes of mind and habits of action which, until recent times at least, have been characteristic of the American people as a national group. Our colonial ancestors were jacks-of-all-trades; at some time or other in their lives—and often even during a single year—they engaged in hunting, trapping, farming, fishing, and sometimes seamanship as well. In short, they were able to turn to any of the various rudimentary economies as the occasion required. The result was a certain cleverness and facility rather than the thoroughness that results from specialization. This versatility, however, served the American people well as they created a multitude of frontiers in their westward march from the Atlantic to the Pacific. These frontiers, it should be emphasized, were both horizontal—that is, westward across the surface of the Continent—and vertical—upward through various stages of social and economic growth—so far as any given area was concerned. In the words of the historian Frederick Jackson Turner, American development exhibited—

not merely advance along a single line, but a return to primitive conditions on a continually advancing frontier line, and a new development for that area. American social development has been continually beginning over again on the frontier. This perennial rebirth, this fluidity of American life, this expansion westward with its new opportunities, its continuous touch with the simplicity of primitive society, furnish the forces dominating American character (192, p. 2).²

Like the majority of his descendants, the colonial farmer was constantly preoccupied with the practicalities of existence. His was a struggle to procure the basic necessities. To be sure, he usually did gain comforts over and above a rudimentary existence, but he lacked the time or the stimulus to develop an interest in the aesthetic or the philosophical. There is no indication of his having an appreciation even of the glorious settings which nature had provided as the scene of his activities.

By virtue of necessity the colonial farmer developed a self-reliance, especially as related to the forces of nature, which extended into intense individualism. This is not to say that he did not contribute to community action when a scarcity of labor demanded or when leisure permitted social gatherings. Such association, however, was possible only where there was a semblance of community life.

The lack of opportunities to travel—in either the physical or intellectual sense—also bred a narrow outlook that tended to develop into extreme provincialism.

The colonial farmer was dominated by a generous optimism.

² Italic numbers in parentheses refer to Literature Cited, p. 266.

Neither his nondescript past nor his humdrum present provided a basis for boasting, even with his characteristic temerity. Accordingly he always looked to the future, which was unhampered by realities, and let his imagination have full sway.

Owing to the exigencies of their economic existence, our colonial ancestors also came to have a profound and abiding faith in work of some sort, preferably manual, as the duty of every member of a social group. Woe to him who manifested a tendency to shirk his responsibilities, even though the diligence of a parent had amassed for him a modest inheritance which would have permitted his taking a more leisurely way of life.

Background of the English Settlers in America

Among the Europeans who settled in the Thirteen Colonies which England founded or acquired along the North American Atlantic coast, Englishmen predominated. So far as background influences are concerned, it is to the England of the seventeenth—and to a less extent the eighteenth—century that we must look. The mother country was then predominantly rural in its ways of life, and this basic fact must be emphasized in any survey of American colonial agriculture (82, 83). The statement of William Bradford (30) that the Pilgrims were "used to a plaine countrie life and y^e inocente trade of husbandrey" will serve as a description of the English colonists generally. There was, therefore, a natural predilection on the part of the early English settlers in America to attempt to raise the crops and employ the farming methods that were familiar to them in their homeland.

England of the seventeenth century was comparatively undeveloped agriculturally. Probably not more than a quarter of its land was under cultivation, the remainder being in woods, moors, fens, commons, and parks or warrens. Of the 40 counties in England, only 15 no longer had forests (61). There were common lands in abundance and comparatively few fences, plowed fields being separated by balks of earth. In those localities where arable land had been turned into sheep pastures to satisfy the demands of the wool trade, though there were some enclosures, hundreds of acres were grazed by flocks under the supervision of shepherds with their dogs. The "highways" could hardly be so designated; except in the thickly settled regions they may more properly be described as cart or bridle paths. The work of reclamation and enclosure, which changed the surface of the major part of rural England to something approximating the modern scene, took place in the 2½ centuries following the departure of the first English colonists to America. The England which mothered the Thirteen Colonies was relatively untouched by the forces commonly referred to as the industrial and agricultural revolutions.³

Trials and Errors of the Early Years

The earliest efforts of the pioneering English colonists to derive a livelihood from the soil can hardly be called agriculture. In general

³ For references on English agriculture, see: EDWARDS, E. F. SELECTED REFERENCES ON THE HISTORY OF ENGLISH AGRICULTURE. U. S. Dept. Agr. Library Biblog. Contrib. 24, ed. 2, 105 pp. 1939. [Mimeographed.]

their activities resembled those of primitive tribes in the hunting or collection stage of development. All of the initial settlements were to a considerable extent dependent on the native plants and wild animals for food until the first crops could be harvested.

The natural food resources of the Atlantic Coastal Plain varied somewhat according to the latitude, but there was usually an abundance. Berries of various kinds, including blackberries, raspberries, huckleberries, gooseberries, cranberries, and strawberries, and fruits such as wild cherries, grapes, and crab apples, as well as nuts and certain edible roots were available in season. There were also plenty of fish, clams, and oysters, and wild game such as partridges, turkeys, pigeons, geese, and ducks, as well as deer. Yet the early colonists were often on the verge of starvation. Various explanations have been given for this suffering amidst what appears to have been abundance. Basically it was difficult for the first settlers to revert to a different stage of civilization; furthermore, it was difficult to adjust the agriculture of the Old World to conditions in the New.⁴

Contributions of the American Indians

It was not until the English settlers adopted the American Indians' agricultural plants, cultivation and harvesting methods, and processes of food preparation that they were assured of adequate food supplies. Indeed it is not going too far to say that it was the union of American Indian and European farming that produced the beginnings of American agriculture and provided the essential bases for its ultimate development.⁵ Furthermore the economic plants domesticated by the American Indian and taken over by the white man constitute, according to a reliable estimate, approximately four-sevenths of the present total agricultural production of the United States, measured in farm values (181, 182). A complete list of these plants is extensive, but the most important are maize or corn, cotton (the New World species, *Gossypium barbadense* Linn.), peanuts, pumpkins, squashes, beans, potatoes, sweetpotatoes, tobacco, and tomatoes.

The Indian method of planting corn, potatoes, beans, and other plants of New World origin in hills and then heaping the earth about their stalks during cultivation is still a fundamental process in our present-day farming, just as broadcast seeding is essential in growing the grains of Old World origin. In growing their crops the Indians had neither draft animals nor plowing machinery; all of the work of planting, cultivating, and harvesting was done by hand. They did use pointed and spadelike tools in turning the soil. The white man introduced the ox and the horse to supply power and ultimately developed comparatively elaborate machinery to take the place of manual labor. Yet the fundamental system of cultivation remains essentially the same as the white man found it on his arrival in the New World.

⁴ For details of the hardships of settlers during the years of adjustment, see Literature Cited (25, 39, 91). For additional references see: EDWARDS, E. E. REFERENCES ON AMERICAN COLONIAL AGRICULTURE. U. S. Dept. Agr. Library Bibliog. Contrib. 33, 101 pp. 1938. [Mimeographed.]

⁵ EDWARDS, E. E. AGRICULTURE OF THE AMERICAN INDIANS; A CLASSIFIED LIST OF ANNOTATED HISTORICAL REFERENCES WITH AN INTRODUCTION. U. S. Dept. Agr. Library Bibliog. Contrib. 23, ed. 2, 106 pp. 1933. [Mimeographed.] See also Literature Cited (67).

Policies of Land Disposition in Colonial America

In seventeenth-century England, landownership was the key that unlocked the door of economic, social, and political privilege, as well as of prestige. It was natural, therefore, that much emphasis should be placed on landownership in the English Colonies. The early explorers for England took possession of most of the North American Continent in the name of the King, and that individual, therefore, theoretically possessed a vast public domain to dispose of as he wished. Although the ways by which land passed from the King into the hands of actual dirt farmers were many and varied, three distinct procedures stand out.⁶

The Manorial System

One of the methods of land disposition may be called the manorial system. The sheer abundance of land naturally suggested establishing hereditary landed estates, and the result was that grants of large tracts were made to friends of the King. In essence, these grants were an attempt to recreate medieval feudalism in the New World, although it had long since outlived its usefulness in the Old. Economically, however, the successful development and operation of landed estates was contingent on securing a substantial revenue from the land. The land available in other ways was so far in excess of the amount immediately needed that those who had the initiative for the adventure to the Colonies did not voluntarily settle on feudal holdings, albeit American versions. The grantees of the large tracts sought to collect quitrents—that is, feudal payments which “quitted” the actual holders of land of all other payments, dues, and services (26)—and the result was social friction which did not cease until the quitrents were abolished as an incident of the American Revolution (110). In the course of time the manorial holdings largely gave way to plantations, and unfree labor, not land, became the main source of income for the holders of large tracts (79).

The New England System

Another distinctive procedure of land disposition was the New England system—a system of vast importance in its influence on the development of national land policies during the nineteenth century. The dominant characteristics of the New England system were community action and the lack of a profit motive in disposing of land (6).

The leading New England Colonies were established by trading companies which received extensive grants of land from the Crown and served as, or evolved into, governing bodies. Grants direct from the Crown to individuals were practically unknown in New England, the exception being the Gorges grant of 1639 in what is now the State of Maine. Grants to individuals by the colonial governments were likewise rare—those made were in small amounts and always as a reward for services rendered or anticipated.

To effect the methodical occupation of the New England territory by actual settlers who would develop the natural resources not for the

⁶ For the historical literature on the land policies of the colonial period, see: EDWARDS, E. E. REFERENCES ON AMERICAN COLONIAL AGRICULTURE. U. S. Dept. Agr. Library Bibliog. Contrib. 33, 101 pp. 1938. [Mimeographed.] See especially pp. 73-90.

benefit of a few but in the interest of the entire community, reliance was placed on group action and responsibility. When a relatively old and settled community became crowded, at least according to contemporaneous standards, a group wishing to move westward into the wilderness selected representatives to look up a tract, usually contiguous to a settled community, which was deemed suitable for a new settlement. Having found what they needed, they petitioned the colonial government for permission to migrate there. The government, in turn, sent out a committee to examine the tract with reference to its suitability for settlement and to report on the qualifications of the would-be movers—especially of their leaders. If the committee's findings were favorable, the grant was made. The land was usually a rectangular area approximating the traditional American township in size.

The group to which the grant was made became in essence a quasi corporation and proceeded over a period of years to divide the land in severalty among the settlers. Near the center of the tract or in some other strategic location a village was laid out, the focal point being a green with the meeting house, the minister's house, a burial ground, a market place, and a school. From the green extended the village streets with the house lots, which were plots of sufficient size for a dwelling and outbuildings, a dooryard, a garden, and an enclosure for feeding stock.

Then a large block of the grant was roughly surveyed and divided into strips which were distributed among the settlers by lot, each family receiving some of the best as well as some of the poorer land. When these "lots" had been developed into tilled fields, a further—and comparable—division of another block of the grant was made, and so on until all of the land received by the original group had been brought under cultivation. The uncultivated land was used as a common pasture by the community, and one or more herdsman were employed as public servants to handle the stock.

This plan of land distribution, here described in a rudimentary manner, had important social and political consequences. It developed habits of group action and afforded a compact social life. It facilitated the ideal of a Biblical commonwealth and a Puritan theocracy. The town meeting, at which plans for land distribution were worked out and the officers who cared for the village property were chosen, was a vital factor in the evolution of democracy in America.

The New England way provided an effective and equitable method of distributing large areas of land directly to actual farmers in amounts proportioned to their ability to use the land. During the years when the system of town grants was in full operation—before 1725—land speculation was practically unknown in New England.

The New England system also afforded a security of title that facilitated an orderly settlement of new lands. It provided a sure protection against overlapping surveys and title disputes and made the town or colony responsible for the accuracy of the survey and title. The ease with which new land might be acquired and an independent living assured practically obviated a nonlandholding class and necessitated cooperation among farmers.

Headrights

The idea of headrights—the granting of 50 acres of unoccupied land to immigrants landing in Virginia—grew out of the view that any person who “adventured” himself to America acquired a share in the Virginia Company. Since land was the surplus of which the company could be certain, any dividends from shares in the colonial enterprise might reasonably be expected to be in the form of land. With this beginning, it was only a step to allowing a headright for the importation of others. The system which was developed to dispense headrights remained the principal method of acquiring land in the southern Colonies throughout the seventeenth century (*73, pp. 40-54; 91, pp. 372-408*).

In practice, the system changed greatly from the original conception. It was extended to include the members of a settler's family and his household servants, then white indentured servants, and eventually even slaves. Sea captains and merchants who brought in servants or slaves also acquired and sold headrights on their importations. Indentured servants received headrights on the expiration of their periods of service. Eventually fraud and evasion developed in the administration of the system. Men whose business took them back and forth across the Atlantic customarily received headrights each time they landed in the southern Colonies, and the sea captains even claimed rights for their sailors. Ultimately, at least three persons—a captain, a merchant, and a planter—might acquire a right on the same individual. Finally the applicants for headrights resorted to copying names from old record books and tombstones for use on the required forms, and at about the same time the secretary of the Colony began to sell headrights for 1 to 5 shillings each. The Virginia Council, recognizing realities, then authorized the sale of rights to 50-acre tracts for 5 shillings. This substitution, known as a treasury right, was a reversion in legal theory to the right of acquiring land under the Virginia Company by the purchase of stock, the Commonwealth being regarded as a lineal descendant of the company.

Having secured a headright or a treasury right, the individual located the amount of land to which he was entitled on any part of the unappropriated public domain. Surveys were supposed to be made by public surveyors, but as most of these officers were inexperienced deputies the possibility of error was always present.

So far as the disposition of land was concerned, the southern system left much to individual initiative. A person could select any desirable tract of unappropriated land and have it marked off by a county surveyor under his direction. There was no compulsion to consider the relation of his holding to those of others, and there was ample opportunity to engross the best land, leaving the less fertile soil for the later comers. The system was suited to the needs of a society where large plantations and slave labor, fewer hostile Indians, and a favorable climate permitted the extension and scattering of settlement over the coastal lands. In the hinterland the system enabled the pioneers to locate on the good lands adjacent to streams.

Conditions of Agriculture in the New World*Farm Equipment*

The lack of adequate capital affected the supply of farm tools and implements in the early settlements just as it did the number of livestock (25, 39). In the documentary materials on the colonial period are occasionally found ideal lists of the various tools which a family contemplating immigration should bring with them, but the actual outfits as indicated in wills were probably inadequate in most instances. The tools and implements most frequently mentioned are hoes, spades, scythes, reaping hooks, shovels, carts, harrows, and plows.

Although a basic implement, plows were scarce during the first half of the colonial period. The Plymouth colony had none for 12 years and during that period was dependent on hoes and mattocks for breaking the soil. The Swedish colony along the Delaware likewise had few tools of any kind until it was taken over by the Dutch in 1655. On the other hand, the farms of Massachusetts Bay had 30 plows by 1636. The early settlers in William Penn's domain around Philadelphia were also relatively well supplied.

The possession of a plow gave the owner what amounted to a distinct profession. He was the plowman of his community, and his services in this capacity were in demand at practically all seasons. In short he was a public benefactor, and many town communities paid bounties to farmers who bought plows and kept them in operating condition.

The plows of the eighteenth century were very heavy and awkward contrivances. The moldboard was not constructed on scientific principles; its iron plating, designed to cut and turn the soil, was rough and uneven, causing excessive friction, and the pull on the drawbar was much greater than it is on that of a modern plow. It took two men, or a man and a boy, using two or three horses or four to six oxen, an entire day to plow 1 to 2 acres. A lighter type of plow was used in cultivating corn. At the close of the eighteenth century, experiments with improved moldboards and cast-iron plowshares were being made.

The procedure and the implements used in harvesting, threshing, and cleaning grain were comparable to those of ancient Palestine as recorded in the Bible. Wheat and sometimes other small grains were reaped with a sickle. Grass and occasionally grain were cut with a scythe. Grain cradles were introduced in the middle Colonies near the end of the eighteenth century, but were unknown in New England until after 1800. A good reaper usually averaged three-fourths of an acre a day, but if the crop was heavy he could not cut more than half an acre. A cradler could cover 2½ acres.

In the middle Colonies, grain was threshed by treading it out with horses; in New England, the flail was used. After threshing, the grain was winnowed as in Biblical times. A few farmers were experimenting with horsepower threshing machines by 1780.

Labor in the English Colonies

Scarcity of labor had even more far-reaching consequences for American social and economic development (73, 91, 113). At least four out of five free white men were farmers on their own land. There were two natural outgrowths of this combination of abundant resources and lack of free labor: (1) The credo of the glorification of work, already mentioned as a primary American trait, with the accompanying suspicion of the artistic as unproductive; and (2) various systems of nonfree labor.

Practically all Europeans who had sufficient initiative to emigrate to America were of a type that would not readily submit to the authority of others. The abundance of free land at the back gate of every community stimulated this independence, with the result that there was practically no voluntary hiring out. In the New England and middle Colonies, as in nearly all frontier settlements, the problem of a labor supply was met to some extent by community cooperation. In the southern Colonies, however, where staple crops were raised on large plantations, there was a greater need for a large labor supply, and consequently the greatest number of indentured servants and slaves were found there.

Following the example of the French, and more particularly the Spanish, the English colonists attempted enslavement of the native population, but with little success. There are many instances of Indians being held in some form of bondage in New England, particularly after the wars in which Indians were taken captive. As late as 1706 it was the practice of Massachusetts to sell Indian children under 12 years of age and to enslave the women taken in war. The men, however, refused to bend under the yoke of slavery and were shipped off to the West Indies to be exchanged for Negroes.

Considerably more success in procuring workers was attained through the labor-contract method. This system was deeply rooted in England, where wages had been fixed by statute, minors apprenticed, and vagabonds bound out.

These contracted, or indentured, servants may be divided into two groups—voluntary and involuntary. Voluntary indentured servants were those whose apprenticeship was based on a free contract. They were limited to persons who were so anxious to start a new life in America that they were willing to sell themselves for a period of 5 to 7 years to shipmasters or immigration brokers in payment for their passage. German settlers, and occasionally those of other nationalities, sometimes voluntarily indentured themselves in order to obtain funds to make a more advantageous beginning on the frontier when they were able and ready to set up farming for themselves. Most of these "free-willers" came during the latter part of the seventeenth and early eighteenth centuries. As a type of immigrant they were practically nonexistent by the time of the American Revolution.

The involuntary indentured-servant group was made up of debtors, criminals deported by order of English courts, and unfortunates who had been kidnaped. The vagrancy laws in England during the seventeenth century were extremely harsh; the free movement of labor from one parish to another was forbidden; imprisonment was the penalty for debt; and over 300 crimes were punishable by death. The result

of these laws was that the courts and prisons were crowded with paupers, debtors, vagrants, and petty criminals, and many judges felt that shipping these unfortunates to the Colonies was a humanitarian act. Only a few could pay their own passage over, and consequently the vast majority were sold, the term of indenture ranging from 7 to 10 years. Eventually the demand for this type of labor became so great that professional kidnapers seized thousands, particularly in London and other seaport towns, and hurried these victims off to America. During the English civil wars when Cromwell gained ascendancy, many political prisoners also were exiled to the New World.

In general these redemptioners came of good stock. Force of circumstances and social exploitation rather than lack of native ability had kept them poor. As a rule, all they needed was freedom to rise in the social and economic scale. By the terms of their indenture they were promised food, clothing, shelter, medical aid, and the right to own property. For the most part they were well treated, but there were frequent instances of brutality. Masters did not have as strong an economic motive to protect these short-term servants as they did Negro slaves, who were a lifetime investment. At the end of their period of service the redemptioners were to be provided with an outfit as defined in the contract; in the southern Colonies they usually had a headright entitling them to 50 acres of free land. Attesting to the quality of this class as a whole is the fact that thousands of them acquired capital and became prosperous farmers or even planters, as well as mechanics, artisans, and merchants.

There were draw-backs, however, to the use of indentured-servant labor. The initial transportation cost was fairly heavy, the servants had to be acclimated, and the death rate was high, particularly in the last half of the seventeenth century. They provided only a temporary and constantly fluctuating labor supply.

Most of the growth in population of the English Colonies along the Atlantic coast in the seventeenth and eighteenth centuries was the result of natural increase rather than of the influx of indentured servants and slaves. It has been estimated that in 1640 there were 28,000 settlers in the Colonies; in 1660, 85,000; in 1690, 214,000; and in 1770, 2,205,000. Of the immigrants who came after the initial settlements were established, probably one-half landed as indentured servants (93, 96, 137, 184).

The first Negro slaves in the English Colonies were landed by a Dutch privateer at Jamestown in 1619. They were sold to the colonial government, which in turn sold them to planters along the James River. It was not until 1630 that a second cargo of Negroes was sold in the Virginia settlements. From 1635 on, a small number was imported nearly every year, partly from England and New Netherlands, but mostly from the West Indies. Despite the shortage of labor, Negroes were not popular at first, and even in 1690 there were only 5,000 in the tobacco Colonies. However, at the end of the seventeenth century the English Government restricted kidnaping and attempted to check the sending of convicts to America. As a result direct slave trade with Guinea developed, and slaveholding began in earnest. It is estimated that there were 400,000 slaves in the Colonies in 1760 and

that three-fourths of them were in the southern Colonies. The slaves made up about two-fifths of the entire southern population. They constituted only a small percentage of the inhabitants of North Carolina and Maryland but in South Carolina outnumbered the whites 2 to 1.

In the early days the legal status of the Negroes was vague (91). The court records of 1661 speak of Negro servants or merely Negroes and never refer to them definitely as slaves. A few were described as servants for a term of years, others were conceded property rights, and some were liberated by the courts as having served their terms. Nevertheless, holders of Negroes were falling into the custom of considering them servants for life. The more astute saw that, if well directed, Negroes were capable of tending tobacco, rice, indigo, or other staple crops, and with their labor a planter could produce staples at a profit.

Yet even at the time of the American Revolution many southerners were urging the abolition of Negro slavery, and had it not been for the rising interest in sea-island cotton and the problem of the disposition of the Negroes in the Charleston district, manumission might have occurred at that time (91).

Slave labor was poorly adapted to the varied activities of economic life in the North. Generally speaking, northern agriculture could not employ gang labor, nor were there any year-round tasks to occupy the slaves. Slavery did prove profitable, however, to Yankee merchants and shipmasters who shared the monopoly of the slave traffic with the British. The usual procedure of the Yankee slave ships--the famous triangular trade--was as follows: The New England vessels carried rum and other commodities to the Slave Coast of Africa and exchanged them for Negroes. This cargo in turn was taken to the plantations of the West Indies or the southern mainland Colonies and exchanged for sugar and molasses or tobacco, which was then taken back to the home port. The "middle passage," that is, the trip between Africa and the West Indies, was where slavery revealed its gloomiest aspect. The Negroes who had been kidnaped in the interior behind the Slave Coast were placed in heavy chains and packed in the holds of the ships, where they suffered during the many slow weeks of transit. It was on this sort of trade that many New England fortunes were founded.

Crops

In growing their first field crops the early colonists turned to the numerous natural clearings or openings of the Atlantic Coastal Plain (25, 39). These openings were found mostly along the banks of rivers and small streams. Many of them were probably old cornfields abandoned by the Indians, while others resulted from the Indian practice of burning underbrush as an aid in hunting.

Shortly, however, the immigrants to the New World had to turn their efforts to clearing land of vegetation, and this proved a formidable task. It continued to be a basic feature of American agriculture until the pioneers of the westward movement had reached the prairies of western Indiana and Illinois. The sunlight had to be admitted to the soil, and the obstructions to tillage, such as stumps, roots, and

stones, had to be removed. Whatever may have been their original conception of the task before them, the English settlers soon adopted the Indian method of girdling and burning trees in order to prepare land for cultivation.

As already intimated, Indian corn or maize became the universal crop, owing to its advantages under pioneer conditions of cultivation. Since it was indigenous, there was always reasonable assurance of a successful crop. The manner of cultivating it fitted in with primitive methods of clearing, and therefore it was a labor-saving crop. It also yielded more food per acre than European grains.

Probably all of the crops familiar to the colonists in their homeland were tried at some time or other. Wheat, rye, barley, oats, buckwheat, and peas became important crops, in the order named.

The first attempts to raise wheat were not successful, but by 1640 it became important in New England, judging from the fact that it was received in payment of taxes at that time. The Connecticut Valley with its fertile alluvial soil was the best grain-producing region of New England, and may well be designated as the first wheat belt of America (25, pp. 92-94). The middle Colonies also raised wheat and from the very first attempts were more successful. About 1660 the wheatfields of eastern Massachusetts began to be affected by what was called the wheat blast, now recognized as black stem rust. Within a few years it had spread to the Connecticut Valley. In spite of the diverse explanations given by learned contemporaries, a general relationship between the presence of common barberry and the "blast" was recognized, and legislation was enacted to encourage the eradication of the bushes. Wheat also became important in the middle Colonies, to such an extent, in fact, that they came to be referred to as the "bread Colonies."

Rye yielded better than wheat on light sandy and gravelly soil and was especially important along the banks of the Delaware, where Swedes and Finns had settled in an attempt to found a New Sweden. Just as this particular specialization was due to a racial emphasis, so was the production of oats. This grain was produced in abundance as feed for livestock, but only after the Scotch-Irish had come in considerable numbers did the colonists of English descent begin to use oats for human food.

Livestock

When the white man first came, the New World had few domesticated animals and none that could be used in conquering and developing the soil. Within the limits of the present continental United States, the dog was the only domestic animal that was practically universal among the Indians, who used dogs for transportation, hunting, protection and companionship, or food, the use differing according to locality. It was therefore necessary for European settlers in America to import livestock from the mother countries. Because of the distance and the small size of ships at that time, there was a pitiful scarcity of livestock in some of the settlements during the early years. The losses incident to transit of the Atlantic Ocean were heavy, and it was difficult for the early settlers to provide forage, shelter, and protection for the animals. Another factor was the amount of capital behind the particular colonizing enterprises. Plymouth, for example,

was without cattle for 3 years and had no horses or sheep as late as 1627. The Swedish and Finnish communities along the Delaware were also without an adequate number of livestock for a number of years. The Massachusetts Bay Colony, on the other hand, seems to have had a sufficient supply practically from the start.

Eastern North America did not have an abundant supply of indigenous nutritive forage plants, and it was some time before the early settlers realized this fundamental deficiency. Their livestock was dependent for pasturage on the forage in the open places in the woods where fires had destroyed the underbrush or where natural openings occurred. To the early settlers two native grasses, wild-rye (*Elymus* sp.) and broomstraw (*Andropogon* sp.), looked promising, but it was soon discovered that although cattle could subsist on these in the summer, the hay made from them had too high a proportion of roughage to be adequate for winter feeding. Eventually the familiar forage plants of old England were introduced, either consciously or accidentally, and once started they spread rapidly. Our important hay and pasture plants of today—timothy, bluegrass, and red and white clovers—are thus a product of the initial necessity of the livestock industry in America (25, pp. 19-20).

The need of an adequate supply of hay and pasture continued to be a pressing problem not only throughout the seventeenth century but during the eighteenth as well. The cattle were dependent on the annual grasses in the forest openings, and with the increase in numbers of stock the grasses were grazed so short that natural reseeding was prevented. The custom of burning underbrush during the fall months also tended to hold back this process, and droughts further decreased the supply of pasture and hay. As the eighteenth century progressed, more attention was given to what were called "artificial meadows," that is, uplands seeded with red clover, timothy, and other English grasses. This movement was probably inspired by the German-settled communities in the neighborhood of Philadelphia (177, 178).

The management of livestock during colonial times, as in most pioneer periods, may be politely described as rudimentary. The problem of confining the animals to definite localities was not easy to solve. Erecting fences required considerable labor and was especially difficult in the middle and southern Colonies where the settlements were largely individual rather than community affairs. In New England, community settlement made common pasturing possible. There the fences were usually around the cultivated fields rather than the pastures, and the community hired one or more herders to watch the livestock. Hogs, being difficult to confine, proved very troublesome, and it is not an exaggeration to say that they were probably the subject of more legislation than anything else in agriculture during the colonial period. There was also much legislation concerning brands and earmarks (217, 218).

Livestock received little shelter in the seventeenth century and very little more in the eighteenth. This was largely the current practice in the mother country at that time, and there are indications that the settlers did not immediately realize the effect of the severe American winters on livestock. Besides, the scarcity of labor made it difficult to erect barns or even sheds, and there was also the problem of a feed

supply. In the course of the eighteenth century, housing the livestock in winter became a regular practice in New England and New York, but in the Colonies to the south, the livestock continued to shift for themselves as best they could. There was, however, one striking exception—the thrifty German farmers of Pennsylvania kept fewer animals but stabled them during the winter and fed them well.

Colonial Agriculture as Affected by the Policies of England and the Colonies

Contrary to popular belief, legislative regulation of American agricultural production is new only in detail; in principle, it began with our earliest settlements. In accord with the view of other imperial powers of the seventeenth and eighteenth centuries, England expected her colonies to furnish raw materials and serve as a market for the mother country's finished products. Particularly was Britain anxious to stimulate colonial production of commodities for which she was then dependent on other European countries. The measures taken to foster this general policy, commonly known as mercantilism, included tariffs and rebates, subsidies, price regulation, seed distribution, and even acreage control (20, 21, 22). Conforming in large measure with imperial legislation were enactments of the separate Colonies seeking to stimulate or discourage the raising of certain crops.

The history of tobacco regulation is in many respects the most illuminating example of the methods and effects of mercantilism (89). In 1612 it was found that tobacco could be profitably grown in Virginia, and the colonists, stirred by the high returns, began planting it almost to the exclusion of the essential food crops. Sir Thomas Dale, Governor of Virginia, before sailing for England in 1616, found it necessary to order each person to plant at least 2 acres of corn for himself and for each male servant. Tobacco growing continued to increase, however, and the acreage devoted to it was restricted again and again in order to prevent glutting the English market and to insure an adequate food supply.

In response to early high prices farmers in England attempted tobacco raising, but the cost was so great as compared with that of colonial tobacco that various laws were passed between 1619 and 1652 restricting home planting. At the same time, Spanish importations were discouraged by discriminatory tariffs. This gave Virginia, and later Maryland, a monopoly of the English tobacco market, though subject to both custom and excise duties. The supply, however, soon exceeded the demand. Prices were depressed, and because tobacco had become the chief exchange medium for Virginia, price fixing seemed particularly desirable. In February 1631/32, the Virginia Colonial Assembly provided that tobacco exchanged for English goods was not to be sold for less than 6 pence per pound, under penalty of imprisonment. By 1639 production had become so excessive that a crop-curtailment and price-fixing agreement was made between the colonial authorities and the principal merchants. The crops of 1639, 1640, and 1641 were to be limited to 1,200,000 pounds of good quality, and the merchants agreed to accept 40 pounds for each 100 pounds of indebtedness due them. Viewers were appointed to destroy inferior tobacco, and if necessary to burn excess crops, and in exchange

the tobacco was to be rated at not less than 3 pence per pound (91).

England at first attempted to monopolize all of the colonial tobacco exports, but when it became apparent that such a policy would be ruinous in view of the glutted market, reexportation to other European countries was permitted. The restriction requiring all shipments to be sent to England and then reexported, subjecting them to English as well as foreign custom and excise levies, evoked considerable criticism. To temper the rigor of this policy, an elaborate draw-back system by which part of the tariff was remitted on reexportation was begun in 1631, and after 1723 the entire duty on the reexported commodity was remitted.

The spread of tobacco growing from Virginia to Maryland and North Carolina during the course of the seventeenth century aggravated the surplus problem. As a result, various intercolonial pacts were projected with a view to restricting production. More successful were the efforts at standardizing quality by a system of central warehouses and the inspection of export crops by licensed officials. These provisions were enacted in Virginia in 1730 and in Maryland in 1747.

Despite all attempts at limitation, the volume of tobacco exports grew from 27,750,000 pounds in 1665 to over 100,000,000 on the eve of the Revolution, with a value of £900,000 in 1770. It is probably true that on the whole production was profitable, at least for planters who were able to employ slave labor. One authority holds that it was owing to English restrictions on Continental trade that colonists suffered at periodical intervals from low prices, particularly after 1680, and that this in turn led to the use of slaves. This view has been disputed, however, by others, who stress the the marketing services extended by English merchants, the draw-backs granted the colonists, and the value of the monopoly of the English market (114, 208).

Cotton was not of particular importance in colonial agriculture, though South Carolina was exporting a million pounds annually by the end of the colonial period. Rice and indigo were developed as money crops before the end of the seventeenth century and like tobacco were subject to detailed regulation.

In 1677 the proprietors of South Carolina wrote that they were attempting to secure rice seed for distribution, while an act of the assembly of 1695/96 included rice as one of the commodities that might be tendered in payment of quitrents. Considerable experimentation in rice planting took place in the two decades between 1695 and 1715, and with a surplus available for exporting, the colonists sought to repeal the English tariffs on rice. Portugal and the West Indies offered a profitable market, but the direct trade that resulted was contrary to the purpose of the navigation acts, and in 1704 rice was added to the list of commodities required to be sent to England and subjected to payment of duty before being reexported.

The Portuguese trade, as a result, was greatly diminished, and protest from the colonists took the form of memorials to Parliament and increased smuggling. Parliament relented in 1730 to the extent of permitting direct trade to any part of Europe south of Cape Finisterre in Spain. This encouraged the rice planters to increase production. Later, however, it became apparent that the northern

markets were far more important than the southern; in the decade 1730-39, for example, 74 percent of the rice exports went to Holland, Hamburg, Bremen, Sweden, and Denmark. Like tobacco the bulk of the rice crop was then sent to England to be reexported and through draw-back provisions largely escaped British duties.

In the early years of South Carolina, rice was specified as a commodity to be accepted for certain public payments, and legislative decrees attempted to establish its exchange value. There were also laws to prevent deceitful packing and to standardize the quality of exports.

To stimulate the production of indigo, instructions to accept it in place of quitrents were sent to the South Carolina authorities in 1690, and in 1694 an act was passed to provide special encouragement for growing it. It was not until the 1740's, however, that the indigo industry developed to any considerable extent. In 1734 Parliament had placed indigo on the free list, and a decade later the South Carolina Assembly offered a bounty, but the act was repealed after 1 year. Great Britain, in response to petitions from English clothiers and dyers and colonial planters, granted a premium in 1748 that was continued, although at a modified rate, until 1777. This gave the industry a tremendous impetus, and it is said that the indigo planters were able to double their capital every 3 or 4 years. England received the entire indigo crop, which before the Revolution exceeded a million pounds a year (91).

