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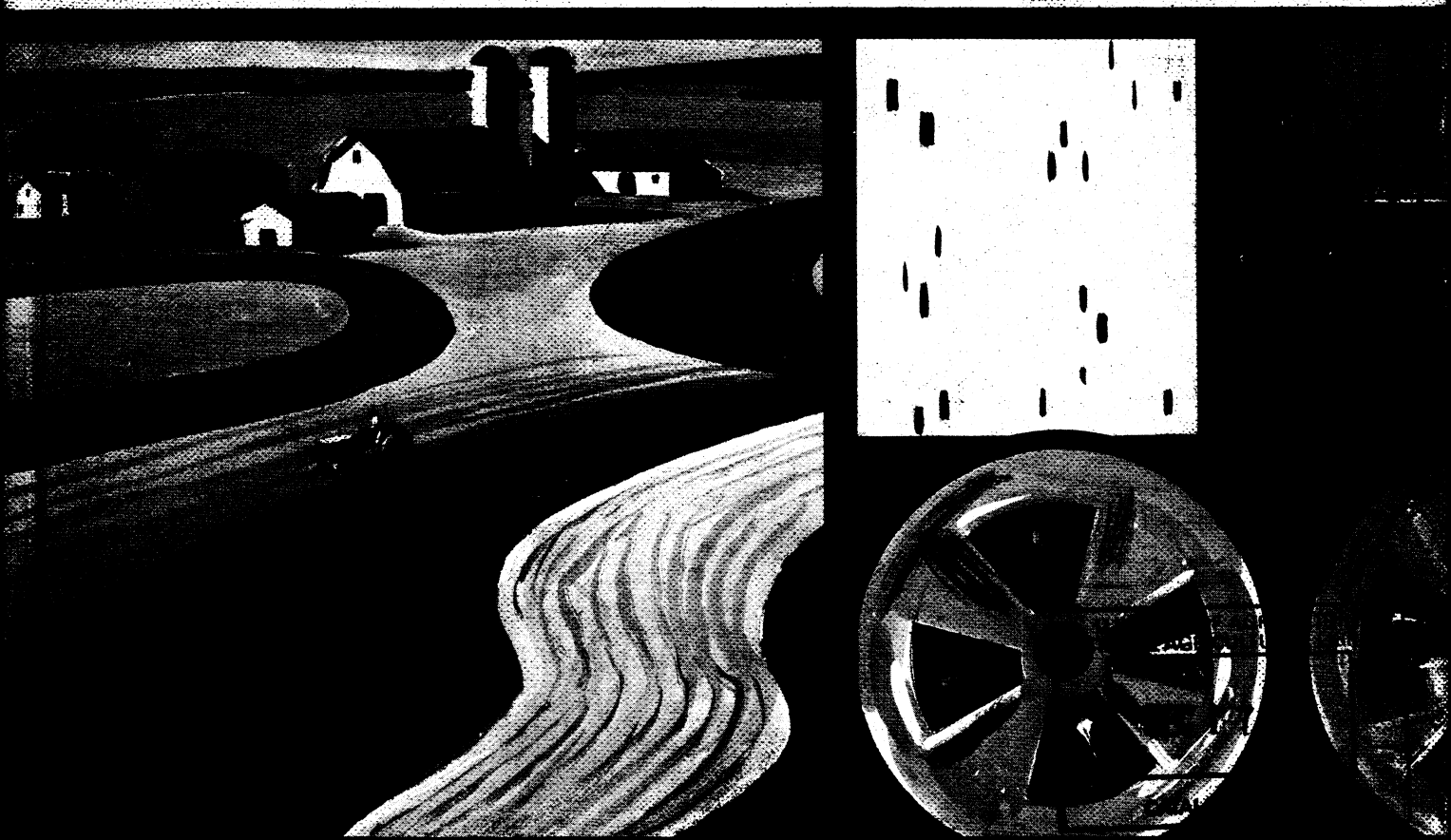
The Story of U.S. AGRICULTURAL ESTIMATES



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THE STORY OF U.S. AGRICULTURAL ESTIMATES

Prepared by the

Statistical Reporting Service

Miscellaneous Publication No. 1088

U.S. DEPARTMENT OF AGRICULTURE

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FOREWORD

Throughout the history of the United States there has been need for reliable and timely information on the agriculture of the Nation. In the early days of the young Republic, the concern centered largely on obtaining information on better farming methods and results obtained from different cultural practices in terms of greater yield.

Requirements for information changed as the frontier pushed further inland, as manufacturing began to move from the farm to shops and factories with the inevitable development of a consuming population, and as the need for a more effective marketing system evolved. Farmers everywhere were being pushed into the long and painful shift from subsistence to commercial agriculture. Gradually demand developed for more specific statistics that would serve the needs of the marketplace and guide national policy.

The first part of this chronicle, covering the period between Washington and Lincoln, is a summary of the efforts of early leaders to obtain information about the farms of the new Republic. Out of their efforts evolved several ideas and schemes for collection of current statistical information; some of them were the basis for the methods employed in the early efforts to provide a regular crop reporting service. This part of the story was prepared by Walter H. Ebling, who served as Statistician for Wisconsin from 1927 until he retired in 1960.

The second part of the story covers the period from the establishment of the Department of Agriculture in 1862 to about 1905, i.e., from Lincoln to Theodore Roosevelt. This may be characterized as the "founding period" of the Crop and Livestock Reporting Service (later the Statistical Reporting Service). The program found its footing; overall policies and objectives were crystallized, and an operating organization was shaped and reshaped. It was during this period that the long time series of statistics of crop and livestock production were started, marking the beginning of a century of continuous statistical service to agriculture and the Nation. Emerson M. Brooks wrote the section of this book that covers the founding period. Brooks began work with the Crop Reporting Service in 1933, and was on the headquarters staff of the Administrator of SRS when this history was prepared.

The next 40 years or so saw an accelerating emphasis upon more efficient production for the market. New tools and new machines marked the decline of horse and mule power and reduction in manpower needed to provide food and fiber for the Nation. These changes, together with population growth, the development of great urban areas, and the requirements for a marketing system to distribute the food to these areas, exerted an increasing demand for more comprehensive, more precise, and more timely information on supplies of food. A great depression and two world wars stimulated the need for agricultural statistics.

Beginning around 1940 a new trend in agriculture began to be recognized and was accentuated by the exigencies of World War II. Agribusiness became a popular word to denote the common interests of the farm and the business enterprises dependent upon the farm. A natural development of this concept was integration of functions. Vertical integration of agriculture typifies the most recent trend. With this development the problems of meeting the needs for agricultural statistics have become more complex. Users have become more sophisticated. With the increase in size of enterprise and greater investment of capital, business decisions have become more critical. The Statistical Reporting Service is now called upon for greater accuracy and more detailed statistics as a basis for these decisions. S. R. Newell prepared the history of the period from 1905 to 1966. W. F. Callander, long-time Chief of the Crop and Livestock Reporting Service and

Chairman of the Crop Reporting Board, did a great deal of research and prepared voluminous notes that were a great help in the task of completing the story.

Personnel files in the National Archives provided a mine of useful material. Letters, speeches, comments, and papers written by participants for various purposes, and usually not considered at the time as documents of historical significance, were equally useful. In addition to these sources, Newell drew heavily on his close association with the crop and livestock estimating program since the early 1920's. His contribution was prepared after his retirement as Chairman of the Crop Reporting Board in 1966.

Wayne D. Rasmussen and Vivian Wiser of the Agricultural History Branch, Economic Research Service, were most generous in providing guidance, furnishing materials from their files, and assisting with the manuscript and the format. Emerson M. Brooks made many suggestions and helped in the final organization of the book. Joseph A. Becker and Charles E. Gage contributed by providing Newell with firsthand information on many episodes in the history of the Service.

This volume does not deal with the technical aspects of the Statistical Reporting Service as it is presently operated. For a complete discussion of this aspect of the service see "Statistical Reporting Service of the U.S. Department of Agriculture—Scope and Methods," U.S.D.A. Miscellaneous Publication No. 967, 1964, 234 pages.

Harry C. Trelogan
Administrator

CONTENTS

PART I. EARLY EFFORTS TO GATHER AGRICULTURAL STATISTICS, 1781-1861

PROLOGUE

The United States became a Nation when the Articles of Confederation were ratified in 1781. The business of the new Nation was largely agriculture. In 1790, the census showed about 4 million people; over 90 percent gainfully employed were in agriculture. Farmers, particularly those in the North, were thinking in terms of their own and local needs first, while in the South agriculture had tended to develop along more commercial lines. In 1790, tobacco alone accounted for 44 percent of total exports. Cotton soon began to take the limelight and by the middle of the 19th century accounted for 54 percent of the value of total exports.

Invention of new farm machinery and improvement of the old were receiving active attention. Eli Whitney invented the cotton gin in 1793 and in the same year Thomas Jefferson invented a moldboard plow based on scientific principles. Four years later, Charles Newbold of New Jersey received a patent for the first cast-iron plow. In 1833, John Lane began the manufacture of steel plows and Oberd Hursy patented the first successful horse-drawn grain reaper. A few years later, in 1837, John Deere began manufacturing plows with steel share and smooth wrought-iron moldboard. A patent was granted to G. W. Brown for a widely used corn planter in 1853 and the next year a patent was granted for a two-wheeled jointed bar mower. In 1856, a two-horse straddle row cultivator was patented and in 1858 a harvester which gathered grain into bundles was patented by C. W. and W. W. Marsh.[1]

[1] Rasmussen, Wayne D., Readings in the History of American Agriculture. Univ. Ill. Press, 1960, pp. 35–60, 295–301.

Transportation was also developing. In 1805 the first corn-fat cattle were driven over the mountains from the Ohio Valley to eastern markets. Building turnpikes started about 1790. The first one of importance, the Philadelphia-Lancaster Turnpike, was completed in 1794. The most celebrated turnpike was built by the Federal Government. This was the Cumberland Road, or National Pike, that ran west from Cumberland, Md. The first appropriation for this road was made in 1806 and work started in 1811. By 1818 it had reached Wheeling on the Ohio River and in 20 years, it had been pushed across Ohio and Indiana and on to Vandalia in central Illinois. The original plan was to extend the Cumberland Road to St. Louis, but by the time it reached Vandalia the superiority of railroads had been established and the extension was abandoned.

From the earliest times, rivers had been the principal means of transportation. The limitations of river transportation became an increasing problem in meeting the needs of the new Nation as population increased, and as industrial growth drew increasing numbers of industrial workers into urban centers. Canalization of the rivers in some instances alleviated the problem of long and difficult portages around the rapids, but the problem of upstream traffic was the greatest limitation. The solution of this problem came in 1807 when Robert Fulton succeeded in running his *Clermont* up the Hudson from New York to Albany, demonstrating the practicability of using steam power to propel ships. Steamboats were introduced on the Ohio River in 1811, but it was not until 1815 that a steamboat succeeded in ascending the Mississippi River as far as the falls at Louisville, Ky.

Problems of east-west transportation still remained. This limitation encouraged the

building of canals. One of the first to be built was the Santee Canal connecting Charleston, S.C., with the Santee River; it opened in 1800. Another early enterprise was the Middlesex Canal, connecting Boston with the Merrimac River a little north of Lowell, Mass. Many States embarked on extensive canal building programs, but by far the most commercially important canal was the Erie Canal from Albany to Buffalo. This project was started in 1817 and completed in 1825.

Canalization was the most significant development of the age, connecting the farming areas in western New York State and the great new agricultural areas of the Central States with the growing industrial areas of the Atlantic Coast.[2]

Development of rail transportation overlapped the canal building era. The opening of the Baltimore and Ohio Railroad in 1830 might be regarded as the beginning of the decline of canal transportation. Actually, the Erie Canal is the only one built during the period that has survived the competition of the railroad and later transportation developments. The total mileage of railroads in the United States in 1840 was 2,818 miles. By 1860, just 2 years before the U.S. Department of Agriculture was established, the railroad net amounted to 30,626 miles.[3]

Interest of the farmers in improved practices, new crops, and breeds of livestock dates to the first colonists. Agricultural societies started early, beginning with the American Philosophical Society organized in 1743 to promote scientific agriculture. The movement grew after the Revolution. The societies were influential in promoting improved agriculture and giving expression to the concern of farmers with the political actions of the new Government and the need for national recognition of the problems of agriculture.

The shift from manpower to horsepower, the opening of new lands accelerated by development of transportation, and the awakening of interest in experimentation with fertilizer and new varieties of crops and breeds of livestock all had significant impacts on the activities of the Government in agriculture. The first action of the Government came in 1839 when the Patent Office started collecting agricultural statistics and distributing seed. In 1862, with the establishment of the U.S. Department of Agriculture, the work was expanded.

CHAPTER 1. EVOLUTION OF AGRICULTURAL DATA SYSTEMS

Efforts to establish facts about U.S. agriculture trace back to colonial days. In colonial times, nearly everyone was concerned with land and the production of things needed to sustain life, and attempts were made to collect information on farming methods and to generalize about responses in production. Efforts to quantify production and populations became more frequent and more effective with the passing decades. Indeed, historic roots and prototypes of modern Government surveys seeking agricultural information can be traced to periods long before the U.S. Government itself assumed this type of responsibility. Various fields of work now carried on by the U.S. Department of Agriculture had early origins. Much of our latterday progress was made possible by the efforts of our forefathers to deal with the issues of their day. They left a heritage upon which much has been built, including our present agricultural data collecting systems.

Knowledge of agriculture which early settlers brought from Europe was often of little service to them.[4] In a sense pioneers began life anew, and for years many were short of tools, shelter, food, and animals. For a time, life in most places was indeed a struggle for existence.[5] The first permanent settlers in America were caught in a great transition. While land was often free, the problems of clearing and of producing a crop were many and often quite unrelated to Old World experience.

In their European background the newcomers were not hunters nor fishermen, nor

[2] Jones, Eliot. Principles of Railway Transportation. The Macmillan Co., 1929, pp. 38–43.

[3] U.S. Department of Commerce. Historical Statistics of the United States, Colonial Times to 1957, p. 427.

[4] Eliot, Jared. Essays on New England Husbandry. Killingworth, Conn., 1747. Essays reprinted by Mass. Soc. for Promoting Agr., 1811, Part I, p. 5.

[5] Ibid.

had they experience in land clearing.[6] Likewise, they were unaccustomed to using native fruits and other plants for subsistence. Gradually they improved their equipment and shelter, while producing crops from European seeds as well as learning to clear land and grow corn and other native crops as the Indians had done before them. Livestock, which was scarce in the early periods, became more numerous, especially after the introduction of European forage crops such as bluegrass and clover.

As better farming methods were developed, more knowledge of agriculture in all its phases was eagerly sought, especially by men in positions of leadership. They experimented with improvements in farm practices and often corresponded with men of learning and influence in distant colonies or in Europe, exchanging views and experience so that they might improve their own farming methods and those of others. The writings on agriculture by Washington, Jefferson, and other leaders in our early history are illustrative.

The early search for knowledge of agriculture often involved concepts of yields per acre. Jared Eliot's essays (first published in 1747) mention 20 bushels of wheat per acre as a middling crop.[7] Long before 1747, the first year official averages could be obtained, yield expectations were expressed quantitatively. Likewise an interest existed in size and utilization of landholdings of farmers, but official data summarizing such subjects had yet to come into being.

Data on animal inventories, such as those obtained on cattle by tax lists of Connecticut in 1648 or Essex County, Mass., even earlier, were recorded,[8] but collection of data on agriculture in the modern sense had not evolved. Local inventories of livestock, etc., as obtained from early tax lists have perhaps more interest to historians than they had for people of that time.

[6] Bidwell, P. W. and Falconer, J. D. History of Agriculture in the Northern United States, 1620–1860. Carnegie Institution, 1925, p. 5.

[7] Eliot, Jared. Essays on New England Husbandry. Killingworth, Conn., 1747. Essays reprinted by Mass. Soc. for Promoting Agr., 1811, Part I, p. 5.

[8] Bidwell and Falconer. pp 26, 105.

Early American farmers, like those of England, showed little concern about markets, the environment being one of food deficits rather than surpluses. The market usually seemed to be assumed and emphasis was mainly on how to achieve more production. Farming was an individual matter, with much of the production for home consumption and only a small amount for market. Self-sufficiency as a concept applied to local communities as well as to the individual farm. Questions in agriculture were mostly about "farming and farming methods," about practices in use and results obtained, rather than about general supply and location of products. Because nearly everyone had land, the distinction between producers and consumers of farm products was not as clear as it has since become.

President Washington's Mailed Inquiry

An early use of letters to farmers to obtain information on agriculture was undertaken by Washington while he was President of the United States. In "George Washington, Farmer" [9] it is recorded: "These letters were the result of inquiries made of Washington by Arthur Young (of England) in 1791." The report further states that:

> . . . because of this service and of his general interest in agricultural matters Washington was elected a foreign honorary member of the English Board of Agriculture and received a diploma, which is still preserved among his papers.
>
> The following circular letter was addressed to several gentlemen, the best informed of the agriculture, value of lands, and the prices of produce, &c. in the States of New-York, New-Jersey, Pennsylvania, Maryland, and Virginia; and the answers which have been received are thereunto subjoined.
>
> Philadelphia, August 25, 1791.
>
> Dear Sir,
>
> Some inquiries having been made of me by important characters, on the state of agriculture in America, comprehending its several relations, and intended to ascertain the value of our lands, with their yield in the several kinds of grain, grass, &c. the prices of farming stock; the prices of produce, &c. together with a list of the taxes in the different States, which may in any way affect the farmer: as an object highly interesting to our country, I have determined to render the most just and satisfactory answers that the best information I can obtain from different parts of the United States will enable me to give.

[9] Haworth, Paul Leland. George Washington, Farmer, p. 84. Bobbs-Merrill Co., 1915.

With this view, my confidence in your disposition and knowledge, leads me to offer to your inquiry, and to request from your intelligence as early information as may be convenient, on the following heads:

1. The fee-simple prices of farming lands in such part of the State of _____ as are neither so near to large towns as to enhance their value, nor so distant from market as greatly to reduce it, or to make the situation inconvenient. In your answer to this inquiry, be pleased to note, generally, the situations, the soil, and, if it be practicable, the proportions of arable, pasture, and woodland.

2. The rents of the same lands, when leased, and, generally, the terms of lease.

3. The average product of the same lands in wheat, rye, barley, oats, buckwheat, beans, pease, potatoes, turnips, grasses, hemp, flax, &c. in the common mode of husbandry now practised.

4. The average prices of these articles, when sold at the farm, or carried to the nearest market.

5. The average prices of good working horses, working oxen, milch cows, sheep, hogs, poultry, &c.

6. The average prices of beef, veal, mutton, pork, butter, and cheese, in the neighbourhood, or at the nearest markettowns.

7. The price of wrought iron, whence the price of farming utensils may be inferred.

8. A list of the Taxes laid in the State of_____

The tendency of this inquiry, will be my apology for the trouble it may give to you.

I am, dear, Sir, with great regard,
Your most obedient servant,

G. Washington [10]

He obtained enough information from his inquiry to write fully to his English correspondent. As agricultural surveys evolved they were mainly designed to bring together information to answer questions of interest at a particular time. And while the early surveys were often prototypes of inquiries that were used later, they can be best understood in terms of what was wanted in the way of information at the time the surveys were made.

Inquiries by Early Agricultural Societies

A spirit of improvement was promoted largely through agricultural societies. These came into existence in England early in the 18th century, the first one being credited to Edinburgh, Scotland, in 1723.[11] The movement spread in the British Isles, then to Europe and America.

In England, the societies became a device for promoting interest in agriculture by the well-to-do landowners for whom agriculture became a special interest during the last half of the 18th century. Improvement of agriculture was a social as well as a practical economic endeavor with men of standing, and various ways were developed to popularize the movement. A development that did much to stimulate this interest was the creation of the English Board of Agriculture in 1793. Sir John Sinclair, with the aid of Pitt, secured an act of Parliament and a charter from the King for such a Board.[12] In this way the Government became a party to the collection of information and the making of statistical surveys, thereby adding dignity and standing to the agricultural revolution. This was one of a long series of events which led to similar action by the U.S. Congress nearly seven decades later, when the Department of Agriculture was created with statistical work as a major and continuing activity. In fact, at the urging of Sir John Sinclair, with whom he corresponded, George Washington proposed in his last annual message to Congress the establishment of a Board of Agriculture and the use of public financial aid for its work.[13]

Agricultural societies in the United States took various forms, but generally they provided a means by which people in public leadership who were interested in agriculture could work and express themselves concerning improvement in this broad field. Leading citizens undertook to popularize knowledge about agriculture and better farming methods in an effort to improve their communities.

Actually, in their general objectives, the early agricultural societies covered various areas of work which later became recognized Government functions in the Department of Agriculture. Some of the objectives and their outcomes are as follows:

1. Educational efforts of the societies may be considered a response to a need which ultimately brought the Morrill Act of 1862 and the land grant colleges.

[10] Letters from George Washington to Arthur Young and Sir John Sinclair. Printed by Cottom and Stewart, Alexandria, 1803, pp. 19–50.

[11] True, R. H. The Early Development of Agricultural Societies in the United States.

[12] Neely, W. C. The Agricultural Fair. p. 39. Columbia Univ. Press, New York, 1935.

[13] Ibid., p. 42.

2. Payments of premiums for improved crops and animals, as well as experiments and demonstrations, were forerunners of agricultural experiment station efforts which came with the Hatch Act of 1887.

3. Educational fairs, shows, exhibits, and contests may be looked upon as forerunners of agricultural extension work that became a cooperative Government responsibility under the Smith-Lever Act of 1914.

4. Inquiry for the collection of information was a major part of the societies' efforts on behalf of agriculture, and their surveys first brought State support for statistical work. This in turn led to congressional support for statistics, first in the Patent Office and, 23 years later, in the establishment of this function as a part of the Department of Agriculture. Through inquiries, statistical and other information was sought which made generalization possible in agricultural matters.

The Massachusetts Society for Promoting Agriculture and Agricultural Inquiry

Just as they pioneered early work in other important public efforts in agriculture, so certain early agricultural societies undertook the making of inquiries to collect a wide range of information and data on farming. A notable early effort in this area was that of the Massachusetts Society for Promoting Agriculture about 1800, when it distributed a set of 50 queries, answers to which were published in 1807.

While the inquiries dealt largely with farming methods, experience, and results, numerical values had a place in describing such items as production per acre, numbers of animals usually kept on a farm, and prices. Also there were questions on straw and fodder; land values; seed used per acre; and days of labor used per acre in raising and shelling corn. One respondent stated that shelling corn took 7 days per acre and was done by rubbing the corn cobs against a spade and over a tub.

Inquiry by the Albemarle Agricultural Society

Another agricultural society that undertook the collection of information was the Albemarle Agricultural Society of Virginia. The society was organized on May 5, 1817, in Charlottesville by a small group whose objectives were to promote the interests of agriculture and domestic economy. Among the leading names listed was that of Thomas Jefferson, who according to R. H. True may be justly regarded as the founder of this society.[14] A committee of five, one of whom was Jefferson, was named to prepare rules and regulations for the government of the society. When this committee reported on October 7, 1817, nine objects for attention and inquiry by the society were stated. These included the cultivation of primary crops—wheat, tobacco, and hemp—for market, and also subsidiary items for the support of the farm and household, such as other crops and livestock. The emphasis on the three crops for market reflected the greater importance of the market aspect of production in this region, as well as the growing importance of a market economy in the agriculture of the time. The fact that inquiry is stressed among the objectives of the society may be associated with accomplishments by inquiries of other early societies, notably the one in Massachusetts. The subject matter of the inquiry was broad; it included "Calendars of Work" relating to organization of farm operations, requirements of labor, "draught animals: employed throughout the year," etc.

The Albemarle Society undertook various other projects for the advancement of agriculture. For the purpose of

> carrying into effect the views of the Society with regard to implements of Husbandry, it is expedient to establish a manufactory of such; to be in part under the patronage and guidance of the Society; to have in view particularly improvements in the construction of ploughs.[15]

Another undertaking of the society was the establishment of a professorship of agriculture at the University of Virginia,[16]

> to hasten and perpetuate the march of Agricultural improvement already so happily commenced. . . . This Society could not make an appropriation of its funds more conducive to the

[14] True, R. H. Early Days of the Albemarle Agricultural Society. Amer. Hist. Assoc. Ann. Rpt. 1:244, 246. 1918.

[15] True, R. H. Minute Book of the Albemarle (Virginia) Agricultural Society. Amer. Hist. Assoc. Ann. Rpt. Vol I, p. 277. 1918.

[16] Ibid., pp. 298–299.

permanent attainment of the primary objects of its institution—and as it is reasonable to expect that all the Agricultural Societies, the Farmers and Planters of the State generally will cheerfully contribute to an Establishment of such universal Interest—Therefore. . . . Resolved, That One Thousand Dollars of the sum now in the Hands of the Treasurer of this Society be appropriated to the establishment of a Fund, the profits of which shall go to the support of a professorship of Agriculture at the University of Virginia.

Early Statistical Efforts by the States

In addition to State support of agricultural societies, State governments contributed to the agricultural data field by direct action programs. The inclusion of certain agricultural items in a New York State census in 1825 was an early State contribution.

The Massachusetts Agricultural Survey—1837–41

One of the best-known and most extensive State agricultural surveys was made by the Commonwealth of Massachusetts over a 4-year period, 1837–41. The State government undertook to collect information on agriculture and associated items in each county of the State. In addition to the contributions by the Massachusetts Society for Promoting Agriculture, much more was done in that State through the survey begun in 1837 and reported in four publications between 1838 and 1841.

Early Growth of State Censuses

When Washington's proposal to Congress in 1796 to establish a National Board of Agriculture failed to be accepted, public support of agriculture was left to the States. The Massachusetts Society for Promoting Agriculture, in 1792, had been the first to receive such help. In time, various States supported the work of these organizations and other projects.