Prior to 1700 Great Britain imported all her hemp and flax from the Baltic countries and Holland. To escape this dependence, a bounty of £6 per ton was placed on colonial-grown hemp, and in 1721 it was exempted from duty and the bounty continued for 16 years. These measures had very little effect, but after 1764 there was a revival of interest, and new bounties of £8 per ton of hemp or flax were offered from 1764 to 1771 and of £6 from 1771 to 1778. In addition to these imperial bounties, numerous subsidies were offered by the various Colonies. Despite all the legislation these products never became important items of exportation.

Lumbering and the production of naval stores were essentially agricultural pursuits in the colonial period, being carried on mainly by farmers and planters. Despite the abundance of timber these industries did not develop in America until the opening of the eighteenth century, and then only under the stimulus of the mother country's desire in typical mercantilistic fashion to escape dependence on Baltic imports. A schedule of premiums was drawn up in 1704/5 by Parliament, and arrangements were made for a surveyor of woods to instruct the colonists in methods of naval stores production. In 1713 Parliament further set aside £10,000 to employ skilled people and the necessary tools for fostering the industry.

In all the Colonies the production of tar and pitch as well as the lumbering industry was subject to considerable legislative regulation and aid. Qualitative standards were set up with penalties and officials to enforce adherence.

With the Italian Piedmont alone draining over £200,000 bullion from England for silk, the efforts to raise this product in the Colonies were especially persistent. Numerous mulberry trees were found growing in Virginia, and silkworm eggs were imported by the Virginia

Company from Italy, France, and Spain. The colonial assembly in its first year, 1619, supplemented these efforts by an enactment requiring each man to plant 6 mulberry trees annually for 7 years. In 1654 Armenian silk experts were imported, and in 1656 an allowance of 4,000 pounds of tobacco was voted to one of these experts by the Virginia Assembly. Bounties for production were offered in 1658, and in 1662 every landowner was ordered to plant 10 mulberry trees properly fenced and tended for every 100 acres of land he owned. As late as 1730 it was reported that 300 pounds of raw silk had been exported from Virginia.

The Huguenot settlers of South Carolina were interested in the silk industry, and acts of 1736 and 1744 offered sizable rewards for silk growing. Results were meager, only 651 pounds of raw silk being exported from 1742 to 1755. In Georgia particularly every effort was bent toward stimulating silk production. Foreign experts were sent out by the Trustees of the Colony; a nursery of mulberry trees was established at Savannah, and 4 public filatures—establishments for reeling silk—were erected; books and free instruction were provided; and each grantee of a 500-acre tract had to plant at least 2,000 white mulberry trees. In 1740 membership in the newly established assembly was made conditional upon the planting of 100 mulberry trees, and after 1753 no one was admitted who did not annually produce 15 pounds of silk and conform to the law requiring a certain number of female slaves to be sent to Savannah for instruction in the silk industry. The high point in Georgian silk exports was reached in 1766-67, when 1,084 pounds were shipped out; by 1772-73 the figure had declined to 485 pounds (91).

Attempts to grow silk were not confined to the southern Colonies; similar visionary hopes were entertained in the northern Colonies (25). Mulberry trees were common, and many families succeeded in actually producing some silk.

Trade and Markets of the English Colonies

By the third quarter of the seventeenth century the main tendencies of colonial trade were already well defined. New England, with its relatively unproductive soil but numerous harbors, excellent resources for shipbuilding, and proximity to the fishing banks, was turning more and more to commercial activities. Its export staples—fish, timber, whale products, grain, and ships—entered into competition for the most part with the products of old England, and consequently New Englanders sought markets in southern Europe and the West Indies. The islands, absorbed as they were in sugar production, afforded a natural outlet for surplus fish, salted meat, timber, and horses, and already the famous three-cornered traffic involving New England rum, African Negroes, and West Indian molasses had begun to develop. Boston and Salem were flourishing shipping centers, not only for the overseas trade but for the coastwise traffic, which more and more was absorbing the energies of New England traders and shippers (137).

Of the middle Colonies, the Jerseys and Pennsylvania did not develop until the last quarter of the century. New York, however, under both Dutch and English rule, early turned to fur trading and grain production, and by 1678 Governor Andros reported an annual

export of 60,000 bushels of wheat from the Colony. The principal market for this trade was the West Indies. The importance of the middle Colonies as fur-trading and bread-producing regions became more marked by the close of the seventeenth century when the Jerseys and Pennsylvania were also exporting pelts and grain (4).

The commerce of the southern Colonies was far more important than that of the other groups during the seventeenth century. The climate, soil, natural resources, and topography adapted the country to the production of the staples demanded by England, and by 1700 southern trade with the mother country was valued at two-thirds that of all the mainland Colonies. Virginia, with its tobacco, was foremost; its great crop was exchanged in England for clothing, iron, wines, and manufactured goods. Maryland, too, became a large exporter of tobacco (91).

Foreign trade was by far the most important during the entire colonial era, but domestic trade gradually grew in proportion and significance during the eighteenth century. Overland traffic was difficult because of the lack of transportation facilities. Only a few products—valuable articles of small bulk such as furs, whiskey, iron supplies, and salt—could be carried profitably in this trade. Nearer the coast there was a relatively greater density of population, and centers like Boston, Newport, New York, Philadelphia, Baltimore, and Charleston sponsored market fairs and created a considerable demand by the opening decades of the eighteenth century. Even here, however, water transportation was much cheaper, and the Hudson, Delaware, and Susquehanna Rivers provided excellent arteries of trade. Domestic traffic was largely coastwise. This was due partly to the fact that products were collected at a few important points for shipment to Europe or to the West Indies, while imported articles were distributed to smaller ports. Nevertheless, New England was shipping its own salted meats, cider, fish, and rum to the middle and southern Colonies; by 1714 New York was sending wheat and flour to New England and South Carolina; and before the end of the colonial period, Pennsylvania pig iron and paper and Rhode Island cloth and candles were common in most of the Colonies. With the population only a little over 4,000,000 as late as 1800, the domestic trade could not expand to any great proportions (114).

In addition to these early beginnings of internal trade the eighteenth century was marked by the increasing importance of the West Indian traffic. New England came to depend upon the islands for molasses and sugar with which to make rum, a necessary article in its African trade; for currency with which to buy manufactured goods from the mother country; and for a carrying trade—an outlet which used many of her men and much of her capital. So vital was this trade that it continued in spite of the Molasses Act of 1733 and the French and Indian wars of the 1750's. The traffic in African slaves also expanded rapidly with both the West Indies and the mainland (3).

Two of the chief obstacles to the expansion of colonial trade were the inadequacy of transportation facilities and the scarcity of metallic money. It has already been pointed out that the overland trade to the interior was negligible owing to conveyance difficulties, though the use of Conestoga wagons rounded at the bottom to prevent the

contents from spilling was helpful for short distances and on good roads. The ocean trade too was seriously hampered by the lack of shipping facilities, especially in the South. The vessels sent by the London commission merchants who handled most of the trade usually arrived in the late fall or early winter. The captains leisurely proceeded to collect cargoes from the scattered plantations, and it was not until the following spring that they returned to England. The delay bore heavily on the planters, who in 1659 were paying £6 to £7, or about 18 percent of their gross sales, to send a ton of tobacco to England. After paying the expenses of customs, commissions, freight, and other charges they received only 35 percent of the gross sales, so that shipping costs actually equaled half their net income from the crop. Even as late as 1737, £7 per ton was regarded as low; and in wartime the charge might rise as high as £15. Added to this was the dearth of ships. Merchants tended to send too few rather than too many, since this placed them in a better bargaining position and prevented losses when the tobacco taken did not repay the outlay for the chartered vessels. As long as the planter had a clear account he could exert some pressure on the merchant, but when he fell into debt, as was generally true, he became more and more subject to the will of the commission agent. It is no wonder that the southern planter complained bitterly against the restrictions that kept out Dutch and Portuguese shippers and limited the field to the British and colonials (91).

Until far into the eighteenth century piracy was another factor complicating the transport problem. It flourished along the American coast, especially in the West Indies and the Caribbean Sea, where there was plenty of booty and many chances of hiding among the islands. From 1689 on through the eighteenth century England was at war with France, and at various times Spain also was a belligerent. The navies of these countries were kept busy, and the existence of hostilities made possible a good deal of piracy, disguised as legitimate privateering. In 1698 England passed a very stringent law against piracy and employed her navy to act as a convoy for merchant ships. By 1720 the Atlantic Ocean had become relatively safe as a highway of trade.

The absence of an adequate circulating medium also retarded colonial trade. Precious metals were lacking, and the exportation of British coins was forbidden by law. The coins that were circulated came chiefly from Spanish, French, and Portuguese colonies and from the West Indies. Spanish "pieces of eight" were most popular, but since they were subject to "clipping" and "swearing" and might contain varying quantities of metal when minted, their value was hardly stable. Massachusetts from 1652 to 1684 coined the famous "pine tree shilling," worth 75 percent of an English shilling.

In 1690 Massachusetts also issued bills of credit, and soon the other Colonies were printing treasury and land-bank notes. Depreciation was so general that in 1751 Parliament forbade the issuance of paper money in New England and extended the restriction to other Colonies in 1764. Lacking any other medium, the colonists were obliged to resort to barter or staple money for local trade at least. In Virginia and Maryland tobacco was stored in warehouses, and the receipts or

notes were recognized as money. Massachusetts made corn and beaver skins legal tender, and the Carolinas used tar and rice. To preserve this currency at a uniform standard was very difficult since the market value of the commodities fluctuated widely (115, 136).

More than all else, the navigation acts and the general trend of the mercantilist policy are usually interpreted as having been iniquitous influences on colonial trade. From Adam Smith to the present, writers have insisted that the system violated natural rights and had dire consequences. England was determined to maintain a favorable balance of trade, hoard gold and silver, strengthen native shipping, and employ the Colonies as subsidiary units producing noncompetitive raw materials. The long series of acts passed to promote these ends was a factor in colonial commerce, but to what extent and with what results it is difficult to say (12).

The navigation acts were initiated as part of the struggle between England and Holland for the world's carrying trade. The first law was passed in 1645, and was amplified and extended in 1651, 1660, 1663, 1672, and 1696. The act of 1651 is famous for the monopoly it gave the English or colonial shippers in the carrying trade. The act of 1660 added to the monopoly of navigation that of colonial commerce and markets. It prohibited the shipping of sugar, cotton, wool, tobacco, ginger, "fustick," or other dye woods, as well as anything grown, produced, or manufactured on English plantations in America, Asia, or Africa to any place whatsoever except England. The list was expanded in 1706 to include naval stores, including pitch, tar, turpentine, hemp, yards, and masts. Rice was included in the ban during 1706-30, copper ore and furs were added in 1722, molasses in 1733, and whale fins, hides, lumber, iron, raw silk, and pearlsh—wood ashes used in soap making—in 1764. Nonenumerated articles, the chief of which were grain, fish, and rum, could be exported anywhere until 1766, but after that only to ports south of Cape Finisterre (91).

The acts of 1663, 1673, and 1696 attempted to prohibit the importation of any European goods into the Colonies unless brought via England and in British- or colonial-built and manned ships. To round out this commercial policy, the English Government took steps to control or discourage the few infant industries which sprang up in the Colonies.

While the Old Colonial System stressed the interests of the mother country to the disadvantage of the colonials, the effects on the latter were by no means disastrous (114). The Colonies were primarily agricultural, and it was natural that they should devote themselves to the extractive industries. Furthermore, such bounties as those on naval stores and indigo were the determining factor in the production of commodities. The prohibition of tobacco growing in England was beneficial to the planters of Virginia and Maryland, and high duties kept Spanish tobacco out. Similar treatment of other foreign commodities—iron, silk, whale oil, pearlsh, and molasses for example—resulted in similar benefits. The duty on commodities bound for the Colonies via England was generally refunded, so that in some cases the colonists could purchase goods more cheaply than could their British brethren. In the case of goods reexported to the Continent the system of draw-backs enabled colonial goods to escape the tariff.

Another moderating influence was the general evasion of the navigation acts, particularly in the first half of the eighteenth century when Robert Walpole's philosophy of "salutary neglect" dominated the attitude of the mother country toward the Colonies. Smuggling was common; courts failed to convict; and later, when admiralty courts were established, the conflict between admiralty laws and the common law courts impeded enforcement. There was also much collusion with imperial customs officials. The Molasses Act of 1733 was a mistake, but economic pressure was too great to permit its enforcement. It remained a dead issue until 1763 at least.

England, moreover, was the natural entrepôt, or distribution center, for the Continental trade. It was the best market for most of the colonial produce; its merchants offered credit facilities for colonial planters; and as Englishmen they could best deal with fellow Englishmen.

It is true there were disadvantages resulting from this regulatory system. While shipbuilding and related industries were stimulated in the northern Colonies, the monopoly of the carrying trade by English and colonial shippers tended, as already shown, to make freight rates high. The middleman's profits for manufactured goods and even for the southern raw-materials trade went into the pockets of the English merchant. Another disadvantage was the constant draining of gold from the Colonies to the mother country. Finally, the more stringent enforcement of the commercial policy after 1763 worked a measure of hardship and aroused resentment (137).

AGRICULTURE IN TRANSITION, 1775-1860

Agriculture and the Revolution

It is now generally recognized that the American Revolution was social as well as political. The struggle was waged not only against parliamentary and royal oppression; the enemy included local tyranny as well. Leadership was supplied by merchants and lawyers and planters who had economic as well as ideological differences with England. The driving force of the Revolution, however, was furnished by city laborers and mechanics, small farmers, and backwoodsmen. Often during the "simmering period" the middle-class elements wondered whether their leadership was anything more than nominal, as they found themselves driven more and more to assume a congenitally unpalatable extremist position.

Just as a closed corporation of large landed and commercial interests operated the levers of control in eighteenth-century England, so their prototypes formed the governing caste in America. The constituent elements, most of whom became Loyalists, were the colonial administrators, their friends and clients, the rich planters, the upper clergy, the more prosperous of the professional classes, the merchants whose interests coincided with England's—in short, the most cultivated, the most influential, and the wealthiest. Many rungs below were the smaller merchants, the less prosperous of the professional classes, the indebted planters, the newer families; in this group were Otis, Jay, the two Adamses, Henry, Franklin, Hancock, and Washington. These

men cherished a half-expressed ambition to play a more prominent role in political and social life; they were activated also by antagonism to imperial policies that struck at their economic interests. It is equally true that on emotional and intellectual grounds they believed that a greater degree of local control would benefit the Colonies. Yet their alliance with the city and the frontier elements was at best a marriage of convenience. If they shouted against imperial "taxation without representation," still there were many among them who would withhold the suffrage and deny representation in the assemblies to the city landless and the mass of small farmers (1,131).

It can also be understood why the agrarian elements should have been attracted to the Revolutionary cause. The backwoodsmen had several grievances against English policy. They resented the Proclamation of 1763, which would have shut off westward expansion; they opposed the prohibition of the issuance of paper money; they sought more liberal land policies; and perhaps most patent of all, they had a sense of local self-sufficiency that was naturally hostile to outside interference.

Their grievances against the colonial governments were even more immediate. The struggle between frontier and seaboard—between old settlements and new—is familiar to every student of society; in the America of a continuously expanding westward movement it is a particularly familiar—perhaps even overworked—theme. In the back country, from Maine to South Carolina, grew up a distinct society composed of small farmers and trappers with little property but considerable courage and initiative. Their philosophy, so far as it was articulate, was democratic and individualistic; it contested the right of the seaboard to exercise political and economic domination. In Virginia it was the Piedmont against the Tidewater; in Pennsylvania, the western farmers against the wealthy Quakers; and in New England, the frontiersmen versus the wealthy coast townsmen.

In the economic sphere the issues at stake were the interests of small, debt-ridden farmers who sought in paper money both an escape and a medium of exchange, as opposed to the creditor and propertied powers of the coast to whom depreciated money meant partial cancellation of loans they had made. In land legislation it was the settler's opposition to absentee landlordism and speculation. Farmers who cleared the land and fought the Indians desired exemption from taxation.

Frontiersmen also took their stand against property qualifications and the careful allotment of representation by means of which colonial governments were controlled before the Revolution. In Pennsylvania, for example, Chester, Bucks, and Philadelphia elected 26 delegates to the assembly, while the five frontier counties although having a considerable majority of the population were allotted only 10 representatives. Virginia's 19,000 voters below the fall line similarly legislated for over 30,000 colonists living elsewhere. These conditions stimulated attempts on the part of the western settlers to break away and form new states in Virginia and the Carolinas. The colonists also charged that tax officials were corrupt and that justice was expensive, slow, and far away.

So far, then, as the small farmers and frontiersmen took up arms in response to their interests, it was a twofold gain that they sought: (1) To

strike at imperial control, and (2) to gain a share in local government.

At the opening of the Revolution there were 2,750,000 people in the Colonies; about 700,000 of these were men between the ages of 18 and 60. At no time were more than one-eighth of this number under arms, and during most of this period not more than one-sixteenth. There was widespread apathy concerning the war. The back country did, however, play a role of some importance in the struggle. British armies could not make any permanent conquests in the interior. The failure of Burgoyne in New York is partly attributable to unexpected frontier resistance, and after winning most of his battles Cornwallis lost in the South because he could not hold his gains. George Rogers Clark had a part, in winning the Old Northwest.

On the whole agricultural life went on much as usual. New England, after the first year of the war, except for the occupation of Newport and a few raids along the coast, was free from invasion. New York, New Jersey, and Pennsylvania suffered from the depredations of both armies. This was compensated for by the liberal prices paid in gold by the French and British for supplies from the farmers, many of whom were only too willing to sell.

American agriculture as a whole was stimulated rather than injured by the war. Blockade runners carried Virginia tobacco to Europe, and the last 20 years of the eighteenth century were comparatively a golden age for that crop. In 1774 production totaled 101,800,000 pounds of leaf tobacco; by 1790 the figure had risen to 130,000,000, with one-half of the southern population engaged in or dependent on tobacco growing. Rice cultivation and export also went on with little interruption. In 1778 the first water mill for cleaning and preparing rice for market was erected on the Santee River. The cessation of imperial bounties cut the ground from under the indigo industry, but cotton came to supplant it. The legislatures of Maryland, Virginia, and South Carolina encouraged cotton growing to fill local needs during the war. The same was true of wool production, which was stimulated by interference in trade due to nonimportation agreements and the outbreak of war.

The exodus of the Tories in the course of the war permitted division of many large estates and the abolition of the last vestiges of the feudal system. As late as 1769, five-sixths of the population of Westchester County, N. Y., lived on manor lands. In 1777 the Continental Congress recommended that the Colonies confiscate and sell Loyalist property and invest the proceeds in loan certificates. Little external stimulation was needed; New Hampshire appropriated 28 estates, including that of Governor Wentworth; Massachusetts seized the estates of all who sided with England; New York confiscated the 50,000-acre manor of Sir John Johnson, the Philipse manor of 300 square miles, the Morris estate, and other large holdings, which were broken up and sold in 500-acre lots; and Pennsylvania took over the property of the Penn family. After the Revolution, in response to treaty promises, a few feeble gestures in the direction of remuneration were made. However, the political and social power that went with these great landed holdings was never restored.

Along with confiscation and land division came a more democratic mode of land tenure. Under the leadership of frontier "radicals"

like Jefferson, quitrents were abolished; by 1786 entail, by which land was settled permanently on a person and his heirs, had been made illegal in every State but two; and the other aristocrat-fostering device, primogeniture, the exclusive right of inheritance of the first-born, disappeared by 1791 so that a farmer could hold his land in fee simple and dispose of it as he pleased (133). A few years after the Revolution, moreover, particularly by the Ordinances of 1785 and 1787, a constructive policy of colonization and land sale and settlement was inaugurated.

National Consciousness and Agriculture

The triumph of the patriot cause in the Revolutionary War brought a quickening of national consciousness in the new country. In every phase of life—political, economic, social, and intellectual—a peculiarly American note was sounded. Having won independence, the leading citizens of the new country seemed resolved not only to create a Nation that had a recognized place among the countries of the world but one with distinctive rather than inherited or borrowed ways of life.

Agriculture too seems to have been affected by this nationalistic movement. Practical farmers in regions where agriculture was rapidly becoming commercialized began to use gypsum on wheatlands and grasslands (25, 88). Clover and other cultivated grasses also came into fairly general use in these regions. Although such changes had no immediate and widespread influence on agricultural production, when considered with the organization of agricultural societies and the beginning of American agricultural literature, they indicate the awakening of a new and enthusiastic interest in agricultural improvement. Washington, Jefferson, and many other prominent leaders were familiar, either by correspondence or by personal observation, with the revolutionary changes that were taking place in the agriculture of England, and the contrast with the stagnant conditions at home was a challenge (121, 167, 195).

To popularize in America the knowledge of the new methods of farming, leaders organized agricultural societies. The first of these organizations was the Philadelphia Society for Promoting Agriculture founded in 1785 (189). Within 15 years similar organizations were at work in Charleston, S. C., Hallowell, Maine, New York City, New Haven, Conn., and Boston, Mass. The membership of these groups consisted for the most part of men of all professions rather than dirt farmers, and the main objective was the dissemination of information concerning the agricultural progress in other countries. These societies were, therefore, literary or learned rather than practical and made few if any direct contributions to actual farming.

These early societies were pioneers, however, in the great task of agricultural education. Their transactions provided the reading public with accounts of the best agricultural practices abroad as well as the results of experiments in scientific agriculture in America.

Land Policies and Democracy, 1785-1862

Many students of American history hold that the laws concerning the disposition of the public domain have been the most significant

legislation that the Federal Government has enacted. Certainly these laws have been a vital factor in determining the rate of the westward movement of settlement and the drain of population from older communities; furthermore, the development of manufacturing and its labor supply have been notably affected.

Having won the world-wide conflict which ended in 1763, the English were confronted with the problem of governing and settling the vast empire consisting of what is now Canada and the region westward from the Appalachian Mountains to the Mississippi River. The absence of a strong majority party in the British Parliament and Cabinet in this crucial period precluded the possibility of drafting and executing a well-organized and constructive colonial policy. Furthermore, at this time there were not more than three political leaders in all England who clearly saw the importance of the problem. An added complication was the fact that, with the removal of France as a colonial power in North America, the American colonials breathed more easily and felt more independent.

The halting and little-comprehending efforts to solve this problem of the western empire ended in failure. The struggle which England had carried on in all parts of the world had created a vast debt, and it was natural for the British leaders to contend that the Americans should assume at least part of the responsibility for maintaining military posts on the American western frontier to hold the Indians in check and should help in paying off the national debt. This belief led to a series of financial measures which generated resistance in the American Colonies and led directly to the American Revolution. A factor in this resistance was undoubtedly the economic depression which followed the cessation of war in 1763. Meanwhile westward progress of colonial farmers provoked a series of conflicts with the Indians, and the Imperial Government by the Proclamation of 1763 and supplementary action sought to regulate this movement westward. The treaty of 1783, which recognized American independence, also gave the United States control of the vast domain south of the Great Lakes and west of the Alleghenies, thus leaving to the new Nation the problem which had confronted the mother country in 1763—that of settling and governing this western empire.

Fortunately for the future development of the United States, the States with claims to western land were induced to cede them to the Congress of the Confederation (2, 111, 112). Furthermore, after a few preliminary steps Congress enacted the Ordinances of 1785 and 1787. The first of these laid down the basic principles of land disposition to which the United States has adhered, and the second provided the principles of procedure which were generally followed with reference to all territories from the Appalachians to the Pacific. As Frederick Jackson Turner said,

This federal colonial system guaranteed that the new national possessions should not be governed as dependent provinces, but should enter as a group of sister States into the federation. While the importance of the article excluding slavery has often been pointed out, it is probable that the provisions for a federal colonial organization have been at least equally potential in our actual development. The full significance of this feature of the Ordinance is only appreciated when we consider its continuous influence upon the American territorial and State policy in the westward expansion to the Pacific, and the political preconceptions with which

Americans approach the problems of government in the new insular possessions (192, p. 132).

The Federal land policies which developed from the Ordinance of 1785 were conditioned by struggles between different schools of political thought, different sections, and different economic groups (115). On one side were those who urged that the Government should dispose of its land with prudence; in the opposite camp were those who demanded a generous land policy. Starting with the first viewpoint in dominance and gradually swinging to the other extreme, the clash of these divergent views constitutes the central theme of the history of American land policies during the eight decades preceding the enactment of the Homestead Act of 1862 (183, 185, 207).

During the formulation and enactment of the various land laws, the conflict of interests tended definitely to concentrate on three specific details: The minimum amount of land to be offered for sale; the price per acre; and the terms of payment.

As early as 1800 the political pressure of the frontier farmers, a group traditionally disposed to demand "liberal" land legislation, had begun to show its influence (185), and within 20 years their cause had definitely won. Whereas the act of 1796 had specified that the smallest amount purchasable was 640 acres, 80 acres was the minimum unit by 1820, and this in turn was reduced to 40 acres in 1832. The minimum price was reduced from the \$2 an acre established in 1796 to \$1.25 in 1820. Furthermore, in practice the minimum price tended to become the maximum price, only a few choice areas being bid for higher amounts at auction time. Thus abundance of land, plus a united public opinion, circumvented the intent of the laws.

Only in one respect was there a nominal reversal of this general trend toward a liberalization of the terms of land acquisition. In 1796 the purchaser was required to pay one-half the price in cash within 30 days and the remainder within 1 year. Four years later the credit terms were considerably liberalized—one-fourth cash, one-fourth within 40 days, one-fourth within 2 years, and one-fourth within 4 years. In 1820, owing to the fact that speculators and actual settlers were in arrears amounting to \$21,000,000, the credit provisions were repealed and thenceforth immediate cash payment was required.

The history of land legislation during the period under review also tends to center about three political and economic issues—graduation, preemption, and homesteads. The first two were a result of the rapidity with which the public domain had been occupied, and they evolved logically into the third.

The frontier farmers and speculators, having before them what seemed to be an inexhaustible supply of land, selected only the better lands as they pushed westward. Gradually the existence of islands of poorer land which had no buyers became obvious and resulted in a demand to lower its price. Finally in 1854 Congress passed a graduation act reducing the minimum price to \$1 an acre on land that had been open to sale for 10 years and to 12½ cents on land that had been listed for 30 years.

The preemption issue evolved from a correlative if opposite situation (155). Frontiersmen, becoming impatient of or even being oblivious to the progress of the official land surveys, frequently pushed

into the public domain and settled on choice locations without further formality. In doing so they were reverting to the so-called "indiscriminate location" of colonial times. With reference to the land laws, these settlers—usually referred to as squatters—were criminals. When the first townships in Ohio were surveyed there were already a considerable number of settlers in the region, and attempts were made to dislodge them with militia (101). The frontier attitude ultimately prevailed to a large extent. The pioneers banded together into claims associations which maintained a list of each member's holdings; they selected a bidder to speak for them at the land auctions and attended the sales as a body pledged to insure the purchase at the minimum price of those lands which were already occupied. Again and again Congress passed laws sanctioning the action of particular groups; and ultimately, in 1841, it enacted the preemption law by which heads of families, men over 21, and widows were allowed to settle on 160 acres of unsurveyed public land with the right to purchase their holdings at the minimum price when the land was actually placed on sale. The Preemption Act of 1841 and the Graduation Act of 1854 were, however, merely preludes to the complete triumph of the advocates of a liberal land policy in 1862, when the homestead principle was enacted into law.

The general idea of free grants of land to actual settlers goes far back into colonial times (79). The headright system of land disposition as practiced in the southern Colonies, it will be recalled, embodied the essential features of the homestead principle. Insofar as the quit-rent system was unenforceable, it also resulted in actual settlers acquiring land. There was the further precedent of gifts of land to individuals or groups, sometimes as a reward for services rendered to the national welfare or for services anticipated. In all these three procedures settlers got land without money payments.

In spite of these colonial precedents, Congress was slow to abandon the conservative and conserving policies adopted during the two decades immediately following the American Revolution. Many regarded public land as a great national resource which should be administered carefully and prudently with a view toward insuring an income to be used for the well-being of the American people. Many, notably the landowners and manufacturers of the eastern seaboard, opposed liberalization of the land policy. They saw the value of their real estate undermined by the cheaper and newer lands in the West; they also saw western land competing for their labor supply and thus compelling higher wages. The opposition soon rationalized this self-interest and found itself expounding the view that Government generosity with land pauperized the beneficiaries and encouraged laziness. Even as late as 1832 the western leader, Henry Clay, opposed any reduction in the price of public land.

In contrast, the self-interest of the pioneer farmers and land speculators in the West generated a notable enthusiasm for cheap and ultimately free land (156, 163, 164). To secure effective action, they joined forces with city workers who hoped to escape westward and benefit thereby. In the 1840's the National Reform Association took the leadership, propounding the doctrine that the public land should be distributed in equal amounts to actual settlers (38, 51).

One of its most effective pamphlets was entitled "Vote Yourself a Farm," and much emphasis was placed on the idea that land ownership was an essential ingredient of the political philosophy to which the United States was dedicated. Horace Greeley was the patron saint of the association, and the columns of his New York Tribune were an open forum for its use.

At its best the cause of the liberal land policy which came to be epitomized in the idea of free homesteads to actual settlers transcended mere economic self-interest. Many contended that land sold on liberal terms or even given away promoted true democracy. Perhaps the most eloquent spokesman of this view was Senator Thomas Hart Benton of Missouri. It is certain that beneath the passing arguments of the politicians and the pamphleteers lay the conviction that equality of economic power was essential if genuine freedom and democracy were to thrive in America.

The homestead bill introduced by Andrew Johnson passed the House of Representatives in 1852, but complete enactment was destined to be held up for a decade because it became a part of the slavery controversy (180). In the first vote a majority of the southern Congressmen had supported the bill, but as sectional tension intensified they veered away, and final passage awaited the withdrawal of the southern representation from Congress after secession (63, 101).

The Pioneers Open New Lands for Agricultural Settlement, 1776-1850

In 1790, when the country's first census was taken, there were approximately 4,000,000 people in the United States. Of these, 94 percent inhabited the 13 original States; only 250,000 had settled in the West of that day—principally in Vermont, Kentucky, Tennessee, and Ohio. By 1850 the Nation boasted 31 States and a population of more than 23,000,000 (196). The frontier line had leaped the Mississippi River northward into Minnesota and Iowa, and southward into Texas; skipping the Great Plains, it had followed the trail of gold into California. All this had been effected in one lifetime (47, 143, 154, 216).

The migration, one of the greatest in world history, streamed across the Atlantic and swelled through the settled regions of the East. Over 2,000,000 immigrants swarmed in from 1820 to 1850, and in the next 10 years 2,600,000 more arrived. Land was the great magnet. Rich, virgin soil, seemingly unlimited in extent and available almost for the asking—such was the common theme repeated by shipping agents and in letters, pamphlets, newspapers, and handbills. It was an irresistible temptation to farmers sweating over worn-out lands and to city folk who were restless, adventurous, or unsuccessful (193).

In the North the first great trek went through western New York and Pennsylvania into the region known as the Old Northwest (96, 215). Bounded by the Ohio, the Great Lakes, and the Mississippi, this area, with the exception of certain reserved sections, had been turned over by the claimant States to the Continental Congress to form a national heritage. The way to settlement was opened by the Ordinances of 1785 and 1787—the most significant legislation passed by Congress under the Articles of Confederation. Immediately after the enactment of the second of these measures the Ohio Co., an asso-

ciation of land speculators, purchased some 2,000,000 acres, paying for them with depreciated soldiers' certificates. In accordance with the bargain, this sale was coupled with the sale of several million acres more to the Scioto Co., a front for certain Congressmen. The third of the groups to undertake settlement of the Ohio country was the Symmes Co., which obtained a contract on similar terms in 1788 (*101, pp. 41-55*).

It was originally planned to delay settlement until the completion of surveys, which in turn were not to be made until the Indian titles had been extinguished. The Indians were with great difficulty persuaded to sign a series of treaties; but, encouraged by British officials, they refused to abide by the terms and prepared to take the warpath, forcing temporary abandonment of the surveys. The land-hungry settlers were not to be daunted, and in December 1787 the first of them left Ipswich, Mass. In the spring of the following year they founded Marietta, north of the Ohio River. A few months later a group of pioneers from New Jersey, under the guidance of Judge John Cleves Symmes, settled near the mouth of the Little Miami River where it flows into the Ohio. Virginians took up the district reserved by their State in 1790, while most of the Connecticut Reserve was sold to the Connecticut Land Co., which in 1796 sent out a small party that founded Cleveland. Thus began the occupation of the vast trans-Appalachian West, a process which continued throughout the nineteenth century (*125, 191*).

In the same wave of migration, western New York was settled. The Catskill and Adirondack Mountains, the forest, and the hostile Iroquois Indians had kept the whites confined to the Hudson and the lower Mohawk Valleys until the close of the Revolution. Soon afterwards pioneers from New Jersey and Pennsylvania followed the Susquehanna and Tioga Rivers north to Seneca Lake and into the heart of New York. At about the same time New Englanders began to push westward from Massachusetts and Vermont. The Holland Land Co. under Robert Morris purchased the region west of Seneca Lake and sold its holdings in smaller tracts to speculators and settlers; east of the lake the State reserved 1,700,000 acres for military bounties. For the most part, however, this entire area was settled by New Englanders.

After 1800 the westward movement assumed momentum. As a result of the pacification of the Indians by Gen. Anthony Wayne and the consequent treaty of Greenville in 1795, the way was cleared for peaceful settlement of the Northwest, particularly after the British gave up their posts on the Great Lakes. The distress in Europe caused by the Napoleonic wars and their aftermath brought hundreds of thousands of immigrants to American shores. Economic depression in the East, due to the embargo, the nonintercourse acts, and the war further stimulated the push westward. There was discontent in the seaboard States, also, especially in New England, because the ruling power was held by old political and religious oligarchies. In the Southern States planters left the worn-out tobacco lands of Virginia and North Carolina and settled on the fresh alluvial soil of the Old Southwest. In doing so they usually drove before them the small pioneer farmers of the uplands, who moved north into the Ohio Valley.