Censuses were a popular form of State statistical work. Even in colonial times some of these were taken, one for Massachusetts being reported as early as 1643, one in Rhode Island in 1708, and one in New Hampshire in 1767. After independence, more States gradually undertook some kind of census enumerations, and in the 1850 census compendium published in 1854, Superintendent of the Census J. D. B. DeBow found that 20 of the 31 States had some type of census. While these were mainly for the enumeration of population, other items were included. Not only were State censuses found in some of the older States, but some of the new States provided for censuses in their constitutions and others made legislative provision for them later. These older censuses were quite unlike the more recent agricultural enumerations by assessors, which are still carried on in 14 States.

In the years of rapid westward expansion and of rapid increases in population due both to immigration and natural increase, the interval between the decennial U.S. censuses was longer than many States wanted to wait for a new record of their growth. A number of States took their own censuses 10 years apart, midway between the Federal population censuses. Gradually, however, the State censuses of population disappeared.

State Statistical Bureaus Proposed

In the 1840's there was interest in the establishment of a national statistical bureau similar to those existing in some European nations. There were also efforts to establish State statistical bureaus. DeBow reported that such bureaus had been proposed in South Carolina, Rhode Island, Virginia, and Illinois, and that one had been actually established in Louisiana.[17] Working in Louisiana, DeBow prepared a circular proposing—under 14 inclusive heads—the desired functions of such a bureau for that State. He believed that the outline was also suitable for other States. In the light of changes taking place in agriculture at midcentury, it is a little surprising that the statistical proposals of the period were wholly in the nature of long-interval descriptions.

Early Agricultural Data in the U.S. Government

The U.S. Government did practically no work in agriculture for a half-century after independence. President Washington and others had urged it, but the Congress had not responded. Interest seemed to be mainly in local aspects of the industry, and, since farming was highly individualistic, the demand for

[17] Compendium of the 7th Census (1850), pp. 18–20.

a national program in agriculture developed slowly. However, in the decade after 1830, with the rapid growth of the Nation and the great westward expansion, as well as more evidence of agricultural surpluses and price problems, the need for more information on agricultural resources became apparent. The efforts of States were uncoordinated, and while some of them were locally important, national data for agriculture were not available. Two extraordinary individuals, Archibald Russell and Henry L. Ellsworth, came forward with proposals for a national program for agricultural data in the U.S. census and in the Patent Office.

Archibald Russell and His Census Proposals

An important event in 1839 was the appearance of a book entitled, "Principles of Statistical Inquiry as Illustrated in Proposals for Uniting an Examination Into the Resources of the United States With the Census to Be Taken in 1840." Its contributions were many. The author, Archibald Russell, was a native of Scotland who had been educated in Europe, and he transported to the American scene viewpoints based largely upon European experience. He proposed ideas about the need for national inventory data as well as State data on agriculture and other parts of the economy.

Russell was 28 years old when his book was published, only 3 years after he settled in New York. His education at Edinburgh and Bonn in philosophy, law, and medicine, plus his experience, somehow combined to produce this remarkable treatise after only a few years in this country. He saw in the mechanism of the U.S. census, provided for in the Constitution to enumerate the inhabitants, a means of measuring the Nation's various resources of which agriculture at that time was the leading one.

Russell proposed that an inventory of resources of the Nation be taken along with the 1840 Census of Population. He believed that economic understanding would be helped greatly by such data. Because the Nation had already enumerated its people at 10-year intervals, beginning with 1790, Russell argued that agriculture, manufactures, and other subject matter could be enumerated along with the sixth census of population. President Van Buren, in his message to Congress in December 1838, recommended the adoption of provisions for taking the population census of 1840 and possibly extending it to include additional information. The President's recommendation was:

> In recommending to Congress the adoption of the necessary provisions at this session for taking the next census or enumeration of the inhabitants of the United States, the suggestion presents itself whether the scope of the measure might not be usefully extended by causing it to embrace authentic statistical returns of the great interest specially entrusted to, or necessarily affected by, the legislation of Congress.

The President's statement provided the opportunity for Russell to write detailed proposals for including other subjects with the population enumeration in 1840. He quoted the statement in full in his book. In fact, the statement reads as though Russell might have had something to do with writing it.

Midcentury U.S. Census of Agriculture

Congress adopted President Van Buren's recommendation, and the first census of agriculture was taken in 1840. The enumeration, containing 37 items, was included in a Schedule of Mines, Agriculture, Commerce, Manufactures, etc. In 1850, a separate Schedule No. 3, Productions of Agriculture, listed 46 items. In 1860, Schedule 4, Productions of Agriculture, had 48 items and in 1870, Schedule 3, Production in Agriculture, had 52 items.

During 1840–70, while changes were not as great as in decades that followed, some progress was made. The separate listing provided for each farm beginning in 1850 was a major improvement. After the 1840 experience, a census committee studied methods and content of the various census questionnaires, and better enumerations were the result. Archibald Russell was involved in this work, especially in the census of 1850 when the first individual farm schedule for agriculture was employed.

The census of 1840 provided the first national inventory of agricultural production. In spite of its shortcomings, it became the basis of a remarkable undertaking in agricultural estimates in the Patent Office beginning in 1841.

Annual Agricultural Estimates by Ellsworth in the U.S. Patent Office

Development of agricultural data in the United States was greatly advanced by the work of the U.S. Patent Office. This had its beginning during the 9-year administration of Henry L. Ellsworth from Connecticut, who while trained in the law was also deeply interested in agriculture. He was Commissioner of Patents from 1836 to 1845. In his report to Congress for the year 1837, he commented on the fact that commerce and manufacture had received help from the Patent Office, but that agriculture had been taken for granted and had received no aid from legislation. He expressed optimism about what could be done for agriculture and mentioned specifically the introduction of new varieties of wheat and other seeds from foreign climates. He indicated that selection of seeds and experiments with crops might substantially increase the yields. He implied that space in the new building occupied by the Patent Office might well be set aside for agriculture.[18]

To further his ideas Ellsworth prevailed upon Congress to appropriate $1,000 from the Patent Office fund in 1839 for the following purposes:

(1) Collecting and distributing seeds.
(2) Carrying out agricultural investigations.
(3) Procuring agricultural statistics.

In his report for 1839, he reported that he had found it necessary to expend a small amount of the appropriation for procuring agricultural statistics in conjunction with the inquiries propounded by the Secretary of State in taking the census. Also, the U.S. diplomatic corps had been solicited to procure seeds, and the officers of the Navy had been requested to convey to the Patent Office such seeds as might be offered.

In his report for 1840, he reported on progress made as a result of the 1839 appropriation: Over 30,000 packages of seed had been distributed, and these had been well received by the agricultural community. On the matter of statistics he merely reported that these "are in a state of forwardness but can not be completed within the time permitted for the annual report from the Patent Office." [19]

The Emergence of Annual Crop Production Estimates by States

When the census totals for 1839 crops and other data for 1840 appeared, Ellsworth had a basis for estimates of production by States and Territories which he made yearly through 1844.[20] Because the interest had now shifted more to data for the Nation, such data were obtained by adding the totals estimated separately for each of the States and Territories. Ellsworth's painstaking efforts provided the general pattern of annual agricultural estimates which continues to the present time in the U.S. Department of Agriculture. Many improvements have been made. However, the idea of using enumerated quantities for each State or Territory as a base or benchmark, and projecting estimates for later dates by applying a rate of change estimated from current information, was the method used by Ellsworth. It was a prototype of the methods that continued after the work was taken up by the Department of Agriculture.

In the Patent Office report for 1841, Commissioner Ellsworth shows tabular estimates of the production of the principal crops and the populations of livestock and other items on the farms by States and Territories.[21] In commenting on these tables Ellsworth stated, "These annual statistics will, it is hoped, guard against monopoly or an exorbitant price." [22]

Statistical Work in the U.S. Patent Office After Ellsworth

Ellsworth left the Patent Office on April 30, 1845. His successor, Edmund Burke, served a 4-year term. In general, Burke continued the statistical work which had been undertaken by Ellsworth (except in 1846, because no ap-

[18] U.S. Senate Document No. 105. 25th Cong., 2d. Sess.

[19] U.S. Congress. Senate Documents. 26th Cong. 2d. Sess., Vol. 4, p. 152.

[20] U.S. Congress. House of Representatives Document No. 109. 27th Cong., 3rd Sess., pp. 4 and 5 1842.

[21] U.S. Congress. House of Representives Document No. 74. 27th Cong., 2nd Sess., pp. 64–67.

[22] Ibid., p. 5.

TABLE 1.—*Agricultural statistics, as estimated for 1841.*

	States, &c.	Population according to the census of 1840.	Present population, estimated on the annual average incr'se for 10 years.	Number of bushels of wheat.	Number of bushels of barley	Number of bushels of oats.	Number of bushels of rye.	Number of bushels of buckwheat.	Number of bushels of Indian corn.
1	Maine	501,973	522,059	987,412	360,267	1,119,425	143,458	53,020	988,549
2	New Hampshire	284,574	286,622	426,816	125,964	1,312,127	317,418	106,301	191,275
3	Massachusetts	737,699	762,257	189,571	157,903	1,276,491	509,205	91,273	1,905,273
4	Rhode Island	108,830	111,156	3,407	69,139	188,668	37,973	3,276	471,022
5	Connecticut	309,978	312,440	95,090	31,594	1,431,454	805,222	334,008	1,521,191
6	Vermont	291,948	293,906	512,461	55,243	2,601,425	241,061	231,122	1,167,219
7	New York	2,428,921	2,531,003	12,309,041	2,301,041	21,896,205	2,723,241	2,325,911	11,441,256
8	New Jersey	373,306	383,802	919,043	13,009	3,745,061	1,908,984	1,007,340	5,134,366
9	Pennsylvania	1,724,033	1,799,193	12,872,219	203,858	20,872,591	6,942,643	2,485,132	14,969,472
10	Delaware	78,085	78,351	317,105	5,119	937,105	35,162	13,127	2,164,507
11	Maryland	470,019	474,613	3,747,652	3,773	2,827,365	671,420	80,966	6,998,124
12	Virginia	1,239,797	1,245,475	10,010,105	83,025	12,962,108	1,317,574	297,109	33,987,255
13	North Carolina	753,419	756,505	2,183,026	4,208	3,832,729	256,765	18,469	24,116,253
14	South Carolina	594,398	597,040	963,162	3,794	1,374,562	49,064	85	14,987,474
15	Georgia	691,392	716,506	1,991,162	12,897	1,525,623	64,723	542	21,749,227
16	Alabama	590,756	646,996	869,554	7,941	1,476,670	55,558	60	21,594,354
17	Mississippi	375,651	443,457	305,091	1,784	697,235	11,978	69	5,985,724
18	Louisiana	352,411	379,967	67	----	109,425	1,897	----	6,224,147
19	Tennessee	829,210	858,670	4,873,584	5,197	7,457,818	322,579	19,145	46,285,359
20	Kentucky	779,828	798,210	4,096,113	16,860	6,825,974	1,652,108	9,669	40,787,120
21	Ohio	1,519,467	1,647,779	17,979,647	245,905	15,995,112	854,191	666,541	35,452,161
22	Indiana	685,866	754,232	5,282,864	33,618	6,606,086	162,026	56,371	33,195,108
23	Illinois	476,183	584,917	4,026,187	102,926	6,964,410	114,656	69,549	23,424,474
24	Missouri	383,102	432,350	1,110,542	11,515	2,580,641	72,144	17,135	19,725,146
25	Arkansas	97,574	111,010	2,132,030	950	236,941	7,772	110	6,039,450
26	Michigan	212,267	248,331	2,896,721	151,263	2,915,102	42,306	127,504	3,058,290
27	Florida Ter.	54,477	58,425	624	50	13,561	320	----	694,205
28	Wiskonsan Ter.	30,945	37,133	297,541	14,529	511,527	2,342	13,525	521,244
29	Iowa Ter.	43,112	51,834	234,115	1,342	301,498	4,675	7,873	1,547,215
30	Dist. of Columbia	43,712	46,978	10,105	317	12,694	5,009	312	43,725
		17,069,453	17,835,217	91,642,957	5,024,731	130,607,623	19,333,474	7,953,544	387,380,185

TABLE 1—Continued.

	States, &c.	Number of bushels of potatoes.	Number of tons of hay.	Number of tons of flax and hemp.	Number of pounds of tobacco gathered.	Number of pounds of cotton.	Number of pounds of rice.	No. of lbs. of silk cocoons.	Number of pounds of sugar.	Number of gallons of wine.
1	Maine	10,912,821	713,285	40	75	----	----	527	263,592	2,349
2	New Hampshire	6,573,405	505,217	28	264	----	----	692	169,519	104
3	Massachusetts	4,947,805	617,663	9	87,955	----	----	198,432	496,341	207
4	Rhode Island	1,003,170	69,881	½	454	----	----	745	55	801
5	Connecticut	3,002,142	497,204	45	547,694	----	----	93,611	56,372	1,924
6	Vermont	9,112,008	924,379	31	710	----	----	5,684	5,119,264	109
7	New York	30,617,009	3,472,118	1,508	984	----	----	3,425	11,102,070	5,162
8	New Jersey	2,486,482	401,833	2,197	2,566	----	----	3,116	67	9,311
9	Pennsylvania	9,747,343	2,004,162	2,987	415,908	----	----	17,324	2,894,016	16,115
10	Delaware	213,090	25,007	54	365	352	----	2,963	----	296
11	Maryland	827,363	87,351	507	26,152,810	5,484	----	5,677	39,892	7,763
12	Virginia	2,889,265	367,602	26,141	79,450,192	2,402,117	3,084	5,341	1,557,206	13,504
13	North Carolina	3,131,086	111,571	10,705	20,026,830	34,437,581	3,324,132	4,929	8,924	31,572
14	South Carolina	2,713,425	25,729	----	69,524	43,927,171	66,897,244	4,792	31,461	671
15	Georgia	1,644,235	17,507	13	175,411	116,514,211	13,417,209	5,185	357,611	8,117
16	Alabama	1,793,773	15,353	7	286,976	84,854,118	156,469	4,902	10,650	354
17	Mississippi	1,705,461	604	21	155,307	148,504,395	861,711	158	127	17
18	Louisiana	872,563	26,711	----	129,517	112,511,263	3,765,541	881	88,189,315	2,911
19	Tennessee	2,018,632	33,106	3,724	35,168,040	20,872,433	8,455	5,724	275,557	692
20	Kentucky	1,279,519	90,360	8,827	56,678,674	607,456	16,848	3,405	1,409,172	2,261
21	Ohio	6,004,183	1,112,651	9,584	6,486,164	----	----	6,278	7,109,423	11,122
22	Indiana	1,830,952	1,213,634	9,110	2,375,365	165	----	495	3,914,184	10,778
23	Illinois	2,633,156	214,411	2,143	863,623	196,231	598	2,345	415,756	616
24	Missouri	815,259	57,204	20,547	10,749,454	132,109	65	169	327,165	27
25	Arkansas	367,010	695	1,545	185,548	7,038,186	5,987	171	2,147	
26	Michigan	2,911,507	141,525	944	2,249	----	----	984	1,894,372	
27	Florida Ter.	271,105	1,045	2¼	74,963	6,009,201	495,625	376	269,146	
28	Wiskonsan Ter.	454,819	35,603	3	311	----	----	25	147,816	
29	Iowa Ter.	261,306	19,745	459	9,616	----	----	----	51,425	
30	Dist. of Columbia	43,725	1,449	----	59,578	----	----	916	----	32
		113,183,619	12,804,705	101,181¾	240,187,118	578,008,473	88,952,968	379,272	126,164,644	125,715

TABLE 2.—*Seven Years of Agricultural Estimates made in the U.S. Patent Office 1841–1849 (1) and U. S. Census Data 1840 and 1850*

	Census 1840	Estimates 1841 (2)	Estimates 1842 (3)	Estimates 1843 (4)	Estimates 1844 (5)	Estimates 1845 (6)	Estimates 1847 (7)	Estimates 1848 (8)	Census 1850
Population	17,069,453	17,835,217	18,742,109	19,183,583	19,552,196	19,602,500	20,746,400		23,191,876
Bu. of Wheat	84,823,272	91,642,957	102,317,340	100,310,856	95,607,000	106,548,000	114,245,500	126,364,600	100,458,944
" of Barley	4,161,504	5,024,731	3,871,622	3,220,721	3,220,721	5,160,600	5,649,950	6,222,050	5,167,015
" of Oats	123,071,341	130,607,623	150,883,617	145,929,966	172,929,966	163,208,000	167,867,000	185,500,000	146,584,179
" of Rye	18,645,567	19,333,474	22,762,952	24,280,271	26,450,000	27,175,000	29,222,700	32,951,500	14,188,813
" of Buckwheat	7,291,743	7,953,544	9,483,409	7,959,410	9,071,000	10,268,000	11,673,500	12,523,000	8,956,912
" Indian Corn	377,531,875	387,380,185	441,829,246	494,618,306	421,953,000	417,899,000	539,350,000	583,150,000	592,071,104
" Potatoes	108,298,060	113,183,619	135,883,381	105,756,133	99,493,000	88,392,000	100,965,000	114,475,000	104,066,044
Tons of Hay	10,248,108¾	12,804,705	14,053,355	15,419,807	17,715,000	14,065,000	13,819,900	15,735,000	13,838,642
" Flax & Hemp	95,251¾	101,181¾	158,569¾	161,007¾	22,800	37,500	27,750	100,000	
Lbs. of Tobacco	219,163,319	240,187,118	194,694,891	185,731,554	151,705,000	187,422,000	220,164,000	218,909,000	199,752,655
" of Cotton	790,479,275	578,008,473	683,333,231	747,660,090	872,107,000	936,088,000	1,041,500,000	1,066,000,000	2,445,793*
" of Rice	80,841,422	88,952,968	94,007,484	89,879,145	111,759,000	89,765,000	103,040,500	119,199,500	215,313,497
" of Silk Cocoons	61,552½	379,272	244,124	315,965	396,790	486,530	404,600	400,000	10,843
" of Sugar	155,110,809	126,164,644	142,445,199	66,400,310	201,107,000	226,026,000	324,940,500	275,000,000	
Gals. of Wine	124,734	125,715	130,748	139,240				500,000	221,249
Lbs. of Wool	35,802,114	35,802,114						60,000,000	52,516,959
" of Hops	1,238,502	1,238,502						1,566,301	3,497,029
" of Wax	628,303½	628,303½						789,525	14,853,790**
Horses & Mules	4,335,669	4,335,669						5,419,586	4,896,050
Neat Cattle	14,971,586	14,971,586						18,714,482	18,378,907
Sheep	19,311,374	19,311,374						25,000,000	21,723,220
Swine	26,301,293	26,301,293						35,000,000	30,354,213
Poultry	9,344,410	9,344,410						11,680,512	
Dairy Prod.	$33,787,008	33,787,008						42,233,758	418,881,199***
Orchard Prod.	7,256,904	7,256,904						9,071,130	$7,723,186
Homemade or Family Goods	29,023,380	29,023,380							$27,493,644
Produce of Market Gardeners		2,601,196						45,000,000	5,280,030
Nurseries & Florists		$ 593,534						741,917	
Men employed in Nurseries		8,553						741,917	
Capital Invested		2,945,774							

*Bales of cotton **Honey included ***pounds (1) No estimates reported for 1846 and 1849. Detailed estimates by States and territories for 7 years are shown in footnotes 2 through 8. (2) 1841 estimates from House Doc. No. 74, 27th Cong., 2d Sess., Rpt. from the Commissioner of Patents, p. 66. (3) 1842 estimates from House Doc. No. 109, 27th Cong., 3d Sess., Rpt. from the Commissioner of Patents, p. 4. (4) 1843 estimates from House Doc. No. 177, 28th Cong., 1st Sess., Rpt. of the Commissioner of Patents, p. 12. (5) 1844 estimates from Senate Doc. No. 75, 28th Cong., 2d Sess., Rpt. of the Commissioner of Patents, p. 11. (6) 1845 estimates from House Doc. No. 140, 29th Cong., 1st Sess., Rpt. of the Commissioner of Patents, p. 90. (7) 1847 estimates from House Doc. No. 54, 30th Cong., 1st Sess., Rpt. of the Commissioner of Patents, p. 84 (8) 1848 estimates from House Doc. No. 59, 30th Cong., 2d Sess., Rpt. of the Commissioner of Patents, p. 719.

propriation was made by Congress for that year). In addition to the work on agricultural statistics, the agricultural material in the Patent Office was substantially expanded in the years after Ellsworth's departure. However, the annual estimates of agricultural production by States and Territories were continued only through 1848 and discontinued thereafter.

Subsequent Commissioners of the Patent Office, while they were concerned with other types of agricultural data, did not resume the efforts to produce annual estimates. Under the third Commissioner of Patents, Thomas Ewbank, who served for about 2½ years, agricultural work in the Patent Office expanded steadily, but mainly in directions other than statistics.

The bold attempts of Ellsworth and his successor, Burke, to make national estimates of production for the important agricultural products and to estimate animal populations each year, were not looked upon with favor by Patent Office leadership after 1849. While the work in agriculture grew, reports covering much technical material and data on trade prices, etc., were published. There were no further attempts by the Patent Office to estimate agricultural production in the years between the census enumerations. In fact Orange Judd, editor of the American Agriculturist, derided the whole effort as a "seed store in Washington."

Development after 1850

The years from 1850 to 1863 were indeed a period of great transition in American agriculture. In the first place the decade of the 1850's was one of unusual prosperity and vast changes. Foreign migration to the United States was tremendous. The census of 1850 showed that more than 1,700,000 people had come to the country during the last decade. The census of 1860 showed nearly 6,200,000 had come since 1850. Many of these newcomers were lured by agriculture.

In this period, the West drew heavily on the people of the older colonies. In 1850, for example, the census reported that 154,891 people born in Connecticut were now living outside that State. This was more than half the number of native-born people still living in Connecticut at the time of the census.[23] For North Carolina likewise, more than half of the people who had been born in that State were living in other States. The westward migration of the people in the century following the end of the American Revolution has been referred to as the greatest single fact in American history.[24] In this movement agriculture was transformed completely, from the old self-sufficient type that was known at the beginning of that century to a more commercial agriculture, increasingly dependent upon national and international markets.

The westward movement of agricultural production before 1860 is shown by census comparisons. For example, in 1840 the census showed that the New England and Middle Atlantic States produced one-third of the Nation's wheat; in the 1860 census these States had only one-seventh of the wheat production. During this period the Nation's wheat crop doubled. For barley, in the 1840 census the Northeastern States had 85 percent of the production. In the following two decades national production increased nearly fourfold, but in the 1860 census the Northeastern States had less than 38 percent of the barley production. For cattle, the 1840 census found over 32 percent of production in the Northeastern States but in 1860 only 20 percent. While these changes were occurring, the Northeastern region developed other lines of output such as more dairying (especially cheese-making), and more feed crops such as oats, hay, and corn, as well as special items like tobacco, hops, and flax.

The vast developments of the decades preceding 1860 in American agriculture may be summed up as follows:[25]

1. The great westward movement of the people in the United States.
2. The development of a public land policy which resulted in the Homestead Act of 1862.
3. The growth of cotton production in the South.
4. Application of science and invention to farm machinery.
5. The development, especially after 1830, of transportation.

[23] U.S. Bureau of the Census. 1850 Census Compendium. p. 114.

[24] Learned, H. B. The President's Cabinet. p. 293. 1912.

[25] Ibid., p. 305.

Out of the great changes which American agriculture experienced in this period there emerged needs for information on agriculture other than that already provided by the census. Since there was no experience anywhere which offered a pattern, it had to emerge bit by bit as men wrestled with the problems of the period. In this process, movements to deal with the troubles of farm producers in a time of agricultural abundance and the trend toward more exports and more commercialization of the industry appeared in various places. The political climate favored more Government work in agriculture, and efforts were made during the decade of the 1850's and earlier to create a national bureau of agriculture and statistics. The evolution of a second major data system in agriculture can be better understood if some of these are reviewed.

James T. Earle and Agricultural Societies

In the middle of the 19th century there was a revival of the agricultural society movement, especially State agricultural societies. The influence of these societies was important.

The Maryland State Agricultural Society made notable efforts to develop the collection of agricultural statistics. On October 5, 1854, at the society's annual meeting in Baltimore, a resolution by J. T. Earle for the appointment of a special committee of the society to collect statistics on crops was adopted. A circular (questionnaire) was sent by the committee to county agricultural societies in Maryland as well as to the officers of other State agricultural societies, but few bothered to reply.[26]

Earle also sent a questionnaire to individuals and to county agricultural societies, to report by October 10 on the state of crops. While the results of the effort are not known, it may have influenced later efforts. It appears to have been an attempt at annual estimates similar, perhaps, to those which the Patent Office discontinued after 1848.

[26] The American Farmer 10(9): 278–279, Mar. 1855.

John Jay's Statistical View of American Agriculture

On the evening of August 25, 1858, following the establishment of an agricultural section of the American Geographical and Statistical Society of New York, John Jay, the first chairman of the new section, gave an address.[27]

In this address the author undertook to "glance over the field which the Agricultural Statistics of our country are destined to embrace."

STATISTICS AS A BASIS OF POLICY.—Jay believed that statistics, if adequately provided, would be useful in guiding our policy in agriculture as well as in all social matters. He quoted Lord Stanley as follows:

> When, therefore, in discussing social questions, we apply the statistical test, we are really doing nothing more than appealing from imagination to fact, from conjecture to certainty, from an imperfect to a perfect method of observation.

His was a plea for the performance of statistical work involving Government at all levels, but he recognized that the efforts by States so far had been unequal and perhaps inadequate on this subject.

Jay's paper was a gem from the standpoint of bringing together much current thought of the period. It was an able plea for improved descriptive analysis of the rural economy at 10-year intervals by the Federal census, and for a Federal program in general. However, it failed to record the parallel development during that decade of a need for current information to guide farm plans in production and marketing.

Headway Through Journalism

While John Jay in his New York address made no mention of the farmers' need for current data, a breakthrough was brewing in the correspondence of editor Orange Judd at the office of the American Agriculturist on

[27] Jay, John. American Agriculture, A Statistical View. p. 5.

Water Street, only city blocks away. The recognition of public interest in crop information as the growing season progressed, and short reports on the situation in issues of the American Agriculturist, were the beginning of a new pattern that was to develop into a major agricultural data system. The new system, when combined with the census, was to serve the Nation's agriculture for the century to follow. Other editors had, of course, discussed crop prospects, and price prospects based on the crop outlook, but the work of the American Agriculturist led to a major development.

As near as is known, Judd began in the middle 1850's to get from his subscribers brief summary reports of observations on the condition and prospect of crops as the season advanced. He got a considerable volume of mail from which he distilled the essential facts. This is shown in the September 1858 issue of the paper, "Reports on Crops—A Model."

In 1857, after an extensive trip through the Middle West, editor Judd wrote on "The Crop Prospects" in the September issue.[28] By 1859 two reports on crops appeared—one in July (page 200) on "The Crops—The Frost" and another in the August issue (page 252) under the title "Reports on the Crops." In the latter, 16 short statements from respondents from various places were printed. Each was a short summary of crop conditions and prospects in the area where the respondent was located.

Evolution of Monthly Crop Reports

After some years of reporting on crops by subscribers of the paper, a larger project was proposed by Judd in the March 1862 issue of the "American Agriculturist."[29] He proposed that:

> 1. Let the readers of the Agriculturist in every town counsel together, and select some man who may be relied upon for good judgment, and general ability to estimate with some degree of accuracy in regard to the leading crops, wheat, corn, etc., (a), what is the amount of surface (area) sown or planted, as compared with previous years; and (b), the prospect at any date. Wherever there is a Farmer's Club, let the Club choose the reporter. Let it be understood by him that he is desired to keep on the look-out, and be able to respond to all questions as to the prospect of the crops. Where any subscriber stands alone, and can get no one to cooperate with him, let him volunteer to act himself, and the very fact that his report is to go out to the country will lead him to be observant and make inquiries.
> 2. Let the name of such persons be forwarded to the Editor of the Agriculturist without delay.
> 3. To every such person we will send out a sheet of blank forms, to be filled up with a brief summary of the amount and condition of the leading crops of the different kinds. The blanks will be so arranged as to require very little writing in filling up, and therefore involve but little labor aside from that required to be well informed as to the condition of the crops.[30]
> 4. One of these blanks to be filled up at given dates, say May 10, June 10, July 10, and August 10, and forwarded to this office.
> 5. These reports will be published in tabular form in the Agriculturist, either in full or in a well-digested summary.

So, in 1862, five monthly crop reports were published—May through September—by the American Agriculturist. The U.S. Department of Agriculture was established in May 1862 and its first crop report appeared in July 1863, using much of the pattern Orange Judd had worked out.

Rarely, indeed, has an individual diagnosed a need in agriculture and met it as directly as editor Judd in his five monthly crop reports in 1862. His was the genius which saw beyond previous writers to the need for current monthly information, as well as for annual estimates which had been accomplished in the early work of the Patent Office. By having voluntary respondents report by mail early in each month, Judd was able to measure currently both the acreage and the yield variables in crop production. He asked respondents for comparative estimates on "area" and "prospects" for selected crops, and his journalistic opportunity to work with voluntary correspondents who were his readers and subscribers accomplished much in a single crop season. Orange Judd and those who worked with him made crop reports news and they have been news ever since. The pattern used by the Department of Agriculture from the beginning of its statistical work in 1863 to the present employs Judd's method.

[28] Judd, Orange. The American Agriculturist 16: 175, Mar. 1862.

[29] Ibid., 72.

[30] The original questionnaire used for this purpose, presumably in sets of 5 for the 5 months to be reported, has not been located and was not available for this study.

The U.S. Department of Agriculture and Agricultural Statistics

Beginning with the early proposal of George Washington in 1796, various efforts were made to establish an agricultural bureau in the U.S. Government. At least four Presidents —Washington, Van Buren, Taylor, and Lincoln—mentioned the subject in their messages to Congress. The proposal of Washington in December 1796 was not acted on in Congress. That of Van Buren in December 1838 resulted in the inclusion of agricultural data in the U.S. census in 1840. The recommendation of Zachary Taylor in 1849 got no immediate results, but that of Lincoln in December 1861 resulted in enactment by Congress on May 15, 1862, of a law to create what has become the U.S. Department of Agriculture.

During the period many others, including men in the Patent Office, the agricultural societies, and the agricultural press, suggested and urged that an agricultural and statistical bureau be created in the Government. However, Congress was divided on the issue. It was not until the Civil War year of 1862 that legislation was passed to establish a Department of Agriculture and transfer to it the agricultural work of the Patent Office.

PART II. THE FOUNDING PERIOD, 1862-1905

PROLOGUE

In retrospect, the period from May 15, 1862, when the U.S. Department of Agriculture was established by act of Congress to 1905 when the Crop Reporting Board was set up stands out as a distinct chapter in the history of the estimating service.

The new Department under the Commissioner of Agriculture was immediately confronted with the problem of laying the foundation for a service fundamental to the development of agriculture, the basic enterprise of the Nation. The problems were tremendous and compounded by the chaos brought on by a devastating war which was still in progress. The accomplishments of the first few years were nothing short of amazing considering the difficulty of communication and the disruption of farm operations.

Two laws that were to have a profound effect on agriculture were passed in 1862: the Homestead Act was approved on May 20 and the Morrill Land Grant College Act was approved on July 2.

Demand for food between 1861 and 1865 stimulated interest in agricultural statistics. It was also responsible for more commercialization of northern agriculture and temporary diversification of southern agriculture. This gave impetus to the first American agricultural revolution.

The most significant development following the close of the Civil War was the rapid growth of the railroad system. An act of Congress, approved on July 1, 1862, granted land to the Union Pacific Railroad Company and the Central Pacific Railroad Company for construction of a transcontinental railroad. The road was completed with the joining of the rails of the two companies at Promontory Point, Utah, on May 10, 1869. By 1870 the total mileage of railroads had reached nearly 53,000 miles. The Pennsylvania Railroad had developed a through route between Philadelphia and Chicago, and the New York Central had worked out a through connection from New York and Chicago. The consolidation of a railroad net, by providing end-to-end connections, was not always a simple matter because of the diversity of gages. New England and New York roads were generally standard gage—4 feet, 8½ inches. Southern railroads followed the plans of the South Carolina Railroad of 5 feet, while in Pennsylvania and Ohio there were a variety of gages. Changing the gage involved changing the roadbed and the equipment. The standard gage did not become universal until the 1880's and by 1900 the total mileage operated had increased to 193,346 miles.[31]

The completion of the transcontinental railroad in 1869 stimulated the movement of agriculture into the Great Plains. The Wheat Belt began to move across the Mississippi River and the Corn Belt began to be stabilized in its present area. The Cotton Belt also started to move westward and by 1890 Texas was becoming the chief cotton State.

New farm equipment became available. Gang plows and sulky plows came into use shortly after the Civil War. Springtooth harrows also became available. In 1880, 3,000 twine binders were marketed and horsedrawn combines came into use in the Pacific Coast wheat areas between 1890 and 1900. By 1890 most of the basic potentiality of agricultural machinery dependent on horsepower had been discovered. Agriculture was becoming increasingly mechanized and commercialized. For example, it required 8 to 10 man-hours of labor to produce 1 acre (20 bushels) of wheat using a gang plow, seeder, harrow, binder, thresher, wagons, and horses as contrasted with 50 to 60 man-hours in the period from 1825 to 1895.

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[31] Jones, Eliot. Principles of Railway Transportation. pp. 43–66. The MacMillan Co., 1929.

It required 14 to 16 man-hours of labor to produce 1 acre (40 bushels) of corn using 2 bottom gang plows, disc and peg tooth harrows, and a 2-row planter. This compares with about 30 to 35 hours of man-labor with walking plow, harrow, and hand planting during the period of the 1850's.[32]

The growth of the urban population necessitated bringing food supplies from increasingly distant areas. This, of course, created the need for facilities to assemble, ship, process, and distribute food in the growing cities. To perform this service, the commission merchants, brokers, and all of that group generally referred to as "middlemen" became increasingly important.

A critical situation developed in 1893. The eastern cities were flooded with grain, pork, and beef. Farm prices sank very low and the business depression of 1893 added to the already depressed farm situation so that debt paying became almost impossible, and mortgage foreclosures were common.

These difficulties brought forth many suggestions as to what should be done to avoid recurrence. Questions were raised as to the cost of production, railway rates, policies of large-scale processors, marketing methods, and market prices. There was criticism of the exchanges—particularly the operations on the futures market. There were also suggestions for low-interest farm credit, regulation of the meatpacking industry, low loans on commodities in storage, better crop reports, adjustments of production by individuals, and many more, some of which seemed "far out" at the time, but not so strange 40 years later.

In 1894, Senator W. A. Peffer offered the following explanation for the depressed agricultural situation:

> Over trading tends to create extravagant estimates of the supply and that in itself depresses prices. When prices are regulated by a market which appears to be very full, they will tend downward.[33]

[32] U.S. Department of Agriculture. A Chronology of American Agriculture, 1790–1965. Econ. Res. Serv., Sl. rev. 1966. (A fold-out chart.)

[33] U.S. Congress. Agricultural Depression: Causes and Remedies. Sen. Com. on Agr. and For. Report by Senator W. A. Peffer, Feb. 15, 1894, 53rd Cong., 3rd Sess., Sen. Rpt. 787.

The first of four remedies suggested by the Senator was an improved system of crop estimates and market information so that farmers might be informed on market supply.

This collapse in the economy highlighted an area to which the new Department of Agriculture had given little attention. The office of the Statistician had subsisted on $10,000 to $20,000 a year for the first 20 years of its existence. This office was actually providing the first and basic marketing service for American agriculture. From 1882 to 1902, the appropriations increased from $94,000 to $146,000, which was below the rate of increase for the overall appropriation. The emphasis in the Department had turned to more glamorous work, such as: research in the physical sciences, development of new seed, introduction of new varieties, and learning to grow "two blades of grass where one grew before." The Depression of 1893 brought to the fore the need for attention to the problems of marketing and distribution, for development of laws providing for rules of fair play in the marketplace, and for regulation of the means of transportation between the farm and the marketplace. Forty years later the Statistician and his bureau were the principal ones in the Department of Agriculture giving attention to the economic problems of agriculture.

It would seem that the difficulties and criticisms interspersed with the successes during the founding period acted as the forge that tempered and strengthened the metal out of which the Crop Reporting Service was formed. There is one question, at least, that seems to have been answered with some finality during the 43-year period. Objections during the early part of that period were often a broadside blast, seeking to eliminate the service entirely. These kinds of complaints often served to bring out support, and more often than not, gave the Statistician an opportunity to "unhinge" the generalizations on which such tirades were frequently based. Other criticisms often proved helpful in correcting deficiencies and improving the service. At least by the turn of the century the question was no longer, "Shall there be a statistical reporting service?", but rather, "What should be

done to improve and strengthen the service to better meet the ever changing needs of the people?" This attitude was most dramatically proven in 1905 when the basic principles of the service were severely threatened.

CHAPTER 2. A BEGINNING IS MADE, 1862–65

Department of Agriculture Founded, 1862

When Abraham Lincoln was elected President in 1860, the United States had 2 million farms valued at over $7 billion, on which there were some 9 million cattle and which produced 839 million bushels of corn, 173 million bushels of wheat, and many other crops.[34]

The new President understood this only in a general way, as these statistics from the 1860 census would not be available to the public for another two years due to the ponderous process of tabulating and summarizing the voluminous returns. It was this lack of knowledge of current conditions that sparked the efforts of farmers, agricultural societies, and editors of farm journals[35] to establish what Lincoln called "an agricultural and statistical bureau."[36]

The long struggle to establish a separate Department of Agriculture of Cabinet rank and devoted to the interests of agriculture was part of the campaign to provide reliable statistics concerning the Nation's sprawling agriculture. This concern was wide and deep as it was commonly believed that the farmer was systematically fleeced by speculators who possessed knowledge of crop conditions not available to thousands of individual and isolated countrymen.

After the term of Ellsworth's successor as Commissioner of Patents, Edmund C. Burke, ended in 1849, attempts of the agricultural division of the Patent Office to provide facts about crop production had become so anemic they were treated with scorn and derision. Such criticisms should not obscure the fact that the Patent Office data were used by the public. For example, in the only extensive talk Lincoln ever gave on agriculture he said, "Many years ago I saw it stated in a Patent Office Report that eighteen bushels was the average crop of wheat throughout the United States." [37] Bad as the Patent Office statistics may have been, they were the best available and so were used. An Indiana farmer, Lewis Bollman, later the Departmental Statistician, said:

> The Patent Office reports of transactions of foreign societies, or scientific essays are so unconnected with practical matters, and written in such technical and scholastic language as to be not only distasteful to the farmers, but unintelligible to them. This was the legitimate result of the fact that the chief clerk was usually a mere writer without any particular acquaintance with agriculture. They knew nothing of farmers or of farming.[38]

Such grass-roots clamor, swelled by the angry voice of the farm press,[39] became so persistent that a succession of Commissioners of the Patent Office urged that the statistical work be shifted elsewhere, perhaps to a new Department of Agriculture.[40]

Withdrawal of Southern members of Congress following secession made possible the passage of the Homestead Act, the Land-Grant College Act, and the Act of May 15, 1862, establishing the Department of Agriculture. Congress provided for a separate Department headed by a Commissioner who was responsible to the President but who did not have Cabinet status.

Next to interest in seeing a Department of Agriculture established, the farm journals were most concerned as to who would head the new establishment. Their hopes and expectations were high. The American Agriculturist in its issue of March 1862 under the caption "Who Shall Be Head of It?" declared that the Commissioner must be "an intelligent, capable, honest man, with special talent and qualifi-

[34] U.S. Bureau of the Census. Historical Statistics of the U.S., 1789–1945. Washington, D.C., 1949, pp. 95–106.

[35] Report of the Commissioner of Agriculture for 1866, p. 526. Washington, 1867.

[36] True, Alfred C. A History of Agricultural Experimentation and Research in the United States, 1607–1925. Washington, D.C., Gov. Printing Off., 1937, p. 40 (quoting Lincoln's Message to Congress, Dec. 3, 1861).

[37] Wisconsin State Fair, Sept. 30, 1859 *In* Washington, Jefferson, Lincoln, and Agriculture, U.S. Dept. Agr., 1937. p. 43.

[38] Lewis Bollman to Senator H. S. Lane of Indiana, Dec. 26, 1862, National Archives.

[39] Working Farmer 4:125, 169 (1852), 8:25–26, 217 (1856).

[40] U.S. Commissioner of Patents, Report (Washington, 1851), Pt. 2, p. 653–656.

cations for the post; one who can take in a broad view of the general agricultural and horticultural interests of the whole country." In May the editor again stressed the need for a competent head of the new Department and pointed out that the incumbent would receive "the comfortable salary of $3,000 a year." [41] A decision was not long in coming.

On July 1, 1862, Isaac Newton, who had headed the agricultural work of the Patent Office, was appointed the first Commissioner of the Department of Agriculture by President Lincoln. The reactions to this appointment were mixed and sometimes caustic. The "Rural New Yorker" greeted the news with a derisive headline, "Who is Isaac Newton?" It then followed with a sarcastic editorial that castigated the new Commissioner and alleged he was so illiterate his writings included such words as "lettis, shoogar, inons (onions) and sausgee (sausage)." [42]

The American Agriculturist evidenced its chagrin in its issue of August 1862, with this bleak announcement:

> The Bureau of Agriculture—Isaac Newton of Pennsylvania, Commissioner, and Richard C. McCormick, of New York, Chief Clerk. This is the state of the case. It is our duty to our readers to announce the fact. We wish to say nothing more on the subject at present.[43]

Since Newton was the first head of the Department of Agriculture and inaugurated its statistical service, it is appropriate to probe a little further into the story of this controversial figure. According to his granddaughter, Issac Newton was born in Burlington County, N.J., March 31, 1800, to Isaac and Mary (Newton) Newton, a family of English ancestry and Quaker faith. The young father soon died leaving an 18-year old widow and baby son Isaac. The mother and son lived for years in the farm home of her prosperous father-in-law. The growing boy attended "county and state" schools, but apparently did not continue on to college. When 21 years of age, Newton married Dorothy Birdsall, and took over management of two adjoining farms in Delaware County, Pa., which he developed into a model of "neatness, order and productiveness." [44] Casting about for additional income Newton opened an "ice cream and confectionary shop in Philadelphia." [45]

About 1854, Newton "against his wife's advice"[46] bought a 1,000-acre tract of land in Virginia. When his wife refused to move to Virginia, Newton was compelled to operate his farm through overseers. A combination of absentee management, malaria, and war devastation brought disaster and in 1861 Newton was in Washington, D.C., looking for a Government job. Over the years Newton had sent butter and other choice products [47] from his farm to the White House and more recently had become acquainted with President Lincoln. In August 1861 Newton was made superintendent [48] of the Agricultural Division of the Patent Office and the next spring he found it a short step to the Commissionership of the new Department of Agriculture.

Thus the Department of Agriculture made its start in borrowed basement rooms—headed by a politically minded, bankrupt farmer, under a President who considered himself " . . . no sort of a farmer." [49]

Although the Department's beginning was hardly auspicious, the times were indeed "pregnant with mighty events." [50] The Organic Act gave wide latitude for action and Newton proved to be energetic and basically sound in

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[41] American Agriculturist, Mar. 1862, p. 68; May 1862, p. 136.

[42] Rural New Yorker (Aug. 30, 1862). This appears to have been grossly unfair in view of Newton's accomplishments as Commissioner.

[43] American Agriculturist, Aug. 1862, p. 228. The Chief Clerk, McCormick, later became Governor of Arizona and contributed comments on the agricultural situation to his old colleagues in the Department. See Monthly Report (November-December 1866), p. 442.

[44] Amanda A. Newton. Typed statement in Library of U.S.D.A. Perhaps unconsciously Miss Newton used the same words to describe the model farm as had been employed in 1872 by James M. Swank in his Department of Agriculture, Its History and Objects (Washington, D.C., Gov. Printing Off., 1872), p. 27.

[45] Amanda Newton. Ibid.

[46] Ibid.

[47] These included a "fatted calf" to President-elect Fillmore according to Amanda Newton's typed statement.

[48] Swank, James M., p. 24.

[49] U.S. Department of Agriculture. Washington, Jefferson, Lincoln, and Agriculture. Washington, D.C., Gov. Printing Off., 1937.

[50] Swank, James M., p. 24.

his proposals. The Commissioner adopted these "objects" for the Department: [51]

1. Collecting, arranging, publishing, and disseminating, for the benefit of the Nation, statistical and other useful information in regard to agriculture in its widest acception.
2. Collecting, from different parts of our own and foreign lands, such valuable animals, cereals, seeds, plants, slips, and cuttings as may be obtained by exchange, purchase, or gift.
3. Answering the inquiries of farmers and others on all matters relating to agriculture.
4. Testing, by experiment, the value of different agricultural implements and their adaptation to the purposes intended, as well as testing the value of cereals, seeds, and plants, and their adaptation to our soil and climate.
5. Analysis, by means of a chemical laboratory, of various soils, grains, fruits, plants, vegetables, and manures, and publishing the results.
6. Establishing a professorship of botany and entomology.
7. Establishing an agricultural library and museum.

First Annual Report

The first "object" listed by Newton pertained to the collection of agricultural statistics and was in keeping with Section 3 of the Act establishing the Department, which read in part as follows:

> It shall be the duty of the Commissioner of Agriculture 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 (accurate records of which experiments shall be kept in his office), by the collection of statistics, and by any other appropriate means within his power.[52]

Commissioner Newton energetically pursued this object throughout his period in office and was responsible for the start of the statistical services of the Department. One of his first actions was to utilize the talents of Jacob Richards Dodge, who had been working in the Agricultural Division of the Patent Office, to assist in preparing the Commissioner's report to the President.[53] This first Annual Report of the Department of Agriculture was submitted by Commissioner Newton to President Lincoln with a letter of transmittal dated January 1, 1863.

The Commissioner's report was preceded by the full text of the Act of May 15, 1862, establishing the Department. Newton then reviewed the history of agriculture, and claimed that "there has been no great and general advance in agriculture in modern times till within the past thirty years." [54] The report itself, however, was a notable achievement for a fledgling agency with a small staff operating under wartime conditions. Articles on many phases of agriculture written by various authors were incorporated as part of the Commissioner's report, comprising in all a volume of 632 pages. A distinctive feature was the section on agricultural statistics.

Statistics from Census of 1860

The pages devoted to statistics included information from the Census of 1860 pertaining to agriculture for the year 1859, estimates of production for 1863, weather data, and export records. Although Newton's letter of transmittal was dated January 1, 1863, delays in printing made it possible to include estimates for the 1863 crop year. In keeping with the times, the census data were shown separately for "Loyal" and "Disloyal" States. Apparently it was believed necessary to explain why the Department was publishing Census Bureau data and Newton did so in these words:

> The Census returns for 1860 having been published, it is due to agriculture that at the earliest moment returns of the principal agricultural products should be republished in the annual report of the Department of Agriculture.[55]

The Census figures were historical data, that is, they referred to conditions 2 years previous rather than to the present or to pros-

[51] U.S. Commissioner of Agriculture Report, 1862. Washington, 1863, p. 20. They had originally been suggested some 20 years earlier by Jesse Buell.

[52] See full text in appendix.

[53] True, Alfred Charles. A History of Agricultural Experimentation and Research in the U.S., 1607–1925. p. 45.

[54] U.S. Commissioner of Agriculture, Report 1862, Washington, 1863, p. 7.

[55] Ibid., p. 546.

pects for the future. Although such data were useful they failed to meet many needs. As the Commissioner's report states:

> The census returns give the amount only of the crops, and when an estimate of value is made, the prices of a seaport, usually of New York, have been selected, and by these the value declared. In this way values have been exhibited far above the real value, having no other existence than in this false mode of estimating them. The census has never returned the yield per acre, nor the number of acres under cultivation. Whether the comparative number of acres was increasing and the yield per acre decreasing, or the contrary, thus showing whether our agricultural production, represented by immense crops, was at the expense of the soil, or whether an improved system of farming was gradually restoring the exhausted soils of past years, were questions of the highest magnitude but of which no one could speak with any certainty.[56]

The Commissioner clearly felt that he had a mandate from Congress and the public to provide agricultural statistics that would be timely and of practical usefulness. Facilities for collecting extensive and reliable data were nonexistent but the Commissioner, aided by J. R. Dodge and James S. Frinnell, Chief Clerk of the Department, took energetic action, which he recorded in these words:

> With means totally inadequate for the collection of statistics by which any of these important purposes might be accomplished, the Commissioner of Agriculture, nevertheless, sought to obtain those within his power, and for useful objects. During last winter he issued circulars to every county in the loyal States, making inquiries relative to the prices of agricultural products in them and the average yield per acre of the leading crops. He issued others, during the summer and fall months, to make known the monthly condition of the crops, their amounts, etc. The medium, for communicating the knowledge obtained through the latter to the public, was monthly reports. . . .

These few sentences show that the Commissioner displayed intelligence in planning these first statistical surveys. With commendable restraint the subject matter of the circulars was limited to two "useful objects," prices of farm products and average yields per acre of leading crops. The effort was to get returns from "every county in the loyal States," thus making the returns of national significance. The surveys were repeated monthly to keep abreast of changes in crop conditions. Reports were published to inform the public of the agricultural situation. No doubt Commissioner Newton was guided by the experience of Orange Judd the previous season[57] and by the skilled hand and solid judgment of his statistical assistant, Jacob R. Dodge, but even so Newton must be given credit for recognizing and accepting good advice.

There is some confusion as to just when this first report of the U.S. Commissioner of Agriculture was written. The Commissioner's letter transmitting his first Annual Report is dated January 1, 1863, but the report includes a record of donations to the Department up to June 30, 1863. The data referred to were for crops of 1862, hence information had to be obtained near or after harvest. Therefore, the evidence seems conclusive that "last winter" referred to the winter of 1862–63 and the "summer and fall" of 1863.

First Crop Estimates

Having collected information from farmers in every county concerning yield per acre and value of crops for 1862, the Department was still confronted with the formidable task of converting the sample information into meaningful State data. The most recent "complete" data available were those from the Census for the year 1859, but these were faulty because the usual incompleteness was compounded by the "indifferent" crops of that year. On the other hand, the crops of 1862 were the "best ever grown."[58] To help bridge this gap the statisticians had available the returns from the circulars sent during the winter of 1862–63 to "every county in the loyal States" and special State reports for Ohio, which was believed to have a quite reliable statistical service. The indications of crop conditions in the various States revealed by these statistics and by comments of correspondents guided the statistician in arriving at a production figure for each State. These data were considered by Department statisticians to be "an approximation to correctness." The statisticians felt compelled to defend them, however, by pointing out that differences in the

[56] Ibid., p. 575.

[57] American Agriculturist 21:26, June 1862.

[58] U.S. Commissioner of Agriculture Report, 1862, (Washington, 1863) p. 574; also pages 575 and 576 for further details of estimating methods.

data between States had real significance. They explained:

> Again, there is a striking difference between the price of corn in Ohio and Indiana, which are neighboring States, with nearly equal market facilities in many respects. But large quantities of corn in Ohio are consumed in distilleries, and much shipped eastward. Indiana, although much smaller than her neighbors in square miles, is the largest hog-producing State in the Union. Its corn is fed chiefly to this stock, and hence its market price represents the value of corn fed to hogs, while in Ohio it exhibits its value when hauled to the nearest railroad depot.

The significance of such "local peculiarities" and the importance of understanding them was fully appreciated by the Department staff and characteristically they included in their first report comments on the economic implications of the statistics.

After determination of total production of selected crops by States, acreages for 1862 were computed by dividing by the appropriate yields per acre. These yields had been adopted from averages shown by the circulars returned by county correspondents.[59] Such methods can be criticized as highly subjective and unscientific, but they were valuable as indicating a level of production adequate for the needs of the Northern States in the war effort.