Other factors stimulating migration were the increasing liberality of the Federal Government in its land policy and the wresting of new land cessions from the Indians after the victories of William Henry Harrison in the Northwest and of Andrew Jackson in the Southwest. After 1811, with the launching of the first steamboat on the Ohio River, the pioneers had a more rapid means of transportation. By 1820 there were 60 steamboats on western waters, and in the years that followed, the steamboat was a vital factor in the settlement of the West. Finally, the purchase of the vast Louisiana empire in 1803 and of East Florida in 1819 opened seemingly limitless horizons.

Settlement of the Old Northwest was rapid from the beginning, Ohio being admitted into the Union in 1803. During the next decade Indiana and Illinois became States, and Michigan followed in 1837. In 1810 the region had some 272,000 inhabitants; in 1830, 1,470,000; and in 1860, 6,927,000. Ohio alone had nearly a million people in 1830—more than Massachusetts and Connecticut combined. The growth of the leading cities in the Ohio-Mississippi Valley also reflects the rapidity of settlement. Chicago jumped from a mere fur-trading post to a community of over 100,000 inhabitants between 1830 and 1860, and Cleveland expanded from 6,000 inhabitants in 1840 to 43,000 in 1860. Cincinnati assumed national preeminence in meat packing. This tremendous westward movement was a very serious drain upon the Eastern States, particularly Virginia and Massachusetts where the population remained practically stationary.

Until about 1820 most of the farmers migrating from New England were absorbed along the northern frontier and in western New York (128). In Ohio, except in the New England communities around Cleveland and Marietta, most of the settlers came from New York and New Jersey. Indiana and Illinois had many New Englanders in their northern counties but were inhabited for the most part by yeoman farmers from Piedmont Virginia and North Carolina and by the restless pioneer farmers pushed out of Kentucky and Tennessee by more wealthy planters from the seaboard States. The migrations of the Lincoln and La Follette families illustrate this pressure very well.

Though the bulk of the native stock which settled the Mississippi Valley was predominantly from the Southern States, the region north of Tennessee did not take on the same tone as the Old Southwest. The "poor whites" from the South mixed with the New Englanders and the farmers from the Middle Atlantic States to form communities of small farms with few or no slaves and with an abiding faith in democracy (34, 124). Many of the pioneers were Scotch-Irish, and to these was added a large German population. Over half a million Germans came to America between 1830 and 1850 and another million in the decade preceding the Civil War. They were destined to stand by the Union in the struggle between the States and came to be a vital factor in the political development of the Mississippi Valley. The Germans settled chiefly around Cincinnati, in the lake counties of Wisconsin, and in Indiana, Illinois, and Michigan (76).

In point of time, migration south of the Ohio into what is now Kentucky and Tennessee preceded the settlement of the Old Northwest. The movement began before the Revolution and continued

steadily during the course of the struggle. By 1790 Kentucky had over 70,000 inhabitants, and Tennessee had 36,000. The people of these regions made many attempts to free themselves from the political control claimed by Virginia and North Carolina. Their leaders, John Sevier, James Robertson, and James Wilkinson among others, were in constant intrigue with the Spanish Governor and his agents at New Orleans. However, among the rank and file—chiefly yeoman farmers from Pennsylvania and small farmers pushed out by the wealthy planters of Tidewater Virginia and the Carolinas—loyalty to the United States was stronger, and in 1792 and 1796 Kentucky and Tennessee entered the Union.

The second stage of populating the Old Southwest grew out of the invention of the cotton gin in 1793 and the insatiable demand for cotton. Planters pushed westward seeking land on which they could grow the staple more cheaply and in doing so displaced the pioneer farmers who had preceded them. Unable to refuse the relatively high prices offered by the planters, many sold out and retreated to the mountains to become "poor whites" or pushed on north of the Ohio River or across the Mississippi. Although small farmers continued to constitute the bulk of the population, the political, social, and economic levers in the Southwest were more and more exercised by large planters who developed an aristocracy.

Between 1800 and 1850 Tennessee's population grew from approximately 106,000 to over a million, while Arkansas, having only 14,000 inhabitants in 1820, boasted more than 200,000 three decades later. Simultaneously with the expansion of population westward went the development of cotton production. In 1820 South Carolina and Georgia were the leading cotton States, but after 1834 Alabama and Mississippi, each having grown some 200 percent in the intervening years, became the heart of the cotton kingdom. The profitability of slave labor on western lands incidentally fastened the institution firmly into southern economy. Other byproducts of the expansion were the Pinckney Treaty with Spain in 1795, which provided for navigation of the Mississippi, deposit rights in New Orleans, and cession of lands between the Yazoo River and the 31° parallel; the acquisition of the Louisiana Territory in 1803; and the purchase of Florida in 1819.

Obtaining the vast territory of Louisiana was a particularly monumental stroke of good fortune involving a 140-percent increase in the area of the United States. When Jefferson made the deal there was only a scattered, heterogeneous population in and around New Orleans, chiefly French, Spanish, American, and Indian. Only 10,000 people inhabited upper Louisiana, half of these being Americans who had been lured across the Mississippi by the convenient land laws of Spain and by the rich fur trade centering in St. Louis. The first real knowledge of the size and resources of the trans-Mississippi West resulted from the Lewis and Clark expedition and the explorations of Capt. Zebulon Pike.

After the fur traders the cattle rangers were the first to push into this region, and they were followed by the cotton planters. Together they moved into Texas in the thirties, and the westward tide brought revolution, annexation, and war with Mexico. By the terms of the

peace treaty the United States gained a new empire in the southwest beyond the Mississippi.

Before 1850 the Oregon Territory was acquired from England, and California was ceded by Mexico. Gold was discovered in California, and emigrants rushed to the Pacific coast by sea and land. After the gold rush of 1849 there were two frontiers in America. One moved slowly westward from the Mississippi River across the Great Plains, and the other moved eastward from the mountains along the Pacific coast.

The effect of the westward movement on the Eastern States and on American life in general was profound but it is not clearly known in many phases.⁷ In the Northeast the opening of fertile lands in the West caused a depression in local agriculture and provided the essential basis for the rise of industrialism and urbanism. As the Ohio and Mississippi Valleys were settled they furnished the industrial centers with both a source of cheap food and a growing market for manufactured goods. A counter claim is that the frontier, by drawing off potential laborers, kept wages high and seriously handicapped the rapid development of American industries; recent studies, however, tend to lessen the weight of this argument. In the South, westward extension no doubt discouraged manufacturing by drawing off the surplus capital. Again, while settlers who undertook cotton production on newly opened lands prospered, those who remained behind suffered greatly from the added competition. Eventually the struggle over the disposition of new territories in relation to slave or free labor provoked the greatest tragedy in American history, the War between the States.

It is generally agreed that the frontier had a liberalizing effect on American politics. Both the Jeffersonian and the Jacksonian movements stemmed in large measure from western influences (19; 28; 29; 44; 77; 169, pp. 200-219; 192, pp. 243-268; 193, pp. 14-38; 214). When new State constitutions were drawn up, provisions were made granting to freemen suffrage and office-holding privileges unrestricted by property requirements. Wealth was evenly divided, at least in the first stage of settlement, and this bred a spirit of equality that was reflected in the social and political life. Nevertheless, as has recently been shown, it is easy to overwork this point. Most of the humanitarian reforms of the period were initiated in the older communities where the conditions calling for amelioration were bred and where the leaders were in touch with similar movements in England and on the Continent. The West, however, particularly the Northwest, did support the reforms and embodied many in its legislation. Yet if it were necessary to mention the most important single influence emanating from the West, it would be rather in the realm of the psychological. As long as there was a frontier, men felt that there was always an avenue of escape, a chance to start anew.

Agriculture in the Old Northwest

Until the prairies of western Indiana and Illinois were reached, the farming in pioneer communities west of the Alleghenies was essentially

⁷ For the literature evaluating the significance of the westward movement, see: EDWARDS, EVERETT E. REFERENCES ON THE SIGNIFICANCE OF THE FRONTIER IN AMERICAN HISTORY. U. S. Dept. Agr. Library Bibliog. Contrib. 33, 99 pp. 1939. [Mimeographed.]

a repetition of the experience along the Atlantic seaboard during the two centuries of the colonial period. The frontiersman cleared from 1 to 3 acres by girdling and grubbing and then planted the field to vegetables and corn. At this stage the family depended on game and other wild products to supplement the food raised. Maple sugar was also important, but potash was the only cash product. With more land cleared, additional corn and some wheat were added. Gradually a farm capable of producing surpluses for outside markets was developed (27).

The responsiveness of wheat to new lands is patent to students of agricultural tendencies, and its development in the region northwest of the Ohio River is an excellent illustration (17). New York and Pennsylvania were the leading wheat-producing States during the first quarter of the nineteenth century; but during that time there was a westward shift even within their borders, the Genesee country supplanting the Hudson-Mohawk Valley. Ohio became an important producer of wheat during the thirties, but the big shift westward came during the fifties. Whereas Pennsylvania, Ohio, and New York—in the order named—had been the top-ranking States in 1849, Illinois, Indiana, and Wisconsin took their places within a decade. In that time Wisconsin rose from ninth place to third, and New York and Pennsylvania experienced not only a relative but an absolute decline (100). By 1860 the five States of the Old Northwest were supplying about half of the wheat produced in the entire United States. Within the region, the hilly counties of Ohio and the prairies and oak openings of Indiana, Michigan, Illinois, and Wisconsin were the areas of concentration.

When the westward-moving pioneer farmers reached the edge of the prairie in Indiana and Illinois, they hesitated, believing that land which did not support trees was not rich enough to produce farm crops (150, 175). The lack of a ready supply of wood for buildings, fences, and fuel was also a factor. The dependence of these frontiersmen on the rivers as avenues of transport to markets and the scarcity of water and lack of shelter for livestock on the prairies also made them reluctant. The thick and heavily matted prairie sod was a formidable challenge to the customary wooden and cast-iron plows, and from three to seven yoke of oxen were required to break new fields. Even then it was two or three seasons before the grass roots had rotted sufficiently so that the fields could be worked easily. Higher prices for grains after 1845, due to conditions in Europe, together with the coming of the railroads, affected the occupation of the prairies. The challenge of the sod led to the development of the steel plow (45), and eventually, after experiments with various fencing materials such as sod walls, smooth wire, and Osage hedges, the fence problem was solved by the invention and perfection of barbed wire (97).

Corn production, like that of wheat, responded, though less quickly, to the pull of the new lands of the Northwest. In general it tended to occupy a belt directly south of the wheat region, but prior to the end of the sixties a corn belt was not clearly delimited except for special areas, such as the rich bottom lands along the Scioto River and the limestone basins of Kentucky and Tennessee (119, p. 172). The census of 1840 revealed Kentucky, Tennessee, and Virginia as the

leading corn States, but within two decades the center of concentration had shifted northwestward to Illinois, Ohio, Missouri, and Indiana, with Kentucky and Tennessee in fifth and sixth places. By this time Iowa and the eastern parts of Kansas and Nebraska had become important centers. The older States in the East continued to produce corn for their own needs.

The corn of this northwestward-moving belt was marketed in the form of whiskey and hogs, the first because it was valuable in proportion to bulk and the second because hogs furnished their own motive power. The hogs of the frontier were a special type, essentially a product of the rigors of life in the open and were known aptly as "wind-splitters" or razorbacks. Many pioneers raised several hundred hogs a year. If they were left to feed on the forest mast alone, however, besides putting on flesh that was soft and difficult to preserve, they became untractable and without the stamina to survive the rigors of severe winters. It was therefore essential to supplement the mast with corn, and eventually, as markets developed, corn-feeding and marketing hogs became the basic activities of agriculture in the Old Northwest.

In the early nineteenth century the hogs were taken down the rivers on boats to be sold to the plantations in the South or driven overland to eastern markets (25). At first the farmers drove their own hogs eastward, but gradually a profession of drovers developed and the trade became standardized. Some herds numbered as many as 5,000 and moved eastward at the rate of 8 or 10 miles a day. Although the ultimate destination was usually Philadelphia, Baltimore, or New York, many herds were taken to the plantations of Tennessee, Virginia, and the Carolinas. This method of marketing declined with the development of meat packing along the Ohio, especially centering about Cincinnati, which became known as "Porkopolis." The coming of the railroads was a final factor ending this trade.

The range-cattle industry has always been associated with the frontier, and the region north of the Ohio River was no exception. As early as 1805 George and Felix Renick of Ohio drove a herd of range cattle overland to Baltimore, where they cleared a profit of over \$30 a head (149). Their success led to other similar drives, and shortly the marketing of range cattle in the East became a well-defined source of cash income for the farmers in the West of that time. The drives were started in the early spring and continued through the summer. Each night the herds were halted at "drove stands," where food and shelter were provided for both the drovers and their charges. Four-year-old steers were driven slowly and sold directly to the abattoirs. Three-year-olds were often sold to the farmers in the hinterland of Philadelphia for feeding. By 1840 the farmers of the Ohio Valley had taken over the fattening of their own cattle, and this development became specialized in a zone bounded on the south by the 36° parallel and on the north by the 40° parallel. The bluegrass region of Kentucky and the Scioto Valley were the centers for corn feeding, and many of the leaders in this development were former Virginians who had known of similar methods on the banks of the Potomac in the days of Washington. Eventually these feeders reached out for additional stock from the prairies of Illinois, Iowa, and Missouri and from

the wheat farmers to the northward. Before large-scale refrigeration, it was difficult to preserve beef in a palatable form, and beef packing did not develop on a scale comparable with that of pork (118). The eastern cattle drives, therefore, continued long after the hog drives had ceased. The advent of railroads after 1850 brought an end to the drives, and the cattle-feeding industry pushed westward to the Corn Belt.

Northeastern Agriculture Confronted With Western Competition, 1775-1860

In the New England and Middle Atlantic States the colonial pattern of agriculture continued dominant until the second decade of the nineteenth century (25). Cultivation was extensive and exploitive, tools clumsy, systematic crop rotation and fertilizers generally absent, livestock neglected, and orchards and woodlands badly managed. Each farm was a self-sufficing unit, growing food for home needs and a scant surplus to be exchanged at the local store for salt and sugar (190, 204). For the most part tools and clothing were made in the farm home. In New England wheat had been generally abandoned, except in a few favored regions, and root crops such as potatoes and turnips were noticeably lacking. The prevailing mode of crop rotation was the medieval practice of alternating grain, grass, and fallow. Implements were few in number, most farmers being able to carry all they possessed on their backs, and the plows were home-made wooden contrivances with a plating of iron strips added by the local blacksmith. Oxen were the chief draft animals, and cattle generally were noted more for their hardiness than for beef or dairy production. Between 1801 and 1811 merino sheep were imported from Spain, and the result was a vast improvement in American flocks (52, 211).

To this picture of prevailing agricultural backwardness certain exceptions must be noted. Pennsylvania as late as 1840 was the leading wheat-producing State, and considerable grain was also raised in the Hudson and Mohawk Valleys of New York; the Middle States were to a considerable extent the bread States for New England and the South. Corn was a leading staple in New England the output per acre averaging 25 to 30 bushels; in the Connecticut Valley, it occasionally averaged as high as 40 or 50 bushels. The Connecticut Valley in general was a prosperous farming country still able to raise wheat commercially, and its more progressive farmers used gypsum to restore their soil. Other outstanding areas were the Narragansett country of Rhode Island, where dairying for exportation was extensive, and the western counties of Massachusetts, which produced grain commercially.

With such exceptions it may be repeated that northern agriculture at the opening of the nineteenth century was based on practices comparable to those of old England prior to its agricultural revolution. American farmers had not only failed to avail themselves of the new scientific practices introduced by Bakewell, Tull, and Young—they had even resisted any change. The cheapness of land and the high price of labor also militated against intensive cultivation. However, P. W. Bidwell, a careful investigator of this particular subject (23,

24, 152) has insisted that the fundamental cause of this retardation was the lack of markets for surplus production. When the rise of manufacturing resulted in the concentration of a large nonagricultural population in towns and cities a spirit of commercialization became evident in northern agriculture.

This change began after 1810; the population of the Eastern States increased from 3,487,000 in that year to 6,761,000 in 1840; urban centers of over 8,000 inhabitants increased from 3 in 1790 to 33 in 1840; while in southern New England all but 50 of the 479 townships had at least one manufacturing village clustering around a textile mill, an iron furnace, or some other industry. To meet the demand of this new market the farmer turned to lighter and better-designed agricultural tools; the grain cradle displaced the sickle, the iron and later the steel plow superseded the wooden plow, and the cultivator supplanted the hand hoe. Improved machinery brought increased production and decreased labor time and costs. In Pennsylvania and New York the horse replaced the slow-moving ox as the main draft animal.

Creation of a home market brought a shift from general to specialized farming, and each locality tended to concentrate on the products for which its soil, climate, and geographical position were best suited. Market gardening and dairying developed in the immediate vicinity of urban centers, notably around Boston, New York, Philadelphia, Providence, and Newport. Lands were reclaimed, meadows drained, and dry lands irrigated; the soil was repaired by the planting of clover and the use of gypsum; more labor was hired; and the teachings of the new agricultural societies were heeded. One effect of these changes was a sharp rise in land values; an acre outside of Philadelphia brought \$150 in 1837, and near New York land prices in some instances increased fourfold between 1800 and 1840. Tenancy also appeared as immigrants leased truck farms before purchasing their own lands. The production of fluid milk to meet town and city needs became prominent in these decades and continued to expand even after the center of dairying had moved westward.

Feeding cattle for beef received increased attention in the East, concentrating in the Connecticut Valley, which supplied the Brighton market near Boston, and in southeastern Pennsylvania. Specialization in butter and cheese making developed chiefly north of New York City and in central New York after the completion of the Erie Canal. Around other cities the sale of fluid milk had largely supplanted cheese and butter production by 1840. Striking improvement was effected in swine husbandry owing to crossing with improved breeds, but there was no marked geographical concentration.

Eastern wool growing enjoyed its greatest prosperity in the decade of the 1830's (212). The domestic manufacture of woolen goods was firmly established, and, stimulated by protective tariffs, it increased its output and demand for raw materials. In 1837, 28 of the 38 million pounds of wool used in the mills was of local origin. In 1840 the eastern wool growers owned 60 percent of the country's sheep, but specialization was already well developed. In New England production was limited to Vermont and the hills of western Massachusetts and Connecticut.

Among other changes in northeastern agriculture that came in response to urban needs were the increase in hay production to feed the horses in city and town stables and the growing of potatoes in considerable quantities, particularly in Maine and on Long Island. Farmers also conducted a profitable business in supplying city dwellers with firewood and charcoal and furnishing sand, stone, and timber for buildings.

Now that the farmer received a cash income he turned to factories to supply him with the clothes, tools, and furniture he had formerly made for himself. The decline of household industries had as revolutionary an influence on rural life as the growth of industrialization had on the formation of a wage-earning class. As self-sufficient farming waned, long-established habits and traditions in thinking and living were uprooted. The family as an economic unit became less important, with all that implied for rural mores; farmers' sons and daughters began migrating to mill towns to take up a new way of life. Those who remained behind developed a taste for urban standards of living. Others were stirred to action and turned westward.

In general outline the adaptation of northeastern agriculture to the rise of local markets is valid as painted. The changes did not appear overnight, however, nor did they affect all farmers uniformly. There were many influences retarding the main trend. Ingrained habits tended to keep many farmers in the old ways of producing what they needed for their own uses, buying and selling little. Lack of working capital was another serious hindrance; the farmer marketed his produce once a year and had to maintain his family on the returns until the next year. The country store was the chief source of short-time credit, and interest rates were high because losses were frequent. Where the farmer realized a surplus, he preferred to invest in lands, in larger homes, or in outside enterprises, rather than in labor-saving machinery. Mortgages increased noticeably in number after 1830, but the money was used for paying bills or in outside speculation instead of for financing farm improvements. The imperfect organization of markets was another obstacle; the country merchant, the chief middleman for farm produce, performed his function badly and at a high cost.

While the eastern farmer was still adjusting himself to commercialized agriculture he was faced with a second transforming influence, namely, western competition (10). The Erie Canal opened in 1825 and brought steadily increasing quantities of foodstuffs to the eastern markets, but the pressure greatly increased after the railroads reached beyond the Alleghenies. By 1850 there were 7,000 miles of railroad in the country, largely concentrated in the Northeast and Northwest; and 10 years later Minnesota, Iowa, Nebraska, and Kansas were already pouring surpluses eastward. From the West came wool, wheat, and pork in such quantities and at such low prices as to discourage local production. Sheep raising in southern New England declined nearly 50 percent between 1840 and 1850, with a further drop of 35 percent in the next decade. The products of the eastern wheat growers, suffering from soil deterioration and crop blights, could hardly compete with the products of fertile lands newly opened in the West; and by 1840 flour from western wheat was used generally in New England, not only by city folk but by farmers as well.

Before the advent of refrigerator cars the effect of competition in beef and pork production was somewhat tempered, although by 1859 half the beef supply of Massachusetts came from outside New England, and Philadelphia received 32,552 tons of livestock from Pittsburgh over the Pennsylvania Railroad. Between 1840 and 1860 the number of swine in Massachusetts, Rhode Island, and Connecticut fell from 306,000 to 167,000.

Serious as these inroads were, they by no means crowded out eastern production entirely. If local farmers almost completely lost the markets for wheat and wool and to a lesser extent for live cattle and hogs, the advantage of their proximity to industrial centers could not be altogether overcome. More attention was given to growing vegetables and supplying fluid milk. Cheese and butter making increased, and by 1860 New England and the Middle Atlantic States accounted for 70 percent of the country's cheese and close to 50 percent of its butter. In New York, the Nation's leading dairy State, production was centered in the Mohawk and Hudson Valleys, with some expansion into the central counties; Vermont led in New England, although Litchfield County, in western Connecticut, was famous for the fine quality of its cheese; while southeastern Pennsylvania supplied butter and milk for the Philadelphia, Wilmington, and Baltimore markets.

The New England and Middle Atlantic States grew more hay and forage in 1860 than in 1850, although their share of the country's total dropped 15 percent. Corn production increased in New England between 1840 and 1850 but then declined; on the other hand, the crop of potatoes in Maine in 1860 was almost twice as large as that of 1850. A final example of adaptation to city needs was the increased planting of orchards. Horticultural societies were formed, improved varieties of apples planted, and old native fruit trees grafted. By 1847 Oneida County, in the Mohawk Valley, shipped nearly 18,000 barrels of apples.

Eastern agriculture thus underwent two major changes by 1860: First, between 1810 and 1840, in response to the growth of a home market, farmers gradually shifted from self-sufficing to commercialized agriculture. While this process was still unfolding, canals and railroads enabled farmers on rich, virgin, western soil to ship their produce to eastern markets. As a consequence, local farmers were forced to specialize in articles such as milk, butter, cheese, vegetables, fruit, and hay, which, by reason of their perishability or bulk, escaped western competition and enjoyed a ready market in the expanding urban centers close by.

Changes in Southern Agriculture to the Civil War

Despite an ever-growing rivalry with the Northwest, the South continued as the principal center of commercial agriculture from the Revolution to the Civil War. Its preeminence, however, was due chiefly to the rise of cotton production and its expansion into the Old Southwest. Tobacco, the chief staple during the colonial period, fell off greatly in relative importance, its total production remaining stable until about 1850. Indigo cultivation waned, having suffered a deathblow by the removal of the British bounty. Rice farming

underwent a transition incident to the adoption of the tide-flow system. Hemp and flax later became crops of some importance in Kentucky and Missouri, and sugar growing achieved considerable success in Louisiana. It was cotton, though, and particularly cotton on western lands, that predominated.

Cotton

During the last half of the eighteenth century the inventions of Crompton, Hargreaves, Arkwright, and Cartwright had revolutionized textile manufacture in England (46, 98, 203). Spinning and weaving machinery operated by steam or water power and the consequent introduction of the factory system made possible mass production of cotton cloth for a world market. Cotton fiber on an equivalent scale was needed. In colonial times cotton had been grown in the southern Colonies, but only for domestic use. Soil and climate favored the green-seed, short-staple variety, but separation of the seed from the lint was difficult, slow, and expensive because the fiber had to be cut or torn away. Sea-island cotton, a longer-fibered variety, was introduced in 1786. Its seeds were easily removed by running the fiber between rollers that revolved in opposite directions. Although sea-island cotton brought high prices and was raised, often on a large scale, until the Civil War, the acreage devoted to it was limited, as it could be successfully grown only on the lowlands along the south-eastern coast.

The cotton gin invented by Eli Whitney in 1793 solved the crucial problem incident to large-scale production of the green-seed, short-staple cotton, and its invention marked a turning point not only in southern agriculture but in American history (120). Upland or short-staple cotton became the largest commercial crop in the South and the basis of its economy (145, 147). Each decade cotton production approximately doubled. In 1800, 73,222 bales of cotton was produced; in 1840, 1,347,640; and in 1860, 3,841,416. It overflowed the domestic market and became the largest single export of the United States. In the year beginning October 1809 cotton represented 23 percent of the value of total exports, or a little over \$66,000,000; by July 1, 1860, it had increased to 61 percent, or more than \$333,000,000. Cotton fed not only the mills of old England but those of New England as well; a major item in the domestic trade was the exchange of southern raw cotton for New England manufactured cloth. As the South concentrated more and more on cotton growing, it also offered a market for northwestern grain and livestock products.

Cotton expansion revived the moribund institution of slavery. In 1794 George Washington had written a friend (129): "Were it not that I am principled against selling negroes as you would cattle in the market I would not in 12 months be possessed of a single one as a slave. I shall be happily mistaken if they are not found to be very troublesome species of property ere many years have passed over our heads." The growing of cotton was very well adapted to unskilled, supervised gang labor (90); in the 5 years before the Federal prohibition of the slave trade became effective in 1808, South Carolina alone imported 39,000 slaves, and by 1860 its slave population increased to 57.2 percent of the total population. Another institution,

the plantation, similarly became prominent, and the three together—cotton, slavery, and the plantation—exercised considerable influence over the political and social as well as the economic structure of the South (146).

Cotton growing centered first in the tidewater region of South Carolina and Georgia. The crop proved so profitable that many planters shifted to it from indigo and rice cultivation. As L. C. Gray has pointed out in his monumental work on southern agriculture (91), methods of cultivation were crude and wasteful, not because of slave labor but because land was abundant and cheap. Squandering natural resources was as characteristic of the southern planter as of the western pioneer. Cotton growers reached out to the Piedmont of North Carolina and Virginia and then turned southwestward. The War of 1812, the acquisition of East and West Florida, and the removal of Indians to reservations beyond the Mississippi were, in part at least, due to cotton. The heavy black or brown loam soils in the Alabama-Mississippi Black Belt were found to be unsurpassed for cotton, and this region long remained the foremost cotton district in the world. Nevertheless the migration of cotton continued westward into the second area of great cotton production along the lower Mississippi. Even these conquests were not enough, and the land-hungry and restless pushed on to the prairie region of Texas.

Until 1821, over one-half of the cotton had been grown in Georgia and South Carolina. By 1850 Alabama ranked first, Georgia second, Mississippi third, and South Carolina fourth. In 1860 Mississippi, Alabama, and Louisiana produced over one-half of the total cotton crop in the United States, while Texas grew more than South Carolina. In the North, when the Atlantic Seaboard States could not meet the challenge of western agriculture, industrialization was intensified; in the older South no such compensating factor was present, and economically it fell steadily behind the Southwest. Land values declined, and Savannah and Charleston were supplanted by New Orleans and Mobile as trade centers. Even by 1820 the areas first devoted to cotton presented a sorry picture of eroded lands, bare of vegetation except for scrubby growths.

The Southeast blamed its decline on the tariff, the Federal banking policy, the lack of credit facilities, and heavy taxation. All these factors were present, but they did not constitute the crux of the problem. The fundamental difficulty lay in the too-rapid westward expansion. Had there been planned control, southern development might have taken a different course.

The States of the south Atlantic seaboard did attempt to adapt themselves to changing conditions (33). Leaders like William Gregg and James Hammond stressed the need for industrial diversification, and a number of textile mills and iron foundries were established. The movement did not progress far—despite hundreds of books, resolutions, and conventions—because the capital available was too closely tied up with landed investments, while the labor supply, whether slave or "poor white," needed wholesale readaptation. It was only after the Civil War, when its agriculture lay in ruins, that the South turned to industry on a large scale. As an alternative to industrial development, an attempt was made to establish the Southeast as the

trade center for both the Southwest and the Northwest. Although canals and railroads were built, only a meager success in serving the hinterland was achieved. The Southwest developed its own ports, and the Northwest became tied to the Northeast by the railroads.

Attempts were also made to adjust and reform the agriculture of the Old South to the changed conditions (54, 55, 56). John Taylor of Caroline sought to halt the retardation of Virginia agriculture (134, 179), and Edmund Ruffin sounded an even more clarion call to action (56). His teachings won for him the title "father of American soil science" (57), but they failed to stay the tide. When the Old South first felt western competition, it found itself with too much slave labor. Transfer of that surplus westward only strengthened the competition. Finally, in the forties and fifties, when labor was needed for agricultural diversification, slaves were scarce. The Old South could not afford to pay \$1,000 to \$1,400 for a prime hand and was outbid by the Southwest where fertile lands yielded a much greater output per unit of labor. In desperation the Southeast sought a reopening of the slave trade; though the attempt failed, slave smuggling probably was increased.

More important for later development was the fostering of progressive methods such as deeper plowing, the introduction of new crops, the increased use of labor-saving devices, and the importation of improved breeds of livestock. Agricultural journals and societies were begun and fairs and exhibits held. General farming became a prominent feature of the agriculture of the Border States, and just prior to the outbreak of the Civil War Virginia achieved a moderate prosperity as a result.

Tobacco

Tobacco, the South's chief colonial staple, reached its height in the 1790's, when over half the population of the tobacco States—Virginia, Maryland, and North Carolina—were engaged in or dependent upon its cultivation. It ranked first on the list of American exports in 1790 when the value of tobacco shipped exceeded \$4,000,000. After 1800 it declined rapidly in relative importance, and production was stable until 1850. The disturbed trade conditions resulting from the Napoleonic wars, the post-1815 attempt of England to stimulate domestic tobacco production or West Indian importation, the high duties imposed by countries of continental Europe anxious for revenue, and the competition of Cuba, Sumatra, and Colombia, all helped to undermine the position of United States tobacco on the world market. At home, meanwhile, cotton was outbidding tobacco for the available land and labor.

By 1850, however, tobacco production had passed its lowest point and had begun to revive. Flue curing supplanted the old-fashioned, charcoal-fire, open-air methods, while a new yellow-leaf variety, lighter than the old varieties, won popular favor. Between 1850 and 1860 production doubled, North Carolina and Virginia being affected most (84, 86, 109, 158, 159).

Tobacco, like cotton, expanded to new fields in the West in the period before the Civil War. Extractive pioneer cultivation laid waste the older lands, while low prices on the world market called for

decreased production costs. It was cheaper to move to fresh soil than to struggle with worn-out fields. Virginia maintained its lead till 1860, but Kentucky was close behind, and Ohio, Tennessee, and Missouri had made a considerable advance. Two important trade and manufacturing centers for tobacco, Louisville and St. Louis, developed in the West.

Sugar

Sugar production, like that of cotton, grew from insignificant proportions to outstrip tobacco in importance. The cane was introduced into Louisiana by Jesuits from Santo Domingo in 1751, but it was not until the last decade of the century that the crop was grown on a commercially significant scale (31, 145, 147).

The sugar district centered along the rivers and bayous of southeastern Louisiana, where the soil was rich and the growing season was sufficiently long for the plant to mature. Despite fluctuations due to floods and occasional early frosts, production increased from approximately 20,000 short tons in 1823 to 270,000 in 1861. Unlike most other southern staples, sugar enjoyed the protection of a high tariff, and the industry was highly mechanized; sugar production expanded but little either to the west or to the east. It did extend over to the Brazos River area of Texas and to a lesser degree into Florida and Georgia, but in these States it was relatively insignificant. Though the industry was limited in the main to Louisiana, it affected the Southeast. Many South Carolinians, for example, migrated to Louisiana, taking their laborers with them. In 1811 Wade Hampton established himself on a large plantation at the head of Bayou Lafourche. By 1860 the sugar plantations were using a total of 180,000 slaves; this involved a considerable drain of labor from the Atlantic seaboard and sent slave prices upward.

Rice, Flax, and Hemp

Rice had been a leading agricultural crop along the coast of South Carolina and Georgia during the colonial period and continued to be so down to the Civil War (16, 50, 99). Production increased threefold from 1820 to 1850 but suffered a distinct decline in the next decade. In the banner year 1850 South Carolina and Georgia together accounted for almost all the rice grown in the United States. There was some development of the industry in Louisiana, Mississippi, and Alabama, but it was of little consequence. Rice planters felt western competition most when they had to bid for labor on a market dominated by the cotton growers of the Southwest.

At the close of the colonial era flax and hemp were crops of some importance in the local markets of the Southeast. In the next few decades Virginia shipped a sizable quantity of flax to the North, and upper South Carolina also succeeded in raising flax commercially. The extension of cotton cultivation and soil deterioration hampered further development.

Almost from the first settlement of Kentucky, hemp raising was found well suited to the rich limestone areas (91). Unusually favorable prices from 1826 to 1828 stimulated production, and hemp growing expanded into middle Tennessee and, during the thirties, into the rich

valleys of Missouri. The cotton industry had a considerable interest in hemp, since it was manufactured locally into baling cloth, rope, and clothing for Negroes. In 1859 Kentucky and Missouri together produced more than three-fourths of the 57,000 tons of hemp raised in the United States. Soil deterioration, scarcity of labor, and Russian competition, however, had already influenced Kentucky to turn more toward wheat growing and cattle raising.