Division of Statistics Organized

The increased interest in collecting statistics led to the establishment of the Division of Statistics in the spring of 1863. The Commissioner decided that Lewis Bollman, a farmer from near Bloomington, Ind., was the man to head the Division. Perhaps his decision was influenced because Bollman had written, on December 26, 1862, to "Friend Lane" (Senator H. S. Lane of Indiana), stoutly defending the creation of a separate Department of Agriculture and expressing a willingness to wait and see how the new Commissioner performed before condemning him.[60] Bollman was sworn in on May 28, 1863, and thus became the first person to serve as Chief Statistician of the Department.[61]

He was born in New Boston, N. H., September 28, 1823, and was educated in local schools and academies. In 1879 he was awarded an honorary A.M. degree by Dartmouth College. He had wide experience as a teacher and journalist.[62]

Bollman was soon heavily engaged in his new duties. For example, for the Report of the Commissioner for 1862, he wrote an article on cultivation of sorghum; an "Article on the Wheat Plant"; a letter of transmittal to the Commissioner; a report on statistics in which he discussed census data of 1860; a report on statistics of 1862 giving details of procedures used in collecting and analyzing the statistics; and finally a report on the agriculture of California.[63]

Monthly Reports Started July 10, 1863

Despite the agonies inherent in setting up a new organization, the Division of Statistics moved rapidly ahead with the effort to collect and publish monthly reports of crop conditions.[64] On July 10, 1863, the Commissioner submitted "to the consideration of the farming community" a report covering the condition of crops for May and June, and promised that "a similar report will be issued on the tenth of every month." The Report states in part:

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[59] No record is available as to the number of respondents to these circulars but in the Monthly Report for September 1863, p. 14, it is stated that the circulars were sent "to about two thousand correspondents."

[60] Original letter in Library of Congress. Photostatic copy in USDA Library.

[61] See letter in Bollman personnel file in National Archives, Christensen to Richardson, 1940.

[62] Alfred C. True. A History of Agriculture Experimentation and Research in the U.S., 1607–1925.

[63] U.S. Commissioner of Agriculture Report, 1862. pp. 65–95, 140–47, 547–99.

[64] U.S. Department of Agriculture Monthly Report, May, June, and July, 1863.

Publishing Record of Monthly Reports

May–Dec., 1863 (Monthly) Issued by the Department of Agriculture. Jan.–Dec., 1864 (Bi-Monthly) Issued by the Department of Agriculture. Jan. 1865–Dec. 1876 (Monthly) Issued by the Department of Agriculture. New Series, Misc. Pub. Jan. 1877–1882 Issued by the Dept. of Agriculture. New Series, 1–10 Oct. 1883–Aug. 1884 Issued by the Division of Statistics. New Series, 26–36, Jan. 1886–Dec. 1886 Issued Report of Statistician. New Series, 48–58, Jan. 1887–Dec. 1888 Issued Report of Statistician. New Series 70–80, Jan. 1890–Dec. 1890 Issued Report of Statistician.

> The Agricultural Department in issuing its first monthly report of the condition of crops, desires to make known its purpose in preparing these reports and the means it has adopted to collect the information embraced in them.
> 1. The relationships between agriculture, manufactures, and commerce, demand that something should be done to obtain and publish, at brief intervals during the crop season, reliable information of the amount and condition of these crops. . . . Ignorance of the state of our crops invariably leads to speculation, in which oftentimes, the farmer does not obtain just prices and . . . the consumer is not benefited.
> 2. Holding these views the Commissioner of Agriculture believed it was his duty to adopt some plan to obtain each month during the months from May to October inclusive, general information of the amount and condition of our leading agricultural products. . . . It was desirable to avoid perplexing interrogatories and to select those only which could be answered briefly and definitely. . . . the questions relate to but two matters, the amount sown in 1863 compared with that in 1862, and the appearance of the crops in May and June. The answers are given in figures, by adopting 10 as the representative of an average of the amount of acres sown; making each number below or above it represent one-tenth of a decrease or increase. So 10 represents also an average appearance. The figure 9 would be one-tenth below the average appearance, and 11 would be one-tenth above it. . . . as farmers communicate to each other and to persons in town, especially to dealers in produce, the state and amount of their crops, there soon obtains in every county a knowledge of their condition, whether more or less than an average has been planted, whether injured, and by what cause and to what extent. With no great trouble, this information can be collected and transmitted through the plan adopted. From no other source can the condition of growing crops be ascertained.
> It is designed to issue the circulars about the tenth day of each month, and have them mailed for their return on the first day of the ensuing month. This will give time to take averages of the answers, to prepare the [meteorological] tables, and to make such statements in the report as may be desired, and have it printed and distributed to correspondents, with the next circular by the tenth.

The above statements and plans were eminently sensible and established a pattern of reports that has been followed ever since. The questionnaire was restricted to two basic questions; they were plainly worded, a simple means of reporting in 10ths was provided, a reasonable period was allowed for reply, the return postage was prepaid to encourage response, and the inquiries went to farmers familiar with crop conditions. There were, of course, many difficulties; enough to delay issuance of the first report. Some of these were the irregularities of the mails, delay in the printing of the circulars, and time required by correspondents to make arrangements to procure the desired information. All of these difficulties are very familiar to anyone experienced in the collection, tabulation, analysis, and publication of agricultural statistics.

The Commissioner pointed out to his correspondent that:

> The envelopes accompanying the circulars for July are prepaid. This course was rendered necessary by the construction given by the Post-master General to the law of last session of Congress, regulating the franking privilege. That law declares that 'all official communications addressed to the several executive departments by an officer responsible to that department, who shall mark it 'official' with his signature thereto, shall be free of charge, but all others must be prepaid.' . . . . Rather than be unfaithful to the duties demanded of him by the act of Congress and by the interests of agriculture, the Commissioner has determined to prepay all postage of his regular correspondents. . .

This arrangement was essential if adequate returns were to be forthcoming from the farmer reports. The Commissioner had moved promptly to arrange a system compatible with the law. The legal ruling requiring the sending of "prepaid envelopes instead of franks for returns" [65] to the 2,000 correspondents added greatly to the expense of operating the statistical service. However, in his Bi-Monthly Report issued in July 1864, Newton was finally able to inform his correspondents that the Congress had restored free postal communication between them and the Department.[66]

The first Monthly Report actually covered 2 months, May and June. A table for May gave the condition in 10ths by States and a "general average" for grains, potatoes, sorghum, and cotton. After the table was set up for printing, a few late returns came in from California and Utah and these were presented in a brief narrative statement below the table. There was a similar condition table for June that included, in addition to the items for May, data on tobacco, grass, flax, and wool. Correspondents in 21 Northern and Border States and the Nebraska Territory reported for June. The meteorological observations provided by the Smithsonian Institution were an additional feature of the June report. These weather data were obtained from observers in various parts of the "loyal" States who were

[65] U.S. Department of Agriculture Monthly Report. Nov. 1863, p. 1.

[66] U.S. Department of Agriculture Bi-Monthly Report. April and May 1864, July 1864, p. 5.

"unsalaried and unpaid, save in the consciousness of doing a good work." [67]

The inauguration of monthly reports by the Division of Statistics was welcomed by the agricultural press, including the American Agriculturist, which printed the tables with appropriate credit lines and commented editorially:

> Beyond all question, the Agricultural Department can confer a great benefit upon the entire country by an extended and properly executed labor of this kind. . . . We hope the new Department of Agriculture will spare no effort or expense to carry out, on an extended, comprehensive scale, the system of gathering these important statistics. Let them be so carefully collected and collated as to be absolutely reliable, and we can promise both hearty cooperation, and the grateful appreciation of the entire country—not only of farmers but of all other classes. Comprehensive, accurate, and prompt reports of this kind, collected at the expense of a few thousands, or tens of thousands of dollars, as the case may be, will save many millions.[68]

The Patent Office had been severely criticized for its agricultural reports and Commissioner Newton from the outset seemed fearful of continuation of like treatment. He was sensitive to critical comments, actual or anticipated, and from the beginning took a defensive attitude in nearly all instances of criticism. In his first Monthly Report, July 10, 1863, he wrote, "Whatever imperfections it (the statistical system) may now have will be speedily overcome." In his second Monthly Report, August 10, 1863, Newton put up a shield:

> If the farmers of counties having such delinquent societies do not receive these reports and seeds, they will know that the blame does not rest on this Department.

In his third report, September 10, 1863, the Commissioner delivered an essay on "Different Modes of Reporting the Crops" in which he took to task those critics who made a train trip and then supposed that their casual observations could be compared to those of the Department's correspondents. The sensitive nature of the Commissioner was further revealed in subsequent reports as criticism of his conduct of the office mounted. Men pioneering in any new work can expect a barrage of criticism as failures inevitably occur, particularly where complaints can be based on mere difference of opinion as in Newton's day. However, as the statistical work developed, it continued to be lambasted when its forecasts and estimates made significant deviations from known production or inventories.[69]

Special Articles Added to Monthly Reports

Farmers from all over the North turned to the young Department for "information running the whole range of agricultural learning." [70] So that

> . . . these matters may be understood by all, and that the information sought by one may be known to all, it is the intention of the Commissioner to give, in the monthly reports, material that shall serve as a general reply to intelligent questioners.

The first of such articles dealt with mildew of the grape and was carried in the report of August 10, 1863. Thus the Monthly Report early became an omnibus carrying agricultural information on a variety of subjects in addition to crop conditions and inventory statistics.

Agricultural conditions abroad also commanded attention. The October 1863 Report carried a long and involved analysis of "The Foreign Markets for American Breadstuffs." The concern with foreign statistics was to continue and to make them more meaningful to our farmers the Commissioner converted foreign terms such as "quarters," "shillings," etc., into American weights, measures, and currency.[71]

A review of the monthly reports shows the alertness of the Division of Statistics to the needs of the farmer. Following the severe and widespread freezes in August and September

[67] U.S. Department of Agriculture Monthly Report, July 1862, p. 1, May and June 1863.

[68] American Agriculturist, p. 200. May 1863.

[69] See Reports of the Keep Commission on Department methods, Senate Doc. 464, 59th Cong., 1st Sess., 1906; also the Abernethy Report, 1952. Although critical of methods, these congressional investigations always resulted in an improved and expanded statistical service.

[70] U.S. Department of Agriculture Monthly Report, August 1863, p. 12.

[71] Ibid., p. 22.

1863,[72] the September, October, and November reports included correspondents' answers to questions about "the condition of all the fall crops," [73] "value of the injured corn" and information concerning "stock hogs," [74] outlook for crops in 1864, and amount and appearance indicated for fall-sown wheat, rye, and barley, and for timothy meadows.[75] Answers to questions about "the existence of hog cholera" and "the number and condition of the fattening hogs and cattle" were also included. These items were considered of vital importance "because they constitute the provision trade of the country, and supply so great consumption of our armies." [76]

It is not surprising that a schedule of this magnitude could not be maintained. As a result, the Monthly Report for November (issued in December 1863) stated:

> No monthly report will be made for December and from a monthly it will be changed to one issued every two months. This change is rendered necessary because these reports are now embracing too many and too important subjects to be properly prepared in so short a time. . . . . Hereafter the circulars (questionnaires) will be issued in the beginning of the month, and not returned until near the close of it, thus giving the desired time to obtain information.

The desire was to answer important questions asked of the Department without "occupying any ground that belonged to the agricultural press."

Plans for an Improved Statistical Service

In the fall of 1863, having had several months of experience with statistical surveys, Newton presented a discussion of the problem and made recommendations for future development that, in retrospect, appear quite sound.[77] His proposals in brief were:

1. Authority be given the Department to collect current statistics on manufacturers and commerce as well as on agriculture.

2. A quinquennial census to be taken by the Department of Agriculture.

3. Two thousand copies of an "unabridged report of the Census," and other documents and reports to be sent to correspondents as "payment" for their assistance.

4. Rain-gages and thermometers be sent to correspondents voluntarily reporting weather observations.

5. Authority to send circulars to American consuls overseas to elicit statistics on foreign agriculture.

6. Authority to send an agent to visit principal countries of Europe to establish a systematic reporting service "and to learn more about the agricultural capabilities of the various nations."

7. Restoration of franking privilege to the Department.

8. Increase in number of copies of monthly reports—perhaps to 50,000.

9. Sale of statistical reports to the public at cost.

County Correspondents Selected

By April 1864 the Statistical Division had concluded that, instead of an indiscriminate and indefinite number of correspondents in the counties, one outstanding correspondent should be selected for each county. He would in turn select up to five assistants. Circulars would be sent to the county correspondent, who would distribute them to his assistants, summarize their returns to him, and forward one consolidated report for the county to the Department in Washington.[78] Instructions to this effect were given in the Bi-Monthly Report for April 1864. Exceptions were the Confederate States and also the Far West where "mail communications between the seat of government and the Pacific States and Territories do not allow them to be placed in the tables with those of the Atlantic States." [79] Also included was a 10-page discussion entitled "English, Prussian and American Modes of Estimating Their Annual Agricultural Production." [80] The system used here was rated superior and belief was expressed "that before

[72] Ibid, p. 22.
[73] Ibid, Sept. 1863, p. 1.
[74] Ibid, pp. 24 and 25.
[75] Ibid, Nov. 1863, p. 2.
[76] U.S. Department of Agriculture Monthly Report, Oct. 1863, p. 5.
[77] U.S. Department of Agriculture Bi-Monthly Report, Sept.-Oct., 1963. p. 5.
[78] Ibid.
[79] U.S. Department of Agriculture Bi-Monthly Report, Sept.-Oct., p. 5.
[80] Ibid, March and April, 1864, p. 7–18.

long this plan will be adopted in all commercial nations." [81]

Monthly Reports Resumed

Beginning with January 1865 monthly reports were resumed by the Department. An indication of some of the difficulties involved can be gained from the Commissioner's statement:

> The return day of the circulars (questionnaires), by which information of the condition of the crops, stocks, etc. is communicated the 1st day of the month, but it is usually the 18th or 20th before all of them are received. It requires from fifteen to twenty days to have the reports printed, folded, stitched and trimmed. This cannot be shortened until the war is over. A monthly report cannot, therefore, be published with this delay, each month, for the circulars. It often, too, requires a week or more to prepare the tables that are based on the circulars.[82]

J. R. Dodge Appointed Chief Statistician

In the spring of 1866, Lewis Bollman, who had served as Chief Statistician of the Department since early in 1863, resigned and his place was taken by a most remarkable person, the redoubtable Jacob Richards Dodge.[83] For nearly 30 years, before he resigned on March 20, 1893, Dodge was a dominant figure in the Department. His great energy, sound knowledge of agriculture, flair for statistics, and facile pen made him "truly a wheel horse in the building of the United States Department of Agriculture." [84] Dodge had been with the Agricultural Division of the Patent Office and when the Department of Agriculture was established, he accepted an appointment as a clerk at a salary of $1,600 per annum.[85] He worked closely with Chief Statistician Bollman in inaugurating the statistical program[86], and prepared the estimates for 1862 published in the first Annual Report of the Department. Prior to his work with the Department, Dodge had been Head of an Academy in Mississippi, editor and publisher of the "Oasis" in his home town of Nashua, N. H., and of the "American Ruralist" of Springfield, Ohio, and had served as Senate Reporter of the "Washington National Intelligencer" and of the "National Republican."

All States Covered and Continuous Series on Major Crops and Livestock

The year 1866 was notable in the development of the statistical service of the Department, as regular reports were started on numbers of livestock and on condition, acreage, yield per acre, and production of principal crops, which have been continued to the present.[87]

The January 1866 Monthly Report gave, for 22 loyal States and the Nebraska Territory, average yield per acre for 1864 and 1865 and average price per bushel on January 1, 1865, and January 1, 1866, for winter wheat, rye, barley, oats, corn, buckwheat, potatoes, leaf tobacco, hay, and sorghum molasses. Tables also showed the amount and condition of the fall-sown crops—wheat, rye, and barley—in percentages of the previous year. The "condition of the weather" in November and December was indicated by recording the number of reports received as favorable, wet, very wet, dry, very dry, snow.

Statistics on livestock were presented for the first time in the March report.[88] For horses, mules, cattle, and oxen, milch cows, sheep, and hogs, these items were reported:

> Average number of cattle and oxen compared with that of January 1864.
>
> Average number of cattle and oxen compared with that of February 1865.
>
> Average price per head of same under 1 year old, 1865.
>
> Average price per head of same between 1 and 2 years old, 1865.

[81] Ibid., p. 16.

[82] U.S. Department of Agriculture Monthly Report, Jan. 1865, p. 3.

[83] Effective date of his appointment was Sept. 30, 1867, according to his personnel folder in National Archives. The Dictionary of American Biography, Vol. 5, pp. 349–350, gives the date as May 1866; this coincides with the Monthly Report for that month which carries a statement signed by J. R. Dodge that "the first four numbers, up to April, were under the editorship of my predecessor as statistician, Mr. Lewis Bollman," appeared in the 1867 Volume.

[84] Taylor, H. C. and Taylor, Anne Dewees. The Story of Agricultural Economics, 1840–1932. Iowa State Col. Press, Ames, 1952, p. 183.

[85] Dodge personnel file in National Archives.

[86] Swank, op. cit., p. 27.

[87] U.S.D.A. The Crop and Livestock Reporting Service of the U.S., (Washington: Government Printing Office), 1933, p. 3.

[88] U.S.D.A. Monthly Report, March 1866, pp. 148–152.

Average price per head of same between 1 and 2 years old, 1866.
Average price per head of same between 2 and 3 years old, 1865.
Average price per head of same between 2 and 3 years old, 1866.
Average price per head of same over 3 years old, 1865.
Average price per head of same over 3 years old, 1866.

In the September 1866 issue of the Monthly Report the Department announced: "For the first time all portions of the country are included . . . . In a month or two the crops of southern correspondents will be more complete and better organized." [89] The Report stated in respect to its estimates for the South,

> The returns may not be sufficiently numerous to afford entirely accurate basis for estimates, but it is believed that fair approximations have been made. They make estimates of farm stock as compared with the numbers of 1860 as follows: horses, 68 percent; mules, 70; cattle, 65; sheep, 80; hogs, 56 percent.[90]

The returns for September 1866 indicated a cotton crop of "about 1,800,000 bales." [91] The estimate of probable cotton production was based on reports of county correspondents who estimated cotton production for their county "in tenths, not of an average crop, but of the excessive and never-equalled crop which the Census reports." [92] Official estimates for that year are now shown at 1,948,000 bales. The report commented that Texas was swarming with cattle accumulated by lack of markets during the war:

> Immense numbers of cattle are already collected for driving or shipping to a market . . . . Beeves may be had for $15 (in specie) per head and steers at $4 to $5. It has been estimated that $1,000,000 worth of stock is ready to go to market from Texas at the present time.

Despite the tenuous nature of Newton's crop and livestock reporting service in the wartorn South, it revealed the fact that the Texas cattle situation was ripe for the start of the famous cattle drives soon to be begun over the Chisholm Trail and others leading north to railroads.

Information provided by the statistical surveys was augmented by observations of travelers such as Theodore C. Peters, who was commissioned by Newton to travel through the South in the spring of 1867 and arrange for the distribution of seeds. Peters submitted a long narrative that was published in the Monthly Report for May and June of 1867 describing conditions he had seen on a circuitous journey to Louisiana and back to the Capitol.[93]

Brickbats and Bouquets

As already noted, Newton's appointment as the first Commissioner of Agriculture had been greeted with reservations and in some cases open hostility. Some of this may have resulted from the normal reactions of disappointed candidates for the office and their adherents. Perhaps this accounted, in part at least, for the lack of continuing support of Orange Judd, editor of the American Agriculturist, who was himself a candidate for the position.[94] The opposition of the agricultural press increased until, in its issue of 1866, The Cultivator and Country Gentleman declared: "Every leading Agricultural and Horticultural Society in the country has publicly urged the removal of the Commissioner, a unanimity of sentiment which we have never before known to be shown in such a way." This appears to indicate an overwhelming condemnation of the Commissioner, but this too may have had a basis other than Newton's alleged incompetence. The fact is the Annual and Monthly Reports had proven popular with farmers and the hundreds of thousands of copies distributed free of charge represented a competitive threat to the farm journals.[95]

The personality and certain practices of Isaac Newton appear to have been major causes of the resentment against him. The Commissioner could not resist fighting back when his actions were criticized and the pages of his reports were filled with spirited and caustic defenses of his work. The statistical reports came in for their share of censure and

[89] U.S.D.A. Monthly Report, September 1866, p. 350.
[90] Ibid., September 1866, p. 328.
[91] Ibid.
[92] Ibid., p. 356.
[93] U.S.D.A. Monthly Report, May-June 1867, pp. 192–203.
[94] Harding, T. Swann. Two Blades of Grass. Univ. Okla. Press, 1947, p. 18.
[95] Resolutions were presented in every Congress from 1863 to 1866 to publish 120,000 to 165,000 additional copies of the Annual Report of the Department. See flyleaf of each of the annual reports.

Newton defended them stoutly. An example of this type of controversy evolved from criticism of an estimate of the 1865 Minnesota wheat crop. In the January report for 1866 Mr. Newton presented his rebuttal:

> In this report will be found an article in reply to complaints from individuals in Minnesota against the estimate made by this Department of the wheat crop in 1865 from several localities in that State, amounting to between seven and eight millions of bushels; yet the most prominent objector to the correctness of estimate of the department, in a published letter says:
>
> > Owing to the low stage of water in the Minnesota river for the last three years immense quantities of wheat have accumulated in the southern and western sections of the State.
>
> This declaration sweeps away the very grounds upon which an error is alleged in the estimates of the department.

This handling of the situation seems characteristic of Newton. After giving an answer that may have been sound and fully adequate by quoting a statement of one of his tormentors, Newton could not be satisfied but went on in a self-righteous diatribe in which he charged his critics with a lack of "good faith," accused them of "selfish purposes," and of complaining in "general terms, that present nothing to be answered." Characteristically the Commissioner closed with a paragraph of self-praise and with plaudits for the Department's work.

Such missiles inserted in the report for self-glorification purposes irked the editors of agricultural papers and contributed to the feeling of ill will toward the conscientious but exasperating Commissioner.[96]

Charges of nepotism also fanned the flames of resentment against the Commissioner. Newton had put his son in charge of the experimental garden [97] and had twice appointed his nephew, J. W. Stokes, to the important post of Chief Clerk of the Department.[98] There were no Civil Service career employees in those times; politics was the order of the day and Newton played the game according to his lights.

Despite the widespread and quite vocal opposition to Newton he retained the support of President Lincoln who in 1864 said, "The Agricultural Department, under the supervision of its present energetic and faithful head, is rapidly commending itself to the great and vital interest it was created to advance." [99]

In the spring of 1866 the Farmer's Club of the American Institute of New York passed a resolution "to remove the present head of the Department of Agriculture and appoint, to fill the office, a man of well-known ability." [1] Shortly afterward Mr. Newton suffered an accident from which he never fully recovered. Greathouse, in his Historical Sketch of the United States Department of Agriculture,[2] gave the essential facts:

> In July, 1866, Commissioner Newton suffered a sunstroke while in the field on the experimental farm. A large number of varieties of wheat—Tappahannock, Mediterranean, and others new in general use—were being tried. The grain had been cut and was lying on the ground when a thunder shower suddenly appeared. Commissioner Newton was in his room at the Patent Office. He hastened over to the farm, a mile away, to instruct the workmen how to save the wheat free from any injury. The sun was hot and he was wearing a high silk hat. In moving hurriedly about the grounds he became overheated. His son took him to the little office on the farm and summoned medical assistance. Restoratives were applied and he partially recovered, but was never well again.

That Isaac Newton was a controversial figure is obvious, but this should not obscure the fact that his basic objectives, concepts, and principles in founding the Department have been proven sound by a hundred years of experience. The agricultural statistician owes him a special debt of gratitude for recognizing the need of farmers and the general public for timely, accurate, and comprehensive statistics. His early appointment of competent statisticians and energetic support of their pioneering efforts made possible the founding and

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[96] For further examples of this trait of Mr. Newton see U.S.D.A. Monthly Report, November 1863, p. 2; Bi-Monthly Report, Jan.-Feb. 1864, p. 2; Ibid, Mar-Apr., p. 6; Apr.-May, p. 5; Monthly Report, June 1866, p. 255.

[97] True. A History of Agriculture Experimentation and Research in the U.S., 1607–1925, p. 42.

[98] U.S.D.A. Monthly Report, May and June, 1867, p. 190.

[99] Messages and Papers of the Presidents, VI, pp. 133, 188, 251.

[1] Cultivator and Country Gentleman, March 1, 1866, p. 145.

[2] Greathouse, Charles H., Historical Sketch of the U.S. Department of Agriculture, Its Objects and Present Organization. Division of Publication, Washington Govt. Printing Off., 1898, p. 11.

development of the large and scientific statistical service of today.

CHAPTER 3. REGULAR REPORTS ARE ESTABLISHED, 1866–81

First Appropriation for Statistical Work

Although the collection, analysis, and publication of statistics had been an important phase of the Department's work since it was established in 1862, there was no specific appropriation for this activity until fiscal year 1865. During the intervening years the statistical program was paid for out of the Department's appropriation of $64,000 for 1862, $80,000 for 1863, and $119,770 for 1864.[3] For 1865, however, $20,000 was appropriated specially for "Collecting Agricultural Statistics and Information for Reports."[4] The total expenditures by the Department amounted to $150,604, including $54,000 for distribution of seeds; expenditures for statistical work represented about 13 percent of the total and some 20 percent of the operating budget. Such affluence was not to last, however, as the statistical budget sagged to $10,000 in 1867 and ranged from that sum to $15,000 for the next 13 years.[5]

Farm Wage Rate Statistics

In submitting his report in January 1867 Commissioner Newton presented the results of the first inquiry made in 1866 to determine the rate of wages of farm labor. The report gave the average rate of wages per month for farm laborers with board and without board for the northern, western, and southern States. A total of 1,510 returns were received, each representing the composite judgment of several local correspondents and other individuals.[6] The principal questions dealt with:

1. Average wages per month (without board) of farm laborers hired for the year.
2. Average wages per month (with board) of farm laborers hired for the year.
3. Average wages per month (without board) of farm laborers hired for the season or a portion of the year.

Dodge's interest in the broader aspects of the survey is illustrated by his effort to present an interesting analysis of local variations in wage rates in such a manner as to indicate their validity and usefulness. Statistical tables, accompanied by appropriate comments, showed comparisons of four types of wage rates with some characteristic considered significant.[7] The factors thus analyzed in relation to variations in wage rates were:

> The "Panhandle" of West Virginia vs. the State as a whole.
> The dairy region of Ohio vs. the State as a whole.
> The southern part of Indiana vs. the State as a whole.
> The southern part of Illinois vs. the State as a whole.
> Nearness to cities, i.e., river counties of Kentucky vs. the State of Kentucky.
> Newly freed labor vs. long-established labor, e.g., Virginia rate vs. Missouri rates.

One illustration—that of the effect of easy transportation and skilled labor—should suffice to indicate the approach used in presenting these analyses:

> Easy Transportation and Skilled Labor[8]: The advantage of facilities for transportation are shown by the increased rates of wages near navigable rivers and lines of railroad. This is conspicuously seen in a comparison of the river counties of Kentucky with those of other portions of the State. Other elements of difference appear in a comparison of the river counties of the Kentucky side with those of the Ohio shore. A more diversified industry in Ohio, and the employment of free instead of slave labor, enter into the calculation and make a material advance in the rate. The following table exhibits nearly as great a difference between the river counties of Ohio and those of Kentucky as exists between the latter and those of the entire State:

	Question 1	Question 2	Question 3	Question 4
State of Kentucky.	$20.23	$13.65	$23.80	$17.06
River counties, Kentucky.	24.23	16.36	28.79	20.36
River counties, Ohio.	28.27	17.36	32.81	22.33

Modern labor economists, while applauding the ingenuity and resourcefulness of the analyst, might question a bit as to whether some of the differences shown were statistically significant. These studies, however, are further

[3] U.S.D.A., Office of Budget and Finance, Appropriations, Reappropriations, etc., 1839–1936.
[4] Ibid.
[5] See table in appendix for appropriations from 1862 to 1962 for statistical work of the Department.
[6] USDA Monthly Report, January 1867. p. 6.
[7] Ibid., p. 9.
[8] Ibid., p. 8.

evidence of the desire of the meager statistical staff to provide meaningful data in the annual reports.[9]

Condition of the Farm Stock of the United States

Statistics on number, average price, and value of livestock on farms that had been published regularly by the Department [10] did not satisfy the demands for information concerning the livestock industry. The Department argued:

> An interest involving a capital of fourteen hundred millions, without reference to investments in lands, buildings, and incidentals, demands the watchful care of public guardians of our national resources.

Accordingly, the following queries were included in a circular which was made returnable April 15, 1867: [11]

> 1. Has there been any prevailing disease among cattle in your county during the past year? If so, what disease, and to what extent?
> 2. Has the Spanish fever prevailed among cattle in your county? If so, when did it appear, what has been the loss, and what method of treatment has been followed?
> 3. Has the hog cholera prevailed? If so, what has been the loss, and what remedies employed?
> 4. What diseases have prevailed among sheep, and to what extent?
> 5. Has any unusual disease prevailed among sheep, and to what extent?
> 6. What proportion of wool remains on hand compared with the whole amount of last year's clip?
> 7. In what condition have sheep come out of winter quarters?
> 8. Are Cotswolds, Leicesters, South Downs, and other mutton breeds, more or less abundant than formerly? Please state definite facts, in actual experience, of the cost of keeping, amount of wool, etc., of these breeds, in comparison with Merinoes. No estimates are wanted, but actual facts, as full as may be practicable, from individuals who have bred both long and fine wool sheep.
> 9. What is the comparative condition of winter wheat? of winter rye?

Obviously it would be difficult and time consuming to answer such questions in detail concerning one's own farm. To do so for an entire county, as the correspondents were asked to do, would be practically impossible. Apparently, however, the results were considered quite satisfactory as the report states:

> These circulars were sent to all our regular correspondents, and the returns were very complete, both in point of numbers and of particular details. Very few cases of omission, even of a single item occurred.[12]

A good response to such an inquiry, despite the laborious task placed on respondents, might be expected due to the tremendous interest in the subject matter. Judging from comments of the correspondents, losses of cattle from "Spanish fever" and of hogs from "cholera" had been severe and widespread, especially in the South and Southwest.[13] Such disasters always stimulate response to official inquiries regarding the situation.

Sheep-Killing Dogs

Statisticians in 1867, as before and since,[14] were sometimes asked to provide statistics on unusual topics. An instance of this kind was the request for information on the "depredation of dogs," [15] that is, the extent of sheep killing by dogs. Resentment of such losses was widespread and bitter, and sentiment for drastic measures—severe taxes or restraint—was mounting.[16] Factual information was lacking although the Department had some data "obtained at different times from different sources under different auspices." In order to provide a more systematic and realistic view of the situation the Department asked its regular correspondents to estimate the number of sheep killed by dogs in their county during 1866. The returns from 539 counties scattered from Maine to Utah indicated a loss of 130,427 sheep from this cause. As about one-fourth of the counties were reported, it was estimated that "the total number killed would be more than half a million yearly." Such statistics did not need to be precise in order to be useful. An indication of the relative magnitude of the losses was all that was necessary in order for the data to be of value to those fighting to curb sheep-killing dogs.

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[9] The farm wage rate series thus begun has been continued without significant change to the present.

[10] U.S.D.A. Monthly Reports, 1867.

[11] U.S.D.A. Monthly Reports, April 1867, p. 132.

[12] Ibid., p. 132.

[13] Ibid., pp. 135, 137–153.

[14] For example, the 1961 statistician for Wisconsin provided data for estimating the pheasant population in the State for the benefit of hunters.

[15] U.S.D.A. Monthly Report, July 1867, p. 246.

[16] See excerpts of letters quoted on pp. 85–86, Monthly Report, March 1867.

Commissioner Newton Dies

Commissioner Newton died on June 19, 1867. For about 6 months, from June 20, 1867, to December 4, 1867, John W. Stokes served as Acting Commissioner. President Johnson then filled the position by appointing Horace Capron from a field of about 30 active applicants. Capron, a native of New England, had been a successful farmer and manufacturer in Maryland, an officer in the Union Army, and a noted livestock leader in Illinois.

Beginning with the July report in 1867, the returns from the Statistical Division were signed by J. R. Dodge, Statistician, with simply an endorsing signature of the Commissioner.[17] This recognition of the status of the Heads of Agricultural Statistics has continued to the present time. Dodge had been "Statistician and Editor of the Report" and had been referred to as such by the Commissioner in his Report for the previous month (April), but recognition of a separate status for the "Report of the Statistician" did not come until after the passing of the first Commissioner. This first signed "Report of the Statistician" included data on wool prices in New York and Boston; imports of wool at New York; exports of breadstuffs; revenues of Great Britain; the cotton caterpillar; culture of flowers and manufacture of perfumery; Angora and Cashmere goats; temperature of the soil; culture of sugarbeets; farm products and domestic animals in Europe; mineral phosphate of lime; statistics of Bavaria; crops of Europe; and meteorological tables. Here again is demonstrated the wide range of subject matter for which statistics were believed to be needed.

Field Travel of Statisticians

The value of personal observation of field conditions by statisticians was recognized at the start of the statistical work in the Department. In 1867 Mr. Dodge made

> . . . a tour to the Northwest,[18] undertaken for the purpose of increasing and improving facilities for the collection of agricultural statistics and for conference with professional or other intelligent agriculturists relative to Department cooperation in aid of the interest of that great section.[19]

On this trip the Department Statistician was "struck particularly with the ruinous tendency of the current system (or want of system) of wheat culture." He wrote a detailed report describing what he considered a "blind, senseless, and suicidal system of agriculture." [20]

The concentration on wheat to the exclusion of other crops is indicated by this comment from a Wheat Belt agricultural paper: "If a pound of butter comes into the city before Thanksgiving every clergyman should especially name it as a cause of thankfulness." [21] Extracts such as this from correspondents were a favorite means of enlivening the reports and imparting information concerning various sections of the country. Each monthly issue carried several pages of comments taken from reports of field correspondents.

The attitude of Commissioner Capron toward the Department's statistical program was anxiously awaited by J. R. Dodge and his staff. They were soon relieved as the Commissioner wrote in his special report to Congress in January 1868:

> Among the chief purposes connected with the proper fulfilment of the objects of the Department of Agriculture, it must be conceded, is this: the obtaining of reliable statistical information, to be secured by a complete system of correspondence, leading out through the various State organizations—agricultural, horticultural, and pomological—and extending to the county and local societies in each State, where such exist; and where these do not exist, then through such reliable channels as may be most available and efficient.[22]

In his report as Department Statistician, Dodge stated that agriculturally 1867 had been more productive than 1866. In addition to the customary tables on acreage, yield, production, and value of crops, and numbers and value of livestock, the Annual Report included statistics of foreign trade and showed the results of a special survey made during the year. This survey, entitled "Special Statistics of Farm Resources and Products," was sent to the Department's corps of statistical correspondents. Two questions of great interest were these: [23]

[17] U.S.D.A. Monthly Report, July 1867, p. 237.

[18] From the comments in his report he apparently visited the Great Plains area.

[19] U.S.D.A. Monthly Report, October 1867, p. 321.

[20] Ibid., pp. 321–322.

[21] Ibid., p. 366.

[22] U.S. Commissioner of Agriculture, Report, 1867. Washington, D.C., 1868, p. 20.

[23] Ibid., p. 102.

> 1. What is the average percentage of increase (or decrease, if cases of decrease exist) in the price of farm lands in your county since 1860? 2. What is the average value of wild or unimproved tracts of land; and what is the character, quality, and capabilities of such land?

The Chief Statistician wrote an "epitome" giving information from the survey by States, which covered 18 pages of his Report. The data indicated increases between 1860 and 1866 in values of farmland ranging from 10 percent in Kentucky to 175 percent in Nebraska, whereas decreases varied from 18 percent in Tennessee to 70 percent in Louisiana.[24]

In a separate section Dodge reviewed the chaotic agricultural situation in the South during its first full year after Appomattox. His report was based on statistics obtained from a special inquiry sent to "our regular corps of reporters and agricultural editors and planters distinguished in their vocation." [25] The purpose of the inquiry was stated as being

> . . . to ascertain the pressing wants of this section, to furnish information and advice suited to the exigencies of the case, and to initiate a new era in the history of its productive industry.[26]

The questions, 15 of them, were long and complex, often involving several concepts and a series of answers. The returns were informative, however, and provided the basis for an absorbing and instructive report on Southern agriculture in the immediate postwar period.

Frederick Watts Appointed Commissioner

President Grant named Frederick Watts of Pennsylvania Commissioner of Agriculture, and he took office on August 1, 1871. He was widely known for his dedication to improved agriculture. He had introduced Mediterranean wheat in Pennsylvania in 1839 and the first trial of the McCormick reaper in the State took place on his farm in 1840. Watts was a moving spirit in the organization of the Pennsylvania State Agricultural Society in 1851, and was active in organizing the United States Agricultural Society. He was called "the father" of the Pennsylvania Farmers High School, which later became the Pennsylvania State University.[27]

[24] Ibid., p. 119.

[25] Ibid., p. 412.

[26] Ibid.

[27] Fletcher, Stevenson W. Pennsylvania Agriculture and Country Life, 1840–1940. p. 482. 1955.

Dodge Goes to Europe

The persistent desire to improve the subject matter, breadth, and technical quality of statistical reports at home, as well as to expand the coverage of foreign agricultural statistics, resulted in Dodge making a tour of Europe in 1872. Commissioner Watts, in his annual report to President Grant, said the purposes of Dodge's trip were:

> To perfect exchanges, to establish relations of statistical reciprocity, investigate statistical methods, and thus increase and perfect the resources of the statistical division.[28]

The demand for better knowledge of the agricultural situation abroad was whetted by the mounting value of our agricultural exports, which in fiscal 1872

> . . . . amounted to the magnificent sum of $406,394,254, including $1,773,716 for living animals; $75,287,133 for animal products; $15,240,872 for wool in various forms, and $46,352,010 for oils, vegetables, tobacco, and miscellaneous products of agriculture, either raw or manufactures.[29]

Dodge visited Government offices in London, Paris, Berlin, and Vienna, where he investigated the statistical methods being used and programs to aid agriculture. In Vienna he also served as a U.S. Representative to the International Exhibition. He found, of course, a great diversity in the attention given to agricultural statistics and in their scope and quality. Generally he discovered that funds for statistical work were more liberally bestowed than in this country.[30] He was particularly impressed by the fact that, unlike the United States, most European countries endeavored to obtain the area of principal crops. Dodge considered the determination of crop acreages an "initial point in statistical inquiry." [31] The use abroad of police and tax assessors to collect census data met Dodge's disfavor.

[28] U.S. Commissioner of Agriculture Report, 1872. Washington, D.C., 1873.

[29] Ibid., p. 11.

[30] Ibid., p. 15, and Monthly Report, August-September 1873, p. 418.

[31] U.S. Commissioner of Agriculture Report, 1873. Washington, D.C., 1874, p. 150.

Appropriation Problems

The European tour stimulated Dodge's thinking concerning statistical methods and he undertook to garner support for an improved program in the United States. In a speech before the National Agricultural Congress at Atlanta, Ga., May 14, 1874, he said:

> There is great activity of statistical inquiry at the present time, and but little patience of investigation; there is frequency and flippancy in statement, but less of accuracy and thoroughness. There is a feverish desire to accomplish the census of a continent in one day, and proclaim its results the next. Few take time to weigh facts, sift error from truth, and reach broad and philosophical conclusions. What is wanted in statistics is more of thought and less of flurry, more industry and less precipitancy, sounder judgment and less zeal without knowledge. Few have yet learned the logic of statistics, and some even of our law givers are prone to build by proxy the framework of their political economy, and liable to give it a fantastic and incongruous finish.[32]

Dodge carried on the campaign for more funds for about 2 years before Commissioner of Agriculture Watts supported the harassed Division of Statistics in his report of 1875 to President Grant:

> The attention of Congress is called to the proposed organization of this division as indicated in the schedule of annual estimates. This division of the Department has about five thousand regular, appointed correspondents. I know of no branch of the public service in which so much is accomplished with so small an expenditure. It is literally true that nine tenths of the labor performed is gratuitous, that of our correspondents being entirely uncompensated, except by the reports of the Department and seeds sent them for experiment.[33]

The appropriation proposed for fiscal year 1877 was $5,000, a cut from $10,000 in the previous year and $15,000 in 1875. The Report of the Statistician for the year 1876 stressed the need for augmenting the funds for the Department's statistical program. The statement became progressively more irate in tone. In his statement requested by the Committee on Agriculture, Dodge waxed eloquent in places and reached the extreme of proposing that they cut out the $5,000 proposed for the statistical work in the fiscal year 1877 and blot out the division and with it the Department of Agriculture.

The efforts of Dodge and Commissioner Watts resulted in a restoration of funds to the usual amount of $15,000 which apparently silenced Dodge for the time as his subsequent annual report carried no comments on the fund situation. According to his personnel record in the National Archives, Dodge received a cut in salary from $2,000 to $1,900 at this time.

Dodge Leaves the Department and Returns

A new Commissioner of Agriculture, William Gates LeDuc of Minnesota, was appointed by President Hayes, and took office July 1, 1877. Relations between LeDuc and Dodge did not prosper. In his Annual Report for 1878, Commissioner LeDuc listed seven "immediate necessities" of the Department, but significantly an increase of funds for statistical work was not among them.[34] The unfortunate discord between the two men continued to worsen and LeDuc apparently became convinced that Dodge was attempting to undercut him by ridicule and criticism.[35] Dodge denied all such charges. Coming on top of his recent appropriation problems, the strained relations with the Commissioner culminated in his decision to resign his position in 1878. For a few months Jacob Dodge worked for the Treasury Department, and then General Francis A. Walker, Superintendent of the Census, put him in charge of agricultural statistics for the Tenth Census.[36]

Dodge was to be recalled to the Department as Chief Statistician in 1881. Meanwhile the position was held by Charles Worthington aided by an assistant Statistician and five clerks.[37] There was no increase in funds, but in his Annual Report for 1880 Commissioner LeDuc, at last convinced, declared that the statistical staff should be "enlarged to double its

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[32] U.S. Commissioner of Agriculture, Report, 1873, p. 146. 1874.

[33] Commissioner of Agriculture, Report, 1875, pp. 10, 19.

[34] U.S. Commissioner of Agriculture. Report, 1878, Washington, D.C., 1879, p. 39.

[35] Ross, Earle D., The U.S.D.A. During the Commissionership. *In* Agr. Hist. 20:137, July 1946.

[36] Dictionary of American Biography, Vol. 5, pp. 349–350.

[37] True, Alfred C. A History of Agriculture Experimentation and Research in the United States, 1607–1925. p. 54.

present strength." [38] Nothing of the kind occurred, however, and when James A. Garfield became President, he replaced LeDuc as Commissioner with George Bailey Loring on July 1, 1881. This signaled the return on the same day of Jacob R. Dodge as Chief Statistician. Dodge worked at a per diem rate of $6.00 until his appointment was finalized on July 1, 1883.[39] He did not resume his duties as editor, for which he had never been paid,[40] and at last was free to devote his very considerable talents to the improvement of the Department's statistical program.

CHAPTER 4. AN ERA OF PROGRESS, 1882–93

Guidelines for Development

An eventful and constructive decade followed the reinstatement of Jacob Dodge as Chief Statistician. Commissioner George B. Loring in his Annual Report to President Arthur for 1881 sounded the keynote:

> The time has arrived when the crop reporting system should be made more thorough and accurate and its results communicated to the public at the earliest possible moment.[41]

He proposed that a telegraphic synopsis of the report be furnished the press of the Nation and he favored cooperation with State authorities to provide "uniformity and public confidence." Dodge made a personal pledge:

> Believing that the unadorned truth will best promote the interests of producer and consumer, it will be my endeavor to eliminate bias and prejudice from returns and from the work of interpreting and averaging these local estimates.[42]

Dodge devoted a portion of his Report of the Statistician to the Division and its work. He laid down guidelines for future development and announced steps being taken to achieve the desired goals.

> With a range through the entire field of rural effort, and of science applied to agriculture, the ground occupied by agricultural statistics is practically measureless and the demand for statistical service limitless. Hence the work of the division has neither cessation nor respite.
>
> General and special statistics, domestic and foreign, national and international, are required for use of officials connected with the legislative and executive departments of the government, boards of agriculture, chambers of commerce, educational institutions, editors, and others in representative positions. Much service of this tenor is constantly performed, limited only by practical possibilities and the endurance of a small corps of clerical assistants.
>
> The crop-reporting work of this division covers an area of nearly 200,000,000 acres of crops harvested by the hand of man, and includes in cattle industries a range of several hundred millions more. The spirit of the age demands prompt, frequent, and reasonably accurate reports of these vast interests; the unreasoning haste of greedy impulsiveness demands a minute census weekly, simultaneous in collection, and instantaneous in consolidation and distribution. The tendency of the unthinking public is to statistical pretense, inaccuracy, and looseness of statement. It will be the aim of the direction of this service to render it thorough, efficient, and reliable in results; to use systematic scientific methods; to reach practical and exact conclusions, and present them conscientiously.
>
> To this end the Commissioner of Agriculture has obtained an increased appropriation from Congress; and among the means adopted for improvement of this service is the appointment of a statistical agent for each State and Territory, to act as head of a State corps of correspondents, as a lieutenant of the statistician in directing and executing the work of such district. Among these agents are several experienced officers of State departments or boards of agriculture, heretofore in charge of a State corps of statistical reporters upon precisely the same plan in operation in this department. Thus duplication of work is avoided, discrepancies are harmonized, results are verified, avoiding the confusion of a double series of reports, and securing greater accuracy and higher public appreciation of the value of the results. Unfortunately, there are few States that have an organization for the collection of statistics, and in the others it becomes necessary to select agents who have not been educated in statistical collection by such experience; yet there are persons possessed of judgment in agricultural affairs, capacity for organization, a taste for statistical collection, and a "genius for work," from whom to select these agents, in the expectation of developing trained and skilled assistants.[43]

State Statistical Agents Appointed

The appointment of part-time State statistical agents in 1882 was a significant step in the long development of the Department's statistical service. It brought to each report a knowledge of local conditions that could be provided only by competent people, trained in agriculture, familiar with statistical tech-

[38] U.S. Commissioner of Agriculture. Report, 1880. Washington, D.C., 1881, p. 14.

[39] Jacob R. Dodge personnel file in National Archives.

[40] U.S. Commissioner of Agriculture. Report, 1876. Washington, D.C., 1877, p. 18.

[41] U.S. Commissioner of Agriculture Report, 1881. Washington, D.C., 1882, p. 15.

[42] Ibid, p. 577.

[43] Ibid, p. 666.

niques, and following prescribed scientific methods under centralized direction. An invaluable part of their work was the establishment of lists of names of "representative" farmers throughout each State. These cooperative reporters provided the information about their communities which helped make the State and national reports much more meaningful than they would otherwise have been.

The proposed expanded program and the facilities and methods employed were realistic and sound. Especially noteworthy was the fact that the State statistical agents were appointed, paid, and supervised by the Division of Statistics in Washington, D.C. In this way a coordinated series of periodic reports giving details by States, Territories, and the country as a whole could be published in accordance with strict timetables. This organizational structure, embodying a chain of command, accounts in large part for the orderly development of the U.S. statistical service and its superiority to that of many countries. To get appropriate questions included in a circular, to have them worded properly, and to get inquiries mailed, tabulated, analyzed, and the results published on time requires a highly synchronized operation and a concert of action that is practically impossible to achieve without central direction. It is to the credit of Dodge and his colleagues that they understood this important principle and were able to implement it, especially in a day when "States' Rights" were so jealously guarded.

Agency Set Up in Europe to Report on Agriculture

Concern with the domestic statistical program was not allowed to obscure the need for adequate statistics relating to European agriculture. Accordingly, an agency was established in Europe headed by Edmund J. Moffat, who was quartered in the office of the Consul General in London. The new agency was expected to provide "accurate reports of crop prospects, valuable statistical exchanges, and miscellaneous information of value to this department and the agriculture of the country." [44] Moffat furnished regular reports summarizing and reviewing European agricultural conditions; these were published in the Department releases under the caption "European Crop Report" and bearing his name or initials.[45]

The program on foreign agricultural statistics was strengthened by an Act of Congress of June 18, 1888, which required U.S. Consular officers to make monthly reports on crop conditions in their area to the Department of State for the use of the Agriculture Department.[46] Portions of the reports, considered of interest to American farmers, were required by the Act to be included in the monthly report of the Division of Statistics.[47] These were usually given under "Notes on Foreign Agriculture."

Dodge could also report that "under requirement of Congress" a section had been created for the monthly publication of freight rates, special work in dairy statistics had been started, and other special investigations were in progress.[48] The appropriation for collecting statistics for the fiscal year ending June 30, 1883, was $94,000—six times as much as had usually been available for such work. A breakthrough in the budgetary stalemate that had existed for years had finally been accomplished.

Statistics of State Agencies

Writing in 1881, Dodge said: "Few of the States, through assessors or other officers, make any pretense of obtaining annual statistics of farm crops, or even farm animals." [49] He went on to point out, however, that some of the more enterprising States had collected and published statistics and that much good had come of their efforts. It had, he thought, educated the people in "statistical methods and the profitable uses of farm statistics." [50]

[44] U.S. Commissioner of Agriculture, Report, 1881–82, p. 667.

[45] U.S. Division of Statistics, Statistician's Reports, May 1884, p. 21. Also, ibid., June 1884, p. 26.

[46] The Department was raised to cabinet status in 1889. See Appendix B for text.

[47] U.S. Department of Agriculture, Div. of Statis., Report for August 1889. p. 279. 50 Stat. 186.

[48] Ibid., p. 667.

[49] U.S. Commissioner of Agriculture Report, 1881–82, p. 647.

[50] Ibid.

For the collection of annual statistics the assessors were usually utilized despite the fact it was "an extra, vexatious, unpaid and thankless service," for which no penalty was levied for neglect. The results were almost universally poor, even in Ohio whose system was rated the most efficient. In that State a comparison of assessors' returns for 1879 with those from the Census Bureau showed the assessors' data "fell short" 14 percent in corn, 9 in wheat, 8 in oats, 10 in rye, 10 in barley, and 19 in buckwheat. A fear that taxes might somehow be proportional to the acres and bushels reported caused fields "to be reported smaller than they are" and estimates "at a minimum figure." Such attitudes were attributed to the lingering antagonism of some immigrants to "exactions of home governments" and to "some natives whose appreciation of statistical utilities is tinctured with similar suspicions." Other difficulties were caused by confusion of terms. For example, discrepancies resulted from reports of corn measured "in the ear" versus "shelled."[51]

Some States, such as Iowa, attempted to establish crop reporting services based on reports from farmers or other informed individuals. The Iowa Horticultural Society was a leader in such activities, and as early as 1872 tried to get data on conditions and quantities produced from its county correspondents. The State persisted, under various of its agencies, in attempts to provide adequate statistics concerning its agriculture for more than half a century before discontinuing its efforts and placing reliance on Government crop reports.[51a]

The Division of Statistics deplored the poor quality of data obtained by State agencies, especially by the local assessors,[52] but lacking jurisdiction there was little it could do to bring about improvements.[53]

[51] U.S.D.A. Division of Statistics, Reports, September 1885, pp. 24–25.

[51a] Iowa Horticultural Society Transactions, 1935, Vol. 70, pp. 54–55.

[52] U.S. Secretary of Agriculture Report, 1892, (Washington: 1893), pp. 466–467.

[53] Education and persuasion are the principal means of encouraging a high standard of statistical work by tax assessors. Beginning in 1917, cooperative agreements between State and Federal Governments have resulted in most States having a unified statistical system which has eliminated duplication of effort and improved the quality of work done by assessors.