Other Southern Crops

While the South raised all of the cotton, rice, and sugar grown in the United States and over 80 percent of the tobacco, its other crops also ranked high. It produced over 50 percent of the country's corn, over 70 percent of the peas and beans, 94 percent of the sweetpotatoes, and a little less than 30 percent of the wheat. In producing each of the principal classes of livestock the South ranked higher per capita than the United States as a whole. Kentucky was famous for its race horses, horned cattle, and Hampshire hogs, while Virginia was a leader in sheep raising. Eighty-six percent of the South's general farming was located in the Border States in 1859.

Social Organization

Recent writings have stressed the point that to divide ante-bellum southern society into planters and poor whites gives a completely false picture (141). The landowning class was divided into gradations of small, intermediate, and large farmers, and small, intermediate, and large planters. In 1850 only 18 percent of the South's 569,000 farms and plantations were actually plantations, and this estimate includes as "plantations" many thousands of small cotton and tobacco holdings with but one or two working hands. Even in the Black Belt of Alabama almost 80 percent of the nonslaveholding landowners, who in 1850 constituted 44 percent of the region's agricultural population, owned farms ranging up to 200 acres. Of the slaveholding landowners, over 50 percent owned 10 or fewer slaves and 500 acres of land or less, which classed them as farmers. Together the small planters and the slaveholding and nonslaveholding farmers owned approximately 75 percent of the landed wealth in the Black Belt—the so-called stronghold of the plantation system. As late as 1860 only 348,000 families out of a total of 793,493 white and free colored families owned slaves in the South.

While it is true that the yeoman farmer was more truly characteristic of the landholding class, even in the ante-bellum South, the 2 percent of planters holding estates of more than 50 slaves bulked large economically, politically, and socially (34). It was this small predominant group that furnished the Pinckneys, Tyler, Polk, Breckinridge, Claiborne, Hampton, and many others who manipulated the levers of political and social control. Not until the Civil War overthrew the planter aristocracy did the yeoman or dirt farmer begin to come into his own.

Improved Transportation the Key to New Markets

The importance of transportation in American history can hardly be overestimated. As farmers moved westward to conquer the vast

empire extending from the Atlantic to the Pacific, internal improvements became one of the most acute problems in governmental policy as well as engineering science. The first settlers along the Atlantic seaboard were dependent upon ocean transportation to Europe for marketing their raw materials and bringing manufactured goods in exchange. As population later pushed into the interior, recourse was had to rivers, roads, canals, and railroads, with a consequent shaping of the economic development of the Nation (78). Since most of the trade before the Civil War was in agricultural commodities that were not only bulky but perishable—this was long before the advent of refrigerator cars—rapid, low-cost transportation was particularly essential. Not only the economic life but the very existence and location of settlements were determined in many cases by the availability of transportation facilities. Only after 1850, when railroad building went on so rapidly that railroads preceded the settlers—especially in the trans-Mississippi West—and thus determined the routes of migration, did an adequate solution of the transportation problem seem possible. By shortening distances between various parts of the country, improved transportation laid the basis for nationalism; by stimulating domestic commerce and regional interdependence, it eventually cemented the Federal Union.

The rude log dugout and bark canoe were the first means of transportation on rivers in the colonial period. Later these were supplanted to some extent by flatboats and keelboats, many of which used temporary sails. Although the chief communication between the colonies was by water, Indian trails gradually evolved into routes for travelers on foot or horseback. Roads developed slowly; as late as the Revolution only three roads extended to the north and east from New York City, while only one led west out of Philadelphia. In the South two rude trails extended across the mountains—one through the pass at Harpers Ferry and the other through Cumberland Gap. There were also very few bridges until after the close of the eighteenth century.

General interest and activity in road building was gradually awakened in the years from 1790 to 1820, though definite achievement was limited to the older and more settled communities along the Atlantic seaboard (64). Various factors were responsible for the change—the demand of inland farmers for better transportation facilities to market their products; the need of townspeople for cheaper foodstuffs; the prospect of increasing the value of lands in the back country; and the hope of speculators for dividends—this last factor being important and ever present in the movement for internal improvements. The leadership was supplied by individuals who organized private companies and issued stock with which to raise the capital to build turnpikes, expecting dividends to flow from tolls.

Chief among the hard-surfaced or macadamized roads constructed was the Philadelphia-Lancaster Turnpike, 62 miles long, which was built during 1792-94 at a cost of \$465,000. The road was a financial success from the start, and the ultimate result was a turnpike-building boom. In the next 30 years 86 companies were chartered in the State of Pennsylvania alone; by 1832 they had built about 2,200 miles of road at a cost ranging from \$900 to \$7,000 per mile. One hundred and eighty turnpike companies were active in New England in 1810, while

some 88 companies built over 3,000 miles of turnpikes in New York between 1800 and 1807. Each of the seaboard cities was anxious to tap its hinterland for a source of agricultural produce and a market for manufactured goods and consequently sought to outstrip the others in developing avenues of transportation.

Although shipping time and costs were greatly reduced as a result of these turnpikes, rates for overland transport were still extremely high. It cost \$125 to move a ton of freight overland from Philadelphia to Pittsburgh, while the average charge throughout the country for general merchandise was, according to John Bach McMaster (*125*), probably \$10 per ton for each 100 miles. These excessive rates virtually prohibited the transporting of grain and flour more than 150 miles. Another source of complaint was the high toll charges; in New England the average toll was 12½ cents per wagon for every 2 miles. Many farmers preferred using a semblance of trails through swamps and underbrush to submitting to monopolistic extortions. State legislatures in some cases were persuaded to impose a measure of regulatory restraint by setting maximum rates.

Private corporations, even with a certain amount of State aid, could not provide a system of internal improvement adequate to meet national needs. Consequently the people turned to the Federal Government for assistance. Under article 1 of section 8 of the Constitution, Congress was empowered to establish post offices and post roads, raise and support armies, and regulate commerce. This, according to advocates of Government action, was ample authorization in view of the many beneficial results expected to accrue to the general welfare. A network of roads and canals built under Government auspices, they maintained, would stimulate westward settlement, facilitate national defense, and spur the growth of domestic commerce. Such an undertaking was financially possible since in 1806 and at several intervals thereafter there was a surplus in the Federal Treasury.

In response to this pressure Albert Gallatin, Secretary of the Treasury, drew up in 1808 an extensive report to Congress on internal improvements. In it he advocated a Nation-wide system of canals, turnpikes, and river improvements at a total cost of \$20,000,000 to be financed over a 10-year period by the Federal surplus or by the sale of public lands. Coming from such an economy-minded, strict constructionist, the proposal is particularly noteworthy.

The Cumberland Road, extending from Cumberland, Md., to Vandalia, Ill., a distance of 834 miles, was, however, the only major tangible result of this early agitation. The cost to the Federal Government for the construction and maintenance of the Cumberland Road reached almost \$7,000,000, but as a highway to the West for both emigration and trade it amply repaid the outlay.

Internal improvements became increasingly a sectional issue, with the North and West favoring Federal aid and the South opposing it. As President, both Madison and Monroe insisted that a constitutional amendment was necessary for further action; John Quincy Adams, who followed, was strongly in favor of Government subsidies, but Congress was opposed. Andrew Jackson, as a westerner, tended to support improvements that were genuinely national in purpose and not "pork-barrel" ventures designed to line the pockets of local

speculators. Of the \$9,500,000 expended by the Government on roads and canals from 1802 to 1835, two-thirds was disbursed during his administration. The frequently cited Maysville Road veto was due to the intrastate character of that particular project. Under Jackson was also passed the Distribution Act of 1836, designed to rid the Treasury of the surplus by lending the money to the separate States, which were to employ the funds for speculative ventures in road and canal construction. The depression beginning in 1837 brought the movement for Federal aid to a temporary halt, and after the crystallization of opposition in the South the policy finally bogged down in the maze of conflicting constitutional interpretations.

The advent of the steamboat, in 1807, gave river traffic a new importance. Flatboats and keelboats propelled by relays of men who were referred to colloquially as "alligator horses" were useful in downstream trade, and the West was fortunate in having the Mississippi, that 2,000-mile internal artery, for traffic diffusion. By 1810 this trade was valued at \$10,000,000 and engaged 2,000 flatboats and keelboats annually. The disadvantages, however, were great—river hazards were numerous, and traffic upstream was almost nonexistent; in 1815 when a steamer ascended the Mississippi and the Ohio from New Orleans to Louisville in 25 days a new chapter in American trade and internal development was opened (60).

Steam navigation began under a monopoly patent granted Fulton, Livingstone, and associates, and John Marshall was for once popularly acclaimed when in the case of *Gibbons v. Ogden* (1824) he read the Supreme Court's decision invalidating the power of any one State to monopolize river transportation. The next few decades witnessed a tremendous expansion in river navigation by steamboats, particularly in the West. Chief of the water routes were the Mississippi, Ohio, and Missouri Rivers and their main tributaries. By 1851 there were nearly 600 steamboats plying the rivers of the interior. Pittsburgh, Cincinnati, and St. Louis were the main centers of this trade, but New Orleans profited most; from 1830 to 1840 it grew more rapidly in wealth and commerce than any other city. Until canals and railroads broke the tie, this river trade closely bound the Northwest and the Southwest. Western products included flour, bacon, corn, oats, apples, and potatoes. Down to New Orleans from the Ohio Valley came thousands of rafts loaded with corn, hay, and wheat, while from farms of the Cumberland and Tennessee Valleys came tobacco and cotton. By 1852, however, the value of cotton shipped to New Orleans passed that of all other products combined.

Steamboats were an important factor in the settlement of the West, remaining the chief means of travel even after the railroads had come into general use. In 1852 a single ship on one trip carried 500 homeseekers north from New Orleans; the number leaving Pittsburgh on St. Louis boats in 1854 averaged 1,500 each day. The high mark was reached in 1855, when 3,000,000 passengers traveled on Ohio River boats; after that there was a general decline as lines went out of business or moved to more western waters.

The steamboats were never wholly able to overcome many of the obstacles faced by flatboats and keelboats in the Mississippi and Ohio trade. Upstream freight traffic from New Orleans never assumed

impressive proportions, and western farmers had to look elsewhere for their imports. The shallow water, strong currents, and falls at Louisville often delayed ships for days. Shoals and bars were numerous, and they shifted frequently; and floating logs often ripped open the hulls of vessels. Ice, floods, boiler explosions, and scourges were also common. According to one calculation, over 1,000 ships had been lost by 1850, and the number of casualties exceeded 2,200 killed and 1,800 wounded. To improve traffic conditions on the Mississippi, Ohio, Missouri, and Arkansas Rivers, the Federal Government appropriated over \$3,000,000 between 1822 and 1860; unfortunately the grants were made chiefly before 1844 and dwindled into insignificance when the need was greatest (130).

Although less spectacular than western steamboating the coastwise traffic became more important in the long run. New England shippers were most active in the trade. Alien vessels were first placed at a complete disadvantage by the tonnage duties of 1789 and in 1817 were completely excluded by a congressional act. By 1831 the tonnage of vessels in the coasting trade had already exceeded that in American foreign commerce; by 1860 the value of commodities carried in this traffic was six times that of foreign exports. This expansion was due to two factors: (1) Economic specialization and (2) the rise of New York as the leading port. The Northeast became an industrial region supplying the domestic market with manufactured products and receiving in turn food supplies and raw materials, while the Northwest became the granary of the Nation. The pivot of this trade, however, was southern cotton. It was carried to the North to be exchanged for clothes, tools and machinery, furniture, or shoes, or to be reexported from New York to Europe; indeed by 1850 only New Orleans and Mobile ranked above New York in the export of cotton. The coastwise trade in 1852 was valued at over \$2,500,000,000, far exceeding that carried by canals, railroads, or western steamboats (114).

Steam power was soon applied to the American overseas trade. Its practicability having been proved during the 1830's the Cunard Line from Liverpool to New York was established at the beginning of the next decade. The Federal Government encouraged the organization of American steamship lines by granting subsidies for carrying the mails that were far in excess of the actual cost involved. This system was continued from 1845 to 1858, and under it during this period a total of \$14,500,000 was paid out. A competitor of the steamship from 1843 to the Civil War was the clipper ship, with its superior speed and cheaper building and operating costs. Further development of the steamship in transoceanic traffic had to wait upon the era of cheap steel construction.

The movement for artificial waterways or canals arose in part as a response to the successful introduction of steam navigation. From the viewpoint of the seaboard regions, anxious to secure the increasingly important western trade, the problem was to combine steamships with east-west water routes since the great rivers ran in a north-south direction. Despite the improved roads, overland trade was still too slow and too expensive. Meanwhile the West was increasing in population and agricultural production, and the Mississippi River traffic failed to provide an adequate market for its produce or a satisfactory

source of manufactured commodities. The further growth of eastern industrialism and western agriculture alike was contingent on adequate interstate transportation facilities.

The building of the Erie Canal marked the opening of the new era, although local canals had been constructed in Virginia and North Carolina before 1800. The idea of a canal connecting the Hudson River and the Great Lakes had occurred to Gouverneur Morris as early as 1777. It was Gov. DeWitt Clinton, however, who finally persuaded the New York Legislature to appropriate the necessary funds in 1817. In addition to the Erie Canal, New York undertook at the same time to build a waterway to Lake Champlain; these were tremendous financial ventures for a State with a population of less than a million and a half. The untiring zeal of DeWitt Clinton was rewarded when the Erie Canal reached its western terminus at Buffalo in 1825. "Clinton's ditch," as it had been derisively nicknamed, extended 363 miles and, together with the Champlain Canal, cost over \$10,000,000 (115).

Within nine years the cost of building the Erie Canal was paid by the tolls alone; eventually, before these charges were abolished in 1882, more than \$120,000,000 was collected. What the canal meant to the northwestern farmer is indicated by the fact that where previously it had cost \$100 and taken 20 days to ship a ton of freight overland from Buffalo to New York, now the rate was only \$15 a ton, and the time was cut to 8 days. The value of farm produce in western New York doubled, and there was a corresponding increase in the Northwest—with a resultant rise in land values. New cities sprang up overnight in the region of the canal; Utica, Syracuse, and Rochester became large centers. New York City rapidly became the foremost American seaport, its population increasing about 60 percent between 1820 and 1830. Of infinite consequence for the development of the United States was the tie thus knotted between the Northeast and the Northwest.

The example of New York stimulated rival seaboard States to make their bid for western commerce. Pennsylvania was the first. By 1834 this State had completed an elaborate combination of artificial waterways and horse railroads; its 954 miles of canals were the most extensive system in the United States. Though far behind the Erie Canal in volume of trade, the Pennsylvania Canal was the most important route from the upper Ohio to the East. Close to 200 packets and freighters carried produce and passengers on it and the trade between Pittsburgh and Philadelphia in flour, meat products, wool, and tobacco doubled in value.

In the South, Virginia and Maryland undertook canal construction, but with less success. Baltimore sponsored the Chesapeake & Ohio Canal, which terminated at Cumberland, in 1850; the Federal Government contributed a million dollars to this project—one of the very few grants it made in aid of State canals. Though this waterway was useful, the Baltimore & Ohio Railroad soon superseded it in importance. Richmond merchants, also anxious for the western trade, started in 1835 a canal which reached the headwaters of the James River two decades later.

In the Old Northwest to secure the greatest advantage from the

Erie Canal a series of feeder canals was necessary to supplement the rivers flowing toward the Great Lakes. Ohio became the leader, its canal system being outranked only by those of Pennsylvania and New York. Indiana, Illinois, and even sparsely settled Michigan followed suit. The availability of the eastern market led to extended production, quickened westward migration, and increased land cultivation. No longer was the Northwest dependent on a glutted New Orleans market. Western wheat began to feed not only industrial America but England as well.

The costs of internal improvements were staggering, particularly for the less developed States on the frontier.

Private investors in the East and in England subscribed to State securities, and Congress also was induced to contribute. From the public domain alternate sections 5 miles wide on each side of projected canals were granted Indiana, Illinois, and Ohio. To allay opposition, it was argued that the reserved sections would so rise in value as to compensate for the land given gratis.

Expenditures for internal improvements were excessive, and the panic of 1837 pricked the speculative bubble. At least six States were obliged to repudiate part of their debts, while many others stopped interest payments for years. A committee of British bondholders was formed and attempted to induce Daniel Webster to act as its collection agent. Nearly all the States sold their interests to private concerns and retired from the field. It became part of the American credo that a public utility could not be built and operated successfully except by private enterprise. That the State governments should withdraw at this particular juncture—on the eve of railroad development—was of the utmost consequence.

Railroads appeared on the scene to challenge the supremacy of canals just as the latter mode of transportation reached its highest point of usefulness. Being faster and available for year-round use, railroads were soon able to gain the upper hand. Railroad managers hastened the conquest by rate cutting and the purchase and closure of competing canals. The rise in our own time of motor transportation as a rival of the railroads has a touch of poetic justice. Interest in canals has also reawakened recently—witness the Great Lakes-St. Lawrence Waterway project favored by the present administration. Canal transportation is cheaper for heavy freight, and it is maintained that slower marketing may help to prevent glutting the market with agricultural produce.

As the Lancaster Turnpike opened the turnpike era and the Erie Canal began artificial-waterway construction, so the Baltimore & Ohio Railroad ushered in the railroad age in 1828. By 1830 the B. & O. boasted 11 miles of rail, and in the same year the Mohawk & Hudson was begun from Albany to Schenectady. For draft power the railroads used horses and sails at first, but steam locomotives definitely proved their superiority when the "Best Friend of Charleston" attained a speed of 30 miles per hour traveling alone and 16 to 21 miles with four loaded cars. The next year, 1831, the "Tom Thumb" made the 13 miles between Baltimore and Ellicott's Mills in 1 hour, and the managers of the Baltimore & Ohio were converted to steam as a source of power.

On their first appearance railroads evoked considerable opposition. Farmers feared the loss of markets for their horses and hay as well as increased danger from fires along railway routes. Tavern keepers saw the undermining of their business, while military strategists insisted that railroads were inferior to canals for military transport. The superior speed of the railroads gave them easy control of passenger traffic, but commanding the far more important field of freight transportation was another matter. It was relatively easy in New England and the South, where the chief competitor was the carriage trade, but very difficult in the region of the Great Lakes and the Mississippi and near canals of the better type. Figures for 1852 suggest that the railroads at that time carried only one-seventh of the tonnage transported.

Until 1840 railroad building was confined to the seaboard, particularly within southern New England and eastern Maryland. The trans-Allegheny region had only a few miles of isolated railroads. No adequate railroad network was completed by 1850, when a tremendous spurt began. Within 10 years the mileage increased from 9,000 to 30,000 miles. The New York Central was consolidated in 1853; Chicago, by way of the Illinois Central, Michigan Southern, and Lake Shore routes, was brought in touch with New York; the Pennsylvania Railroad reached out to Pittsburgh; while in the South there were connecting railroads from Savannah and Charleston across the mountains to Chattanooga.

Once under way, railway construction increased rapidly, with ensuing consequences in sectional economic alignment. Cincinnati, which had previously depended on the river trade to New Orleans for transportation, in 1857, as a result of railroad connections, sent five times more wheat and corn to northern and eastern than to southern centers. Illinois, by 1860, surpassed Tennessee as the greatest corn State as a result of the opening of the prairie areas by the Illinois Central road. Both the flour-milling center and the stock-raising industry shifted westward. New York City kept growing, while New Orleans began to decline. As in the case of canals, the Northeast bound the Northwest to itself with rails of steel.

Before the break-down of State finances in 1837 the State governments made some gestures in the direction of aiding railroad building. In Massachusetts and Maryland private corporations were granted State assistance, while Michigan and Illinois undertook State construction. Even after the panic years Georgia built the Western and Atlantic, but in general the field was left in the hands of private capital.

The public authorities, however, did not withdraw completely after 1837. In 1838 all railroads were designated by Congress as post roads, while two years earlier maximum rates were fixed for the branch of the Baltimore & Ohio that passed through the District of Columbia. There were proposals to use the army to build a Government railroad to the Mississippi, and at various times Congress voted money for railroad surveys. The separate States, in granting railroad charters, wrote in clauses regulating maximum rates, holding the corporations liable for accidents, and reserving the right to purchase the railroads at a certain price after a given interval.

In the fifties Congress began a system of land grants in connection with railroads such as it had previously attempted with roads and canals (95). Illinois, Alabama, and Mississippi were granted alternate sections 6 miles wide on each side of projected routes. This procedure was far more cautious, however, than that which developed after the Civil War. The Illinois Central, for example, was to pay 7 percent of its gross earnings in return for the 2,500,000 acres it received, while the Federal Government doubled the price on the alternate sections that it had reserved to itself. It was not until the South was shorn of its power in Congress that virtual empires of land were given to the railroad magnates as subsidies. A memorial to Congress in 1847, lamenting the growth of railroad combinations and monopolies, and the price-fixing agreement of certain New York, Ohio, and Michigan roads in 1853 foreshadowed post-Civil War trends.

THE AGRICULTURAL REVOLUTION

During the last 100 years, the agriculture of the United States as well as the economic life generally has undergone changes so momentous in their ramifications and consequences that, taken together, they are frequently referred to as the agricultural revolution. In the words of a noted agricultural historian (174):

Agriculture was transformed from a simple, pioneer, and largely self-sufficing occupation into a modern business organized on a scientific, capitalistic, and commercial basis; industry definitely underwent the change from hand labor in the home to machine production in the factory; and the local market was transformed into the world market. This threefold revolution in agriculture, industry, and commerce is the key to the study of the recent history of the United States.

Like all revolutions this vast reorientation of American economic life did not begin suddenly or in all parts of the country simultaneously. It has already been noted that even in the colonial period the activities of many American agricultural communities were directed toward the production of surplus crops for distribution in markets beyond the Atlantic. During the latter half of the eighteenth century the agriculture of England underwent a similar revolution (153), and the accompanying desire to utilize the findings of modern science in order to make farming profitable was not without influence among the leaders of the United States in the years immediately following the American Revolution (195). While the forces of the agricultural revolution had long been at work, it remained for the Civil War to hasten their fruition. The result was the evolution of a complex economic and social structure whose problems interlink with those of the entire world and challenge the intelligence of all mankind (169).

The forces underlying the American agricultural revolution may be epitomized as follows: (1) The passing of the public domain into private ownership by means of liberal land policies; (2) the completion of the westward movement of settlement; (3) the invention and popularization of improved farm implements and machinery; (4) the extension and development of transportation facilities; (5) the migration of industries from the farm to the factory; (6) the expansion of domestic and foreign markets; (7) the establishment of agencies for the promotion of scientific knowledge relating to agriculture—agricultural societies, agricultural fairs, periodicals for farmers, the Federal Department of Agri-

culture, and agricultural colleges and experiment stations; and (8) the resort to conscious and concerted political organization and action by farmers in an effort to retain an equitable place for agriculture in the economic structure of the Nation.

A concrete result of this agricultural revolution was a quickening of the tendency for certain agricultural crops and commodities to dominate in the regions naturally suited to their production. In its Yearbooks for 1921 through 1925 the Department of Agriculture provided a notable series of articles which include historical descriptions, both textual and graphic, of the westward movement and current location of the agricultural crops and products of the United States.

The remainder of this article, therefore, will be devoted largely to an analysis of the forces which, taken together, constituted the agricultural revolution. Space will not permit a discussion, however, of the development of agricultural societies (13, 35, 36, 40, 135, 188, 189), agricultural fairs (7, 135, 161), and the agricultural press (18, 68, 69, 71, 81). These important elements are briefly treated elsewhere in this volume (Old Ideals Versus New Ideas in Farm Life, p. 111).

Land Policy to 1918; a Perversion of Democratic Aims

On May 20, 1862, President Lincoln, a westerner, signed the Homestead Act. The Republican Party thus completed the bargain it had made in 1860 to insure western support. Under the act, 160 acres of the public domain was offered free to any person who was the head of a family or had reached his majority and who was an American citizen or had filed intentions of becoming one. After proving 5 years of residence or cultivation and paying a nominal registration fee, the homesteader received title. He might, however, by the commutation clause of the act purchase the land after only 6 months of residence, at the prevailing minimum price, usually \$1.25 per acre. The required period of residence was raised to 14 months in 1891.

From the vantage ground of the present, the historian can easily see the faults of the homestead law. Its fundamental weakness, according to B. H. Hibbard (101), was its complete inadaptability to the region to which it applied. The principle of the small homestead was valid between the Ohio and Missouri Rivers and was reasonable even in Minnesota and the eastern parts of Nebraska, Kansas, and the Dakotas. By 1862, however, these areas were already occupied, and the great bulk of the lands open to homesteading lay west of the 100th meridian, from the Great Plains to the Pacific coast. The average rainfall over most of this region ranges from 10 to 18 inches, falling much lower during seasonal and cyclical dry spells. Traditional farming techniques based on the humid soils of the East were unsuitable for these new conditions. Effective land utilization required dry farming, grazing, or intensive cultivation with natural or artificial irrigation. But 160 acres was too much land for irrigated farming, while for dry farming or grazing it was too little.

In addition to being out of touch with the realities of soil and climate, the Homestead Act did not jibe with other land legislation. This idea has been carefully developed by Paul Wallace Gates in his essay, *The Homestead Law in an Incongruous Land System* (87).

He points out that the Government continued the cash sale of land until 1891 and that more land was sold than was homesteaded. Altogether about 100 million acres of Federal lands were on the block. Another 125 million were granted to railroads between 1862 and 1871, with the proviso that homesteaders were to move at least 20 to 40 miles back from projected routes. Rather than suffer from inadequate transportation facilities, many settlers preferred to pay \$400 or more for a quarter section. By the Dawes Act of 1887, modified by the Burke Act of 1906 and subsequent measures, some 100 million acres of Indian lands were also opened for sale. Many millions of acres more were turned over to the States to finance colleges according to the Land Grant College Act of 1862.

With such a vast empire purchasable, speculation and land monopolization were in order. Syndicates of foreign or domestic origin purchased in blocks of 100,000 acres or more and generally secured the most desirable lands. Actual settlers were left to take their chances with the free lands, often less fertile or less advantageously located, or to buy at prices set by the speculators, the railroads, or the States. This result was altogether contrary to the expectations of the democratic forces that had fought for free homesteads for 35 years.

Even less satisfactory than the land enactments themselves was their administration. Fraudulent entries were common occurrences. People were regularly employed to file claims which could be turned over to land, timber, or mining companies. Equally flagrant was the practice of staking claims for nonexistent individuals. When land was purchased in large blocks, almost invariably the transaction was accompanied by a measure of graft. The General Land Office, which supervised disposal of the public domain, did not have the organization, the personnel, or the backing to insure careful and honest administration—even if it had had a desire to do so (65). So long as rich prizes were in the offing for laxity, and overscrupulousness brought official and public disapproval, the General Land Office was not likely to develop that desire.

Efforts to remedy abuses were slow and ineffectual. Loans were made from time to time to homesteaders affected by droughts and blights. After 1871 the Government ceased its grants to railroad and canal companies and took steps to recover land not actually needed for rights-of-way. Realizing the need for a local supply of lumber, fuel, and fence posts, an attempt was made by an act of 1873, later amended, to stimulate the planting of trees on western prairies. For covering 40 acres with timber, a person could claim the quarter section of which the 40 acres was a part. Unfortunately, to quote Hibbard, "The Timber-Culture Act was framed when there was still some government land in Iowa, a great deal in southwestern Minnesota, and immediately to the west of the Missouri River. But by the time a few years had passed and the Timber-Culture Act got well under way its operation was crowded into the plains and into the semi-arid regions, where it would have been both impossible and undesirable to bring the trees along to the stage required by the government. . . . It was one of the most complete failures, so far as accomplishing what Congress had in mind is concerned, to be recorded in the long list of unfortunate public land acts" (101; see especially pp. 421-422).

That a tract of 160 acres was useless in arid regions was quite obvious to anyone who knew the West. President Grant, after visiting the Mountain States in 1875, suggested to Congress that it appoint a commission actually to visit the land and make recommendations based on a first-hand study. Two years later the Desert Land Act was signed. This act offered a 640-acre section at \$1.25 per acre to anyone who would irrigate within 3 years. Almost immediately the Land Office began a campaign for the repeal of the measure. The provision for irrigation was vague since it did not specify how much water was to be conducted to the land. On the other hand, effective irrigation farming required considerably more capital than most settlers could command. As it operated, the Desert Land Act of 1877 chiefly benefited the grazing interests and irrigation companies, which engrossed many thousands of acres (85).

In 1878 two measures were put into effect for the disposal of public timber and timberlands. By the Timber Cutting Act citizens of specified States and Territories were authorized to cut down trees on the mineral lands of the public domain for mining and agricultural or domestic purposes without charge. However worthy its intent, the measure in effect was a bounty to grasping mill owners and lumber companies.

Even more harmful to the public interest was the Timber and Stone Act which provided for the sale, at \$2.50 an acre, of quarter sections of land unsuited for agriculture but valuable for timber. According to reports of the Land Office and the Secretary of the Interior, the act operated to transfer the public timberlands almost directly to large corporations and speculators. Over 13 million acres of the national heritage was thus lost.

The establishment in 1879 of the United States Geological Survey to classify the public resources was a progressive step. Unfortunately a commission created under the same act recommended that the General Land Office be vested with the final responsibility for classification. The work of the Geological Survey until 1906 was confined largely to the preparation of topographical and geological maps and reports.

In 1887-91, under President Cleveland—zealous crusader for honesty in politics—a halt was called to the more flagrant abuses of land administration. When, as a result, the number of claims allowed dropped off, interested groups protested and the trend was reversed in the next administration.

More significant for the future was the attempt made by Congress in 1891 to reform its land policy by the passage of an omnibus bill (198). The measure began by repealing the Timber Cutting Act. Next, it specified that a definite plan for irrigation must be presented whenever land was taken up under the Desert Land Office and that at least \$3 per acre must be spent for improvements. The Preemption Act, on the statute books since 1841, was repealed, and the policy of selling the public domain, except timber, mineral, and other special lands, was abandoned. Section 24, authorizing the President to set aside forest lands as public reservations, foreshadowed another era.

Toward the close of the century critics became more vehement in attacking laissez faire ideas. Proclaiming new concepts of social

control, these progressives helped pave the way for public regulation of railroad practices and the attempted suppression of monopolies. From the same general source came the attack on a land policy that permitted, if it did not actually encourage, the reckless squandering of basic national resources.

As a result of such pressure the movement for conservation got under way. In 1876 the Department of Agriculture was authorized to investigate the country's forest resources and by 1905 the work had evolved into the Forest Service. To its care were entrusted the national forest reserves which Presidents Harrison and Cleveland, acting under the statute of 1891, had already expanded to include almost 40 million acres. An experiment in reclamation was also undertaken; through the Carey Act of 1894 the Federal Government sought to enlist State aid in the settlement and irrigation of arid lands by offering to turn over a maximum of a million acres to each of certain States.

After 1900 the trend toward reform in land policy and administration, as in other phases of national life, became more marked. Theodore Roosevelt assumed leadership and with his dramatic flair impressed the country with the urgent need for a well-rounded program of conservation and reclamation. The Carey Act having proved unsatisfactory, direct Federal activity in promoting irrigation was required by the Reclamation Act of 1902. The money received from land sales was to be set aside as a reclamation fund for developing irrigation projects, the costs of which were to be repaid by the settlers in the ensuing decade. Although the principle of Federal supervision was sound and many desert areas were converted into flourishing farm lands, the measure was not entirely satisfactory and had to be modified repeatedly (85).

The first decisive step in protecting the Nation's mineral resources was taken in 1906 when President Roosevelt directed the Secretary of the Interior to withdraw from entry all valuable coal lands. A hardship arose from the fact that mineral lands were often good agricultural areas on the surface. In an effort to serve two purposes, Congress, by acts of 1909 and 1910, authorized agricultural entry for surface rights only, reserving to the Government all mineral rights. Subsurface wealth thus saved to the Nation included not only coal, but iron, phosphate, potash, copper, and other vital resources. The leasing of these deposits to private individuals was permitted under carefully prescribed regulations by laws of 1914, 1917, and 1920.

President Roosevelt added 148 million acres to the public timberland reserves. Systematic efforts to prevent forest fires and to retimber cut-over tracts were undertaken by the Forest Service under Gifford Pinchot. State cooperation was enlisted at a conference of Governors called by the President in 1908, and within 18 months 41 State conservation commissions were appointed and in active operation. The area set aside for national parks under a policy begun in 1872 with the creation of Yellowstone National Park was greatly enlarged.

Under President Taft, the conservation program continued its progress. An act of 1910 facilitated the withdrawal of water-power sites from entry. The following year Congress arranged for the purchase of forest lands near the headwaters of navigable streams in the White

Mountains and the southern Appalachians. Even the intensely bitter Ballinger-Pinchot dispute was from one point of view an encouraging sign. It indicated that public opinion could be aroused to a high pitch of indignation against alleged mishandling of the public wealth (107).

Contrary to general opinion, more land was homesteaded in the decades after 1900 than in those preceding. The frontier as a continuous line of settlement came to an end in 1890, as every student since Frederick Jackson Turner has been made aware, but vast tracts of scattered public lands of inferior quality still remained open. To facilitate their settlement Congress tried further modifications of the Homestead Act. In 1904 the Kinkaid Act permitted the granting of 640-acre homesteads in western Nebraska, and 5 years later the Enlarged Homestead Act was passed, making it possible to take 320 acres as a homestead in a number of other States and Territories. The requirement of 5 years of residence prior to issuance of title was cut down to 3 years in 1912. Finally, by the Stock-Raising Homestead Act of 1916, land classified as good only for grazing or forage was to be parceled out in homesteads with a maximum of 640 acres.

The existence of free lands was, according to Turner, the most momentous single factor in the shaping of peculiarly American institutions (192). Without subscribing to all the deduced ramifications of that thesis, one may agree that the end of the frontier era closed a significant chapter in the country's history. City laborers may not actually have migrated to western farms to escape industrial exploitation, as the "safety-valve" theory insists, but at least they had shared with other Americans the psychological comfort of looking toward an expanding and seemingly unlimited horizon. Now there was to be no escape to the wilderness or beyond the hills, no endless temporizing with basic social and economic problems. America was obliged to grow up.