Graphic Presentation

Improvements in all phases of the statistical program were constantly being sought by Dodge and his associates.[54] The Chief Statistician had long been intrigued by graphic illustrations such as charts and diagrams and he encouraged their use, especially in the Annual Report of the Commissioner of Agriculture. His first major use of graphic illustration involved the preparation of exhibits for the 1876 Centennial Celebration in Philadelphia. For this purpose, a series of maps, diagrams, charts, black and tint lithographs, and wood upon lithographic tint engravings was prepared. Some of the maps were 12 by 17 feet. Acreage, yield, and production of crops by States were depicted along with woodland density, farm wage rates, fruit areas, per capita production data, exports, and so on through 43 items, ending with engravings of principal buildings of a number of colleges.[55]

Another ambitious endeavor of this kind was the exhibit prepared under Dodge's direction for the New Orleans Exposition of 1884. Dodge was delighted with the assignment, especially since he considered it another indication that "a spirit of statistical inquiry is abroad, accompanying the schoolmaster, invading the press, and sometimes the pulpit." [56]

"Crop reporting," Dodge said, "is counting in advance by instantaneous generalization." [57] He proposed to make it possible for the average person to achieve an instantaneous under-

[54] A new series of statistical reports was inaugurated in October 1883, to be published monthly and to provide information of current interest rather than the more permanent material reserved for the Annual Report. Included were the usual reports on condition of crops, livestock, transportation rates, etc. In 1892 the crop report was separated from the general report of the statistician "as being more ephemeral in character and requiring more prompt issue than miscellaneous statistics." U.S. Secretary of Agriculture Report 1893 (Washington: 1894), p. 34. The Monthly Reports, New Series, 1 to 10 were issued by the Division of Statistics Nos. 11 to 25 by the Bureau of Statistics; Nos. 26 to 36 under the label "Report of the Statistician."

[55] U.S. Commissioner of Agriculture Report, 1875, Washington, D.C., 1876, p. 466.

[56] Ibid., 1884, p. 466.

[57] U.S. Commissioner of Agriculture Report, 1887. p. 22.

standing of his statistical reports. Accordingly, in 1889 the Division of Statistics published an "Album of Agricultural Statistics of the United States." That same year the Paris Exposition awarded Dodge a gold medal for graphic illustrations of agricultural statistics.[58]

International Statistical Institute Established, 1885

At the 50th anniversary meeting of the Statistical Society of London in 1885, an International Statistical Institute was organized and J. Richards Dodge was elected a member although he was not present at the London meeting.[59] The initial session was scheduled to be held in Rome in September 1886, but because of an outbreak of cholera the conference was postponed until April 1887. Dodge represented the United States at the gathering and wrote a preliminary account of the session, which was carried in the Department's June Report. In a statement concerning the need for an International Statistical Institute Mr. Dodge said:

> In these days of international commingling, by commerce, immigration, and travel, demand for statistics more comprehensive than national statements have arisen, and international comparisons have therefore become an urgent necessity of progress in government, industry, and the arts.

"A Clear and Searching Glance into the Future"

Any temptation Dodge may have had to relax his efforts to expand and improve the statistical service of the Department was countered by the stimulation of his European tour, criticism at home by the National Board of Trade,[60] and his concern with mounting crop surpluses. Writing in 1889, Dodge declared that "the vital need of today is a clear and searching glance into the future, a forecast of crop results which shall fairly indicate them in advance."[61] Dodge had no illusions as to the difficulties involved in making such estimates. In fact, the staff, field organization, and statistical methods available were not adequate for such a task nor would they be for many years to come.

In his report the previous year, Dodge had said: "The county correspondents now number 2,331, their assistants are fully three times as many, and the State agencies have a large list of correspondents. Altogether over twelve thousand persons are connected with the work of statistical investigation."[62] The implication is that this constituted a powerful staff and it was for the time but, looking back, it seems woefully inadequate.

That Jacob Dodge labored incessantly to satisfy the demands of his day is indicated by the variety of subjects for which he obtained and published statistics, his efforts to provide information on foreign agricultural conditions, his emphasis on use of scientific statistical tools, the innovations he made to popularize statistics, and his articles such as "The Agricultural Depression and Its Causes (1890)," "Permanency of Agricultural Production (1891)," "Agricultural Production for American Consumption (1884)," "Foreign Markets for Dairy Products."[63] The economist, Henry C. Taylor, and his wife, Anne Dewees Taylor, in their "Story of Agricultural Economics in the United States, 1840–1932," stress the role of J. R. Dodge as an economist and laud his attention to the economic problems of the times.

Repeatedly in the Monthly Reports, Mr. Dodge endeavored to convince his farmer respondents that in reporting to him concerning farming conditions they were serving their own best interests. In an article on the subject in the report for November 1889, Dodge said, in part: "The farmer has everything to gain and nothing to lose by publicity of the results of his labors. He cannot keep these results a secret if he would, and it would be extremely injurious to his interest if he should."

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[58] Dictionary of American Biography 5: 349–350.

[59] U.S. Division of Statistics, Reports, September 1885, p. 45. Francis A. Walker, President of Massachusetts Institute of Tech., attended the London meeting and was an original member of the Institute.

[60] National Board of Trade. Proceedings, 1887. p. 12.

[61] U.S. Secretary of Agriculture. Report, 1889. Washington, D.C., 1889, p. 201.

[62] U.S. Commissioner of Agriculture. Report, 1888. Washington, D.C., 1889, p. 405.

[63] Each is included in the Report of the U.S. Commissioner of Agriculture for the year indicated.

National Board of Trade Criticism of Reports

Criticism now and then from editors of farm journals and similar "experts" could be expected. More disturbing was that from members of such an organization as the National Board of Trade. In a meeting in January 1887, Mr. McLaren, a Member of the Board from Milwaukee, introduced a resolution stating that since the monthly statistical reports of the Department served no useful purpose for the agricultural and commercial interests of this country but, on the contrary, aided our foreign customers, that the Department should "report on the *acreage* as soon as it is definitely ascertained, and on the *yield* of grain and cotton only at the end of the calendar year." [64] The purpose, good faith, and desirability of continuing the Government reports was vigorously defended by a number of Board members, especially by Charles B. Murray of Cincinnati, whose son Nat C. Murray 40 years later served as Head of the Bureau of Statistics of the U.S. Department of Agriculture. After considerable discussion, Mr. Goodale from Cincinnati proposed a substitute resolution which reads as follows:

> Whereas, The monthly crop reports formulated by the United States Government have in the past contained numerous inaccuracies, which inaccuracies as we believe, are mainly due to poorly informed and careless correspondents; and
> Whereas, Congress is proposing to establish the Department of Agriculture upon a more serviceable foundation than heretofore; therefore be it
> RESOLVED, That the Bureau having in charge the crop statistics be memorialized to furnish the necessary money and to take proper steps towards securing more efficient correspondents in agricultural districts, to the end that a greater degree of accuracy may be reached in formulating statistics on growing crops, more especially on those of grain and cotton.[65]

The substitute resolution was unanimously adopted by the Board.[66] Although there was no immediate increase in congressional appropriations for the Department's statistical program, the resolution indicated the attitude of a segment of the trade and supported the arguments for increased funds.

Dodge had never claimed infallibility for his statistics. In 1866 when he became Chief Statistician he wrote:

> The crop estimates are only intended to be approximate, for current use in supplying early information in foiling the purposes of reckless speculation. They should not be authoritatively quoted as fully ascertained and precise facts. In general terms, they have proved far more reliable than other reports and estimates.[67]

In 1892, in submitting his 24th and final Annual Report as Statistician for the Department, Dodge said: "The crop-reporting system of this division is the most systematic and extensive known. It would be folly to claim for it perfection . . . ." [68]

Dodge Retires

During the quarter of a century between these two statements, Jacob Richards Dodge had worked conscientiously and persistently to develop a statistical service adequate for the needs of the times. The goal was not reached nor has it yet been, but there was much for which Dodge could be proud. As he said:

> The work of the division at first, very limited in scope and area, now includes, besides organized original investigation in this country and Europe, the collection and coordination of the official and commercial statistics of the world. Instead of one clerk, the office force including compilers, translators, computers, and copyists now include 60 . . . . [69]

The annual appropriation for the Division of Statistics had grown to $136,000. Reports were being received from some 15,000 regular monthly respondents and about 125,000 "representative farmers." Publications included a 4-page "synopsis" of the crop report in an edition of 125,000 copies for the exclusive benefit of farmers;[70] 20,000 copies of the monthly report sent to regular crop reporters, the press, and officials; and a monthly report incorporating miscellaneous items.

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[64] National Board of Trade. Proceedings, 1887. Boston, 1887, p. 12.

[65] Proceedings, op. cit.

[66] Ibid., pp. 14–20.

[67] U.S. Monthly Report, 1866. Washington, D.C., 1887. Statement on flyleaf, under label Notice.

[68] U.S. Secretary of Agriculture. Report, 1892. Washington, D.C., 1893, p. 404.

[69] Ibid.

[70] Ibid, 1893, p. 406.

Although Dodge thought that improvements in statistical methods and operating procedures were possible and desirable, he believed that the great obstacle to reliable statistics was the lack of accuracy in the original data. Dodge argued:

> A stream cannot rise higher than its source; pure mathematics and immaculate judgment combined cannot cure the inaccuracy of erroneous original data. This is today the supreme difficulty in obtaining correct statistical results, whether in a census that requires years of time and millions of money, or in any other official or unofficial crop investigations.[71]

The cure for this seemed to Dodge to lie in education of the public, especially farmers, as to the importance of accurate reporting.[72]

On March 15, 1893, Jacob R. Dodge signed his last monthly Report of the Statistician. Five days later he submitted his resignation to the new Secretary of Agriculture, the Hon. J. Sterling Morton of Nebraska. Dodge gave as his reason "a cherished desire to terminate my long and exacting service as Statistician, and carry out my plans for more agreeable work in agricultural literature." [73] He was in his 70th year. Until his death nearly a decade later J. R. Dodge served as Statistical Editor of the "Country Gentleman," a magazine which had a wide circulation among farm people.[74]

CHAPTER 5. A DECADE OF CONFUSION, 1894–1905

Henry A. Robinson Appointed Chief Statistician

When J. Sterling Morton took office as the third Secretary of Agriculture on March 7, 1893, he selected Henry A. Robinson as Chief Statistician. Robinson took office on April 1. Nat C. Murray characterized him as "a purely political appointee without qualification as a statistician." According to Murray, a letter written by Robinson in the files of the Division indicated that Robinson thought that the data from crop reporters should be tabulated and given to the public "for what they were worth" without regard to accuracy.[75] As a result of this policy the accuracy of the reports steadily declined.

This not only created trouble that was not fully apparent until the Census of 1900, but the inaccuracies in the current estimates soon became evident to users, particularly to the National Board of Trade.

Criticism of National Board of Trade

In January 1895 the Board passed two resolutions. The first was submitted to the Board by Charles B. Murray and read as follows:

> Whereas, the monthly and yearly crop reports of the United States Department of Agriculture have in recent years been confusing, misleading, and manifestly erroneous in important particulars, therefore,
>
> RESOLVED, That if the crop-reporting service of the Government is to be continued, it should be required that every needful effort be made for insuring the fullest degree of efficiency in the work, with reference to completeness and accuracy of data, and that the dissemination of the information should be conducted in such a manner as to preclude misunderstanding in regard to the import of such reports and their relation to or comparison with previous statements.[76]

The second resolution, presented by A. C. Raymond of Detroit, read:

> RESOLVED, That a committee of seven be appointed by the President, to wait upon the Secretary of Agriculture and the Statistician of that department, with a view to arranging a conference with them by representatives from commercial organizations of the United States, for the purpose of devising a system of agricultural reports which shall regularly furnish to the public the most accurate, reliable and complete information concerning the agricultural products of the United States.[77]

As a result of these resolutions a Committee on Crop Reports was appointed, with Charles B. Murray as Chairman. Members included W. J. Boyd of St. Louis, Blanchard Randall of Baltimore, A. C. Raymond of Detroit, Breedlove Smith of New Orleans, D. B. Smith of

[71] Ibid., 1892, p. 405.

[72] Ibid., p. 406.

[73] A copy of this letter is in Mr. Dodge's personnel file in National Archives. Secretary Morton took office March 7, accepted Dodge's resignation on March 23, to take effect at the close of business March 31, 1893. Morton was the ninth Commissioner or Secretary of Agriculture under whom Dodge had served.

[74] Dictionary of American Biography 5: 349–350.

[75] Murray, Nat C. A Close-up View of the Development of Agricultural Statistics from 1900 to 1920. (4): 708, Nov. 1939.

[76] Taylor, Henry C. and Anne D. Taylor. The Story of Agriculture Economics in the United States, 1840–1932; Men, Services, Ideas. p. 204. 1952.

[77] Ibid., p. 204.

Toledo, and G. F. Stone of Chicago.[78] Following a session of the Committee with the members of the Division of Statistics in Washington on April 15, 1895, the following resolutions were adopted:

> This conference, called to consider means by which the crop-reporting service of the Department of Agriculture may be improved and the official results made more satisfactory to the public, beg to submit for the consideration of the honorable Secretary of Agriculture the following suggestions:
>
> That it is the judgment of the interests represented in this conference that the official crop-reporting service should be maintained, and that the reports now regularly issued be continued, with such modifications as hereinafter suggested.
>
> (1) That the April report on winter grain be discontinued, but that all other features now embodied in that report be continued.
>
> (2) That in all reports concerning acreage of the various crops reported upon, the Department give the area by States in acres, as well as by the percentage of the previous year's area.
>
> (3) That the Department, instead of having a principal correspondent and three assistants in each county, as at present, make an effort to secure the regular service of one or more reporters in each township, all to make their reports directly to the Department at Washington.
>
> (4) That in the selection of these correspondents they should not be taken from farming classes exclusively, but should include, so far as possible, representatives of all classes of rural industry.
>
> (5) That the Department discontinue the employment of salaried State agents in the regular crop-reporting work.
>
> (6) That the returns of reserves of wheat, corn, oats, and cotton be had for dates representing the close of the crop year; wheat on July 1, oats on August 1, corn on November 1, and cotton on September 1.
>
> (7) That arrangements be perfected with the United States consular service for sending by cable to the Department, on or about the 9th of each month, a statement giving the best available information concerning prospects for crops of grain and cotton in their respective districts, to be published in connection with the domestic crop report when issued.
>
> (8) That it is the sense of this conference that a law should be enacted punishing by fine and imprisonment any employee of the Department of Agriculture who divulges to any one outside of the Department of Agriculture any statistical or other general information of the Department previous to the time appointed for officially presenting the same to the public.[79]

Corps of Township Reporters Set Up

The most immediate and perhaps most important result of these resolutions was the establishment of a corps of township correspondents who reported directly to Washington. This carried out resolution number 3 except that the system of county correspondents was continued.[80] Paid State agents were also maintained despite the recommendation that the Department discontinue their employment. Periodic stocks reports were inaugurated in 1895 as proposed; they have continued as recommended. Nothing was done during Robinson's regime to provide monthly cable reports from the consular service concerning foreign grain and cotton prospects. Also no regulations were promulgated for punishment by fine or imprisonment of a Department employee guilty of divulging information prior to its official release. As we will see, both of these developments were to come later. Nevertheless, Robinson felt that progress was being made. In the Report of the Secretary for 1896 he pointed with pride:

> With county correspondents varying from 9,000 to 10,000 in number, with state statistical agents and assistants numbering 6,000 to 7,000 and with a corps of township correspondents having about 28,000 members, each group working independently of the others, the Department has at its service the amplest resources it has ever commanded.[81]

The Committee on Crop Reports of the National Board of Trade was not so sanguine, however, and continued to urge that positive action be taken on its recommendations.[82]

An Annual Census of Agriculture

Robinson was of the opinion that his experienced county crop correspondents could make an annual farm-to-farm survey that would provide much more reliable data than that obtained by the casual, part-time enumerators of the decennial census. His farsighted plans included "self-enumeration" by the more educated and cooperative farmers, and interview followup of nonrespondents by paid interviewers. In the Secretary's Report for 1895, Robinson outlined his proposal. It was much too extensive to meet the requirements

[78] Ibid.

[79] Ibid., pp. 204–205.

[80] In 1925 the lists of township reporters and county correspondents were combined comprising a corps of nearly 40,000 U.S. Dept. of Agr. reporters. See the Crop and Livestock Reporting Service of the U.S., Misc. Pub. 703, Washington, D.C., 1933, p. 4.

[81] U.S. Secretary of Agriculture Report, 1896, Washington, D.C., 1896, p. 115.

[82] National Board of Trade. Proceedings. Jan. 1897, and Dec. 1897.

of a current reporting system, even if the tremendous expense of enumerations could have been eliminated by securing voluntary enumerators, to say nothing of the cost of processing the questionnaires after the field enumerations.

His objective to secure more accurate reports as a basis for annual estimates was commendable. Dodge, before him, had felt the same need as did many Chief Statisticians to follow him. More than half a century was to elapse before a workable plan that would accomplish the objectives which he sought would be developed and put into operation.

James Wilson Appointed Secretary of Agriculture

When the Republicans were returned to the White House by the election of 1896, President McKinley appointed James Wilson as Secretary of Agriculture. He retained that position for 16 years, a record never achieved by any Cabinet officer before or since.[83] Secretary Wilson, or "Tama Jim," as he was known because of his residence in the county of that name in Iowa, wrote in his first annual report:

> I am impressed with the extreme cumbrousness of the system of crop reporting that has been in use in this division during the last few years. Instead of conducing to completeness and accuracy, it would appear from the report of the Statistician to in some measure defeat its own object by its unwieldiness and by the fact that the indefinite multiplication of crop reporters weakens the sense of individual responsibility. I strongly favor the making of some slight pecuniary acknowledgement of the services of a carefully selected corps of correspondents located mainly in the principal agricultural States, and that reliance be placed upon the State statistical agents for information regarding the States of minor agricultural importance.[84]

John Hyde Appointed Chief Statistician

To renovate the Department's statistical service, Secretary Wilson chose John Hyde, who, like Wilson, had been born a British subject but had become a naturalized citizen of the United States and claimed Omaha, Nebr., as his home.[85] Hyde had been in charge of agricultural statistics for the Census of 1890 and had joined the staff of the Department of Agriculture in 1895 as an editor or "expert compiler" in the Division of Statistics.[86] He was, therefore, a holdover from the previous Administration when appointed Statistician and Chief of the Division of Statistics on May 5, 1897. In a biographical statement Hyde said that he had not been trained for any particular field but that, prior to Government employment, he had been engaged primarily in "banking and journalism."[87]

Hyde went to work energetically to strengthen the work of his Division. The new Statistician believed that the primary function of the Division was to shed a true light on agricultural conditions so that farmers would not be fleeced by speculators. He expressed his philosophy thus; "In every sphere of human thought uncertainty is the mother of speculations."[88] Hyde sought to convince farmers of the importance of agricultural statistics by writing a rather lengthy article entitled "Of What Service are Statistics to the Farmer." The article was published as a part of the Report of the Secretary of Agriculture for 1897, and 15,000 reprints were placed on sale at 5 cents apiece by the Government Printing Office.[89]

Secretary Wilson proposed that "brief reports" be displayed in rural postoffices so that farmers could be kept quickly informed of crop prospects.[90] In about 4 years, this suggestion was put into effect, when cards carrying pertinent cotton data were mailed to 24,000 Southern postoffices within 3 hours of publication of the telegraphic summary, with the request that the cards be prominently displayed.[91] The publicity given the reports was

[83] From Mar. 6, 1897, to Mar. 5, 1913, according to official records of the Department of Agriculture.

[84] U.S. Department of Agriculture. Yearbook, 1897. Washington, D.C., 1898, p. 56.

[85] Personnel folder of John Hyde in National Archives. For reference to Wilson see Arthur C. True, History of Agriculture Experimentation and Research in the U.S., 1607–1925, p. 186.

[86] Ibid. His annual salary as "Expert Compiler" was raised to $2,250 the next year.

[87] Ibid.

[88] U.S.D.A. Yearbook, 1897. Washington, D.C., 1898, p. 265.

[89] U.S.D.A. Yearbook, 1898. Washington, D.C., 1899, p. 608.

[90] Op. cit., p. 57.

[91] U.S.D.A. Yearbook, 1901. Washington, D.C., 1902, p. 524.

considered so valuable that the plan was extended to include grain.[92]

The "Crop Reporter" Established

Hyde's determined effort to provide timely information concerning the Nation's agriculture resulted in a new monthly publication, "The Crop Reporter." The publication was billed as for "the exclusive use of the Department's crop correspondents," but only "so long as . . . . (they continue) to supply the Statistician with the information asked for."[93] During its first year, 362,800 copies of the Crop Reporter were published[94] and 4 years later distribution totaled 1,300,000.[95]

Traveling Field Agents Employed

One of John Hyde's first efforts to improve the statistical service was the appointment of 20 additional State Agents, making a total of 41 by July 1, 1898. In addition, Hyde was of the opinion he needed five "traveling inspectors" to coordinate the work of the State Agents and to keep abreast of agricultural changes in the areas assigned to them. A reduction in funds for 1899[96] postponed such appointments but gradually Hyde created a staff of roving assistants.[97] Nat C. Murray, later Chief of the Bureau of Statistics, started work with the crop reporting service in 1904 as one of these special field agents with a territory that included Ohio, Indiana, Illinois, Michigan, and Kentucky.[98] Of this experience Mr. Murray has written:

> I was required to make a report upon the condition of the various crops as of the first of the month for each of five States, similar to reports being made by the State statistical agents. It was not long before I learned from experience that it was impracticable, if not impossible, to report satisfactorily upon the condition of crops in each of five States as of a certain date by travel and observation alone. Questions as to percentage of increase or decrease of acreage, or of yield per acre, which did not relate to a specific date, could be investigated in this way, by contacting specialists in certain crops in various parts of the States covered. After some time I was authorized to maintain several hundred select correspondents, who reported to me as of the first of each month.[99]

The work of the regional field agents was considered very valuable. The number was increased and the system of regional agents continued until in 1914, fulltime State agricultural statisticians were appointed.

The Census of 1900 vs. Current Estimates

Publication of agricultural data from the Census of 1900 was eagerly awaited by Hyde and his staff as this would afford a direct comparison of the Department's estimates made currently and the census enumerations.[1] Because of the importance of this relationship, Hyde announced late in 1901 that the usual year-end estimates of crop production for that season would not be published pending receipt of Census data the following summer. This decision aroused dissent, especially from the Committee on Crop Reports of the National Board of Trade, which declared:

> If the Crop Reporting Service of the Department of Agriculture is unable, without undue delay, to offer an approximately correct statement of the situation or results as a comparison with the preceding year, it has little claim for existence . . . . The conscientious work of the statistician of the Department of Agriculture has been and is recognized. It is his method which is open to criticism.[2]

When the results of the Census became available in 1902, a controversy immediately arose because of the wide differences shown for many crops between acreages and production for 1899 as shown by the Census and the estimates made currently for that year by the Division of Statistics of the Department of Agriculture. In almost all instances the De-

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[92] Ibid.

[93] U.S. Dept. of Agriculture Yearbook, 1899. Washington, D.C., 1900, p. 685.

[94] Ibid. The Crop Reporter was superseded in 1913 by a similar publication "Crops and Markets."

[95] Ibid. 1903, p. 76.

[96] Ibid. 1898, p. 60.

[97] Two were enrolled in 1900 (U.S.D.A. Yearbook, 1900, Washington, D.C., 1901, p. 73); 2 more in 1902 (Secretary of Agriculture Report, 1902, p. 72); 2 in 1903 (Secretary of Agriculture Report, 1903, p. 88). According to Nat C. Murray three of these were Ed. S. Holmes, John Darg, and Tom Baldwin (see footnote, Jour. Farm. Econ., Nov. 1939, p. 709).

[98] Jour. Farm. Econ. XXI(4): 709, Nov. 1939.

[99] Ibid.

[1] U.S. Dept. of Agriculture Yearbook, 1900. Washington, D.C., 1901, p. 54.

[2] National Board of Trade. Proceedings, 1902. P. 119.

partment's estimates were significantly lower than comparable census figures.[3] For the Nation's two largest crops, acreage differences showed Department estimates about 16 percent lower for corn and 18 percent lower for wheat.[4] Discrepancies of such magnitude could not be ignored by either agency, nor by the public, and the question arose as to which set of data, if either, was correct. The National Board of Trade formed a Committee of Inquiry on Agricultural Statistics that held a series of meetings with the Census Bureau and the Department of Agriculture in which the techniques and procedures used by each agency were carefully reviewed.[5] This Committee recognized difficulties and weaknesses of both the census enumerations and Department estimates but concluded that the primary difficulties might be "a possibly faulty area basis as a starting point, accepted from the latest census returns; a tendency to underestimate on the part of correspondents, in application of percentage comparisons; and a cumulative divergence from the true line by progressive application of such underestimates." [6]

These findings by the committee underscored the basic weakness in the estimating procedures that were followed. The census base figures were established every 10 years. Each year the statisticians gathered by mail inquiry from a large number of farmers their opinions of the percentage of change in the current year as compared with the past year. The percentage change for the current year was applied to the estimate for the previous year to give a current year estimate. Continuing this procedure for 10 years—until a new census was taken—meant that the current estimates were subject to the error that might be present in the beginning census base, the error or bias that was present in the currently reported figures by the crop correspondent, and the error in the census figures at the end of the 10-year period.

From the beginning, the statisticians had recognized these problems and had given particular attention to the analysis of the year-to-year percentage changes derived from the combined judgment of the corps of crop correspondents. Obviously, if this combined judgment was biased, and was not corrected, the resulting acreage estimate would be in error. Moreover, because each succeeding estimate was based on the preceding years the error would be cumulative.

Robinson, when Chief Statistician from 1893 to 1897, had been inclined to accept the reported figures from correspondents without change. Because of this lack of critical appraisal during his term, the crop reports had indicated a continuous decline in acreage and production of corn and wheat. When Hyde became head of the Division of Statistics, he attempted to correct this situation but was not fully able to do so.[7]

It appears, therefore, that the wide variation between the Department's estimates for 1899 and the census enumerations for that year resulted primarily from a low base as established for 1889 by the Census Bureau, and from accumulated errors in the Department's estimated yearly percentage change during the subsequent decade. Thus the data of both agencies appear to have been faulty.

Surveys to Collect Farm Management Statistics

The engrossment of the Division of Statistics from its beginning with the collection and analysis of data relating to economic aspects of agriculture has been frequently noted in these pages. In 1902, this interest found new expression in a cooperative project undertaken with the Minnesota Agricultural Experiment Station to provide statistics pertaining to the cost of producing farm products.[8]

The methods used to collect data were unique. Three college students were hired to make daily interviews with 15 farmers along specified routes in 3 Minnesota counties. The route statisticians, as the young interviewers were called, boarded in the home of one of their cooperators. Records were made of "each hour of labor performed by each man and each horse, and giving the field crop or other enter-

[3] Official records of Crop Reporting Board.