Under a wiser and better-administered land system many of the pains of social maturing might have been avoided. It is conceivable, for example, that scientific land planning actually might have achieved the ideal which underlay the conception of the Homestead Act—a wide diffusion of wealth and the creation of a large class of independent proprietors. Instead, 37 percent of the American farmers were already counted as tenants by 1910, and that proportion was to increase in succeeding decades. By holding off land from the market and moderating the rapidity of settlement an equilibrium might have been established and maintained between industrial and agricultural growth and some of the fundamental ills of American agriculture might have been avoided. At least such lands as were not suited to farming should have been closed to cultivation, and programs to combat erosion and floods should have been initiated. The Nation's resources in timber and minerals, had they been better safeguarded, would have increased the social wealth of succeeding generations.

Such reasoning, however, takes no account of prevailing conditions and concepts. It was practically impossible to have foretold in 1860 that within 30 years a half billion acres of the public domain would have been disposed of or reserved for governmental purposes. The land was considered valueless unless it was put under cultivation as

rapidly as possible, and the various land acts did help to people the wilderness. To have opposed unregulated settlement would have been considered either a mad perversion or a reflection of some selfish economic interest endangered by western competition. It was not only the lumber and mining companies and the land speculators that demanded a free hand; the mass of the American people, particularly those who looked westward, kept shouting for land and more land. The United States in the generation before 1900 was probably not ripe for any further measures of social control, even though large-scale industry had arisen and shown the value of central planning.

Completion of Westward Movement

By 1850 the westward-moving frontier of settlement had halted at the edge of the Great Plains, owing to the Indian policy inaugurated a generation before and to the fact that the unoccupied region presented a challenge to the accepted methods of agricultural conquest (206). It is true that there were already isolated islands of settlement in California, the Willamette Valley, and Utah. Within 40 years the entire territory of the trans-Missouri West was occupied and began to add to the surpluses of agricultural products and to serve as a growing market for manufactured goods (47, pp. 403-625; 143; 154, ch. 17-42).

The settlement of the territory extending from the Missouri River to the Pacific Ocean may be resolved into five stages of development. (1) For a time, the region served merely as a roadway to the gold of California and the fertile lands of Oregon. (2) The miners, stimulated to seek new opportunities, turned to the unoccupied valleys and mountain ranges. Their rush into the region of Colorado laid the basis for permanent settlement there. The occupation of Nevada, Arizona, New Mexico, western Montana, Idaho, and eastern Washington followed during the decade of the Civil War. The need of food supplies for the mining camps prompted the beginning of agriculture in the valleys (53, 213). (3) The completion of the Union Pacific Railroad in 1869, inaugurated 5 years before as a means of strengthening the bond between the Pacific coast and the North, brought in a flood of hunters who exterminated the buffalo and thus facilitated occupation of the Plains by the range-cattle industry. The success of the Union Pacific encouraged the building of four other similar lines. Thus, the trans-Mississippi West, as contrasted with the East, had facilities for rapid transportation prior to, rather than after, intensive settlement and exploitation (142). (4) During the two decades following the close of the Civil War, the Great Plains became the scene of the range-cattle industry, which contributed immeasurably to the romance, color, and folklore of the West (58, 140, 144). The railroads made possible the development of this industry; they also brought in homesteaders and other land seekers who disrupted the range and forced the cattlemen to shift to a ranch basis (59). (5) Farmers from the East, taking land in accordance with the Homestead Act or buying it from the railroads which had received large grants as subsidies, undertook to occupy the Great Plains and the valleys to the westward (32, 62). The fact that much of this land received less than 20 inches of rainfall a year foredoomed the transplanting of eastern ways of agriculture and necessitated the development of new methods and crops (108, 127, 168).

Irrigation and dry farming became important in America for the first time, and many problems were passed on to the post-World War generation (122, 123).

Three factors affecting agriculture that accompanied the completion of the westward movement should also be mentioned: (1) The growth of population in that part of the United States settled prior to 1850; (2) the rapid growth of urbanization; and (3) immigration from Europe.

The population of continental United States numbered 23,191,876 in 1850 and 62,947,714 in 1890. By 1920 it had passed the hundred-million mark, totaling 105,710,620. That is to say, the population increased by two and one-half times in 40 years and by four and one-half times in 70 years. Immigration supplied 31,406,943 from 1850 to 1920. Reduced to simple terms, this increase in population meant more farm surpluses; but it also created a greatly expanded home market for agricultural products.

The population of the United States continued to be predominantly rural to the end of the period under review, but the rapid increase and ultimate triumph of urbanization predestined the future of the United States to a quite different social and economic configuration (171). The census of 1880 showed that the rural population, including towns and villages with less than 2,500 inhabitants, numbered 35,797,616, or 71.4 percent of the total population. This was more than the population of the entire country in 1860. By 1910 the rural population numbered 49,806,146, which was 54.2 percent of the total. By 1920, however, the census showed that the majority of the American people lived in towns and cities—48.6 percent being classified as rural and 51.4 as urban.

American Agriculture Becomes Mechanized

Through countless centuries agriculture was carried on by hand labor, with only a few simple tools supplemented to a slight extent by animal power (25, pp. 34-37). This basic pattern continued practically unchanged down to 1830.

In the decades from 1830 to 1860 were crowded inventions and improvements that revolutionized agricultural development (25, pp. 207-216, 281-305). After this period food scarcity and famines were no longer accepted as inevitable. Farmers could harness machinery and step up production to the point delimited in capitalistic economy by "effective market demand," or less technically, by the ability of people to buy. The American farmer acquired the power not only to bring forth an abundance of food for every man, woman, and child in the United States but also to contribute to a world surplus.⁸ How much of the increased production may be attributed to machinery and how much to the larger acreage under cultivation—though even in that machinery was a causal influence—better methods of cultivation, the use of fertilizers, better seeds, crop rotation, and other factors, it is difficult to determine. The availability of mechanical power was certainly of crucial importance when labor was scarce and land abundant, and it has had a continuing effect on the lowering of prices of farm products by cutting costs of production.

⁸ TOLLEY, H. R., and BRODELL, A. P. THE ROLE OF MACHINERY IN THE DEVELOPMENT OF THE AGRICULTURE OF THE UNITED STATES. 11 pp. U. S. Bur. Agr. Econ. 1930. [Mineographed.]

Probably the most significant single invention introduced in the period from 1830 to 1860 was the mechanical reaper (74). Driven by animal power, it displaced many hands at that crucial point in grain production when the work must be completed quickly to save the crop from ruin. The cradle, in general use after 1800, was a great improvement over the sickle, but it was still a hand tool. Many minds in Europe and America worked to perfect a reaper, and more than 50 different models were brought out between 1786 and 1831, when Cyrus McCormick completed his first machine (132). Obed Hussey and McCormick patented reapers in 1833 and 1834, respectively (105). Within 10 years, during which several improvements were made, McCormick only sold approximately 80 machines and was in a fair way to being outstripped by his rival, Hussey. McCormick, however, had the foresight to move West, seeing a limitless market in the vast, fertile prairies. In 1847 he established his own factory in Chicago and by 1851 was turning out a thousand reapers a year. His profits 6 years later mounted to over a million and a quarter dollars, while Hussey sold out in 1858 for a mere \$200,000.

Although the early reaper was crude, it cut by one-third the cost of harvesting. At a trial held in Geneva, N. Y., in 1852, it required 14 men with cradles to do the work of 9 men with a reaper. Of the 9 men, only 2 were needed for the machine and 7 to rake and bind the grain (160). When mechanical raker and binder attachments further displaced manpower, the net saving in cost increased two-thirds or more.

Between 1830 and 1860 the plow advanced from the iron to the steel stage. Prior to Jethro Wood's day, the plow in common use was a cumbersome wooden contrivance. In 1814 Wood patented a cast-iron model, and at his death 20 years later farmers had overcome their fear of soil poisoning and thousands were using iron plows.

The iron shares, however, did not scour in the rich, sticky, and heavily root-matted soils of the prairies of the Middle West. In an effort to overcome this, two blacksmiths, John Lane and John Deere, working independently, substituted steel for iron shares (48). Lane did not realize the importance of his discovery, but Deere soon moved to Moline, Ill., and began large-scale production. His annual output had reached 10,000 plows by 1857. Although the problem of an adequate and cheap supply of good steel was still unsolved and the East clung to the less expensive iron plow, the contribution of Deere made possible the successful cultivation of the prairies.⁹

Jethro Tull, an early English agricultural reformer, had invented a modern seed drill before the middle of the eighteenth century, but American farmers were still sowing wheat broadcast almost a century later (11). In 1799 an American, Eliakim Spooner, patented a mechanical corn planter, but it received very little attention. Not until the 1840's was the manufacture of grain drills begun in this country by William Pennock. By 1860 the wheat drill was in general use in the Middle Atlantic States but it did not become common in the prairie regions until the early seventies. Horse-drawn corn drills also became popular during this time; most noted were the Billings drill, which

⁹ CHURCH, LILLIAN, compiler. HISTORY OF THE PLOW. U. S. Dept. Agr., Bur. Agr. Engin. Inform. Ser. 48, 16 pp., illus. 1935. [Mimeographed.]

sowed fertilizer with the corn, and the Brown machine, which planted two rows at a time. Mechanical drills combined the two operations of sowing and covering with soil and made for more certain and larger yields.¹⁰

A few threshing machines of English or Scottish design were imported soon after 1800, but they were easily broken and few persons knew how to repair them. A number of American models were on the market by 1820, but they met with comparatively little success. In the thirties the demand for small inexpensive machines became so great that over 700 different models were being advertised. The Pitts thresher, which successfully combined threshing, separating, and winnowing, marked a turning point, but not until the late forties was it used in the leading wheat fields. After 1850 most of the grain in the prairie regions seems to have been threshed by itinerant machines which could prepare over 300 bushels of wheat for bagging in a single day.¹¹

Though all these improved implements were extensively used by 1860, the Civil War was the decisive force in farm mechanization (106). The Union Government's mobilization of the largest army which any nation had brought together up to that time necessitated the withdrawal of a million farmers from agricultural production. The men and women left behind on the farms of the North and West had to turn to the new machinery, particularly reapers and threshers, and their success in producing a greater wheat crop than during peacetime proved the utility of the labor-saving devices. By the close of the war, farm machinery had become a necessity for farmers engaged in commercialized agriculture.

The second stage of development, roughly from 1860 to 1910, was marked by the general displacement of men by horses as the motive power for agricultural implements. Horses had already been used before 1860 to provide the motive power for the plow, the grain drill, the hay mower and rake, the reaper, and the thresher. As these implements came into more general use, the number of horses used as draft animals increased correspondingly.

In addition, the new or improved machines marketed in succeeding decades all required horsepower. Among the more prominent of these innovations was the Marsh harvester, patented in 1858, which not only reaped the grain mechanically but delivered it on a table to be bound. Even more important was the invention in 1878 by John F. Appleby of a twine binder. According to Carver (41), this machine more than any other made possible increased production of grain by stepping up the speed of harvesting. By 1880, according to the census of that year, about four-fifths of all the wheat grown in the United States was cut by machine.

Improved machines for planting and cultivating were similarly horse-drawn. The sulky and the gang plow were extensively used by 1880 in the wheat-growing regions of the Pacific coast and in the Red River Valley. The spring-tooth harrow was patented in 1877, and

¹⁰ CHURCH, LILLIAN, compiler. HISTORY OF GRAIN DRILLS. U. S. Dept. Agr., Bur. Agr. Engin. Inform. Ser. 70, 9 pp., illus. 1935. [Mimeographed.]

¹¹ CHURCH, LILLIAN, compiler. PARTIAL HISTORY OF THE DEVELOPMENT OF GRAIN THRESHING IMPLEMENTS AND MACHINES. U. S. Dept. Agr., Bur. Agr. Engin. Inform. Ser. 73, 40 pp., illus. 1939. [Mimeographed.] See also (160).

soon there was a growing demand for it in the Eastern and Central States, while after 1892 the disk harrow became popular in the West. The lister, which simultaneously plows and plants the seed in two opposite furrows, was a special device introduced after 1880 for making corn growing possible in the semiarid regions. Mechanical harvesting of corn also replaced hand labor, and in the last decade of the nineteenth century A. S. Peck patented a corn binder.

Although the production of wheat and other small grains, corn and hay benefited most from mechanization, other agricultural products were also affected to a lesser degree. The cotton-seed planter, fertilizer distributor, cotton-stalk cutter, and various specialized types of plows and harrows were introduced in the Cotton Belt. The cotton gin was greatly improved, and the development of a cotton-picking machine was begun. Between 1850 and 1875, dairying too underwent mechanization, and by 1910 centrifugal cream separators and testers, improved churns, and other dairy apparatus had resulted in the transfer of cheese and butter making from the farm to factories.

Just prior to the outbreak of the first World War farm equipment entered still another stage of development, with the substitution of mechanical power for horse power (15). Steam engines were first tried, but they were not altogether satisfactory because of their weight and the difficulty of providing fuel and water. About 1905 the gasoline tractor was introduced, and in efficiency, durability, and suitability for the required operations it proved superior to steam.

The tractor was most effective in wheat farming. During the eighties the revolutionary harvester-thresher, or combine, was first tried in the wheat fields of California. The huge machine pulled by 20 to 40 horses completed all the operations from reaping through bagging the wheat and had a daily average capacity of 25 to 45 acres. The combine drawn by steam tractor, which appeared in the nineties, had an even greater average capacity, being propelled at a higher speed than the normal gait of work horses. Both the horse combine and the steam combine were tried in the North Central States, but the demand there was for a smaller and lighter machine. The improved gasoline tractor eventually made possible a redesigning of the combine, which, however, for most economical use still needed a 1,000-acre farm in 1920.

In corn growing, power farming has made plowing and cultivation speedier and less expensive. Whereas a man with a two-horse team could plow from 8 to 10 acres a day, with a tractor and 4-row cultivator he could cover 60 to 65 acres. The horse-drawn corn picker, introduced before 1910, was replaced by a tractor-driven machine. Gasoline power was utilized also for the corn binder and silo filler.

Farm machinery has been used in the United States far more than in any other country, but even here its specific effects cannot be delineated too clearly because of the complexity of the factors involved. Although not the only cause, it has certainly aided the American farmer to achieve the highest production per man (160). On the other hand, the widespread use of farm machinery probably postponed the shift from extensive to intensive cultivation, and on a per-acre production basis the American farmer ranked below his European competitor.

Mechanization put a premium on large-scale farming, with the economies incident to such operations (8). There was a geographic shift also to lands of relatively level topography and low rainfall. While these conditions were fulfilled in the western part of the United States, they also prevailed in Canada, Australia, and Argentina.

Transportation for the Products of the Farm

The development of domestic transportation facilities from the fifties to the World War centered almost exclusively about the expansion of the railroad industry. In 1860 the United States had 30,000 miles of railroad confined largely to the Northeast; by 1920 the country boasted a network of 253,000 miles covering every section, with some seven separate lines joining the Atlantic and Pacific coasts. The railroad mileage of the United States in 1910 exceeded that of all Europe and represented more than a third of the world's total. While the country's population was increasing three times, railway mileage expanded more than eightfold. In the face of this phenomenal growth the Mississippi River trade declined, and close to 2,000 miles of canals were abandoned by 1900. Waterways did not succumb without a struggle, as will be indicated later, and in certain phases, notably the Great Lakes traffic, enjoyed considerable prosperity. The railroads dominated the post-Civil War era and were interwoven in the political pattern almost as inextricably as in the economic (75).

As previously shown, after the panic of 1837 the Federal and State Governments determined to leave the financing and management of public utilities to private interests. They could not shake off responsibility entirely, however; railroads were too obviously and painfully a matter of public concern. The result was that, at least until the depression of 1873, local and State authorities vied with the Federal Government in pouring out lavish subsidies freely to private railroad construction companies. After that a reverse tendency set in and State governments sought to regulate and control railroads, a movement later taken up and extended by the Federal Government.

It is now generally agreed that without Government aid railroad expansion would not have been as great or as rapid. It was not, however, an unmixed blessing. During the 32 years following the initial grant to the Illinois Central in 1850, Congress and the General Land Office actually turned over 155 million acres of the public domain to railroad companies, an area equal to that of the New England States, Pennsylvania, and New York combined (157). The Union Pacific and Central Pacific Railroads received financial assistance, \$16,000 to \$48,000 having been awarded for each mile of railway constructed.

State and local subsidies were more varied; they included land grants, the right of eminent domain, exemption from taxation, loans, money grants, and assistance in floating securities. The railroad companies later defaulted on most of the money loaned, a privilege not extended by the United States Supreme Court to the local governments, which had to shoulder a debt totaling \$300,000,000. Adding up these various governmental largesses, one historian concludes that three-fourths of the cost of railway construction was borne by public authorities (94).

The farmers had looked with favor on every type of aid given the railroads. They not only accepted the higher taxes necessitated by the local subsidies, but mortgaged their land and equipment to purchase railroad bonds. The railroads promised unbelievable prosperity; they had the power to open Nation-wide and even world-wide markets; they could bring in thousands of settlers to increase land values and create great centers of trade and wealth; they might join field and factory, country and city. It was a bright vision for farmers suffering from declining agricultural prices; that their extravagant hopes were never realized, at least not to the extent expected, they attributed to grasping, iniquitous railroad managers.

Indeed, the embattled agrarians could level and substantiate a host of charges against the railroads. Absentee management, watered stock, flimsy construction, high rates, pooling devices, discriminations between long and short hauls and between shippers and regions, dishonesty, corruption of State legislatures, and incivility—all evils which had been perpetrated by railroad managers—by no means exhausted the list of complaints. If managers attempted to defend themselves on the score that they were protecting the interests of stockholders, it could be pointed out that the inner powers, such as Jay Gould, Daniel Drew, Cornelius Vanderbilt, and their hundreds of imitators, manipulated stocks to their own enrichment; furthermore, the rates charged were based on an excessive capitalization. Competition occasionally brought rates down, but railroad pools removed even this boon. Assuredly the American people in their desire to meet their need for transportation facilities found themselves confronted with problems they had not anticipated. After many vicissitudes, it occurred to the more thoughtful that if railroad managers could band together so could farmers.

The Patrons of Husbandry, or as it is popularly known, the Grange, was founded in Washington, D. C., in 1867. It began as a secret society designed to break down the social isolation of farmers. By 1874 the order had 15,000 local branches and 1,500,000 members; it spread to every section of the country, but particularly to the Middle West. The farmers, having been brought together, naturally began to discuss their common problems, and from that point it was but a step to the launching of cooperatives and the formation of political groups and parties (35).

The farmers could not undertake the construction of railroads, so they turned to the Government, which according to democratic theory was their agent. They organized State and local tickets and from 1871 to 1874 elected hundreds of mayors, Governors, and Representatives. The result was the passage of the first mandatory railroad laws ever placed on American statute books. In Illinois, Iowa, Wisconsin, Minnesota, Missouri, Nebraska, and California railroad rates were regulated by legislation and constitutional amendment; pooling, free passes, rebates, and the long- and short-haul evil were prohibited, and enforcing commissions were established. Here again, as in the cooperatives, there was evident a lack of experience, railroad hostility, and increasing apathy as public pressure subsided. In addition, the Supreme Court, in the *Wabash* decision of 1886, reversed its previous liberal stand in the *Munn v. Illinois* ruling of 1876 and held that the

States had no right to regulate interstate commerce, even in lieu of congressional action.

Despite the fulminations of E. L. Godkin in the Nation and of other leading contemporary editors, the Grangers were not "wild-eyed communists" launching a war against private property. They were small-scale American farmers drawn into a new industrial-capitalistic society which they did not understand; but one fact they grasped intuitively—unless they fought to control this new order, it would enslave them and deprive them of their birthright as free Americans. The railroad monopoly was a symbol of the new oppression as well as their most immediate enemy, so the agrarians rose against it; but, as shown in later developments, the struggle was primarily for a society that had a place for the small farmer as well as the great capitalist.

The Granger movement, at least in its economic and political aspects, waned by 1880, but the tradition remained. In 1887, owing largely to western and southern pressure, the Interstate Commerce Act to subject railroads to Federal regulation was passed. When the measure was weakened by judicial decision, the same elements supported the Elkins Act of 1903, which provided for punishing the receiver as well as the giver of rebates, and the Hepburn Act of 1906, which empowered the Interstate Commerce Commission to initiate rates and force adherence, leaving to the carriers the burden of court action, and which also extended the Commission's jurisdiction over express- and sleeping-car companies, pipe lines, switches, spurs, tracks, and terminal facilities. The Mann-Elkins Act of 1910 empowered the Commission to suspend new rates for 10 months pending an investigation and set up a special commerce court to hear railroad cases.

These measures alleviated the worst features of the evil, but to the farmers' new way of thinking they did not solve the problem. In 1892, the People's or Populist Party inserted this plank in its national platform: "Transportation being a means of exchange and a public necessity, the Government should own and operate the railroads in the interests of the people" (102).

From the 1870's to the World War there was a progressive decline in railroad rates for both freight and passenger traffic. This was partly in response to legislative regulation, but the competition of railroads and the introduction of various improvements, such as steel rails and labor-saving devices for handling bulky commodities, were even more important factors. In 1880 the average cost of shipping a bushel of wheat from Chicago to New York was 20 cents; in 1910, it had fallen to 9½ cents. The average freight rate per ton-mile was \$1.22 in 1883; by 1890 it declined to \$0.93, and reached \$0.75 in 1900. Passenger rates also decreased, but to a lesser extent.

The effect of these lowered rates was seen in the rapid development of the West. Railroads, anxious to increase transportation revenues and sell their land grants, became active colonizers, spreading propaganda and sending agents to the Eastern States and all over Europe. Glowing pictures were painted, and reduced transportation rates and liberal credit terms on land purchases were offered. The railroad, as Benjamin Harrison observed in 1884, replaced the pack train and Conestoga wagon as the chief vehicle of emigrants to the West. Between 1860 and 1900, the center of the

Nation's population moved from central Ohio to eastern Indiana.

By helping to populate the West and by offering lower freight rates and improved facilities, the railroads were a factor in establishing the Northwest and North Central States as the grain kingdom of the country. The invention of the refrigerator car also spurred the meat-packing industry. After 1869, pork packing was possible in the summer and fresh beef could be shipped freely in any season. The total value of the products in this industry grew from \$29,000,000 in 1860 to \$4,246,000,000 in 1919. Refrigeration transportation likewise aided the westward extension of the dairy and poultry industries.

With reduced rates and improved facilities, the railroads were able to divert almost completely the agricultural and other bulky commodity trade from the river and canal routes. The high-water mark of river transportation for the lower Mississippi came in 1880 when over a million tons were received and shipped at St. Louis, but this trade fell to 141,000 tons in 1905. The Federal Government attempted to improve river trade by appropriations which mounted to more than \$12,000,000 by 1882. Unfortunately, pork-barrel grants were substituted for systematic planning; a Mississippi River Commission established in 1879 urged a flood-control program, but its appropriations were only for higher levees and consequently floods were all the more disastrous when they did occur. In 1899 Congress authorized the removal or remodeling of bridges obstructing navigable streams, but it was not until the War Department took over the project in 1917 that any progress was made. The creation, in 1902, of the Federal Board of Engineers for Rivers and Harbors as a planning and superintending agency marked a turning away from traditional pork-barrel methods. The chief salvation of river traffic, however, was the towboat business. Although barges moved very slowly, so many could be towed at one time that economies were effected in both time and cost.

Canals declined in transportation importance even more than rivers. By 1909, over half the mileage of canals had been abandoned. In an attempt to revive a dwindling trade, the Erie Canal was widened and deepened at a cost of about \$200,000,000, but apparently the increase in traffic has not justified the outlay. Railroads are speedier; they are designed to handle large, bulky traffic; their many branch lines touch hundreds of points inaccessible to canals; and the cost of transshipment frequently outweighs the advantages of the lower canal rates.

In contrast with the river and canal traffic, trade on the Great Lakes showed a progressive increase. Despite railroad competition, it increased more than threefold between 1890 and 1910. These fresh-water seas provided a deep and continuous artery of trade for a thousand miles at rates lower than those of the railroads. Grain, lumber, and minerals were the chief commodities carried, and the passage at Sault Ste. Marie, in contrast to the plight of other canals, had become by 1900 the greatest internal waterway in the world, with five times as many ships as passed through the Suez Canal.

The coastwise trade suffered a noticeable decline in the face of railway competition. The opening of the Panama Canal in 1914 aided the water carriers somewhat, although the ship corporations

engaged in the coastal trade were actually controlled for the most part by the railroads. Coal, lumber, cotton, and similar bulky commodities have long been the chief items of coastwise traffic.

Compared with the volume of domestic trade, foreign commerce was relatively insignificant, but for agricultural produce foreign markets were of considerable importance, particularly in the period before 1900 and during the World War.

The Migration of Industries From the Farm to the Factory

A distinctive feature of American farm life during the two and a half centuries following the settlement of Jamestown was economic self-sufficiency. Each farm produced practically everything that it consumed—food, clothing, furniture, soap, candles, and the many other articles essential to the farmer and his family (190, 204). The transfer of manufacturing from the farm to the factory is the most significant aspect of the transition from self-sufficient to commercial agriculture. It was, furthermore, the central fact of both the agricultural and industrial revolutions.

This migration of industries from the farm to the factory resulted in vast changes in the technical processes of manufacturing; in greatly increased market demands for agricultural commodities due to the growth of large urban centers; and in a tendency toward intensified specialization in agriculture.

The industries that have been transferred from the farm to the factory may be grouped as follows: (1) Food products; (2) textiles and clothing, including boots and shoes; and (3) tobacco and a number of minor products. The first group includes slaughtering and meat packing (49), flour milling (116), the manufacture of butter, cheese, and other dairy products (9, 148), and the canning of fruits and vegetables. Many new industries developed, notably the processing of beet sugar, the baking of bread and pastries, and the making of confections. In 1860 flour and grist mill products were worth \$248,580,000 and ranked first among the food-manufacturing industries. In 1919 the initial place had been taken by the slaughtering and meat-packing industry, whose products were worth \$4,246,291,000. The products of all food industries in 1919 were valued at \$12,438,891,000 and constituted 20 percent of the total value of all American manufactured products.

The transfer of the textile, clothing, and shoe industries likewise has been significant. In 1820 more than two-thirds of the textiles were being produced in individual homes, but within a generation the balance had shifted to the factories in the rising industrial centers (24). The processing of tobacco experienced a similar though somewhat less rapid change (109).

American Agriculture Acquires New Markets at Home and Abroad (1865-1914)

Prior to 1850, the main emphasis on the southern cotton and tobacco plantations and to a lesser degree in the northeastern wool and fluid-milk industries was on raising a surplus for sale. By that time the same tendency was evident in western cereal and meat production; it was accentuated by the Civil War and brought to full development in

the decades immediately following. From the Ohio and Mississippi Rivers to the Pacific coast, vast fertile farming areas were geared to surplus production, with results comparable only to the revolution in industry during the same period. Between 1860 and 1900, over 400 million acres were added to the farm domain, mostly in the trans-Mississippi West, while the income realized from agriculture increased from \$3,000,000,000 in 1860 to \$5,500,000,000 in 1910.

Many factors combined to produce this phenomenal growth: The application of machinery to agriculture; the free-homestead policy of the Federal Government; improved transportation facilities; a growing labor supply, due mainly to an influx of immigrants; and the utilization of science and industry. Of basic importance was the expansion of markets, both domestic and foreign. It is axiomatic that large-scale agriculture appears, in the first instance, only in response to demand; a farmer has no reason in a money economy for raising crops beyond his immediate family needs unless he can dispose of them profitably. Agriculture utilized machinery and science after the Civil War principally because the tremendous growth in the nonagricultural population created an unparalleled market for food and raw materials. All over the world, the industrial revolution concentrated in urban centers hundreds of millions who had to be fed and clothed, while the processes of manufacturing created a constant demand for cotton, wool, and other agricultural products. It was the good fortune of the western farmer to be particularly blessed with land, labor, machinery, and other resources to meet this need.

Of the farm products grown in the United States after 1860, cereals were by far the most important. In 1899 they constituted almost half of the total value of all crops raised in the country. From 1860 to 1915, the output of corn was increased from a little over 800 million to almost 3 billion bushels; wheat production in the same years rose from 173 million to more than 1 billion bushels (*172, 194*). Cereal growing was centered in the Northwest and North Central States. Illinois and Indiana were the leading corn States. The substitution of rollers for stones in flour milling encouraged the growing of spring wheat in Minnesota and North Dakota, although by 1909 Kansas had passed Minnesota and was second only to North Dakota (*80, 116*). The internal grain trade, in turn, was localized in the heart of the Wheat and Corn Belts, particularly in the cities on the Great Lakes and the rivers of the upper Mississippi Valley (*173*). Here sprang up the chief primary cereal warehouses where great supplies of grain and flour were concentrated in the first stage of shipment to the South and East for domestic use or for exportation. Foremost was Chicago, which in 1900 received 350 million bushels of grain and flour and shipped 266 million; Minneapolis was second with receipts of 107 million and shipments of 88 million bushels; other leading markets included St. Louis, Duluth-Superior, Milwaukee, and Toledo. From each of these points radiated a network of railways, which brought in the grain from the fields and then carried it away to the South, East, or West. After 1860 the bulk of trade was no longer confined to the east-and-west route over the Erie Canal, the trunk-line railroads, or the waters of the Mississippi (*114*).

Since freight rates on equal quantities of flour and wheat were

about the same, it was found more profitable to transport the finished product than the raw material. As a result, the milling industry tended to be localized near the wheat fields. Minneapolis became the world's greatest milling center, with an annual output of more than 15 million barrels by the end of the century. Duluth-Superior, St. Louis, Milwaukee, Chicago, and Toledo were other major flour-milling cities, just as they were the leading markets for the grain trade.

The extension of railroads to western grazing lands and the rapid increase of corn production in the Mississippi Valley after 1860 spurred the livestock industry. Beef-cattle raising concentrated in the North Central, West-South-Central, and Mountain States; hog growing in the Corn Belt; and sheep raising in the Mountain States. Like the trade in grain, the domestic trade in livestock centered in cities that were within easy reach of the producing regions and at the same time had ready access to the consuming regions. To these primary markets the railroads carried thousands of carloads of cattle, hogs, and sheep to be slaughtered or reshipped to Eastern slaughter-houses.

Cincinnati was the chief meat-packing city prior to 1863, but after that Chicago assumed the lead (49). In 1914, Chicago handled almost one-fourth of the country's output, with Kansas City, New York, Indianapolis, and St. Louis following in that order. Pork was the packers' principal product, the dressed weight slaughtered annually exceeding 5 billion pounds; beef was second; and mutton and veal trailed behind. Until the perfection of chilling processes in the early seventies, meat shipped any distance was salted or pickled, and eastern cities depended on importations of live animals for their supplies of fresh meat. With the introduction of the refrigerator car, the trade in dressed beef and mutton grew rapidly in the Central States, and there was a decline in the east-bound shipments of livestock. The higher railroad rates on livestock as compared with those on meat products further accentuated the change.

The influence of urban concentration was clearly visible in the growth of the dairy business (9, 117). Fresh milk had to be supplied each day, and the farmers nearest the great cities, such as New York, Philadelphia, and Chicago, monopolized this form of dairying. The crude home-production methods of butter and cheese making which had formerly prevailed could provide neither the quantity nor the quality of dairy products demanded by city dwellers. Consequently there was a shift to factory production, and by 1869 over a thousand cheese factories extended in a belt from New York to Iowa. In 1879, Wisconsin alone produced more than 19 million pounds of cheese, over eighteen times as much as the total home production in 1859.

At first it was believed that superior dairying was limited to a few scattered regions favored by soil and climate, but agricultural experiment stations proved that butter could be made wherever beef could be grown. Thus the dairy industry spread westward, the refrigerator car providing the necessary transportation facilities to eastern markets. By the end of the century, more than 800 million pounds of butter and over 133 million pounds of cheese were made in the North Central States, Iowa and Wisconsin leading; after 1900, Minnesota began to

assume an important place in butter production (70). Poultry and eggs were also important items in urban diets, and incubators and cold storage enabled producers to meet market demands for them. The trade in these products was heaviest in the cities of the Corn Belt, from which over half the total output came. In 1901 Chicago received about 2,800,000 cases of eggs, half of which were shipped to eastern cities.

The cotton regions were in a desperate plight in 1865 (210). Not only had they suffered the ravages of war, but with the overthrow of slavery and the break-up of the plantation system, they faced the problem of reshaping their entire economy (138, 219). However, within 5 years, the Southern States were growing as much cotton as in 1860, and production kept increasing. In 1910 the output of the staple reached 11,609,000 bales as compared with 3,841,000 in 1860, a rise of more than 300 percent. The westward march of cotton is evidenced by the fact that by 1900 Texas was the leading State, with almost 7 million acres devoted to cotton culture and a crop almost equal in size to the total production of the South prior to the Civil War (5, 66).

Formerly the bulk of the cotton had been exported to feed English mills, but after the Civil War domestic textile manufacturing grew as rapidly as cotton production, and by 1899 over a third of the cotton crop was used in domestic mills. At first most of the cotton manufacturing was confined to the Northern States, but after 1885 the textile industry began to expand rapidly in the Cotton Belt itself. Southern leaders stressed the need for industrial diversification, and local communities and States offered every inducement to encourage the construction of cotton mills. In 1900, southern factories were consuming three-fourths as much cotton as those in the North, and by 1910, they had taken over the lead in domestic consumption.

Before the advent of the railroad, the cities where cotton was concentrated prior to shipment to seaports were located on navigable streams leading to the Gulf or Atlantic coast. Among the largest of these interior markets were Atlanta, Memphis, Shreveport, Vicksburg, Montgomery, Augusta, and Columbia. After the spread of the railway net into the Cotton Belt, not only were other inland cities able to share in the trade, but river ports themselves declined in importance unless they became railway centers. Houston, St. Louis, Memphis, and Augusta—the most important interior markets in 1898—were all focal points of railroads that passed through the most fertile portions of the Cotton Belt.

Railroads also helped New Orleans to regain its early preeminence as an exporting center, a position which it kept until 1899, when it was replaced by Galveston, the chief market of Texas. These two cities shipped about nine-tenths of the cotton exported through the Gulf of Mexico. On the Atlantic coast the chief ports were Savannah, Norfolk, and Charleston, in that order.

The overland all-rail movement of cotton which began about 1855 became increasingly important after the Civil War. Previously, all cotton shipped to the North was carried by coastwise vessels, but by 1900 the railroads had captured more than a third of the trade. A considerable quantity of the cotton purchased by Canada was sent to

the border by rail, and toward the end of the century the growth of cotton exports to Japan stimulated heavy rail movements to the seaports of the Pacific coast.

Although grain, livestock, dairy products, and cotton were the chief commodities in the internal trade, many others were of importance. The production of wool was about five times as great in 1900 as in 1860; the sheep-raising industry shifted after 1880 largely to the Rocky Mountain States, from which wool was sent to the mills of New England, Pennsylvania, and New York.

An interesting trade development of this period was the eastward shipment of fruits from California. The first shipment was made in 1867, and by 1899 the trade amounted to 193 million pounds of fresh deciduous fruits, 95 percent of which was carried in refrigerator cars. During these years, the warmer Southern States also began sending fresh vegetables and fruits to northern cities the year round. Tobacco was another product in great demand in urban communities; Kentucky and North Carolina enjoyed most of the trade, with Louisville becoming the largest leaf-tobacco market in the country in 1865.

As was true of internal commerce, the export trade in agricultural commodities expanded tremendously up to the end of the nineteenth century. A chief item in the trade was grain. So phenomenal was the growth of western production that even during the Civil War, not only were northern armies and civilians fed, but some 138 million bushels of wheat were exported as compared with 39 million from 1856 to 1860. England was the principal market, a fact which has led many historians to the conclusion that western grain kept England neutral.

After the Civil War, the trend of grain exports was upward until the turn of the century. The peak year for corn exports came in 1897 with the shipment of 212 million bushels. Wheat and flour exports reached their maximum in 1901 when over 239 million bushels were shipped, yet only 31.4 percent of that year's crop was exported (104). Corn shipments in the peak year accounted for only 8.9 percent of that crop, all the rest being disposed of on the domestic market.

Exports of meat and meat products, which had been relatively insignificant before the Civil War, soon came to rank third in importance. Their value rose from approximately \$37,000,000 in 1865 to over \$116,000,000 in 1880, and over \$179,000,000 in 1900. The packing industries produced more than the home market could readily absorb, and exportation was of considerable importance, particularly in the case of pork products. Refrigerated storage on ocean vessels provided proper transportation facilities.

The results of these huge cereal and meat imports on European social and economic life were of the most fundamental character. On the one hand, the laboring classes in cities were provided with cheap and abundant food. At the same time, however, European farmers, unless protected by tariff barriers, were unable to compete, and many were ruined by declining prices and falling land values (186). Great Britain was our chief market, and with free trade prevailing after the repeal of the corn laws in 1846, agriculture there suffered particularly. From 1878 to 1907 wheat acreage in England

declined 50 percent. An attempt was made to shift to meat production, and for a time farmers in Great Britain, by concentrating on superior quality, withstood Texan competition, but American meat improved rapidly and even that advantage was soon lost. Continental countries that imported sizable quantities of American foodstuffs suffered similarly. The results were mirrored partly in the tremendous migration from Europe westward during the seventies and eighties, partly in the flocking of farmers to cities, and partly in the agrarian movements that sought relief in governmental policies. A frequently quoted comparison by an Austrian economist likened the effect wrought on European economy by the flow of American agricultural produce to the revolution attendant on the importation of American gold and silver after the discoveries of Columbus.

The peak of this development was reached by 1900; after that, the United States began to decline in importance as an exporter of foodstuffs. Fresh-beef shipments fell from 352 million pounds in 1901 to 6 million in 1914; bacon exports dropped from 650 million in 1898 to 194 million in 1913. Wheat averaged only about 80 million bushels annually from 1910 to 1912; while corn exports dropped below 11 million bushels in 1913. Butter and cheese products also dropped from the 79 million pounds exported in 1898 to only 6 million in 1913.

Many factors were responsible for this precipitous decline. European Governments, in an effort to aid their agricultural classes, raised duties and imposed embargoes on sanitary grounds, as in the case of hog products. Continental farmers themselves used more artificial fertilizers and improved the quality of their livestock. After the eighties, new agricultural regions were opened in Russia, Argentina, Australia, and Canada, and their produce began crowding American foodstuffs out of European markets.

At the same time that foreign markets were contracting, the domestic market was expanding. Industrial development in the United States caught up with the overstimulated agricultural development, and as urbanization increased, a larger share of the farm produce was consumed domestically. In 1899 the average number of wage earners in industry totaled 4,700,000; by 1909 it had increased to 6,600,000 (139).

The American farmer in turn began to adjust himself more effectively to market demands. The first exuberance of the frontier stage had passed and land values were rising, although there were still millions of acres of free land. There was a gradual trend toward increased sugar production and enlarged output of dairy and horticultural products, and more emphasis was placed on supplying cities with fresh milk and out-of-season fruits and vegetables. The results were highly gratifying to the farmer, for prices rose and his income increased. There was a relatively prosperous period for agriculture from 1900 to 1914, with supply and demand in effective equilibrium. The World War proved an extreme calamity for the American farmer; it induced tremendous overexpansion and renewed dependence on foreign markets.

In contrast to the decline in cereal and meat exports, the shipments of cotton abroad increased 1,584,000 bales between 1905 and 1914. Although India and Egypt appeared as competitors, the natural ad-

vantages of the American Cotton Belt gave this country a commanding position. Cotton once more became the chief item in our export trade, as it had been prior to the Civil War. Great Britain alone absorbed one-third of the crop, with Germany and France next in importance (201). Just before the outbreak of the World War, an important trade began to develop with Japan, with cotton being exchanged for silk.

Leaf-tobacco exports similarly increased, from over 300 million pounds in 1899 to almost 450 million in 1913. Between 1903 and 1912, one-third of the world's tobacco crop was produced in the United States; the four countries importing most of the American product were Great Britain, Germany, France, and Italy (201).

Prior to 1850 most American farmers, particularly those in the West, raised produce to be consumed on the farm or to be exchanged in part at local shops for sugar, salt, and similar articles. After 1850, and especially during and following the Civil War, agriculture, as previously outlined, became a commercialized industry in which farmers raised surplus crops to be sold for cash on national and international markets, depending on outside sources for clothing and in many cases even for food. This transformation created problems of a most complex character for American farmers. They were suddenly harnessed to a vast capitalistic process in which they strove, one with the other, to produce as much as possible at the lowest cost and to realize the largest possible income from the marketed surplus. Since machines were used in the competitive struggle, many farmers mortgaged their lands to buy them; but to pay for them more money was needed, so they ran the machines at full capacity to raise more crops. The larger the surpluses grew, however, the more prices sagged and the less were the relative profits.

New marketing agencies and devices appeared, the blessings of which farmers could not quite appreciate. In 1848, the Board of Trade was established in Chicago, and in 1870 and 1871 cotton exchanges were set up in Liverpool and New York. The farmers suspected that the prices received for their grain and cotton were in large measure determined arbitrarily by transactions at these centers. Moreover, they knew that market quotations were in turn affected by speculators who traded in futures; this was a new device by which speculators could bet on the sizes of forthcoming crops. The farmers were assured that this marketing process helped to establish standards and finance crop movements. They were skeptical, however, especially when the dealers who purchased the crops in the first instance formed pooling associations to set a common price, while speculators sometimes deliberately manipulated market prices to their own advantage. The developing practice of grading and scoring farm produce was beneficial, if properly administered, but unfortunately the commission merchants and elevator directors were not always scrupulous. As already stated, railroads played an essential part in connecting the farmers with their markets; and railroad managers notoriously abused their power, by discriminating between shippers and sections, setting freight rates as high as the traffic would bear, and forming pools to avoid competition. Further, the more agriculture became commercialized, the more important was credit.

The farmers needed credit to purchase machinery, to make improvements, and to tide them over from one harvest to another, yet the few national banks that existed in rural areas were prohibited from loaning on mortgages. Although State banks, insurance companies, and individuals filled the gap to some extent, many farmers had to rely on loan sharks who charged interest rates of 15 to 25 percent. The crop-lien system, by which the local merchant took a mortgage on a farmer's crop in return for credit, strangled agriculture in the South. Finally, in purchasing their agricultural machinery the farmers found themselves confronted by large companies that kept prices high.

The farmer grew uneasy. He perceived that his produce fed the city hordes and that its exportation helped pay for foreign investments in American manufacturing, transportation, and mining. He was keenly aware of the wealth that was piling up in cities, for his wife and children were demanding the luxuries of city folks. He saw that railroad managers, grain-elevator owners, bankers and loan sharks, farm-machinery monopolists, commission men, and speculators were all flourishing, while he, on whom all these others depended, staggered under an increasing burden that was crushing him into tenancy and serfdom.

When he sought an avenue of escape, he was solemnly advised by economists that he must adjust his output to market demand. This reasoning may have been sound, but how was the farmer to achieve this end? Manufacturers, by combining into trusts or pools, could control prices and output, at least to some degree; they were able, by their corporate might, to squeeze special privileges from the middlemen, and they could, by pouring millions of dollars into advertising, even "educate" the tastes of the ultimate consumer. Similarly, though much less effectively, wage earners organized into unions to raise wages and improve working conditions; but how were farmers—millions of small isolated producers scattered throughout the country—to unite? Not only that, but prices of farm products were set on a world market, and after the eighties American farmers had to compete with millions of farmers in Russia, Argentina, Australia, and India.

However difficult the task of organization may have seemed, it had to be undertaken as the farmers' only method of defense against political and economic oppression. The entrance of agrarianism into the political arena via the Granger movement has already been mentioned. Economic cooperation was also a leading feature of the Grange. Whenever a local Grange was formed, one of the first steps taken was to initiate some form of cooperative buying and selling. Local agencies merged into county or district councils, and these in turn grew into State bodies. Unfortunately, the National Grange failed to take hold in the beginning and work out a comprehensive cooperative program, so that each State Grange was left to its own devices.

The methods used varied; the most general was to employ an agent who would market the farmers' produce most profitably and force the manufacturers to sell more cheaply. In Iowa, where cooperation first achieved marked success, 5 million bushels of grain and large numbers of cattle and hogs were shipped direct to Chicago through Grange

agents, effecting a saving of 10 to 40 percent by the end of 1872. On the purchases of farm machinery alone, the State members were said to have saved \$365,000. As an example of the difference between individual and cooperative buying, a reaper which had been retailing at \$240 was sold to Granges at \$140 (35).

Grange stores were also common. Stock companies, consisting solely of members of the Grange, were organized to provide the capital. These stores sold to Grangers at very low prices, and the profits, when there were any, were divided proportionally among the stockholders. This system did not work well, as neighboring merchants met the competition and diverted trade from the cooperative stores. More effective was the Rochdale plan, sponsored by the National Grange in 1875. Under this plan, stock was widely distributed in small shares, and savings were effected, not by selling at cost, but by dividing profits among the members according to their purchases. It met with particular success in Texas, where as late as 1887, when the Patrons of Husbandry was in eclipse in other parts of the South and West, there were 150 stores doing an annual business of almost \$2,000,000. The Rochdale system was also applied in the Texan Cooperative Association, which handled shipments of cotton, and in the wholesale business in general. In 1887, the Texan Cooperative Association divided almost \$20,000 in net profits among its members.

In California, three cooperative banks were established to provide credit at low interest rates to farmers. One of these enterprises saved its members considerable money during a depression in the wheat market by loaning them sufficient funds to enable them to hold their wheat for a rise in the market. In a dozen States, the Grange established successful mutual fire and life insurance companies. Heartened by their success and enjoying full treasuries collected from dues and contributions, many of the Granges launched cooperative factories to manufacture farm implements. In Iowa, during the summer of 1874 about 250 harvesters were manufactured and furnished to members at half the prevailing price. Many other States, particularly Kansas, Wisconsin, and Kentucky, set up factories to turn out plows, cultivators, threshing machines, and other implements used in farming. The National Grange in 1874 authorized its executive committee to purchase machine patents and work out a plan of cooperation with State Granges to manufacture all kinds of farm machinery. Adequate capital for these ventures could not be obtained and the Granges were soon involved in patent suits, so that by the close of 1875 the idea was abandoned.

More successful were the cooperative factories that converted the raw materials produced by farmers into finished products. Cheese and butter factories, linseed-oil factories, pork-packing establishments, and even hemp and cotton mills in the South were projected. Capital for these local enterprises was furnished by the organization of stock companies among Grange members. In some parts of the West, farmers' cooperative creameries and cheese factories had even preceded the rise of the Grange, but their number was greatly increased by the Order.

This attempt of the farmer to perform the function of middleman, manufacturer, capitalist, and banker through cooperative enterprise met with only short-lived success. Lack of capital, inability to work

together, lack of business experience on the part of the Grangers, and the competition, fair and unfair, of private merchants and corporations drove most of the cooperatives out of business before 1880. However, the experience had many valuable results. While the undertakings flourished, they saved farmers a considerable amount of money, and they scared the merchants and manufacturers into lowering prices even after the Granger movement had collapsed. Mail-order houses, catering to rural trade, were another outcome, the first one starting business at Chicago in 1872 especially to sell to Grangers. Finally, the Granger experience taught farmers many of the principles and possibilities of cooperation and created a tradition of economic cooperation which has been carried on with increasing vigor down to the present day. The Grange itself, when later revived, returned to cooperative activity in full earnestness.

In the eighties, the Northwestern Alliance and the Southern Alliance, like the Grange in the previous decade, paved the way for united economic as well as political action. A number of grain elevators were established in Minnesota and the Dakotas, and cooperative creameries functioned successfully in Illinois. Much more ambitious, however, was the southern phase: Cooperative stores, elevators, and gins were undertaken by local Alliances and survived over a period of years; cooperative cotton marketing was sponsored in 1886 by the Texas State Alliance; and business agencies were established to make purchases directly from wholesalers and manufacturers. Under C. W. Macune, Texan agrarian leader, a Farmers' Alliance Exchange was organized in Texas to sell farm produce and buy farm supplies. It succeeded in marketing cotton and grain to advantage and in purchasing farm implements at a substantial discount which was passed on to the farmers. So long as the exchange operated on a cash basis, however, it was of no particular benefit to the great mass of farmers who lacked cash. To meet this situation, local Alliances were asked to execute joint notes which, it was hoped, would be accepted as collateral at face value by the banks. The scheme fell through when the banks refused money on the notes, and the exchange was forced into bankruptcy. Other Southern States experimented with the plan in a modified form, the Georgia exchange proving the most successful—in the first year of its existence, it was said to have saved its patrons \$200,000 on fertilizers alone. The idea of a national exchange, although widely discussed, was sidetracked in favor of political action (102).

Another period of expansion for the cooperatives began in 1895 and continued until 1920. Prior to 1900 at least 950 cooperatives were known to have been organized, and before 1920 over 11,000 had been formed. Cooperative associations for every important type of commodity came into existence, although most important in volume of business during the decade 1910-19 were the grain, dairy, livestock, and fruit and vegetable associations.

In 1915, 65 percent of the active cooperatives were located in the North Central States, and 9 percent in the Southern States (202). One reason for this regionalized distribution was the founding, in 1902, of the American Society of Equity in Indiana and of the Farmers' Educational and Cooperative Union, better known as the Farmers' Union, in Texas. Both of these associations gave even more atten-

tion than had preceding farmers' organizations to the marketing problem. The Equity Society even attempted to organize farmers into pools, set prices, and monopolize crop marketing. Wheat and tobacco producers were persuaded to sign legally binding pledges to turn over the bulk of their crops to Equity agents, who would withhold the supply from the market until the prices fixed by the society prevailed. Elevators, cold-storage plants, and warehouses were projected for storing the produce, and credit was to be extended to the farmer. Although the scheme eventually fell through, it was both an indication of the lengths to which farmer cooperation might go and a forerunner of current agricultural thinking. A very illuminating discussion of the movement is given by Robert H. Bahmer in the January 1940 issue of *Agricultural History* (13).

The blessing of the Federal Government was first extended to the cooperative movement in 1914. Under the terms of the Clayton Antitrust Act, cooperatives were specifically excluded from prosecution as a monopoly in restraint of trade so long as they operated without capital stock—a restriction dropped in 1922—and refrained from unfair practices. Since then, cooperatives have become a focal point in Federal farm policy.

Development of Federal and State Agencies

The Department of Agriculture

Proposals for the creation of a Federal Department of Agriculture were made as far back as 1776, when two resolutions recommending aid to agriculture were adopted by the Second Continental Congress. One of these resolutions as originally introduced contained a clause, later struck out, proposing the establishment of a standing committee of Congress to "correspond with and assist" the agricultural societies which were to be set up in each of the Colonies (37).

Two decades later, George Washington, in his last annual message to Congress, advocated the establishment of a board of agriculture to collect and diffuse information and "by premiums and small pecuniary aids to encourage and assist a spirit of discovery and improvement." The proposal was reported favorably by a House committee but never came to a vote. Again in 1817 a memorial was sent to Congress by the Berkshire Agricultural Society, leader in the movement for progressive farming, petitioning for a national board of agriculture. A bill was drawn up and referred to the Committee of the Whole, but got no further (92).

Despite these rebuffs, precedents continued to accumulate. Consuls and naval officers abroad, following the example of Benjamin Franklin, sent home seeds and improved breeds of domestic animals. Merino sheep from Spain were introduced in this way. The practice was officially recognized in John Quincy Adams's administration when all United States consuls were directed to forward rare plants and seeds to Washington. Under Adams, too, a botanical garden was set up and a committee on agriculture was established in the Senate—the House having created a similar committee 5 years earlier, in 1820.

A significant development began in 1836, when Henry L. Ellsworth,

Commissioner of Patents, on his own initiative undertook to distribute seeds obtained from abroad to enterprising farmers. In 1839, Congress answered his plea for aid by appropriating \$1,000 for the three-fold purpose of collecting agricultural statistics, conducting agricultural investigations, and distributing seeds. With this money Ellsworth inaugurated an Agricultural Division in the Patent Office.

Although appropriations came irregularly in the years immediately following, Ellsworth by his personal interest and zeal kept the work going. In 1 year alone, over 30,000 packages of seeds were given away. The agricultural statistics gathered in connection with the decennial enumeration were published in 1842, with a survey of crop conditions. From 1847 on, Congress made annual appropriations for these activities.

Succeeding Commissioners continued the work of Ellsworth. In 1854, Charles Mason employed a chemist, a botanist, and an entomologist to conduct experiments, Congress having granted the division \$35,000. Two years later, a 5-acre garden was obtained and investigations in the cultivation of sorghum and tea were begun.

By 1860, after nearly a century of discussion, the stage was set for the creation of an executive department of agriculture. New forces, including the rise of industrialism, the development of railroad networks, and the introduction of farm machinery, were transforming the Nation's agriculture. Through the work of State and county agricultural societies, the agricultural press, and individuals, at least a beginning had been made in acquainting farmers with the value of scientific agriculture.

The Republican Party, indebted to the agricultural West for its victory in the election of 1860, was pledged to agrarian reform. President Lincoln, in his first message to Congress, called for the immediate establishment of an "agricultural and statistical bureau."

The bill creating the United States Department of Agriculture, which became a law on May 15, 1862, was a compromise between the demands for an organization with Cabinet authority and those calling for a subordinate bureau within the Department of the Interior (162). In the hope of establishing an effective agency which might at the same time escape purely political control, an independent Department was voted with a Commissioner at its head.

According to the organic act, the Commissioner was directed "to acquire and preserve in his Department all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments . . . , by the collection of statistics, and by any other appropriate means within his power; to collect, as he may be able, new and valuable seeds and plants; to test, by cultivation, the value of such of them as may require such tests; to propagate such as may be worthy of propagation, and to distribute them among agriculturists" (197). Actually, all these powers were in substance identical with those exercised by the Agricultural Division under the Patent Office. The evolutionary growth of the Department is further evident in that the organization and methods in operation under the Patent Office were generally continued. Isaac Newton, chief of the Agricultural Division, was appointed as first Commissioner, and he retained the majority of his former associates.

In his initial annual report, Newton outlined the seven aims he intended to foster. He promised to disseminate knowledge of agricultural improvements and to collect and distribute valuable seeds and plants. He emphasized the necessity of encouraging a spirit of inquiry and cooperation among the farmers. In addition, Newton proposed to further scientific investigation by establishing professorships of botany and entomology and by continuing the task of chemical analysis. Finally, he stressed the importance of organizing an agricultural library and of establishing a museum (199).

The last two objectives were realized within a relatively short time. Actually, the library was started in 1840, when a clerk was first appointed to gather statistics and useful agricultural information. When the Department was established this collection of books became its property, and other books were added by purchase and exchange with foreign governments and agricultural societies. By 1871, when the first librarian was appointed, the Department boasted the most complete agricultural library in the country—a collection of more than 8,000 volumes.

A museum was officially established in 1867, when Congress appropriated \$10,000 to purchase the private collection of Townend Glover, the entomologist. The Centennial Exposition of 1876 brought large donations from foreign governments. It was not until 1881 that Congress appropriated funds for the erection of a special building in which the entire museum could be housed. (This building was destroyed in 1905 to make room for the present administration building, and the exhibits were scattered.) The essential contribution that an agricultural museum might make was aptly stated by Secretary Rusk in his report for 1889. It should, he maintained, "be an instructive object-lesson of the agricultural products and possibilities of the country, and should be a standard for accurate knowledge and for practical and scientific reference" (200).

While the library and the museum served as valuable treasuries for the rapidly growing accumulation of knowledge in agricultural science, the Department was also able to exert an immediate educational force through its publications. The most important of these was the annual report, which, until 1868, included agricultural statistics and essays on special agricultural topics—a practice begun in the Patent Office. After 1868 the contents were limited to digests of the work of the Department and the results of its research, including the reports of special agents. Each volume contained an extensive statistical summary of the year's crop production and of the condition of foreign markets. Had the wealth of information included in the reports reached the hands of the most intelligent farmers, it would have been invaluable in popularizing the latest achievements of agricultural science and gaining the cooperation of the farmers in the work of the Department. Unfortunately, most of the distribution was haphazard.

Of more practical value were the monthly reports of the Department. These contained the latest news on the condition of crops and other timely information. They were sent out to farmers' clubs, State agricultural colleges and societies, and to an individual mailing list. In addition, miscellaneous reports informed the public of special

activities of the Department, and beginning in 1883 bulletins were issued by the several divisions dealing with the results of specific investigations.

That the Department was able to make so much headway in the early decades was commendable in view of the many administrative problems it encountered. Remaining outside the Cabinet fold did not protect it from political manipulations. Commissioners were regularly chosen for other than agricultural contributions, although on occasion an appointee possessed the happy combination of political availability and agricultural training. Since it was essential that he remain on good terms with Congress in order to obtain even meager appropriations, the selection of the minor employes of the Department was in large measure political.¹² This criticism, of course, applied more or less to the whole Government service until the establishment of the Civil Service Commission in 1883.

In fashioning its program, the Department had to take account of many conflicting interests. A farsighted minority demanded the pursuit of scientific studies, while the general public insisted on accomplishments of immediate economic benefit. Seed distribution, the most prominent of the Department's activities, was particularly controversial, and it was not until 1924 that the practice was halted by Congress.

Yet in spite of such handicaps the Department made notable contributions to the field of scientific agriculture. Men of outstanding ability served as division chiefs and research workers, and being relatively free from political obligation they built up the Department's prestige. Leaders of this caliber included Townend Glover, entomologist in the Department for the first 15 years, who laid the foundation for the economic approach to the study of insect life; and J. R. Dodge, chief statistician for more than 24 years, who received a gold medal from the French Government for his contributions to the knowledge of practical economics. Dr. H. W. Wiley, in his work on the sugar value of sorghum, conducted the most extensive series of analyses undertaken up to his time in the history of agricultural chemistry, and Dr. D. E. Salmon, chief of the Bureau of Animal Industry, gained a worldwide reputation for his pioneering work in bacteriology.

The organizational structure of the Department was evolved gradually and in response to public need. First of the divisions to be established was the Chemistry Division, set up in 1862. Until 1889 its studies tended to converge about four main subjects: Soils and fertilizers; analyses of the relative compositions of plants raised on the various soils of the country; investigation of food and drug adulteration; and the manufacture of sugar.

The Entomology Division, next created, directed its efforts from the beginning to combating destructive insects. In 1878 Congress recognized the value of such an undertaking by making the first specific appropriation for the investigation "of insects injurious to agriculture," and after 1882 the sum of \$20,000 was available annually. C. V. Riley, one of the leading entomologists of the country, was employed

¹² CORY, ROBERT H. THE UNITED STATES DEPARTMENT OF AGRICULTURE: A HISTORY OF ITS ESTABLISHMENT, GROWTH, AND ACCOMPLISHMENTS PRIOR TO ITS INCORPORATION INTO THE CABINET IN 1889. HONORS Thesis, Yale University. 122 pp. 1936. [Typewritten.] (Copy in files of the Division of Statistical and Historical Research, Bureau of Agricultural Economics.)

and with the exception of a 2-year interval served continuously from 1878 to 1894. A high light of his career which redounded to the credit of the Department was his successful introduction of predaceous insects from Australia to destroy the cottony fruit scale ravaging the orchards of California. This was the first attempt on the part of the Department to apply methods of biological control to the eradication of injurious insects (103).

The statistical work, begun in 1863, centered chiefly about crop reporting, already recognized as essential to efficient marketing. Progress was slow, owing to the lack of sufficient funds, inadequate facilities for communication, and the relatively undeveloped state of statistical techniques. Crop estimates were often inaccurate or appeared too late, and this inefficiency provoked considerable criticism among farmers. Later, as the exportation of agricultural products increased, the need for obtaining statistics on foreign markets became increasingly apparent. J. R. Dodge was selected to investigate foreign statistical methods and to report on the possibility of establishing statistical relations with countries abroad.

When Dodge returned from Europe, the statistical division was completely reorganized and the appropriation increased from \$10,000 to \$80,000. Agents were sent out in the field, and a system of index figures was introduced to indicate relative variations. Considerable progress was made toward the objective of presenting timely and accurate statistics showing current changes in crop areas and conditions. Dodge believed that farmers would learn from the statistics to adjust their production to market demand, but knowledge alone, as later experience testified, was not enough to effect that result.

Up to the establishment of the Bureau of Animal Industry in 1884, the Department was no more than a fact-finding and fact-dispensing agency. The power of regulation was introduced to save our export trade in meat products from total eclipse. During the 1870's the American livestock and dressed-meat industries had overflowed to the European market, but on the charge that the meat was diseased, England and the Continental countries began imposing severe restrictions on imports. Livestock breeders and meat-packing firms were up in arms, and Congress, after a bitter debate, responded by creating the Bureau of Animal Industry to fight contagious diseases among domestic animals and generally supervise meat exports and imports. Permanent quarantine stations were immediately set up near the principal cattle ports, and the Bureau proceeded to wipe out plucro-pneumonia and Texas fever, the two plagues most rampant among domestic cattle. To carry on its fight most effectively, the Bureau was authorized to quarantine areas of infected animals and to condemn and purchase diseased animals. The plagues were conquered after the Bureau of Animal Industry had made a momentous contribution to medical research by its discovery that a micro-organism could be transmitted through the intermediate agency of a carrier, in this case through cattle ticks (43).

In a country where there is such diversity of topographical conditions, agricultural research, to be most effective, must be a coordinated national undertaking rooted in regional experiment stations. The land-grant colleges, established as a result of the Morrill Act of 1862,

potentially provided a comprehensive system of agricultural research and experimentation, but actually their work lacked coordination. Officials of the Department of Agriculture, perceiving this lack of central direction, proposed a unit in the Department to serve as a clearinghouse for the information obtained by the colleges.

In the meantime, a new type of agency—the experiment station—had arisen and was to prove the vital link between the Department and the colleges. The first State agricultural experiment station was erected at Wesleyan University, Middletown, Conn., in 1875. After 1880 a number of State agricultural colleges established stations. Formal meetings of college representatives were held under the leadership of the Commissioner of Agriculture to coordinate the work of the individual stations for the benefit of the entire Nation. At the convention of 1885 it was voted to seek congressional aid for experiment stations. Two years later a permanent organization under the name of the Association of American Agricultural Colleges and Experiment Stations was set up, and, together with the National Grange, it created Nation-wide sentiment in favor of Government action. Congress responded in 1887 with the Hatch Bill, authorizing a national system of agricultural experimentation, the first of its kind in the world.

The act appropriated funds for the establishment of experiment stations in connection with the land-grant colleges to conduct original researches in agricultural science. Section 3 provided that the Commissioner of Agriculture was to stimulate uniformity of method by furnishing forms for the tabulation of results of investigations, by pointing out general lines of inquiry, and by giving advice and assistance. An Office of Experiment Stations was established in the Department to carry out these provisions, and agents were sent to confer with station workers and farmers' clubs throughout the country. A regular publication, the Experiment Station Record, was initiated in 1889 to correlate and publicize the research in progress. The Hatch Act was a notable landmark in the history of the Department, for it insured State cooperation in its research and educational activities.

By 1889 the ground work had been firmly laid and the Department was ready to assume greatly expanded functions. In the 1880's Congress received numerous petitions from the Grange and Alliance groups and from individual farmers stressing the beneficial influence of the Department and urging that it be given Cabinet status. At three separate sessions the House of Representatives approved such a measure by overwhelming majorities. Finally, the Senate concurred, and the law became effective on February 9, 1889. The Commissioner of Agriculture became a Secretary with a place in the Cabinet, but no addition was made to the Department's powers.

The same force of public opinion that won a Cabinet position for the Department of Agriculture obtained for it more generous congressional appropriations. During the first 27 years, the Department's annual expenditures rose from \$64,000 to more than \$1,000,000. In the next 5 years, between 1890 and 1894, the appropriation increased from \$1,708,000 to a little over \$2,623,000. With more adequate funds, the Department was able to perform its authorized functions with increased efficiency, and this in turn led Congress to widen its scope of activities.

One aspect of the Department's work that greatly enhanced its prestige was the successful introduction of new plants. Highly trained investigators were sent to Russia, China, North Africa, South America, India, and other parts of the globe. They not only brought back more hardy and productive varieties of plants already grown in this country, but introduced new plant industries that added many millions of dollars to the Nation's agricultural wealth. Concurrently the Department in cooperation with the State experiment stations, undertook extensive researches in plant breeding in order to adapt the foreign plants to domestic soil and weather conditions. Before the World War the Department had succeeded in establishing the navel orange from Brazil in the orchards of southern California, covering the dry-farm lands of the Dakotas and Nebraska with durum wheat brought from Russia, and persuading the farmers of Arizona to plant Egyptian cotton. Foremost among the explorers responsible for such innovations were David Fairchild, N. E. Hansen, and M. A. Carleton (72, 166).

After the turn of the century the Department opened a new field of service to farmers by the inauguration of county demonstration work. Seaman A. Knapp, of the Bureau of Plant Industry, was sent to teach farmers in the South how to raise cotton that would withstand the ravages of the Mexican boll weevil. He established demonstration farms where interested farmers might learn improved methods. The work was extended to noninfested areas by agents assigned to specific districts, but acting under Knapp's guidance. The General Education Board of New York City, interested in promoting better economic conditions in the South's rural areas, agreed to supplement Government funds for the employment of field agents. Later it was found that the work could be done most effectively on a county basis, and farmers and businessmen agreed to help subsidize agents in their counties. The movement spread to the Northern States, where it was directed by the Office of Farm Management in close cooperation with the State agricultural colleges. The many thousands of farmers served by the county agents became warm advocates of a Nation-wide system of extension work (15).

Meanwhile the agricultural colleges also sought Government aid for their "institutes" or meetings of farmers where professors outlined progressive agricultural techniques. Congress finally agreed in 1914, under the Smith-Lever Act, to match State grants for extension work. Special extension divisions were to be set up in the State agricultural colleges and were to cooperate with the Extension Office established in the Federal Department of Agriculture. Though all extension work was to be carried on through the State colleges, the Department insisted that Federal funds be used to maintain county agents and that farmers' institutes should not be included in the program under the Smith-Lever Act (187).

With the growing public consciousness of national social and economic abuses, after 1890 the Federal Government was granted increased police power to be exercised on behalf of the general welfare. A series of regulatory measures was enacted, and the administrative agencies, including the Department of Agriculture, were called upon to enforce them. In 1905 the Secretary of Agriculture assumed the

protection of the national forests. The Department had begun its investigation of the conservation of timber resources as early as 1876, and in 1881 had established a Forestry Division. In 1906 the Department took over the enforcement of the Food and Drugs Act, which empowered it to prohibit the shipment in interstate commerce of adulterated or misbranded foods and drugs; this too was a field in which the Department had pioneered through its Chemistry Division. Early success in fighting animal diseases and regulating the meat-export trade also qualified the Department of Agriculture to administer the Meat Inspection Act of 1907, affecting the quality of meats in interstate trade. In 1908 it also took charge of the inspection and certification of dairy products in the export trade (42).

Of these four regulatory measures, three dealt with an aspect of the marketing problem, indicating a new emphasis in the Department's activities. Previously, with the exception of crop reporting and the regulation of meat exports, its work had been concerned almost entirely with stimulating agricultural productivity. The marketing process began to disturb the farmer more and more as he became aware of the gap between the prices he received for his produce and the prices paid by the consumer. Public opinion crystallized in a demand that the Government concern itself with this general problem, and in 1910 Congress authorized the Secretary of Agriculture to "investigate the cost of food supplies at the farm and to the consumer." An appropriation of \$50,000 was made in 1913, and within 10 weeks an Office of Markets was created. To this office was entrusted in 1916 enforcement of the Grain Standards Act, the Cotton Futures Act, and the Warehouse Act. The office rapidly grew into the Bureau of Markets and contributed much spadework to the cause of cooperative marketing (126, 176).

From its beginning in 1839 as a division in the Patent Office, to 1917, the Department of Agriculture, according to a reliable estimate, cost the country approximately \$285,000,000. That this expenditure was a profitable investment on the whole few will dispute. The Department was not alone in improving farming methods, but it became "the chief and most valuable single agency" (205). While remaining fundamentally a research organization, the Department of Agriculture, through an orderly process of growth and in response to public need, had by 1918 undertaken extension work, engaged in such service activities as weather and crop reporting, and supervised Federal road construction and administered regulatory laws (209).