[4] Ibid.

[5] National Board of Trade. Proceedings, 1903, p. 81.

[6] Ibid., pp. 94–95.

[7] Jour. Farm Econ. XXI(4): 708–709. Nov. 1939.

[8] This brief sketch of a pioneer project is based on a report entitled "The Cost of Producing Farm Products," Bureau of Statistics Bul. 48, Washington, D.C., 1906, p. 22.

prise upon which the labor was used."[9] Scale drawings of each field were made so that cost per acre could be computed for each crop on each farm and route, and for the State. Complete inventories of livestock, machinery, etc., were made at the beginning of each year. Receipts and expenditures for field crops, machinery, horses, and labor during the year were secured from the cooperative farmers.

In the third year of the project the number of farmers interviewed was reduced from 15 to 8, and the route statisticians were required to live with each farm family 3 days each month for a total of 30 days during the year. During the 3-day residence at a farm the route statistician helped with the chores and recorded the amount of feed used by each group of animals, and the amount, and butterfat content, of milk produced by each cow. A card was left in each home on which were recorded the number of eggs laid, and the number of eggs, pounds of butter, poultry, and other farm produce consumed by the family. The purchase of eight wagon scales for use on one of the routes to obtain more accurate data indicates the lengths gone to by the Department to make the project a success.

The results of the 3-year study were considered "to be more valuable than any data on this subject heretofore collected, because they represent actual farm conditions and have been gathered by exact methods." [10]

End of the Founding Period

Bureau of Statistics Established

On July 1, 1903, a Bureau of Statistics was established which merged the Division of Statistics and Division of Foreign Markets. Although it was expected that the work would continue along "practically the same lines as heretofore," it was hoped that the Bureau would be strengthened so that it would become "the principal source of reliable information on the agricultural resources of the country." [11] As reorganized, the Bureau included a Division of Domestic Crop Reports, a Division of Foreign Markets, and a Miscellaneous Division. The Miscellaneous Division was charged with the conduct of special investigations and the collection of statistics on rural economics. Some 205,000 voluntary reporters, consisting of county correspondents, township correspondents, individual farmers, and special cotton correspondents, supplied information pertaining to agricultural conditions. State Statistical Agents submitted their appraisal of conditions in their State and traveling agents reported for their territory covering several States. Final conclusions based on an analysis of indications from all these efforts were published monthly in The Crop Reporter.[12]

Appraisal of Statistical Techniques and Procedures [13]

The statistical program seemed to be broadly based, efficiently organized, and effectively meeting the needs of the times. Such a roseate picture was not universally accepted. As Hyde said:

> Criticism is not lacking. On the contrary, it is one of the curious features of this work that the more closely reports represent the actual facts and the wider the appreciation of their accuracy the more subject they become to criticism. This is undoubtedly due to the fact that as their general accuracy is more and more widely recognized they necessarily exercise a greater influence upon the markets, thus inevitably favoring or antagonizing, as the case may be, some of those who are engaged in the game of speculation in agricultural products. This immediately attracts the adverse comments of the losers. This result is unavoidable, and is apparently the inevitable penalty the Department must pay for issuing reports so reliable and so generally appreciated as to have instant effect on the markets. Were the reverse true, and were these reports regarded as unreliable, they would not influence prices, and criticisms would be reduced to a minimum.[14]

Although this statement has self-righteous overtones, it is basically true. Throughout its history, the tattoo of criticism leveled at the agricultural estimating service has stemmed

[9] Ibid., p. 23.

[10] Ibid., p. 84.

[11] U.S. Dept. of Agriculture Yearbook, 1903. Washington, D.C., 1904, p. 70.

[13] U.S. Department of Agriculture Yearbook, 1905. Washington, D.C., 1906, p. 105.

[13] See U.S. Department of Agriculture Yearbook, 1907, Rules for the Crop Reporting Board, pp. 106–113 for a comprehensive account of the crop reporting system. Also Reports of the Keep Commission, Washington, D.C., Government Printing Office, Senate Document No. 464, 59th Cong., 1st Sess., 1906.

[14] Ibid., 1904, p. 88.

from the fact that its estimates actually are relied upon by farmers, business people, college professors, and Government officials. When the reports err, these consumers of statistics vent their resentment.

Statistical techniques and procedures used during the founding years of the Department's statistical service were creditable for their time and place. The science and practice of sampling had been, as Professor Bowley said as late as 1906, "persistently neglected." [15] The Department's statisticians had little formal training in statistical methodology and although they learned some procedures from European statisticians, especially those in Germany, for the most part they were statistical "landlubbers" sailing uncharted seas.

The decennial census, which provided State totals of crop production, livestock numbers, etc., was the foundation upon which the monthly and annual crop reports of the Department of Agriculture were based. The county correspondents submitted their judgment of the percentage change from the previous year in production of specified crops in their county. These were weighted by census totals, and the weighted percentage changes were applied to the previous year's production to obtain an estimate of the crop for the current season. Such techniques have the virtue of simplicity but they carry seeds of disaster. For such unadorned procedures to be successful two conditions must be met. First, the census data used as a base for subsequent estimates must be complete and accurate. This degree of precision could not be expected in 1900 nor in any other census enumeration. Secondly, the indications of percentage change from the previous year must be sound. This was not possible under the methods employed during the founding years. The county correspondents and their assistants simply did not have the facts upon which to base precise reports. Their judgment of the situation was adequate for a general appraisal but not for the precise estimates desired and expected by the public.

The making of consistently accurate estimates and forecasts of agricultural production is a formidable undertaking. The reasons are many but some are readily apparent. To select a relatively small, representative sample of farms from a multitude varying in size and type and scattered over vast distances is a highly scientific and herculean task. It is one that would tax the most modern facilities and skills, few of which were available or even dreamed of in the period under discussion. The problems of crop estimating were compounded for Chief Statisticians Bollman, Dodge, Worthington, Robinson, and Hyde by the drastic changes in acreages and in the whole farm situation that took place between the presidential terms of Abraham Lincoln and Theodore Roosevelt. During those turbulent years, the first railroad pushed West to the Pacific, dragging in its wake the cattleman's frontier that soon was overrun and submerged by the "nesters." To keep abreast of such rampaging changes was impossible and the marvel is that the beleaguered statisticians managed, as they did, to follow the main trends and to measure their relative magnitude.[16]

A Blot on the Escutcheon

The possibility had long existed and rumors had circulated that advance information from the crop reports had gotten to outsiders who had used it for personal profit.[17] In 1905, it came to light that E. S. Holmes, Jr., Associate Statistician, had actually collaborated with a New York cotton speculator named Louis Van Riper in stock-market manipulations which reportedly netted them several hundred thousand dollars.[18] The basis for their stock dealing was advance information concerning the Government reports which Holmes was in a position to "leak." Chief Statistician Hyde had delegated a great deal of his responsibility and authority to his assistant. This misplaced

[15] Bowley, A. L. Address to the Economic Service and Statistics Section of the British Association for the Advancement of Service. *In* Jour. Royal Soc. 69: 540. 1906.

[16] This judgment seems justified as a general proposition, however, it can be argued in respect to particular commodities and items. For a highly controversial example see Working, Holbrook. Wheat Acreage and Production in the United States Since 1866: A Revision of Official Estimates in Wheat Studies of Food Research Institute II(7), June 1926, Stanford Univ.

[17] U.S. Department of Agriculture Yearbook, 1898. Washington, D.C., 1899, p. 60.

[18] The discussion of this unfortunate incident is based on the Yearbook of Agriculture, 1905, p. 95, and unpublished material in the Department.

trust enabled Holmes to manipulate the reports, especially those on cotton, to suit his speculative needs. Rumors of leakage of crop information had brought about a tightening of precautions surrounding the preparation and release of the reports, including the locking of the rooms when the estimates were being finalized. When Holmes could no longer leave his office to send his New York confederate advance information, a signaling system was devised involving the raising or lowering of a window shade in the "lockup." If the shade was halfway down, it was a sign that the report would show conditions as Holmes had previously informed his accomplice they would be. If it was halfway up the upper sash, it meant that Holmes' accomplice should sell. If halfway down on the lower sash, it was a signal that the report was even better than Holmes had anticipated.

Failure to get word to the market operator, Van Riper, of a late change in the June 1905 report caused him to lose some $20,000 to $30,000. In retaliation Van Riper charged in a telegram to the Secretary of the Southern Cotton-Grower's Association in Atlanta that the Government report for June had been falsified. An investigation followed; Holmes was removed from office and a corrected report was released. Legal grounds for prosecution of the conspirators were tenuous; however, 11 grand jury indictments were made and the case ricocheted around the courts for several years. Eventually Holmes was fined $5,000 and others received similar penalties.

John Hyde Retires

John Hyde had served 8 eventful years as Chief Statistician of the U.S. Department of Agriculture and although cleared of implication in the cotton scandal, the time had come for him to depart. His letter of resignation to Secretary James Wilson reveals some of the flesh wounds he had suffered during his tenure of office:

Dear Mr. Secretary:- July 18, 1905

During the last four years, or since I succeeded in making the crop reports of the Department reasonably accurate and correspondingly valuable to the agricultural and commercial interests of the country, my administration of the office I have the honor to hold has been constantly under fire from one side of the market or the other. Five times it has been investigated and on every occasion I have been vindicated. In January, 1903, I was awarded $2,500 damages in a libel suit against a prominent firm of cotton brokers by a jury of their own friends and fellow-citizens. These results have been very gratifying to me, but I have the highest medical authority for the statement that the continued fight upon me has already considerably shortened my life. At the present time it is an accepted fact that a powerful organization is bent upon bringing about my retirement, by one means or another. Now, I do not think the position I hold is worth the fight necessary to its retention, and the organization in question is welcome to whatever satisfaction it can derive from my withdrawal from the unequal struggle. If any of my friends think that I ought not to retire under fire, I would have them remember that there is never a time when I am not under fire. I have the honor therefore to tender you herewith my resignation of my appointment as Statistician and Chief of the Bureau of Statistics of this Department.

With much appreciation of the uniform courtesy and kindness you have shown me and of the many tokens of confidence I have received from you, I am

Most respectfully yours,
(signed) John Hyde

Hon. James Wilson
Secretary of Agriculture

Hyde's resignation was accepted by Secretary Wilson the same day it was submitted, to take effect after the customary 30 days of terminal leave.[19]

U.S. Crop Reporting Board Formed

The precipitate departure of John Hyde heralded the end of the founding period of the Department's statistical service. Pending the appointment of Hyde's successor, the duties of Chief Statistician were assigned to the energetic Assistant Secretary of Agriculture, Willet M. Hays. This assignment provided interim leadership to the Bureau of Statistics by a man who had worked with the statisticians in connection with the farm management program and had a high regard for the work being done.[20]

[19] Letter, Hyde to Wilson, July 18, 1905. In National Archives.

[20] Murray, N.C., A Close-up View of the Development of Agricultural Statistics from 1900 to 1920. Jour. Farm Econ. XXI(4), Nov. 1939.

Hays was not a trained statistician but he was enthusiastic and full of ideas. Traditionally the final estimate for each State and for the country as a whole had been determined by the Chief Statistician, with perhaps an occasional assist from one of the staff.[21] When Hays became the temporary head of the Bureau of Statistics, he recognized that he was a tyro at the intricate business of making crop estimates. To offset his lack of experience, Hays began the practice of inviting two of his Section Heads and two Special Field Agents to sit with him as a committee to review the State data and make final estimates as a group. Thus in this casual fashion was created the Crop Reporting Board, which became the "rock" upon which the Department's nationwide and complex statistical service of today was built. For more than half a century the Board has weathered the storms that periodically swirl about it when an errant estimate stirs public wrath. With the formation of the Crop Reporting Board in 1905, agricultural estimating did, indeed, come to the end of its founding days.

[21] Ibid.

PART III. A PERIOD OF GROWTH, 1905-30

PROLOGUE

The progress made in agricultural research during the latter part of the 19th century affected every aspect of agricultural production. Development of new varieties and disease-resistant strains of plants was having a tremendous influence on crop production. Invention of new farm machinery and improvement of the old were enabling farmers to shift from manpower to horsepower. Steam engines were of use in threshing of grain, but they were not the answer to the farm power needs. This led to experimentation with the gasoline engine. A system of dryland farming had been developed in the 1890's and by the end of the century, dryfarming was hailed as the solution of the agricultural problems of the Great Plains.

All of these developments were coincident with the need for commercial agriculture. As a result, there was an increasing awareness of the importance of marketing and a pressing demand for reliable information on the supplies of food and fiber. The significance of this information and need for protecting the crop reports was dramatically demonstrated in the episode of 1905, and the creation of the Crop Reporting Board operating under strict law, rules, and regulations was the answer.

The period from 1905 through the First World War was a period of tremendous development in all phases of agricultural production and marketing. Plow agriculture was increasing in the Great Plains. Dryland farming pushed into the arid sections of the region, developing the dryland farming boom. The cattle industry expanded into the southern Great Plains.[22]

Agricultural research expanded significantly. The theory of selective breeding for plants resistant to disease, developed in connection with research for control of cotton wilt, was applied to most of the major crops and extended to resistance to insects and to drought, adaptation to different climates, improved flavor, better market qualities, and increased food value.[23]

Research on breeding of new varieties of crops was having a significant impact. Turkey red and durum wheat were becoming commercially successful, but probably the most important development was the introduction of Canadian Marquis wheat. This variety had resulted from crossing Red Fife from Poland with Red Calcutta from India. By 1909, the Canadian farmers were producing this variety, and in about 1912 it was introduced in the Dakotas and Minnesota. This was the wheat that helped to alleviate the food shortage during World War I. Later, it was used in the development of many new varieties, including Thatcher in 1934.[24]

Studies that led to the introduction of hybrid seed corn started around 1904. This work was based on the work of two great European scientists, Charles Darwin and Gregor Mendel. It was not until about 1900 that the importance of Mendel's work was recognized. Finally, in the midtwenties, largely through the efforts of Henry A. Wallace, hybrid seed corn became available to farmers. Hybrid seed brought about a revolution in corn production that not only affected systems of farm management, but required the development of new techniques in the corn estimating procedures used by the Crop Reporting Board.[25]

The internal combustion engine was improved rapidly. The increased use of automobiles and trucks revolutionized normal trans-

[22] U.S. Dept. Agr. A Chronology of American Agriculture, 1790–1965. Econ. Res. Serv. Sl. rev. 1966.

[23] Rasmussen, Wayne D. Readings in the History of Agriculture. p. 162. Univ. Ill. Press, 1960.

[24] Wheat Flour Institute. From Wheat to Flour. The Story of Man—in a Grain of Wheat. p. 11. Chicago, Ill., 1965 edition.

[25] Rasmussen, Wayne D. Ibid., pp. 214, 243.

portation. The big open-geared gasoline tractor was introduced in the extensive farming areas in the Great Plains in 1912. It was followed rapidly by lighter, less cumbersome machines, which by the First World War were used in many agricultural areas.

The county agent system got its start as the result of the work of Seaman A. Knapp in connection with efforts to combat the ravages of the cotton boll weevil. The Division of Entomology of the Department of Agriculture had developed the "cultural" remedy by 1897. Knapp had endeavored to extend the methods of control which he had demonstrated on a farm near Terrell, Tex. To expand this demonstration work, he secured funds from farmers, businessmen, railroads, and banks, and the first county agent was employed in Smith County, Tex., on November 12, 1906. The work expanded mostly in the Southern States. The development in the North was somewhat slower, but the plan gained widespread support of many business organizations, chambers of commerce, and the agricultural colleges. Agitation developed for Federal aid. The first bill was drafted by the Agricultural College Association and introduced in 1908. Others followed and finally the Smith-Lever Act for cooperative extension work was approved on May 8, 1914.[26]

The depression of 1907 was followed by a fairly normal period from 1909 to 1912, and then another depression in 1913. These ups and downs in business were disrupting to the whole economy, and served to emphasize prices in the minds of farmers and the speculative nature of the markets in general.

Farmers were consequently becoming more and more aware of economic problems relating primarily to market prices and methods and practices in the market place.

Complaints had long been heard with regard to the damage and loss incurred in shipping livestock. Death losses were high from injury; losses also resulted from lack of feed and water on long hauls. In 1906, the so-called "28-hour law" requiring humane treatment of livestock in transit was passed. Under this law, carriers were required to provide for feed, rest, and water at intervals of not more than 28 hours for all interstate shipment of livestock. Another law involving livestock was the new Meat Inspection Act of 1906. The Act of 1890 had been limited to the inspection of salt pork and bacon and live animals for export, and the quarantine of imported animals. The Meat Inspection Act of 1906 expanded the 1890 law to include inspection of processing plants and requirements for antemortem inspection of animals for slaughter and postmortem inspection of carcasses. Supervision of meat processing and labeling of products were also required.

The Cotton Futures Act, the first major attempt to regulate the marketing of farm products, was approved in 1914. This Act was declared unconstitutional because it was predicated on the taxing power of the Constitution. It was redrafted on the basis of the commerce clause, reenacted, and approved on August 11, 1916. On the same day, the Grain Standards Act and the U.S. Warehouse Act were approved. On August 31, the Standard Container Act was approved. The "Act authorizing the Secretary of Agriculture to collect and publish statistics of the grade and staple length of cotton" was approved on March 3, 1927.

The purpose of the Packers and Stockyards Act, approved on August 15, 1921, was to assure fair competition and fair trade practices in livestock marketing and the meatpacking industry. It is the broadest of the marketing regulatory acts administered by the Department. Under it the Secretary may prescribe rates for stockyards services and marketing fees. The definition of interstate commerce is broad and was sustained in an opinion of Chief Justice Taft in 1922 which in effect declared that all of the posted yards were in interstate commerce. The object sought by the regulation of marketing at the stockyards, Chief Justice Taft stated, "is the free and unburdened flow of livestock" in interstate commerce, and the "chief evil feared is the monopoly of packers, enabling them to unduly and arbitrarily lower the prices to the shipper who sells, and unduly and arbitrarily increase the prices to the consumer who buys" (Stafford vs. Wallace 258 U.S. 495, 515–516).

The increased interest in marketing accelerated studies of grades and standards and plans for a market news service. The first market reports covered strawberries and were issued at Hammond, La., in 1915. Livestock market

[26] Baker, Gladys L. The County Agent. Univ. Chicago Press, 1939, pp. 15–37.

news was started 2 years later, in 1917. World War I created a heavy demand for quality grades for farm products, and special funds were provided for a substantial increase in market reports on many commodities.

All of these regulatory laws and marketing services added emphasis to the importance of adequate and accurate market information. The crop and livestock reports were the basic market information service, and therefore came under additional scrutiny in the marketing process. Trading on commodities exchanges became increasingly sensitive to the estimates of production, particularly the monthly forecasts of production inaugurated in 1911.

CHAPTER 6. CROP REPORTING FROM 1905 THROUGH WORLD WAR I

First Request for Laws Governing the Crop Reports Not Approved

Following the "Cotton Leak" of 1905, President Theodore Roosevelt and the Secretary of Agriculture sought legislation to guard against a recurrence of such a disclosure. At the request of the Secretary, Congressman Arthur J. Burleson of Texas introduced a bill to make the premature divulgence of the statistical reports of the Bureau a crime. His law was passed unanimously by the House. The Senate made some minor changes and then passed it, also unanimously. The conferees met and apparently agreed to the amendments, but when the conferees' report was taken up on the floor of the House, there was considerable confusion over the inclusion of wording in the second section of the bill that made the law applicable to Members of Congress. In the course of discussion it developed that Burleson had inserted that language because, as he said, he intended to make the original bill include Members of Congress anyway. Objection to the revised bill arose from both sides. There were some rather sharp clashes during the discussion on the floor, which continued for several hours, that seemed to boil down to the feeling on the part of many Congressmen, that Burleson had made the law much broader than originally intended. As the time for debate drew to a close, a motion to table the conferees' report was presented and passed, 107 to 66. This killed the bill and nothing more was done until 1909.

In the interim between 1905 and 1909 the Board operated under rules and regulations promulgated by the Department of Agriculture. The Department published several articles to acquaint the public with the precautions that were being taken. One such article, that appeared in the Yearbook of 1907, is reproduced here.

Rules for the Crop Reporting Board [27]

The Bureau of Statistics issues each month detailed reports relating to agricultural conditions throughout the United States, the data upon which these facts are based being obtained through a special field service, a corps of State statistical agents, and a large body of voluntary correspondents composed of the following classes: county correspondents, township correspondents, individual farmers, and special cotton correspondents.

The special field service is composed of 17 traveling agents, who are especially qualified by statistical training and practical knowledge of crops, each assigned to report for a given group of States. They systematically travel over the districts assigned to them, carefully noting the development of each crop, keeping in touch with best-informed opinion, and reporting monthly and at such other times as are required.

There are 45 State statistical agents, each located in a different State. Each of these reports for his State as a unit, and maintains a corps of correspondents entirely independent of those reporting directly to the Department at Washington. These State statistical correspondents report each month directly to the State agent on schedules furnished them. These are then tabulated and weighted according to the relative product or area of the given crop in each county represented, and summarized by the State agent, who coordinates and analyzes them in the light of knowledge of conditions derived from personal observation and other sources, and prepares his monthly and other written and telegraphic reports to the Department.

[27] This section and its subsections reproduced from Yearbook of Agriculture, 1907, pp. 107–110.

There are approximately 2,800 counties of agricultural importance in the United States. In each of these counties, the Department has a principal county correspondent, who maintains an organization of several assistants. These county correspondents are selected with special reference to their qualifications and constitute an efficient branch of the crop reporting service. They make the county the geographical unit of their reports, and, after obtaining data each month from their assistants and supplementing these with information obtained from their own observation and knowledge, report directly to the Department at Washington.

In the township and voting precincts of the United States in which farming operations are extensively carried on, the Department has township correspondents who make the township or precinct the basis of reports, which they also send to the Bureau of Statistics each month.

Finally, at the end of the growing season a large number of individual farmers and planters report on the results of their own individual farming operations during the year, and valuable data are also secured from 30,000 mills and elevators.

With regard to cotton all the information secured from the foregoing sources is supplemented by that furnished by special cotton correspondents, embracing a large number of persons intimately concerned in the cotton industry, and, in addition, inquiries in relation to acreage and yield per acre of cotton are addressed to the list of cotton ginners through the courtesy of the Bureau of the Census.

Scope of Crop Reports

Eleven monthly crop reports on the principal crops are received yearly from each of the special field agents, county correspondents, State statistical agents, and township correspondents, and one report relating to the acreage and production of general crops is received during the year from individual farmers.

Six special cotton reports are received during the growing season from the special field agents, from the county correspondents, from the State statistical agents, and from township correspondents, and the first and last of these reports are supplemented by returns from individual farmers, special correspondents, and cotton ginners.

Transmission of Reports to Bureau by Correspondents

Previous to the preparation and issuance of the Bureau's reports each month, the several classes of correspondents send their reports separately and independently to the Department at Washington.

In order to prevent any possible access to reports which relate to speculative crops, and to render it absolutely impossible for premature information to be derived from them, all of the reports from the State statistical agents, as well as those of the special field agents relating thereto, are sent to the Secretary of Agriculture. By an agreement with the postal authorities these envelopes are delivered to the Secretary of Agriculture in sealed mail pouches. These pouches are opened only by the Secretary or Assistant Secretary, and the reports, with seals unbroken, immediately placed in the safe in the Secretary's office, where they remain sealed and guarded until the morning of the day on which the reports are issued, when they are delivered to the Statistician by the Secretary or the Assistant Secretary. Reports from special field agents and State statistical agents residing at points more than 500 miles from Washington are sent by telegraph in cipher. Those in regard to speculative crops are addressed to the Secretary of Agriculture, by whom they are placed in the safe in his office.

Reports from the State statistical agents and special field service in relation to nonspeculative crops are sent to the Bureau of Statistics and are kept securely in a safe until the data contained in them are used by the Statistician in compiling estimates regarding the crops to which they relate. The reports from the county correspondents, township correspondents, and other voluntary agents are sent to the Chief of the Bureau of Statistics by mail in sealed envelopes.

Preparation of Reports

The plan of placing the final preparation of the reports in a crop reporting board has been continued during the past year, and after 2

full years of trial it has been demonstrated that it is a satisfactory method. It relieves one man of the strain and responsibility and secures the benefits of consultation and the consensus of judgment of men who have been on the ground.

The crop reporting board is composed of the Chief of the Bureau as chairman and four other members whose services are brought into requisition each crop reporting day from among the statisticians and officials of the Bureau and the special field and State statistical agents who are called to Washington for the purpose.

The personnel of the board is changed each month. The meetings are held in the office of the Statistician, which is kept locked during its session, no one being allowed to enter or leave the room or the Bureau, telephones being disconnected.

When the board has assembled, reports and telegrams regarding speculative crops from State and field agents, which have been placed unopened in a safe in the office of the Secretary of Agriculture, are delivered by the Secretary, opened, and tabulated, and the reports, by States, from the several classes of correspondents and agents relating to all crops dealt with are brought together in convenient parallel columns on final tabulation slips. The board is thus provided with several separate estimates covering each State and each separate crop, made independently by the respective classes of correspondents and agents of the Bureau, each reporting for a territory or geographical unit with which he is thoroughly familiar.

Abstracts of the weather condition reports in relation to the different crops, by States, are also prepared from the weekly bulletins of the Weather Bureau. With all these data before the board, each individual member computes independently, on a separate sheet or final computation slip, his own estimate of the acreage, condition, or yield of each crop, or of the number, condition, etc., of farm animals for each State separately. These results then are compared and discussed by the board under the supervision of the chairman, and the final figures for each State are decided upon. It has been interesting to note how often the reports of the different classes of correspondents and agents are very nearly identical, and how closely the figures arrived at independently by the individual members of the board agree. The estimates by States as finally determined by the board are weighted by the acreage figures for the respective States, the result for the United States being a true weighted average for each subject.

Request for Laws Renewed in 1908

The impact of crop reports on the market had been dramatically demonstrated by the 1905 cotton leak. As time went on, the reports became an increasingly significant influence in the market, and it was recognized that substantive law protecting the reports was needed.