Agricultural Education

Formal agricultural education carried on in the schools as a phase of technical or vocational education is relatively new.

The first land-grant college bill introduced in the House of Representatives by Congressman Justin Morrill of Vermont in December 1857 (165), was passed by Congress but vetoed by President Buchanan on the grounds of expense and unconstitutionality. The same measure, reintroduced after the Republicans had come into power, was adopted, with minor amendments, and signed on July 2, 1862. Undoubtedly this was the most significant legislation for agricultural education in the United States. The act provided that a State might

receive 30,000 acres of the public lands within its borders for each Senator and Representative it had in Congress. The proceeds from the sale of these lands were to be invested and the income used to create and maintain colleges. The curricula of these institutions were to be prescribed by the State legislatures, but the leading object, as stated, was to teach "such branches of learning as related to agriculture and the mechanic arts." Other scientific or classical studies were not to be excluded, however, if they served to promote the "liberal and practical education of the industrial classes in the several pursuits and professions in life" (188, p. 100).

The early history of the new colleges was replete with difficulties. In selling their grants, the States competed with the railroad and homestead lands, with the result that in many cases the income derived hardly sufficed to maintain even one department. Aid had to be secured from the State legislatures, and in many cases it was given grudgingly and haltingly, and chiefly in response to pressure from agricultural societies and the Grange. The Federal Government, by the Morrill Act of 1890 and the Nelson amendment of 1907, was induced to provide a subsidy, which by 1911 amounted to \$50,000 annually for each State and Territory.

Politics was rife in the determination of whether an endowment was to be used for establishing new departments or schools in existing institutions or to create new agricultural colleges or agricultural and mechanical arts colleges. Politics was also a prominent factor in the selection of college administrators and professors.

Aside from such considerations, there were few qualified teachers in the natural sciences and practically none in agriculture. Most of the available textbooks, moreover, were of European origin, and their contents were not based on American experience. Entrance standards in the new colleges were low, the students being admitted directly from the grades. The general trend of the curriculum varied according to whether the group that favored narrow vocational training or the one that believed in a broad academic education gained the upper hand. A frequent complaint was that the colleges trained youths for urban rather than rural life.

Nevertheless, in spite of their shortcomings, the agricultural colleges made considerable progress. Teachers were trained, equipment was assembled, texts were written, and the economic and scientific values of these schools were demonstrated to the general public. By 1900, most of these colleges were firmly established and attracting rapidly expanding enrollments. The teaching and research became more and more specialized. Summer schools and post-graduate courses were organized for prospective teachers and scientists. As the work of the agricultural colleges progressed and they came into closer touch with the farming people, considerable attention was devoted to the economic and social aspects of farm life. From the agricultural colleges emanated also the movements for experiment stations, the extension work already mentioned, and agricultural education in elementary and secondary schools.

Organized college extension teaching in agriculture dates from 1892 and was part of the general extension-work movement initiated by libraries and universities. As defined in a report of the Association

of Agricultural Colleges, extension teaching in agriculture dealt with "subjects having to do with improved methods of agricultural production and with the general welfare of the rural population" and were offered "to people not enrolled as resident pupils in educational institutions" (188). Besides special and short courses at colleges, extension work was carried on through lectures, correspondence, publication of bulletins, field experiments, demonstrations, and exhibits at fairs. In 1912, over 7,500 farmers' institutes engaged in extension teaching and attracted a total attendance of 4,000,000 persons. At the same time, the United States Department of Agriculture organized cooperative extension work, as already described.

Closely connected with the extension work were the efforts of the agricultural colleges to aid the movement for the teaching of agriculture in elementary and secondary schools. They initiated nature study and school gardening in city and village schools. To reach the rural schools, they formulated courses of instruction, gave teachers special training at summer-school sessions, and prepared textbooks, manuals, and charts. About 1905, Wisconsin was persuaded to introduce a course in elementary agriculture in its grade schools, and the example was followed by South Dakota and New York. By 1915, the teaching of agriculture in public rural elementary schools was required in more than 20 States, and some instruction was given in practically every State.

As it became evident that the agricultural colleges were destined to become primarily centers of investigation and training of experts, attention was directed to providing systematic agricultural instruction at the secondary level. Only a small proportion of farm children went to college, and of these very few received any considerable amount of agricultural instruction. The courses in elementary schools were helpful, but naturally they could not be very detailed. Most of the manual-labor schools of the pre-Civil War days had disappeared. A new movement for agriculture in secondary schools was begun in the 1880's; in Connecticut, the Storrs Agricultural School was established in 1881, and in 1888 the University of Minnesota organized a well-equipped secondary school on its campus. Other colleges did likewise, and after 1900 the public authorities also began to make appropriations for State, district, or county agricultural schools. The next development was to grant State subsidies to local high schools for introducing courses in agriculture. Virginia began the practice, and 421 public high schools throughout the country had agricultural departments by 1916. Over 73,000 students received some instruction in agriculture during that year through courses at agricultural colleges, State-aided special schools, public high schools, and private schools.

Agricultural instruction was given a practical turn by the rise to prominence of advocates of industrial education. Their general theme was that American youth of noncollege caliber should be required to take fewer "cultural" subjects and should be trained instead along specifically vocational lines. In a sense, this was a return to the Fellenberg philosophy, but with a somewhat broader outlook. The emphasis on practicality attracted many leaders of industry, labor, and agriculture, and in 1906, they formed a National Society for the

Promotion of Industrial Education. The society stimulated public interest in the subject, sponsored State legislation, and drafted bills for Federal aid. The Association of American Agricultural Colleges and Experiment Stations lent its support to the movement, and the campaign culminated in the passage of the Smith-Hughes Vocational Education Act of 1917.

By that measure, funds are granted to States willing to expand their secondary-school systems to include vocational education in agriculture, trade, industries, and home economics. A Federal Board of Vocational Education was set up to cooperate with similar State boards. Plans for expenditures of the Federal funds are submitted by the State agencies for the approval of the Federal Board.

The gradual winning of the mass of farmers to the program of agricultural education tended to encourage improved farm methods, greater productivity, and more general crop diversification. Its social effects were no less significant. Widespread rural education helped to break down the farmers' isolation. It stirred up fresh currents of thought that brought more mobility into rural life. Agriculture was made more attractive to farm youth, having been stamped with academic approval. Altogether, rural education helped to restore the farmers' self-confidence and pride.

From another point of view, the interest of farmers in education indicated a growing maturity in American agriculture. It was a far cry from the western pioneer who skimmed the soil's fertility and then moved on to fresh lands—so long as they were free—to the college-trained specialist familiar with agricultural science and economics. Intensive cultivation began to replace extensive, with a consequent trend toward the laboratory rather than the open frontier.

Finally, it is significant that all the various groups sponsoring agricultural education eventually turned to the Federal Government. Agricultural schools and colleges, organized experimentation, extension work, and elementary and secondary school training in agriculture all began locally, and though the State and local governments have supported them to the present day, in each case Congress was called upon to furnish national leadership and financial aid.

Agrarianism and Agricultural Policy

The struggle to shape national policy with a view to protecting and furthering agricultural interests began with the formation of our Federal system. In the vote on constitutional ratification, the more distinctly rural sections, representing the debtor class, opposed prohibition of State power to issue paper money, and questioned the "sanctification" of contracts. Once launched, the Federal Government, in response to threats of secession from southwestern farmers, was almost immediately obliged to negotiate with Spain for use of the lower Mississippi River and for deposit rights at New Orleans. In domestic policy, the agrarians broke with the Federalist Party on Hamilton's measures, which were designed, as it seemed, to subordinate the interests of a population 95 percent agricultural to the paramount control of an oligarchy of traders, bankers, and speculators. Under the lead of southern planters, notably Jefferson and Madison, the agrarians formed the Democratic-Republican, later known as the Democratic,

Party and gained political control in the Presidential election of 1800.

The followers of Jefferson could not touch the National Bank until 1811 when its charter expired, but they began immediately to retire Government bonds and decrease expenditures. Their greatest achievement was the purchase of the vast Louisiana Territory in 1803. New England's representatives, speaking for the strongly entrenched commercial interests, opposed the purchase as destroying the balance established by the Constitution; they feared that the States carved out of the new possession would outvote the founding States. Later, in the Hartford Convention of 1814, New England secessionists demanded that no new States be admitted into the Union except by a two-thirds vote. The convention itself was called to express New England opposition to a war supposedly fought on behalf of its shipping rights but actually begun and carried through by ardent expansionists—both southern and western (151).

Under Jackson, the Democratic Party championed the cause of small farmers and city laborers, as well as planters. In State governments, it forced the abandonment of property qualifications for voting and office holding, established free public education, and abolished imprisonment for debt. In the Federal sphere, it destroyed the National Bank, the greatest monopoly of that day, and carried out the policy of moving Indians beyond the Mississippi where they would not interfere—at least for a time—with land-hungry settlers.

The chief issue agitating the West was liberalization of the land policy. As early as 1824, Senator Thomas Hart Benton of Missouri began the introduction of "graduation bills" designed to reduce the price of slow-selling lands, by progressive stages, to a merely nominal sum. The incipient trade unions and labor parties supported the granting of land to actual settlers at a nominal price, or free of charge, in order to relieve labor competition. In 1829, Thomas Skidmore founded the Agrarian Party among New York workers, with free lands as one of its chief principles, and Horace Greeley filled the columns of the New York Tribune advocating this reform. Jackson, in a message to Congress at the beginning of his second term, urged that "as soon as practicable" public lands should be sold at nominal cost to settlers (170). As a result of such pressure, the Preemption Act of 1841 gave actual settlers preference in land sales, and 30 years after its first introduction Benton's graduation bill was adopted.

During the forties and fifties, the southern wing of the Democratic Party largely controlled Federal policy. It lowered the tariff and wrenched new lands from Mexico, but blocked western attempts to secure free homesteads and governmental aid for internal improvements. These issues prevented a political union between the South and the Northwest, and enabled the Republican Party, in 1860, to capture the northwestern vote by a promise of free lands. This pledge was redeemed in 1862 by three measures, later recognized as landmarks in American agriculture: The Homestead Act, granting actual settlers 160 acres free of charge; the act establishing the United States Department of Agriculture; and the Morrill measure creating land-grant colleges.

Up to the Civil War, agriculture was the predominant industry of the Nation. This was reflected in the political as well as in the economic

and social life despite the considerable influence wielded by merchants, bankers, lawyers, speculators, shippers, and manufacturers. After the war, agriculture was on the defensive and business enterprise in the ascendancy. The change, with all its revolutionary implications for future development, brought a dynamic, collectivist, urban society, in place of a static, individualist, rural pattern; in that sense, the Civil War was as much a defeat for the Concord farmer as for the southern planter.

By 1890, for the first time, the income from manufacturing was greater than that from agriculture; since 1910, the income from manufacturing has been greater than that from agriculture in every year. Industrialization got under way in earnest during the Civil War; the American entrepreneur had every advantage—unbounded resources, vastly improved machines, a huge reservoir of labor, and an unequalled domestic market. The value of manufactured products shot up from \$3,386,000,000 in 1869 to \$13,014,000,000 in 1899 (94).

Agriculture underwent a parallel transformation, but the farmer never reaped its benefits to any comparable degree. Aided by labor-saving machinery, free lands, and improved transportation facilities, the American farmer, for a time, took control of the world agricultural market. Wheat, pork, and corn poured out of the West to feed Europe as well as the United States, and by 1880 southern cotton again furnished the bulk of the world's cotton supply. This agricultural development was basic in the process of industrialization and urbanization, for without an adequate supply of food and raw materials the factory system would have been impossible.

Yet farmers, as an economic class, fell steadily behind the businessmen. The weaknesses in their position were many. Thousands of small producers could not readily combine to fix prices or control output, even if they had the will to do so. As prices dropped, farmers increased their output, with the result that in some cases the gross as well as relative returns were reduced. On the other hand, fixed charges were increasing. Farmers had to buy machines in order to compete successfully; but as machinery was expensive, the farmer frequently had to mortgage his lands. By 1890, about 28 percent of all American farms operated by owners were under mortgage (175). A succession of crop failures or a sharp decline in farm prices meant foreclosure. At the same time, with an influx of settlers, land values rose. In Nebraska, for example, an acre of land formerly valued at \$7 or \$8 now brought \$25 or \$30. Tenancy, always present, became much more prominent. The census of 1880—the first to deal with the forms of landownership—revealed that 25.6 percent of the farmers were tenants (94). In addition, the farmer suffered from other economic handicaps.

The "robber barons"—or "captains of industry," depending on the point of view—by securing economic power controlled political power. They looked to the Federal Government to safeguard their gains and to yield new sources of wealth. They sought to manipulate tariffs, control banking and currency, escape taxation, grab land subsidies for railroad and timber companies, obtain Government contracts, and prevent governmental interference with the "law of supply and demand"—and they succeeded. Unlike the pre-war

planters, they did not enter politics directly, but their control of the political processes, as attested by the *Crédit Mobilier*, the Whiskey Ring, and the Star Route frauds, was nonetheless effective.

The Granger Movement

The first organization of significance was the Grange, which was inaugurated 2 years after Appomatox. In 1866, President Johnson authorized the Commissioner of Agriculture to send a clerk on a trip of observation through the Southern States. Oliver Hudson Kelley, a Boston Yankee, was chosen, and he had sufficient vision to realize that more was needed than mere recovery from wartime ravages. On his return to Washington, Kelley persuaded five other Government clerks and a fruit grower to organize a secret order of farmers on a national scale, and on December 4, 1867, the National Grange of the Patrons of Husbandry was launched (36).

Like every reform movement, it did not enlist all or even a majority of the class it represented, but nearly all the farmers felt its influence to some degree. In the first place, through it farmers were brought together and united in some form of social organization. In their meetings, they discovered their common interests, including similar economic grievances. Gradually, from the heat of discussion a set of tenets which expressed the general view was fashioned. Finally, the more active and militant set out to achieve their objectives in concrete form, and that brought them into the political arena. The entire process was democratic in its truest sense; it sprang from the mass of people and sought to realize its ends through elected leaders and in orderly fashion.

The National Grange, in 1874, asserted emphatically the nonpolitical character of its association and denied that any Grange could be true to its obligations if it so much as discussed political questions. By that time, however, the members had held political meetings outside their Granges, drawn up platforms, and nominated candidates. In 11 Western States, these various Independent, Reform, Anti-Monopoly, or Farmers' Parties had elected large blocs to the legislatures, and already the first mandatory laws regulating railroad rates had been enacted. The tide of political action could not be stemmed while farmers envisioned legislation that would lower freight charges, outlaw railroad discrimination, and substitute governmental credit for dependence on eastern loan sharks. Lack of an adequate money supply, extortionate charges by grain-elevator companies, speculation in grain and cotton, and high tariffs were other evils the Grangers hoped eventually to eradicate by legislative action.

The most immediate contribution of the Granger movement was the enactment of legislation for State regulation of railroads, commonly known as the Granger laws, already discussed. These laws were short-lived, however. Many were repealed within 2 years or went unenforced. The reasons for their failure are varied: The administrative agencies lacked technical skill; the railroad managers dragged the laws through State courts and smeared them in the press; and many communities feared that too drastic action would put a stop to further railroad construction. An equally important factor was the decline of the Grange and the political parties stemming from it.

The collapse of the Granger movement was as rapid as its rise. Between 1874 and 1880, the number of Granges fell from 20,000 to 4,000 (36). Too rapid growth had attracted many undesirable elements and resulted in the very difficult problem of proper organizational structure. The strong dislike of farmers for politicians who attempted to use the movement for their own ends led to the acceptance of leaders lacking in political experience, and many costly tactical errors were made. Considerable stress had been laid on the cooperative phase of Granger activity, and its failure dealt the movement a hard blow. Other reasons for the decline were the upswing in prices of farm products and a general lowering of freight rates, both of which relieved the acuteness of farmers' grievances.

The Granger experience was an invaluable political education for the farmers. It trained them to act together and revealed the strength and limitations of their organized might. While almost all the early leaders disappeared into oblivion, the rank and file kept pressing on through a line of agrarian movements that gained in momentum and effectiveness in the course of the century. One very important contribution to American democracy resulting from Granger activity was the firm establishment of the principle that a State government has power to regulate businesses clothed with a public interest. It was affirmed by Justice Waite in the *Munn v. Illinois* decision of 1876, a case arising out of the Granger laws, and has remained as a keystone of our constitutional system. The Supreme Court, it is true, withdrew from the States the power to regulate interstate commerce, in 1886. Thereupon, the West and South joined with discontented elements in the East to secure the passage of the Interstate Commerce Act of 1887, which not only brought the railroads under national jurisdiction, but marked the entrance of the Federal Government into the sphere of business regulation—a milestone in American development.

The Greenback Movement

While the Granger agitation was still at its height, another group of agrarians met at Indianapolis, in 1874, to attack the ills of agriculture from another point. Currency reform was the chief prescription of this party, as railroad regulation was the main concern of the Grangers. The money issue was a war legacy; to finance the northern cause, over \$433,000,000 had been issued in paper money, or greenbacks; in addition, various series of bonds had been floated bearing interest rates ranging from 4 to 8 percent, and differing in their specifications as to the medium of payment. Some were to be repaid in gold, some in silver, some in gold or silver, while in others no mention was made of a particular currency.

After the war, the Republican Party fumbled about in an attempt to satisfy conservative elements without alienating western voters. The first of the two issues to be decided was in regard to the greenbacks: (1) Were they to be contracted by redemption in metallic money, inflated by further issues, or left as they were to circulate at face value? (2) What currency was to be used to repay the bondholders? The farmer, as a debtor, had considerable at stake in the answers to these questions. If, during the war, he had mortgaged

his farm for \$1,000, the legal tender he was given was worth probably no more than \$600 because of its depreciation. If the greenbacks were to be redeemed in gold, they would immediately rise to par value and the creditor would receive not only a high interest charge, ranging from 8 to 15 percent, but a further profit of \$400 on the original loan. With commodity prices dropping, this meant that the farmer would have to raise more corn, wheat, or cotton to meet his debts; but, as production increased, prices dropped. On the other hand, if Government bonds were repaid in gold, it meant an increase in taxation; and it was notorious that rural property was already carrying a heavy tax burden.

In 1868, the agrarian element of the Democratic Party wrote into the platform the so-called Ohio idea calling for redemption of Government bonds in greenbacks. The slogan of the farmers was "The same money for the bondholder as for the plowholder." Not content with working through a major party that necessarily contained conservative interests, the agrarians looked about for allies to form a separate party. They found that laborers suffering from widespread unemployment, accompanying if not caused by contraction of the currency, had formed the National Labor Party, which in 1872 adopted a greenback platform. The panic of 1873 and the failure of the Granger movement to relieve the agricultural depression led to a union of farmers and workers in the Independent National Party. Its candidates in the Presidential election of 1876, however, polled only a little more than 80,000 votes, mainly in the western farm areas rather than in the industrial centers.

Increased unrest and discontent in 1877 gave the party new vigor, and the following year a national convention at Toledo, attended by some 800 delegates, adopted the name of "Greenback Labor." The platform demanded the issue of all money by the Government and in sufficient quantity to meet the needs of farmers and workers. It denounced the demonetization of silver—the so-called "Crime of '73"—and the resumption of specie payments which Congress had voted in 1875, to be effective in 1879. In the elections of 1878—the high-water mark of the movement—Greenback candidates polled close to a million votes. Fifteen members were elected to Congress—6 from the East, 6 from the Middle West, and 3 from the South. Outstanding among the Greenback Congressmen was Gen. James Weaver, of Iowa, who became the party's standard bearer in the next Presidential election.

Despite a valiant campaign, Weaver polled only 309,000 votes. This was due in part to the defection of the workers, who had joined the Knights of Labor. Labor returned again in 1888 to form the Union Labor Party, which absorbed the Greenback agrarians. The platform was much wider in scope than former Greenback programs; it advocated Government ownership of railroads and telegraphs and called for a graduated income tax, direct election of Senators, and woman suffrage. The party, however, failed to capture the industrial strongholds; of the 147,000 votes polled in 1888 about two-thirds came from the West and Northwest and one-third from the South and Southwest.

After this failure the Greenback agitation disappeared from the

political scene. The achievements of the organization were notable despite overemphasis on the money issue. It had, for the first time, organized nationally the forces of agrarian discontent; the union of farmers and workers initiated by the Greenbackers was revived in succeeding decades and became the basis for all national reform parties; and finally, it furnished several of the leaders and many of the manifestos of the Populist Party, which became its heir.

The Farmers' Alliances

Farmers' clubs had grown up spontaneously alongside the Granges in the 1870's. In time they were formed into State alliances. In 1887, the Grand State Alliance of Texas joined with the Farmers' Union of Louisiana to form the National Farmers' Alliance and Cooperative Union of America. A year later this organization amalgamated with the Agricultural Wheel of Arkansas, under the name of National Farmers' Alliance and Industrial Union—the change in name indicating a desire to win over the labor element (102).

While this development had been going on in the South, a similar movement of independent origin had, by 1880, been launched in the Northwest. It was generally known as the Northwestern Alliance, and its members were active both in establishing cooperatives and in exerting pressure on the major parties.

The two Alliances held meetings at the same time in St. Louis in 1889, with a view to effecting a merger. The attempt failed, but the programs adopted by the separate organizations showed considerable similarity. Both called for free coinage of silver and Government issuance of paper money. They agreed on the need for reducing and equalizing taxation, and reclaiming from railroads all lands held in excess of actual needs. Moreover, both favored Government ownership and operation of the means of communication and transportation. The subtreasury scheme, strongly advocated by the Southern Alliance, called on the Federal Government to establish warehouses where farmers might store nonperishable commodities and receive loans in legal tender equivalent to 80 percent of the value of the deposits. The annual interest rate was to be only 1 percent and the farmer was to have a year to redeem his property. The Northwestern Alliance, to achieve the same ends—increasing money circulation and providing adequate credit facilities—proposed a Federal farm loan bureau with \$100,000,000 or more in greenbacks at its disposal to make loans on farms up to 5 percent of their value at 2 percent annual interest (36).

In the election of 1890, the Southern Alliance worked through the Democratic Party and succeeded in gaining control of the legislature in five States. In the West, Alliance members organized separate People's, Independent, or Industrial Parties which made particular headway in Kansas and Nebraska.

The Populist Party

Encouraged by this success, the Alliance held a convention with the Knights of Labor at Cincinnati, in 1891, to form a new political party. Some 1,400 delegates attended, a majority of whom represented five Western States; plans were laid to meet the following year to nominate candidates and draft a program. At the convention in Omaha, in

1892, the People's or Populist Party was formally launched on the national scene. Its platform began with a ringing declaration "that the union of the labor forces of the United States this day consummated shall be permanent and perpetual" (36, pp. 142-143). It demanded "a national currency, safe, sound, and flexible, issued by the general Government only," free coinage of silver, the subtreasury system, a graduated income tax, postal savings banks, Government ownership and control of railroads and telegraph lines, and abolition of land monopolies. To attract the labor vote, resolutions were adopted favoring the 8-hour day and the abolition of the Pinkerton labor-spy system.

Into the election of 1892, with General Weaver of Greenback fame as its Presidential candidate, the party cast a bombshell by polling more than a million votes and winning 22 electoral votes—the first time since 1860 that a third party had achieved electoral recognition. This success was partially due to the strategy of combining forces with the Republicans in the South and the Democrats in the West. In the congressional election of 1894, the Populists further increased their vote to a million and a half, electing 7 Congressmen and 6 Senators.

The decisive year was 1896, when agrarianism, with labor as an ally, made its supreme bid for power. All the bitterness and unrest of 30 years of economic and political exploitation was compressed in that Presidential campaign. The immediate background was a world-wide depression that was in its worst stage. Labor, suffering from severe unemployment, had organized Coxe's army and had struck at Homestead and Pullman; it was beaten but sullen. Prices of farm products in 1896 were the lowest ever recorded in the United States. Interest rates remained the same, however, and whole sections of farm areas, particularly in Kansas, Nebraska, Iowa, and the Dakotas, suffered foreclosure.

Since the Civil War, a national policy, reflecting the dominant industrial class, had almost completely neglected agriculture's plight. Even where legislation had been enacted, it was negated by nonenforcement. Railroad managers had little difficulty in contravening the Interstate Commerce Act; monopolists treated the Sherman Antitrust Act with contempt; and timber and mining corporations helped themselves freely to the country's natural resources regardless of the various land laws. Regulatory legislation, as farmers discovered, had little meaning without a sympathetic administration.

That the leaders chose free silver as the one issue on which to wage the battle proved a fatal error. However, in view of the hardships that the banking and currency systems inflicted on the farmers, the decision is understandable. The high capital requirements for initiating national banks made their extension into rural areas very difficult. The State bank notes had been taxed out of existence in 1865, but the power of national banks to issue notes depended on the amount of Federal bonds they held, and the available supply was being contracted owing to Government refunding programs and the competition of investment houses. Thus, between 1880 and 1890, there was a reported drop of over 50 percent in the amount of national-bank notes in circulation. National banks were forbidden by law, moreover, to lend on mortgages (94).

Free silver seemed to provide the only basis for the expansion in currency of which the farmer, as a debtor, stood so sorely in need. The world's annual output of gold declined sharply in the late eighties and early nineties, while the amount of greenbacks in circulation had been fixed by law. The two silver acts—the Bland-Allison Act of 1878 and the Sherman Silver Purchase Act of 1890—had been mere sops and both had been repealed. The money in circulation averaged only \$23 per capita in 1890; the Populists demanded \$50, a figure which was actually topped in 1920. With cheaper money, credit would have been easier; the farmer would have been freed from the clutches of loan sharks, and the heavy mortgage under which he staggered might have been eased. He would have had money to finance farm improvements and buy machinery. That at least was the hope of the agrarian inflationists.

The Populists, heartened by their strength in 1892 and 1894, looked forward to victory in 1896. They organized State and local committees and sent speakers around the country. Expecting the two major parties to stand for gold, they determined to hold their convention last in order to attract the silver elements in the other parties.

The Republicans nominated McKinley, protégé of Mark Hanna, and opposed the free coinage of silver, "except by international agreement" (94). To the Democratic Convention, however, came a strongly determined silver faction. It put through a resolution calling for free and unlimited coinage of both silver and gold at the ratio of 16 to 1 "without waiting for the aid or consent of any other nation." In the closing debate on the party's proposed platform, William Jennings Bryan of Nebraska rose and delivered the speech now favored by schoolboy orators. In that day, however, the words were not only thrilling but revolutionary. When Bryan shouted "You come to us and tell us that the great cities are in favor of the gold standard. We reply that the great cities rest upon our broad and fertile prairies. Burn down your cities and leave our farms, and your cities will spring up again as if by magic; but destroy our farms, and the grass will grow in the streets of every city in the country," he epitomized the defiance agrarianism hurled at the masters of industrialism (94, p. 313). The platform was adopted and Bryan acclaimed as the party's leader.

The People's Party met in St. Louis later in the same month. It had been so strongly committed in advance to silver that there was no retreat, and free and unlimited coinage of silver was accepted as the paramount issue of the campaign. The former Populist demands for Government ownership and operation of the means of transportation and communication, conservation of natural resources, and direct election of Senators were repeated, but the subtreasury plan—one of the most constructive measures for agricultural relief—was dropped.

The western Populists were determined that the party, having swallowed the silver issue, should endorse Bryan. In opposition stood the majority of the southern delegates. To them the Democratic Party, which in their section represented the old planters and new industrialists, was anathema; to fuse with the enemy now meant surrendering all the gains the small southern farmers had achieved since the Civil War. They were finally voted down, but only after a concession was made to support Tom Watson of Georgia for Vice

President, rather than the Democratic nominee, Arthur Sewall, a conservative Maine banker. Henry Demarest Lloyd, himself a Populist and one of the wisest political thinkers of his day, in commenting on the convention, called it "the most discouraging experience" of his life. The free-silver movement he denounced bitterly as a "fake" and as "the cowbird of the reform movement" (94, p. 315).

Events bore out only too well the predictions of the antifusion Populists. Bryan went down to defeat, though he polled 6½ million votes, and with him went the Populist Party. It never recovered from the blow, although it dragged on until 1912.

Improved economic conditions generally, higher prices of farm products, and rising land values brought farmers a measure of prosperity even before the outbreak of the World War. Nevertheless, the agrarian movement did not die out. No new national farmers' party arose, but various associations were formed emphasizing economic cooperation. Typical of these were the Equity Union, American Society of Equity, Gleaners, and most important of all, the Farmers' Union. In 1910, representatives of the Gleaners and the American Society of Equity joined with several State farmers' organizations to establish a Farmers' National Headquarters at Washington to serve as a lobbying agency. A rival group, the National Board of Farm Organizations, created in 1917, also acted as a lobby for farmers' interests. The Nonpartisan League, established first in North Dakota, and then spreading to Minnesota, South Dakota, Montana, Colorado and Idaho, was by 1919 a force to be reckoned with in the national political arena. It did not set itself up as a separate party, but supported those candidates in the two major parties who agreed to accept the league's principles.

Later Developments

The reform movement that the embattled farmers had begun broadened and deepened. In 1900, La Follette, a liberal Republican, became Governor of Wisconsin, and made the State a laboratory for experimentation in bringing corporations under the control of a people's government. Other States experienced somewhat similar currents, so-called "muckrakers" having exposed the tie-up between corrupt political machines and corporations. The tide swept through the Republican Party with Theodore Roosevelt, admirably fitted by personality if not by intellect, as the reform leader. He induced a spark of life in the almost moribund Sherman Antitrust Act; secured legislation designed to strengthen the powers of the Interstate Commerce Commission; and, most important of all, popularized the need for national conservation and irrigation programs. His successor, the less dramatic Taft, furthered each of these three activities.

In 1912, Roosevelt, having failed to capture the Republican nomination, organized the Progressive Party. The three-cornered race split the Republican ranks, and the Democratic Party under Wilson won the Presidency. The platform written by Bryan, who had remained a power among the Democrats since 1896, promised the farmer reform of the country's banking laws, a lowered tariff, and an attempt at easing rural credits. The Underwood Act of 1913 brought reduc-

tions in the tariff, while the justice of Greenback and Populist discontent with the National Bank system was given tardy recognition in the passage of the Federal Reserve Act. In the following year, the Smith-Lever bill, providing for agricultural extension work carried directly to farm communities through county agents, became law (14). Two years later, in 1916, a Federal Farm Loan Board was established, and 12 regional farm loan banks were set up to provide long-term credits at moderate rates of interest. Another measure, the Smith-Hughes Act of 1917, authorized Federal subsidizing of the teaching of vocational agriculture and home economics in the high schools. To this extent amends were made to the agrarians.

LITERATURE CITED

- (1) ABBOTT, WILBUR C.
1929. NEW YORK IN THE AMERICAN REVOLUTION. 302 pp., illus. New York and London.
- (2) ADAMS, HERBERT BAXTER.
1885. MARYLAND'S INFLUENCE UPON LAND CESSIONS TO THE UNITED STATES. 102 pp. Baltimore.
- (3) ADAMS, JAMES TRUSLOW.
1923. REVOLUTIONARY NEW ENGLAND, 1691-1776. 469 pp., illus. Boston.
- (4) ———
1928. PROVINCIAL SOCIETY, 1690-1763 . . . Hist. Amer. Life 3, 374 pp., illus. New York.
- (5) AGELASTO, A. M., DOYLE, C. B., MELOY, G. S., and STINE, O. C.
1922. THE COTTON SITUATION. U. S. Dept. Agr. Yearbook 1921: 323-406, illus.
- (6) AKAGI, ROY HIDEMICHI.
1924. THE TOWN PROPRIETORS OF THE NEW ENGLAND COLONIES; A STUDY OF THEIR DEVELOPMENT, ORGANIZATION, ACTIVITIES AND CONTROVERSIES, 1620-1770. 348 pp. Philadelphia.
- (7) ALLIX, ANDRÉ.
1922. THE GEOGRAPHY OF FAIRS: ILLUSTRATED BY OLD-WORLD EXAMPLES. Geog. Rev. 12: 532-569, illus.
- (8) ALTSCHUL, EUGEN, and STRAUSS, FREDERICK.
1937. TECHNICAL PROGRESS AND AGRICULTURAL DEPRESSION. Natl. Bur. Econ. Res. Bul. 67, 32 pp.
- (9) ALVORD, HENRY E.
1900. DAIRYING DEVELOPMENT IN THE UNITED STATES. U. S. Dept. Agr. Yearbook 1899: 381-402, illus.
- (10) ANDERSON, RUSSELL H.
1932-33. NEW YORK AGRICULTURE MEETS THE WEST, 1830-1850. Wis. Mag. Hist. 16: 163-198, 285-296.
- (11) ———
1936. GRAIN DRILLS THROUGH THIRTY-NINE CENTURIES. Agr. Hist. 10: 157-205, illus.
- (12) ANDREWS, CHARLES M.
1924. THE COLONIAL BACKGROUND OF THE AMERICAN REVOLUTION. 218 pp. New Haven and London.
- (13) BAHMER, ROBERT H.
1940. THE AMERICAN SOCIETY OF EQUITY. Agr. Hist. 14: 33-63.
- (14) BAKER, GLADYS.
1939. THE COUNTY AGENT. 226 pp. Chicago.
- (15) BAKER, O. E.
1937. A GRAPHIC SUMMARY OF FARM MACHINERY, FACILITIES, ROADS, AND EXPENDITURES. U. S. Dept. Agr. Misc. Pub. 264, 33 pp.
- (16) BALL, C. R., and others.
1923. OATS, BARLEY, RYE, RICE, GRAIN SORGHUMS, SEED FLAX AND BUCKWHEAT. U. S. Dept. Agr. Yearbook 1922: 469-568, illus.

- (17) BALL, C. R., LEIGHTY, C. E., STINE, O. C., and BAKER, O. E.
1922. WHEAT PRODUCTION AND MARKETING. U. S. Dept. Agr. Year-
book 1921: 77-160, illus.
- (18) BARNETT, CLARIBEL R.
1928. THE AGRICULTURAL MUSEUM; AN EARLY AMERICAN AGRICULTURAL
PERIODICAL. Agr. Hist. 2: 99-102.
- (19) BEARD, CHARLES AUSTIN.
1915. ECONOMIC ORIGINS OF JEFFERSONIAN DEMOCRACY. 474 pp. New
York.
- (20) BEER, GEORGE LOUIS.
1907. BRITISH COLONIAL POLICY, 1754-1765. 327 pp. New York.
- (21) ———
1908. THE ORIGINS OF THE BRITISH COLONIAL SYSTEM, 1578-1660. 438
pp. New York.
- (22) ———
1912. THE OLD COLONIAL SYSTEM, 1660-1754. 2 v. New York.
- (23) BIDWELL, PERCY WELLS.
1916. RURAL ECONOMY IN NEW ENGLAND AT THE BEGINNING OF THE
NINETEENTH CENTURY. Conn. Acad. Arts and Sci. Trans. 20:
241-399, illus.
- (24) ———
1921. THE AGRICULTURAL REVOLUTION IN NEW ENGLAND. Amer. Hist.
Rev. 26: 683-702.
- (25) ——— and FALCONER, JOHN I.
1925. HISTORY OF AGRICULTURE IN THE NORTHERN UNITED STATES,
1620-1860. Carnegie Inst. Wash., Pub. 358, 512 pp., illus.
- (26) BOND, BEVERLY W., JR.
1919. THE QUIT-RENT SYSTEM IN THE AMERICAN COLONIES. 492 pp.
New Haven.
- (27) ———
1934. THE CIVILIZATION OF THE OLD NORTHWEST; A STUDY OF POLITICAL,
SOCIAL, AND ECONOMIC DEVELOPMENT, 1788-1812. 543 pp.
New York.
- (28) BOWERS, CLAUDE G.
1925. JEFFERSON AND HAMILTON: THE STRUGGLE FOR DEMOCRACY IN
AMERICA. 531 pp. Boston and New York.
- (29) ———
1936. JEFFERSON IN POWER; THE DEATH STRUGGLE OF THE FEDERALISTS.
538 pp., illus. Boston.
- (30) BRADFORD, WILLIAM.
1898. HISTORY OF PLYMOUTH PLANTATION. 555 pp., illus. Boston.
- (31) BRANDES, E. W., and others.
1924. SUGAR. U. S. Dept. Agr. Yearbook 1923: 151-228, illus.
- (32) BRIGGS, HAROLD E.
1940. FRONTIERS OF THE NORTHWEST; A HISTORY OF THE UPPER MISSOURI
VALLEY. 629 pp., illus. New York.
- (33) BRUCE, KATHLEEN.
1932. VIRGINIAN AGRICULTURAL DECLINE TO 1860: A FALLACY. Agr. Hist.
6: 3-13.
- (34) BUCK, PAUL H.
1925. THE POOR WHITES OF THE ANTEBELLUM SOUTH. Amer. Hist. Rev.
31: 41-54.
- (35) BUCK, SOLON JUSTUS.
1913. THE GRANGER MOVEMENT; A STUDY OF AGRICULTURAL ORGANIZA-
TION AND ITS POLITICAL, ECONOMIC, AND SOCIAL MANIFESTA-
TIONS, 1870-1880. 384 pp., illus. Cambridge.
- (36) ———
1920. THE AGRARIAN CRUSADE; A CHRONICLE OF THE FARMER IN POLITICS.
215 pp. New Haven.
- (37) BURNETT, EDMUND C.
1928. THE CONTINENTAL CONGRESS AND AGRICULTURAL SUPPLIES. Agr.
Hist. 2: 111-128.
- (38) CARLTON, FRANK T.
1910. AN AMERICAN UTOPIA. Quart. Jour. Econ. 24: 428-433.

- (39) CARRIER, JYMAN.
1923. THE BEGINNINGS OF AGRICULTURE IN AMERICA. 323 pp., illus.
New York.
- (40) ————
1937. THE UNITED STATES AGRICULTURAL SOCIETY, 1852-1860 . . . Agr.
Hist. 11: 278-288.
- (41) CARVER, THOMAS NIXON.
1911. PRINCIPLES OF RURAL ECONOMICS. 386 pp., illus. Boston, New
York, etc.
- (42) CHEW, ARTHUR P.
1937. THE RESPONSE OF GOVERNMENT TO AGRICULTURE; AN ACCOUNT OF
THE ORIGIN AND DEVELOPMENT OF THE UNITED STATES DEPART-
MENT OF AGRICULTURE, ON THE OCCASION OF ITS 75TH ANNIVER-
SARY. 108 pp. Washington, D. C.
- (43) ————
1937. SCIENCE SERVING AGRICULTURE. U. S. Dept. Agr. 43 pp., illus.
Washington, D. C.
- (44) CHINARD, GILBERT.
1929. THOMAS JEFFERSON, THE APOSTLE OF AMERICANISM. 548 pp., illus.
Boston.
- (45) CHURCH, LILLIAN.
1935. HISTORY OF THE PLOW. U. S. Bur. Agr. Engin. Inform. Ser. 48,
9 pp., illus.
- (46) CLAPHAM, JOHN HAROLD.
1926-38. AN ECONOMIC HISTORY OF MODERN BRITAIN. . . . 3 v., illus.
Cambridge, England.
- (47) CLARK, DAN ELBERT.
[1937.] THE WEST IN AMERICAN HISTORY. 682 pp. New York.
- (48) CLARK, NEIL M.
1937. JOHN DEERE, HE GAVE TO THE WORLD THE STEEL PLOW. 61 pp.,
illus. Moline, Ill.
- (49) CLEMEN, RUDOLF ALEXANDER.
1923. THE AMERICAN LIVESTOCK AND MEAT INDUSTRY. 872 pp., illus.
New York.
- (50) COLE, ARTHUR H.
1927. THE AMERICAN RICE-GROWING INDUSTRY. Quart. Jour. Econ. 41:
595-643.
- (51) COMMONS, JOHN ROGERS, and others, editors.
1910. A DOCUMENTARY HISTORY OF AMERICAN INDUSTRIAL SOCIETY. 11
v., illus. Cleveland, Ohio. See v. 7, pp. 29-37, 285-364; v. 8,
pp. 21-78.
- (52) CONNOR, L. G.
1921. A BRIEF HISTORY OF THE SHEEP INDUSTRY IN THE UNITED STATES.
Amer. Hist. Assoc. Ann. Rpt. (1918): 89-197, illus.
- (53) COON, S. J.
1930. INFLUENCE OF THE GOLD CAMPS ON THE ECONOMIC DEVELOPMENT
OF WESTERN MONTANA. Jour. Polit. Econ. 38: 580-599, illus.
- (54) CRAVEN, AVERY.
1926. SOIL EXHAUSTION AS A FACTOR IN THE AGRICULTURAL HISTORY OF
VIRGINIA AND MARYLAND, 1606-1860. 179 pp. Urbana, Ill.
- (55) ————
1928. THE AGRICULTURAL REFORMERS OF THE ANTE-BELLUM SOUTH.
Amer. Hist. Rev. 33: 302-314.
- (56) ————
1932. EDMUND RUFFIN, SOUTHERNER; A STUDY IN SECESSION. 283 pp.,
illus. New York and London.
- (57) CUTTER, W. P.
1895. A PIONEER IN AGRICULTURAL SCIENCE. U. S. Dept. Agr. Year-
book 1895: 493-502.
- (58) DALE, EDWARD EVERETT.
1930. THE RANGE CATTLE INDUSTRY. 216 pp., illus. Norman, Okla.
- (59) ————
1937. THE COW COUNTRY IN TRANSITION. Miss. Val. Hist. Rev. 24: 3-20.

- (60) DAY, CLIVE.
1925. HISTORY OF COMMERCE OF THE UNITED STATES. 394 pp. New York.
- (61) DEXTER, HENRY MARTYN, AND DEXTER, MORTON.
1905. THE ENGLAND AND HOLLAND OF THE PILGRIM. 673 pp., illus. Boston.
- (62) DICK, EVERETT.
1937. THE SOD-HOUSE FRONTIER, 1854-1890; A SOCIAL HISTORY OF THE NORTHERN PLAINS FROM THE CREATION OF KANSAS AND NEBRASKA TO THE ADMISSION OF THE DAKOTAS. 550 pp., illus. New York and London.
- (63) DU BOIS, JAMES T., and MATHEWS, GERTRUDE SINGLETON.
1917. GALUSHA A. GROW: THE FATHER OF THE HOMESTEAD LAW. 305 pp. Boston.
- (64) DUNBAR, SEYMOUR.
1915. A HISTORY OF TRAVEL IN AMERICA . . . 4 v., illus. Indianapolis.
- (65) DUNHAM, HAROLD H.
1937. SOME CRUCIAL YEARS OF THE GENERAL LAND OFFICE, 1875-1890. Agr. Hist. 11: 117-141.
- (66) EDWARDS, EVERETT E.
1930. HISTORICAL BACKGROUND OF THE PRESENT SITUATION IN SOUTHERN AGRICULTURE. South. Econ. Assoc. Proc. 3: 78-93.
- (67) ————
1934. AMERICAN INDIAN CONTRIBUTIONS TO CIVILIZATION. Minn. Hist. 15: 225-272.
- (68) ————
1935. THE NEED OF HISTORICAL MATERIALS FOR AGRICULTURAL RESEARCH. Agr. Hist. 9: 3-11.
- (69) ————
1937. SOME SOURCES FOR NORTHWEST HISTORY; AGRICULTURAL PERIODICALS. Minn. Hist. 18: 407-414.
- (70) ————
1938. T. L. HAECKER, THE FATHER OF DAIRYING IN MINNESOTA. Minn. Hist. 19: 148-161.
- (71) ————
1939. AGRICULTURAL RECORDS; THEIR NATURE AND VALUE FOR RESEARCH. Agr. Hist. 13: 1-12.
- (72) FAIRCHILD, DAVID.
1906. OUR PLANT IMMIGRANTS; AN ACCOUNT OF SOME OF THE RESULTS OF THE WORK OF THE OFFICE OF SEED AND PLANT INTRODUCTION OF THE DEPARTMENT OF AGRICULTURE AND OF SOME OF THE PROBLEMS IN PROCESS OF SOLUTION. Natl. Geog. Mag. 17: 179-201, illus.
- (73) FARNUM, HENRY W.
1938. CHAPTERS IN THE HISTORY OF SOCIAL LEGISLATION IN THE UNITED STATES TO 1860. Carnegie Inst. Wash., Pub. 488, 496 pp.
- (74) FAULKNER, HAROLD UNDERWOOD.
1931. FARM MACHINERY AND THE INDUSTRIAL REVOLUTION. Current Hist. 33: 872-876.
- (75) ————
1938. AMERICAN ECONOMIC HISTORY. Ed. 4, 828 pp. New York.
- (76) FAUST, ALBERT BERNHARDT.
1909. THE GERMAN ELEMENT IN THE UNITED STATES. 2 v. New York.
- (77) FISU, CARL RUSSELL.
1927. THE RISE OF THE COMMON MAN. Hist. Amer. Life 6, 391 pp. New York.
- (78) FLÜGEL, FELIX, AND FAULKNER, HAROLD U.
1929. READINGS IN THE ECONOMIC AND SOCIAL HISTORY OF THE UNITED STATES. 978 pp. New York and London.
- (79) FORD, AMELIA CLEWLEY.
1910. COLONIAL PRECEDENTS OF OUR NATIONAL LAND SYSTEM AS IT EXISTED IN 1800. Wis. Univ. Bul. 352, Hist. Ser., v. 2, No. 2, 157 pp.

270 Yearbook of Agriculture, 1940

- (80) FOSSUM, PAUL R.
1930. EARLY MILLING IN THE CANNON RIVER VALLEY. *Minn. Hist.* 11: 271-282.
- (81) FUSSELL, G. E.
1932. EARLY FARMING JOURNALS. *Econ. Hist. Rev.* 3: 417-422.
- (82) ———
1933. SOCIAL AND AGRARIAN BACKGROUND OF THE PILGRIM FATHERS. *Agr. Hist.* 7: 183-202.
- (83) ——— and ATWATER, V. G. B.
1933. AGRICULTURE OF RURAL ENGLAND IN THE SEVENTEENTH CENTURY. *Econ. Geog.* 9: 379-394, illus.
- (84) GAGE, CHARLES E.
1937. HISTORICAL FACTORS AFFECTING AMERICAN TOBACCO TYPES AND USES AND THE EVOLUTION OF THE AUCTION MARKET. *Agr. Hist.* 11: 43-57.
- (85) GANOE, JOHN T.
1937. THE DESERT LAND ACT IN OPERATION, 1877-1891. *Agr. Hist.* 11: 142-157.
- (86) GARNER, W. W., and others.
1923. HISTORY AND STATUS OF TOBACCO CULTURE. U. S. Dept. Agr. Yearbook 1922: 395-468, illus.
- (87) GATES, PAUL WALLACE.
1936. THE HOMESTEAD LAW IN AN INCONGRUOUS LAND SYSTEM. *Amer. Hist. Rev.* 41: 652-681.
- (88) GRAHAM, GERALD S.
1938. THE GYPSUM TRADE OF THE MARITIME PROVINCES. *Agr. Hist.* 12: 209-223.
- (89) GRAY, LEWIS CECIL.
1928. THE MARKET SURPLUS PROBLEMS OF COLONIAL TOBACCO. *Agr. Hist.* 2: 1-34.
- (90) ———
1930. ECONOMIC EFFICIENCY AND COMPETITIVE ADVANTAGES OF SLAVERY UNDER THE PLANTATION SYSTEM. *Agr. Hist.* 4: 31-47.
- (91) ———
1933. HISTORY OF AGRICULTURE IN THE SOUTHERN UNITED STATES TO 1860. *Carnegie Inst. Wash., Pub.* 430, 2 v., illus.
- (92) GREATHOUSE, CHARLES H.
1898. HISTORICAL SKETCH OF THE U. S. DEPARTMENT OF AGRICULTURE; ITS OBJECTS AND PRESENT ORGANIZATION. U. S. Dept. Agr., Div. Pub. Bul. 3, 74 pp., illus.
- (93) GREENE, EVARTS B., and HARRINGTON, VIRGINIA D.
1932. AMERICAN POPULATION BEFORE THE FEDERAL CENSUS OF 1790. 228 pp. New York.
- (94) HACKER, LOUIS M., and KENDRICK, BENJAMIN B.
1939. THE UNITED STATES SINCE 1865. Ed. 3, 821 pp., illus. New York.
- (95) HANEY, L. H.
1908. A CONGRESSIONAL HISTORY OF RAILWAYS IN THE UNITED STATES TO 1850 . . . 273 pp., illus. Madison, Wis.
- (96) HANSEN, MARCUS L.
1940. THE ATLANTIC MIGRATION, 1607-1860: A HISTORY OF THE CONTINUING SETTLEMENT OF THE UNITED STATES. Edited by Arthur Meier Schlesinger. 409 pp. Cambridge.
- (97) HAYTER, EARL W.
1939. BARBED WIRE FENCING--A PRAIRIE INVENTION. *Agr. Hist.* 13: 189-207.
- (98) HEATON, HERBERT.
1936. ECONOMIC HISTORY OF EUROPE. 775 pp., illus. New York.
- (99) HEYWARD, DUNCAN C.
1937. SEED FROM MADAGASCAR. 256 pp., illus. Chapel Hill, N. C.
- (100) HIBBARD, B. H.
1904. THE HISTORY OF AGRICULTURE IN DANE COUNTY, WISCONSIN. 214 pp., illus. Madison.
- (101) ———
1939. A HISTORY OF THE PUBLIC LAND POLICIES. 591 pp. New York.

- (102) HICKS, JOHN D.
1931. THE POPULIST REVOLT; A HISTORY OF THE FARMERS' ALLIANCE AND THE PEOPLE'S PARTY. 473 pp., illus. Minneapolis.
- (103) HOWARD, L. O.
1929. THE RISE OF APPLIED ENTOMOLOGY IN THE UNITED STATES. Agr. Hist. 3: 131-139.
- (104) HUEBNER, GROVER G.
1924. AGRICULTURAL COMMERCE; THE ORGANIZATION OF AMERICAN COMMERCE IN AGRICULTURAL COMMODITIES. Rev. and enl. ed., 529 pp., illus. New York and London.
- (105) HUTCHINSON, WILLIAM T.
1930-35. CYRUS HALL M'CORMICK. 2 v., illus. New York and London.
- (106) _____
1935. THE REAPER INDUSTRY AND MIDWESTERN AGRICULTURE, 1855-75. *In* Essays in Honor of William E. Dodd, edited by Avery Craven, pp. 115-130. Chicago.
- (107) ICKES, HAROLD L.
1940. NOT GUILTY! RICHARD A. BALLINGER—AN AMERICAN DREYFUS. Sat. Evening Post 212 (48): 9-11, 123-126, 128.
- (108) ISE, JOHN.
1936. SOD AND STUBBLE: THE STORY OF A KANSAS HOMESTEAD. 326 pp. New York.
- (109) JACOBSTEIN, MEYER.
1907. THE TOBACCO INDUSTRY IN THE UNITED STATES . . . 208 pp. New York.
- (110) JAMESON, JOHN FRANKLIN.
1926. THE AMERICAN REVOLUTION CONSIDERED AS A SOCIAL MOVEMENT. 158 pp. Princeton.
- (111) JENSEN, MERRILL.
1936. THE CESSION OF THE OLD NORTHWEST. Miss. Val. Hist. Rev. 23: 27-48.
- (112) _____
1939. CREATION OF THE NATIONAL DOMAIN, 1781-1784. Miss. Val. Hist. Rev. 26: 323-342.
- (113) JERNEGAN, MARCUS WILSON.
1931. LABORING AND DEPENDENT CLASSES IN COLONIAL AMERICA, 1607-1783; STUDIES OF THE ECONOMIC, EDUCATIONAL, AND SOCIAL SIGNIFICANCE OF SLAVES, SERVANTS, APPRENTICES, AND POOR FOLK. 256 pp. Chicago.
- (114) JOHNSON, EMOY R., VAN METRE, T. W., HUEBNER, G. G., and HANCHETT, D. S.
1915. HISTORY OF DOMESTIC AND FOREIGN COMMERCE OF THE UNITED STATES. 2 v., illus. Washington, D. C. (Reprinted 1922.)
- (115) KIRKLAND, EDWARD C.
1939. A HISTORY OF AMERICAN ECONOMIC LIFE. Rev. ed., 810 pp., illus. New York.
- (116) KUHLMANN, CHARLES BYRON.
1929. THE DEVELOPMENT OF THE FLOUR-MILLING INDUSTRY IN THE UNITED STATES. 349 pp. Boston and New York.
- (117) LARSON, C. W., and others.
1923. THE DAIRY INDUSTRY. U. S. Dept. Agr. Yearbook 1922: 281-394, illus.
- (118) LEAVITT, CHARLES T.
1934. TRANSPORTATION AND THE LIVESTOCK INDUSTRY OF THE MIDDLE WEST TO 1860. Agr. Hist. 8: 20-33.
- (119) LEIGHTY, C. E., WARBURTON, C. W., STINE, O. C., and BAKER, O. E.
1922. THE CORN CROP. U. S. Dept. Agr. Yearbook 1921: 161-226, illus.
- (120) LEWTON, FREDERICK L.
1937. HISTORICAL NOTES ON THE COTTON GIN. Smithson. Inst. Ann. Rpt. 1937: 549-563, illus.
- (121) LOEHR, RODNEY C.
1937. THE INFLUENCE OF ENGLISH AGRICULTURE ON AMERICAN AGRICULTURE, 1775-1825. Agr. Hist. 11: 3-15.

- (122) LORD, RUSSELL.
1938. BEHOLD OUR LAND. 310 pp., illus. Boston.
- (123) ————
1938. TO HOLD THIS SOIL. U. S. Dept. Agr. Misc. Pub. 321, 122 pp., illus.
- (124) McILWAINE, SHIELDS.
1939. THE SOUTHERN POOR-WHITE, FROM LUBBERLAND TO TOBACCO ROAD. 274 pp. Norman, Okla.
- (125) McMASTER, JOHN BACH.
1883-1910. A HISTORY OF THE PEOPLE OF THE UNITED STATES, FROM THE REVOLUTION TO THE CIVIL WAR. 7 v. New York.
- (126) MALIN, JAMES C.
1932. THE BACKGROUND OF THE FIRST BILLS TO ESTABLISH A BUREAU OF MARKETS, 1911-12. Agr. Hist. 6: 107-129.
- (127) ————
1936. THE ADAPTATION OF THE AGRICULTURAL SYSTEM TO SUB-HUMID ENVIRONMENT. Agr. Hist. 10: 118-141.
- (128) MATHEWS, LOIS KIMBALL.
1909. THE EXPANSION OF NEW ENGLAND. 303 pp. Boston.
- (129) MAZYCK, WALTER H.
[1932.] GEORGE WASHINGTON AND THE NEGRO. 180 pp. Washington, D. C.
- (130) MEYER, BALTHASAR HENRY, editor.
1917. HISTORY OF TRANSPORTATION IN THE UNITED STATES BEFORE 1860. 678 pp., illus. Washington, D. C.
- (131) MILLER, JOHN C.
1936. SAM ADAMS: PIONEER IN PROPAGANDA. 437 pp. Boston.
- (132) MILLER, MERRITT FINLEY.
1902. THE EVOLUTION OF REAPING MACHINES. U. S. Dept. Agr. Off. Expt. Stas. Bul. 103, 43 pp., illus.
- (133) MORRIS, RICHARD B.
1927. PRIMOGENITURE AND ENTAILED ESTATES IN AMERICA. Columbia Law Rev. 27: 24-51.
- (134) MUDGE, EUGENE TENBROECK.
1939. THE SOCIAL PHILOSOPHY OF JOHN TAYLOR OF CAROLINE . . . 227 pp. New York.
- (135) NEELY, WAYNE CALDWELL.
1935. THE AGRICULTURAL FAIR. 313 pp., illus. New York.
- (136) NETTELS, CURTIS PUTNAM.
1934. THE MONEY SUPPLY OF THE AMERICAN COLONIES BEFORE 1720. Wis. Univ. Studies Social Sci. and Hist. 20, 300 pp.
- (137) ————
1938. THE ROOTS OF AMERICAN CIVILIZATION; A HISTORY OF AMERICAN COLONIAL LIFE. 748 pp., illus. New York.
- (138) NIXON, HERMAN CLARENCE.
1935. THE NEW SOUTH AND THE OLD CROP (1865-80). In Essays in Honor of William E. Dodd, edited by Avery Craven, pp. 320-334. Chicago.
- (139) NOURSE, EDWIN G.
1924. AMERICAN AGRICULTURE AND THE EUROPEAN MARKET. 333 pp. New York and London.
- (140) OSGOOD, ERNEST STAPLES.
1929. THE DAY OF THE CATTLEMAN. 283 pp., illus. Minneapolis.
- (141) OWSLEY, FRANK L., and OWSLEY, HARRIET C.
1940. THE ECONOMIC BASIS OF SOCIETY IN THE LATE ANTE-BELLUM SOUTH. Jour. South. Hist. 6: 24-45.
- (142) PAXSON, FREDERIC LOGAN.
1907. THE PACIFIC RAILROADS AND THE DISAPPEARANCE OF THE FRONTIER IN AMERICA. Amer. Hist. Assoc. Ann. Rpt. (1907) 1: 107-118, illus.
- (143) ————
1924. HISTORY OF THE AMERICAN FRONTIER, 1763-1893. 598 pp., illus. Boston and New York.

- (144) PELZER, LOUIS.
1936. THE CATTLEMAN'S FRONTIER; A RECORD OF THE TRANS-MISSISSIPPI CATTLE INDUSTRY FROM OXEN TRAINS TO POOLING COMPANIES, 1850-1890. 351 pp., illus. Glendale, Calif.
- (145) PHILLIPS, ULRICH BONNELL.
1918. AMERICAN NEGRO SLAVERY. 529 pp. New York and London.
- (146) ———
1928. THE CENTRAL THEME OF SOUTHERN HISTORY. *Amer. Hist. Rev.* 34: 30-43.
- (147) ———
1929. LIFE AND LABOR IN THE OLD SOUTH. 375 pp., illus. Boston.
- (148) PIRTLE, THOMAS ROSS.
1926. HISTORY OF THE DAIRY INDUSTRY. 645 pp., illus. Chicago.
- (149) PLUMB, CHARLES SUMNER.
1924. FELIX RENICK, PIONEER. *Ohio Archaeol. and Hist. Quart.* 33: 3-66, illus.
- (150) POOLEY, WILLIAM VIPOND.
1908. SETTLEMENT OF ILLINOIS, 1830-1850. *Wis. Univ. Bul.* 220, ser. 5, v. 1, No. 4, 308 pp., illus.
- (151) PRATT, JULIUS.
1925. EXPANSIONISTS OF 1812. 309 pp. New York.
- (152) PURCELL, RICHARD J.
1918. CONNECTICUT IN TRANSITION, 1775-1818. 471 pp. Washington, D. C.
- (153) RICHES, NAOMI.
1937. THE AGRICULTURAL REVOLUTION IN NORFOLK. 194 pp., illus. Chapel Hill, N. C.
- (154) RIEGEL, ROBERT E.
1930. AMERICA MOVES WEST. 595 pp. New York.
- (155) ROBBINS, ROY M.
1931. PREEMPTION—A FRONTIER TRIUMPH. *Miss. Val. Hist. Rev.* 18: 331-349.
- (156) ———
1933. HORACE GREELEY: LAND REFORM AND UNEMPLOYMENT, 1837-1862. *Agr. Hist.* 7: 18-41.
- (157) ———
1939. THE PUBLIC DOMAIN IN THE ERA OF EXPLOITATION, 1862-1901. *Agr. Hist.* 13: 97-108.
- (158) ROBERT, JOSEPH CLARKE.
1933. RISE OF THE TOBACCO WAREHOUSE AUCTION SYSTEM IN VIRGINIA, 1800-1860. *Agr. Hist.* 7: 170-182.
- (159) ———
1938. THE TOBACCO KINGDOM; PLANTATION, MARKET, AND FACTORY IN VIRGINIA AND NORTH CAROLINA, 1800-1860. 286 pp., illus. Durham, N. C.
- (160) ROGIN, LEO.
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- (161) ROSS, EARLE D.
1926. THE EVOLUTION OF THE AGRICULTURAL FAIR IN THE NORTHWEST. *Iowa Jour. Hist. and Politics* 24: 445-480.
- (162) ———
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- (163) ———
1933. HORACE GREELEY AND THE BEGINNINGS OF THE NEW AGRICULTURE. *Agr. Hist.* 7: 1-17.
- (164) ———
1933. HORACE GREELEY AND THE WEST. *Miss. Val. Hist. Rev.* 20: 63-74.
- (165) ———
1938. THE "FATHER" OF THE LAND-GRANT COLLEGE. *Agr. Hist.* 12: 151-186.

274 Yearbook of Agriculture, 1940

- (166) RYERSON, KNOWLES A.
1933. HISTORY AND SIGNIFICANCE OF THE FOREIGN PLANT INTRODUCTION WORK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. Agr. Hist. 7: 110-128.
- (167) SANFORD, ALBERT H.
1916. THE STORY OF AGRICULTURE IN THE UNITED STATES. 394 pp., illus. Boston, New York, and Chicago.
- (168) SCHELL, HERBERT S.
1931. DROUGHT AND AGRICULTURE IN EASTERN SOUTH DAKOTA DURING THE EIGHTEEN NINETIES. Agr. Hist. 5: 162-180.
- (169) SCHLESINGER, ARTHUR MEIER.
1922. NEW VIEWPOINTS IN AMERICAN HISTORY. 299 pp. New York.
- (170) _____
1925. POLITICAL AND SOCIAL HISTORY OF THE UNITED STATES, 1829-1925. 576 pp. New York.
- (171) _____
1940. THE CITY IN AMERICAN HISTORY. Miss. Val. Hist. Rev. 27: 43-66.
- (172) SCHMIDT, LOUIS BERNARD.
1920. THE WESTWARD MOVEMENT OF THE WHEAT GROWING INDUSTRY IN THE UNITED STATES. Iowa Jour. Hist. and Politics 18: 396-412.
- (173) _____
1921. THE INTERNAL GRAIN TRADE OF THE UNITED STATES, 1860-1890. Iowa Jour. Hist. and Politics 19: 196-245.
- (174) _____
1930. THE AGRICULTURAL REVOLUTION IN THE UNITED STATES—1860-1930. Science 72: [585]-594.
- (175) SHANNON, FRED A.
1934. ECONOMIC HISTORY OF THE PEOPLE OF THE UNITED STATES. 942 pp., illus. New York.
- (176) SHERMAN, CAROLINE B.
1937. THE LEGAL BASIS OF THE MARKETING WORK OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. Agr. Hist. 11: 289-301.
- (177) SHRYOCK, RICHARD H.
1939. BRITISH VERSUS GERMAN TRADITIONS IN COLONIAL AGRICULTURE. Miss. Val. Hist. Rev. 26: 39-54.
- (178) _____
1939. THE PENNSYLVANIA GERMANS IN AMERICAN HISTORY. Pa. Mag. Hist. and Biog. 63: 261-281.
- (179) SIMMS, HENRY HARRISON.
1932. LIFE OF JOHN TAYLOR; THE STORY OF A BRILLIANT LEADER IN THE EARLY VIRGINIA STATE RIGHTS SCHOOL. 234 pp. Richmond.
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- (181) SPINDEN, HERBERT J.
1928. THE POPULATION OF ANCIENT AMERICA. Geog. Rev. 18: 641-660, illus.
- (182) _____
1928. THANK THE AMERICAN INDIAN . . . Sci. Amer. 138: 330-332, illus.
- (183) STEPHENSON, GEORGE MALCOLM.
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- (187) TRUE, ALFRED CHARLES.
1928. A HISTORY OF AGRICULTURAL EXTENSION WORK IN THE UNITED STATES, 1785-1923. U. S. Dept. Agr. Misc. Pub. 15, 220 pp.

- (188) TRUE, ALFRED CHARLES.
1929. A HISTORY OF AGRICULTURAL EDUCATION IN THE UNITED STATES, 1785-1925. U. S. Dept. Agr. Misc. Pub. 36, 436 pp., illus.
- (189) TRUE, RODNEY H.
[1935.] SKETCH OF THE HISTORY OF THE PHILADELPHIA SOCIETY FOR PROMOTING AGRICULTURE. 52 pp. [Philadelphia.]
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- (192) ———
1921. THE FRONTIER IN AMERICAN HISTORY. 375 pp. New York.
- (193) ———
[1935.] THE UNITED STATES, 1830-1850 . . . 602 pp., illus., New York.
- (194) UNITED STATES BUREAU OF AGRICULTURAL ECONOMICS.
1924. THE WHEAT SITUATION. U. S. Dept. Agr. Yearbook 1923: 95-150, illus.
- (195) ———
1937. WASHINGTON, JEFFERSON, LINCOLN AND AGRICULTURE. 102 pp., illus. Washington, D. C.
- (196) UNITED STATES BUREAU OF THE CENSUS.
1853. THE SEVENTH CENSUS OF THE UNITED STATES: 1850. 1022 pp. Washington, D. C.
- (197) UNITED STATES CONGRESS.
1863. AN ACT TO ESTABLISH A DEPARTMENT OF AGRICULTURE. Stat. L., 37th Cong., 2d sess. (1862) 12: 387-388.
- (198) ———
1892. AN ACT TO REPEAL TIMBER-CULTURE LAWS, AND FOR OTHER PURPOSES. Stat. L., 51st Cong., 2d sess. (1891) 26: 1095-1103.
- (199) UNITED STATES DEPARTMENT OF AGRICULTURE.
1863. REPORT OF THE COMMISSIONER OF AGRICULTURE FOR THE YEAR 1862. 632 pp., illus. Washington, D. C.
- (200) ———
1889. FIRST REPORT OF THE SECRETARY OF AGRICULTURE. 560 pp., illus. Washington, D. C.
- (201) ———
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- (202) UNITED STATES FEDERAL FARM BOARD.
1932. STATISTICS OF FARMERS' SELLING AND BUYING ASSOCIATIONS, UNITED STATES, 1863-1931. U. S. Fed. Farm Bd. Bul. 9, 91 pp., illus.
- (203) USHER, ABBOTT PAYSON.
1920. AN INTRODUCTION TO THE INDUSTRIAL HISTORY OF ENGLAND. 529 pp. Boston.
- (204) VAN WAGENEN, JARED, JR.
1927. THE GOLDEN AGE OF HOMESPUN. N. Y. State Dept. Agr. and Markets Agr. Bul. 203, 95 pp., illus.
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- (210) WILEY, B. I.
1939. SALIENT CHANGES IN SOUTHERN AGRICULTURE SINCE THE CIVIL WAR. Agr. Hist. 13: 65-76.

276 Yearbook of Agriculture, 1940

- (211) WILSON, HAROLD F.
1935. THE RISE AND DECLINE OF THE SHEEP INDUSTRY IN NORTHERN NEW ENGLAND. Agr. Hist. 9: 12-40.
- (212) ———
1936. THE HILL COUNTRY OF NORTHERN NEW ENGLAND; ITS SOCIAL AND ECONOMIC HISTORY, 1790-1830. Columbia Univ. Studies Hist. Amcr. Agr. 3, 455 pp., illus. New York.
- (213) WILSON, M. L.
1919. THE EVOLUTION OF MONTANA AGRICULTURE IN ITS EARLY PERIOD. Miss. Val. Hist. Assoc. Proc. (1917-18) 9: [429]-440.
- (214) WILTSE, CHARLES MAURICE.
1935. THE JEFFERSONIAN TRADITION IN AMERICAN DEMOCRACY. 273 pp. Chapel Hill, N. C.
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1940. WE WHO BUILT AMERICA; THE SAGA OF THE IMMIGRANT. 547 pp. New York.
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- (217) WOODWARD, CARL RAYMOND.
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- (218) WOODWARD, CARL R.
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- (219) ZEICHNER, OSCAR.
1939. THE TRANSITION FROM SLAVE TO FREE AGRICULTURAL LABOR IN THE SOUTHERN STATES. Agr. Hist. 13: 22-32.