The request for legislation was renewed on January 8, 1908, and was included in an act to codify, revise, and amend penal laws of the United States (Senate Bill 2982). It was reported out of committee by Senator Heyburn. Sections 123 and 124 contained the essence of the law that had been proposed earlier, but made it applicable specifically to officers, employees, or others acting on behalf of the Government with access to information affecting the market.

Senate Bill 2982 was a voluminous document that took some time to progress through the Senate and House. It was finally approved on March 4, 1909. The wording of the sections of the law as related to crop reports is as follows:

Title 18, Section 1902

DISCLOSURE OF CROP INFORMATION AND SPECULATION THEREON.—Whoever, being an officer, employee or person acting for or on behalf of the United States . . . and having by virtue of his office, employment or position, become possessed of information which might influence or affect the market value of any product of the soil grown within the United States, which information is by law or by the rules of such department or agency required to be withheld from publication until a fixed time, willfully imparts, directly or indirectly, such information or any part thereof, to any person not entitled under the law or the rules of the department or agency to receive the same; or, before such information is made public through regular official channels, directly or indirectly speculates in any such product by buying or selling the same in any quantity, shall be fined not more than $10,000 or imprisoned not more than ten years, or both.

No person shall be deemed guilty of a violation of any such rules, unless prior to such alleged violation he shall have had actual knowledge thereof. June 25, 1948, c. 645 § 1, 62 Stat. 790. (18 U.S.C. 1902)

Title 18, Section 2072

FALSE CROP REPORTS.—Whoever, being an officer or employee of the United States or any of its agencies, whose duties require the compilation or report of statistics or information relating to the products of the soil, knowingly compiles for issuance, or issues, any false statistics or information as a report of the United States or any of its agencies, shall be fined not more than $5,000 or imprisoned not more than five years, or both. June 25, 1948, c. 645, § 1, 62 Stat. 795. (18 U.S.C. 2072)

Relevant legislation was also passed as a proviso to the Appropriations Act for the fiscal year 1910. It was reported to the House on January 25, 1909, and was signed on March 4, 1909. This law states:

Title 7, Section 411a

MONTHLY CROP REPORTS; CONTENTS; ISSUANCE; APPROVAL BY SECRETARY OF AGRICULTURE.—The monthly crop report, which shall be printed and distributed on or before the twelfth day of each month, and shall embrace statements of the conditions of crops by States, in the United States, with such explanations, comparisons, and information as may be useful for illustrating the above matter, and it shall be submitted to and officially approved by the Secretary of Agriculture, before being issued or published. March 4, 1909, c. 301, 35 Stat. 1053; March 4, 1917, c. 179 39 Stat. 1157. (7 U.S.C. 411a)

These laws strengthened the Department and the Crop Reporting Board in enforcing the security regulations and protecting the employees and the public from premature release and issuance of false reports. In the 61 years since the organization of the Crop Reporting Board, there has not been a single leak of information contained in reports of the Board.

Essentially, the procedure set forth in the 1907 Yearbook article is followed at present. The security provisions have been extended and tightened up considerably in subsequent years. The official approval of all reports by the Secretary was added after the act of 1909. As the number of commodities expanded, membership on the monthly boards increased.

Cotton Acreage Law of 1912

Cotton has been and is still a very sensitive crop. As a result, there is more specific legislation concerning cotton than any other crop. The first of the cotton laws, approved on May 27, 1912, required that the regular acreage report issued on July 1 should show the cotton acres in cultivation on that date rather than the acres planted as shown for all other crops. Thus, the basis for estimates or forecasts of cotton during the season were in fact a planted acreage discounted for possible abandonment up to July 1, while all other estimates were based on the acres planted.

This law reflects the extreme sensitiveness at the time to anything that might adversely affect the cotton market. The immediate objective of advocates of this law was to eliminate the larger acreage-planted figure which they believed exerted a depressing influence on the market. The prohibition on estimating planted acres created a number of problems. Crop reporters were often confused by the definition of "acreage in cultivation." Reports from farmers were, therefore, a mixture of planted acres including acres that might be abandoned and acres expected to be carried through to harvest.

Another and more serious problem was that those having need for the acreage estimates in various studies, such as land utilization, found that the cotton acreage in cultivation could not be combined directly with planted acreage of other crops.

This 1921 cotton law remained on the books, however, until amended by a law approved May 29, 1958, which changed the basis to planted acres and thereby brought cotton in line with all other crops.

In addition, the security measures have been applied to the major livestock reports. Owing to the sensitivity that developed around the monthly farm price reports and parity prices, these reports were placed under the same security regulations beginning in 1942.

The Keep Commission [29]

In 1905 Theodore Roosevelt established the U.S. Committee on Department Methods to investigate the statistical work of the Government. The committee was composed of C. H. Keep, Chairman, Assistant Secretary of the Treasury; Lawrence O. Murray, Assistant Secretary, Department of Commerce; James Rudolph Garfield, Commissioner of Corporations, Department of Commerce and Labor; and Gifford Pinchot, Chief, Forest Service, U.S. Department of Agriculture.

[29] Taylor and Taylor. The Story of Agricultural Economics in the United States, 1840–1932, pp. 220–225.

The committee sent to the President a document known as the "Reports of the Keep Commission," dated January 6, 1906. The Keep Commission gave special attention to the methods used in making cotton crop estimates. It went into some detail in setting forth the sources of information on which the cotton estimates were based and how the data were appraised. The Commission observed that the information principally relied upon by the Crop Reporting Board was furnished by the traveling field agents and the State agents; therefore, it concluded that there was little gain from the reports from some 85,000 farmers and other special correspondents. It recommended that the Bureau discontinue the collection of these reports and rely solely on paid traveling field agents. It was rather critical of the fact that the State agents were not able to travel and recommended that they be given such authority. It also thought that in the cotton areas the State agents should be essentially cotton men and should be provided with periodic training by the Washington staff of specialists. While the commission had recommended that all reports from the farm be done away with, at a later point in the report it suggested that the traveling field agents and the corps of trained State agents might be justified in maintaining a well-organized corps of correspondents reporting directly to them. It furthermore suggested that the Bureau of Statistics might have one direct correspondent in each county, and that the correspondent should have three or four correspondents located at different points in the county. This coincided with the pattern established back in the 1880's.

It has not been uncommon for an investigating group in the first instance to be quite critical of some methods, but after further deliberations to modify its opinion substantially. The statistician in the crop and livestock estimating service has always been required to know agriculture. The Keep Commission probably recognized that because of his experience and knowledge the statistician was better able to judge the significance of the farmers' reports than the members of the Commission. A number of the Commission's recommendations had an influence on the development of the service, particularly the changes that were made later in the field service.

Crop Estimates Start Expansion

When Willet Hays, Assistant Secretary of Agriculture, was assigned as acting chief of the Bureau of Statistics in 1905, Victor H. Olmsted, who had been chief of the Division of Domestic Crop Reports, was designated associate statistician. C. C. Clark, who had been chief clerk, was appointed assistant statistician and assistant chief. He was also designated acting chief of the Division of Domestic Crop Reports. George K. Holmes continued as chief of the Division of Foreign Markets, and E. J. Lundy was appointed chief clerk.

In June 1906, Olmsted, became chief of the Bureau. C. C. Clark became associate statistician, and Nat C. Murray, who entered the service August 1, 1904, as field agent assigned to Ohio, Indiana, Illinois, Michigan, and Kentucky, was brought to Washington as assistant statistician and assistant chief. F. J. Blair, who had been with the organization for some years, was made Division Chief of Domestic Crop Reports.

The Division of Domestic Crop Reports directed the work of preparing the estimates, and issuing the crop reports. Two developments reported during Olmsted's first year as Chief of the Bureau are significant in his report of 1906: (1) 45 States were being served by a State statistical agent and services had been placed upon a uniform and scientific basis; (2) the scope of the reports had been expanded to cover 25 additional crops, an increase of about 100 percent. The chief of the Bureau commented with some pride that this additional work had been handled with no increase in personnel because the employees had been willing to put in a very considerable amount of time over and above their usual work hours.

Field Services Strengthened

In 1905 the special field services had been composed of 10 special fulltime regional statistical agents traveling in a group of States, 1 special cotton agent, and 1 special tobacco agent. These agents were not supposed to maintain a list of reporters, but one, Nat Murray, at that time a regional agent, in writing later [31] of his assignment said:

[31] Murray, Nat. C., Jour. Form Econ. XXI (4): 711, Nov. 1939.

> It was not long before I learned from experience that it was impracticable, if not impossible, to report satisfactorily upon the condition of crops in each of five states as of a certain date by travel and observation alone. . . . After some time I was authorized to maintain several hundred select correspondents, who reported to me as of the first of each month. These reports also helped me in planning my travels, because I generally went to those sections where my mailed reports were most conflicting, and this experience demonstrated the value of the now widely used combination of personal field observation with reports from correspondents.[32]

The State statistical agents were part-time employees, who maintained offices in their homes and were paid $300 to $1,100 a year. At that time these agents maintained lists aggregating about 15,000 reporters. Each agent summarized the reports for his State and forwarded the results and his recommendations to Washington.[33]

None of the field statistical agents were under Civil Service. They were all, therefore, vulnerable to political changes and patronage pressures, as State agents had been before 1900. They were often political appointees with a variety of backgrounds. Several had been school teachers, superintendents of schools, and college professors. One, at least, acted as statistical agent as an adjunct to his job as professor in a State agricultural college. Some came from the newspaper field, others were auditors, one was a sheriff, another an ex-governor of the State, and some were just farmers. Nearly all of them had a solid knowledge of crops and livestock and farm operations, but very few had statistical training. Statistics at that time was not taught except in engineering and possibly a little in connection with plant and livestock breeding. There was no application of statistical methods to speak of in the field of social sciences.

Many of the men were extremely proficient in appraising crop prospects and analyzing crop conditions as reported by farmers. This was, in fact, the main qualification of most of the crop and livestock estimators both in private and public work. One of the best in the service was almost uncanny in his ability to estimate, or guess, the yield on a field of onions or tomatoes and many other truck crops. Another, the State agent in Arkansas, was an experienced fruit man who rarely missed an estimate of the Ozark peach crop. Most of the long-time statisticians in the Corn Belt were quite proficient in estimating the yield of corn and other grain.

The fact is that this knowledge of crops and livestock and agricultural practices, rather than proficiency in statistical techniques, was depended upon most heavily from the beginning of the service up through the late twenties. So much of the information furnished by reporters was of a subjective nature, it was doubly important that those who used and interpreted that data be thoroughly familiar with the agriculture and crops in their assigned areas.

In 1909 the corps of field agents was increased to 19, and State agents were given some funds for travel within their assigned States.

The township reporter list was increased from about 28,000 to 45,000. The county reporter list was continued with some 2,800 reporters. Schedules from these two lists were sent direct to Washington.

The State aid list was increased from about 10,000 to around 15,000, and additional special lists for cotton, tobacco, and rice were developed.

There was recognition that to be of most use the complex quadruple reporting system needed greater coordination and supervision between the field and Washington. In the annual report of 1910 Olmsted wrote of

> . . .the urgent necessity for personal supervision, inspection, and instruction of state statistical agents and special field agents. With the beginning of the current fiscal year this work has been carried on in a systematic manner. Each state statistical agent and special field agent is visited by an official of the Bureau, who is thoroughly familiar with all requirements pertaining to the collection of information regarding crop acreages, conditions, and yields, and who possesses comprehensive knowledge of agricultural statistical methods; the agents' records and methods are carefully examined, and proper instructions given when necessary. These inspections have a stimulating influence upon the agents, and will certainly result in raising the standard of accuracy and efficiency of our salaried employees whose duties are performed away from Washington.[34]

A year later he reported:

[32] Ibid., p. 709.

[33] "Review of Important Events in History of Crop Reporting," a typed report, written by Leon Estabrook, in the files of SRS.

[34] U.S.D.A. Annual Report for 1910, p. 700.

> The assistant statistician is particularly concerned with the inspection, supervision, and instruction of the field service of the bureau. This is a vitally necessary work, because upon the efficiency of these agents, as reflected in their reports to the bureau, depends largely the accuracy of the Government crop reports.[35]

This was the first attempt to provide supervision and coordination of the reporting system on which the reports were based. It also foreshadows changes that were to come in 1914.

Program Development

Murray, a good manager, sought ways to keep informed on happenings in other fields of work and improve the service. He made changes that enhanced the position of the Bureau in the Department. He revised the system for weighting county reports. With several young men around the Department he was active in a "Rural Economics Club." At the meetings of this club he picked up many suggestions for special investigations that could be made without extra cost to the Bureau. He said that other bureaus of the Department had been making surveys of the extensive type which the Bureau of Statistics was admirably equipped to handle. As a result, the officials of the Bureau encouraged cooperation with other divisions in the Department and several valuable surveys were made.[36]

Murray had noted that the clerical force in the office was fully occupied for about 10 days of each month, extending from the last few days of one month into the first few days of the next, during the time the crop report was being prepared. Between reports there was a very light workload, and, as Murray observed, there was more or less idling away of time. To utilize the personnel more efficiently, a number of special investigations were started. One of the most important projects undertaken was the development of the farm price reports.

Prices for Farm Products

The continued and growing interest in marketing and in economic problems generally emphasized the need for information on prices received by farmers for their products. George K. Holmes was considerably interested in this subject and prepared a good many papers and reports covering the production and value of crops. A report was presented in 1908 on "Wealth Production on Farms." Many workers in the State colleges were also beginning to request more price information.

Murray said that of all the questions put to the Bureau which could not be answered, those relating to prices which farmers received for their products were the most frequent. Accordingly, questions on monthly prices of principal crops were added to the general crop schedule.[37]

Beginning in 1908, local market prices of principal crops were solicited from regular crop reporters on the general crop schedule as of the first of each month until about 1923. Since that time, special lists of merchants have been used, and the reference date for price reports has been changed to the 15th of each month. Supplemental lists of merchants also were circularized for the first time in 1910 to obtain information on prices paid by farmers for a long list of items for family living and production. This was the beginning of the farm price series that later became important in determining parity prices used in administering the Agricultural Adjustment Act.

Quantitative Estimates of Crop Prospects

As a result of increasing concern with problems of marketing, a pressing demand arose for more definitive reports of prospective production during the growing season. Condition figures alone provided useful information on the progress of the crops, but individual users of the reports had to make their own appraisal of the portents for harvest. Murray recognized the desirability of a quantitative estimate and felt strongly that the Bureau of Statistics was best qualified to interpret conditions data and that one official forecast would eliminate the confusion of many individual forecasts and exert a stabilizing influence on the market.

Murray had been experimenting with methods for making quantitative estimates of production prospects. When he made the proposal to Secretary Wilson that the monthly reports include a quantitative estimate, the Secretary

[35] U.S.D.A. Annual Report for 1911, p. 643.

[36] Murray, op. cit., p. 713.

[37] Ibid.

said, "All right, but try it out on grain before you touch cotton because cotton is dynamite."[38]

The first forecast in terms of actual prospective yield and production was published in the report of June 1, 1911, and included winter wheat, spring wheat (these were combined to show a figure for all wheat), oats, barley, and rye. In July, corn, white potatoes, tobacco, flax, rice, and hay were added.[39]

These forecasts were given for the total U.S. crop and being the first venture into this field, there might be some slight question whether Murray, who signed the reports as Acting Chief of the Bureau and chairman of the Board, was feeling his way in the matter of the form of release or being just a little cautious. The reason for this bit of speculation is that the report was presented in two tables. The first table showed the acreage as a percentage of 1910 acreage and the actual acres. This was followed by the condition of the crop for June 1, 1911, compared with June 1, 1910, the average June 1 condition for the past 10 years, and the condition for the previous month, May 1, 1911. The second table showed in successive columns the yield per acre indicated by condition for June 1, 1911, the final yield for 1910, and the 5-year (1906–10) average yield. The next two columns showed the indicated total production in terms of percentages compared with total production of 1910 and the 5-year average (1906–10).

Since Murray said in his article[40] that interpretation of the condition figures into quantitative amounts started in 1912, the Board probably did not consider the 1911 report as a quantitative forecast. In any case, the report of June 1, 1912, showed indicated yield and total production in adjacent columns, the same as has been done since that time.[41]

Par Method Used for Forecast

The basic method for interpreting conditions that was developed and used up to about 1929 was the so-called "par" method. This was essentially a system by which monthly conditions reported for each crop in each State were converted to 100 percent equivalents; that is, if the July 1 condition figure for winter wheat in Kansas was reported at 80 percent and the yield per acre for that year was 28 bushels, the 100 percent equivalent would be 28 ÷ 80 × 100 or 35 bushels. Figures for a series of years would be combined into 5- and 10-year running averages, and the statistician would then review the series and adopt a 100 percent equivalent or "par" for each month of the current year. In other words, it was simply a method of relating average yields to average conditions with a correction or allowance for trend.

The term "forecast" was used, but the statisticians and the Board regularly called attention to the fact that the term was really a misnomer, that the more accurate term would be "production indications." The indicated yield of corn, for example, on August 1 for a given State is an interpretation of the potential yield as of that date, assuming normal weather from that date to harvest. In 1926, Joseph Becker, chief statistician for the Board, explained the basis for the so-called forecasts very well when he spoke before the Southwestern Political Science Association:[42]

> This state of progress, at a given date, we call condition. It has significance as indicating the ability of the plant to withstand future unfavorable conditions or profit by future favorable conditions. With each successive day nearer to harvest, the menace of disaster becomes less and also the opportunity for bumper yields depreciates. The recording of progress or condition, therefore, as the season advances tells us something of value,—marks a succession of mile-stones passed upon the road to harvest.
>
> Does a condition report tell us anything as to the probable outturn, or may a high condition on a certain date be as likely to be associated with a low yield as a high one? Correlation studies between condition and yield indicate that high conditions are more often associated with high yields than with low yields, and correlation coefficients for later dates are higher than for earlier ones.
>
> In other words, having passed a given milestone in above-average condition, the chances are better than even that the crop will yield above average at harvest.
>
> This is the basis of crop indications (forecasts is really an inaccurate word) put forth by this Bureau. We do not predict the final yield, we do not predict future influences upon the crop,—we merely state that with the progress the crop has made to this date and with average influences hereafter, a yield of so much may be expected. Our present method has merit, as demonstrated by the fact that in practically every year in which "forecasts" have been made, the forecast was closer to the final yield than was the average yield.

[38] Ibid., 716.

[39] Crop Reporter, 13: 41, June 1911.

[40] Murray, op. cit., p. 716.

[41] Crop Reporter 14(6): 41.

[42] "Cotton Crop Reports," an unpublished paper by Joseph A. Becker, given before the Southwestern Political Science Association meeting at Dallas, Tex., April 2, 1926. In files of Statistical Reporting Service.

Despite this and similar qualifications that were repeated often from the time the quantitative interpretations were started, most users of the reports regarded them as forecasts of final production. In either case, it soon developed that the forecasts became the principal targets for "pointing with pride and viewing with alarm" on the part of the makers and users of the reports.

Beginning with the forecasting program, the search for ways to improve the monthly reports became a major concern of the Bureau. This, of course, emphasized as well the necessity for continuing and intensifying the work on improving the basis for estimating final acreage and yield estimates. The par method was discontinued in 1929 when it was replaced by direct correlation between condition and final yield for each month.

Embarking into the area of quantitative forecasting during the growing season was to have a profound effect on the entire program. Up to this time, the primary objective of the service was to measure the total production. To accomplish this end, the first requirement was to determine as precisely as possible the acreage planted to a given crop. As the season progressed and crops were harvested, the job was to measure how much was produced. This called for determining yields per acre and the acres harvested. Prices, wages of farm labor, fertilizer used, and all other factors contributing to production were objects of inquiry by the statistician. To round out the picture of total supply, stocks on farms, in warehouses, and other points of storage at specific times were needed.

Secretary Houston Takes Over From James Wilson

The inauguration of Woodrow Wilson and the appointment of David F. Houston as Secretary of Agriculture on March 6, 1913, was an important event in the history of the Department of Agriculture. Secretary Houston was an educator. He had a degree from the University of South Carolina, and had done graduate work in government, economics, and history at Harvard. He taught economics and government and served as dean of the faculty at the University of Texas. In 1902 he became President of Texas Agricultural and Mechanical College. In 1905 he returned to the University of Texas as President. In 1908 he moved to the Chancellorship of Washington University in St. Louis. As Secretary of Agriculture, he emphasized administrative policy, economic research, regulatory activities, and extension work.[43]

Houston appointed as his first assistant secretary Beverly T. Galloway, who had served in the Department of Agriculture since 1887. Galloway was a scientist, and had been chief of the Bureau of Plant Industry since its establishment in 1901.[44]

Bureau of Statistics Changed to Bureau of Crop Estimates

Secretary Houston displayed a great interest in the work of the Crop Reporting Board, and on July 28, 1913, he appointed a committee consisting of Milton Whitney, Chief of Bureau of Soils; J. L. Coulter, Economist, Bureau of the Census; C. W. Thompson of Rural Organization Service; L. M. Estabrook, then Chief Clerk of the Department; and W. J. Spillman of the Office of Farm Management to consider the work and organization of the Bureau of Statistics. The committee of which Whitney was chairman made its report on August 16, 1913, and recommended that the Bureau's title be "Bureau of Crop Estimates." [45]

State Statistical Offices Established

In March 1913, Assistant Secretary Galloway started an investigation of the Bureau of Statistics leading to reorganization. Olmsted, who had been chief of the Bureau, was appointed State field agent for Virginia. Nat C. Murray, Associate Chief, was designated acting chief, pending the appointment of a new chief.

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[43] Baker, Gladys L., Wayne D. Rasmussen, Vivian Wiser, and Jane Porter. A Century of Service—The First 100 Years of the United States Department of Agriculture. USDA, Feb. 1963, pp. 63–65.

[44] Ibid.

[45] The name was officially changed July 1, 1914. Records of the Bureau of Agricultural Economics, comp. by Vivian Wiser, p. 38. Natl. Arch. 1958.

Galloway asked Murray to submit changes he would suggest if he were made Chief of the Bureau. His plan of reorganization was approved [46] and Leon Estabrook, who had been Galloway's secretary, was named Chief of the Bureau. In accordance with the plan, the position of State statistical agent was established as a full-time job under the provisions of the Civil Service regulations.

With certain exceptions an office was set up for each State. In the six New England States, one office was established in Boston to prepare estimates for each of the six States. Similarly, one statistical agent served Maryland and Delaware and another served Utah and Nevada.

Establishment of State offices with career men in charge was an important step in the future development of the crop reporting work. The State statistical agent immediately became the focal point for improving State data and for establishing closer working relationships with State agencies. Coordination of programs and methods by the central office in Washington—a need that had been emphasized by the Keep Commission in 1906—was facilitated.

The reorganization plan seemed to be well accepted by the personnel of the Bureau except for one complaint from some State statistical agents. They preferred the more dignified title of statistician.[47] In 1920 the title was changed to agricultural statistician, but there was no significant change in the functions of the position.

Comments from some of the State statistical agents and records of some of the budget presentations indicate that in the reorganization of 1914 the newly designated or appointed agents were given very little in the way of guidance beyond rather broad instructions for developing lists of reporters, summarizing the monthly returns, and submitting the report to Washington by a specified date. The budget presentation of 1916 showed no expenditures for rent outside of Washington in 1914 nor any allowance for such costs for 1915 and 1916. The State Agent was, therefore, on his own in securing free space for his office. Most frequently the postmaster in the headquarters town provided a room and desk, but some agents worked from their homes.

All of the agents were taken from the Civil Service register. Salaries varied from $1,608 to $2,400 per annum. For 36 agents listed in the budget for 1914, the average salary was about $1,740.[48] The State agents were required to travel in their States. Some of the travel was by automobile, but most of it was by train.

By 1917 appropriations reached $316,436. Steps were taken to improve field organization, equipment, and methods. Provision was being made to obtain suitable offices for the State statistical agents either by rental or by using appropriate space in the post office buildings. Later, as cooperation with the State was developed, some of the States provided office space. Telephones were being installed, and mimeographs, addressing machines, and envelope sealers were being provided.

In many States, at the time of mailing the monthly questionnaires and then tabulating the returns as they came in, the statistician pressed his wife and children into service. By 1917 this situation was beginning to be corrected by the addition of clerical help. Calculating machines were yet to come. Computing was all done by head and hand. Contrary to the popular idea that a statistician couldn't add a column of figures, statisticians of that day became extremely proficient in this department. In fact, some of the "old timers" were hard to sell on the efficiency of an adding machine.

Methodology Investigations

The Bureau did not have funds for research, but it was possible for the statisticians to devote some time between monthly report periods to experimenting with ideas for improving techniques and expanding the usefulness of the sevice. The consuming problem of the service from its beginning was how to improve the sample on which the reports were based. The principal effort was to get more objective information on acreage and yield on which to base the estimates. States that had annual tax assessors' enumerations of acreage, yield, or livestock numbers had consider-

[46] Letter from Murray to Assistant Secretary Galloway—in files of SRS.

[47] Memoirs of V. C. Church, Statistician for Michigan, 1914 to 1941. Typed report in files of the Statistical Reporting Service.

[48] Budget presentation for 1914–15 and 1916.

able advantage. Field statisticians were encouraged by the technical staff in Washington to give all the assistance possible to improve and expand this technique.

Information on railroad shipments, receipts at mills and elevators, receipt of livestock at stockyards, volume of slaughter at packing plants, and many other sources of information at concentration points were being developed. This kind of collateral check data was of great value in verifying annual estimates. Because the estimating technique used was predicated on the change from the previous year, it was of paramount importance that the annual estimates be checked out as closely as possible. The census base provided once every 10 years was the starting point. If the current sample was selective, that is, if it contained a disproportionate number of farms of a specific size or type, the ratio of change when applied to all farms would not represent the true situation. The statisticians therefore were constantly analyzing the samples, comparing them with the census base for number of farms, size of farms, ratio of size of farm to various kinds of crops, and many other factors.

A considerable amount of the statisticians' time was given to solving problems that were inherent in the methods used. Some of the statisticians developed ingenious ways of measuring bias in the reported figures. Others sought ways of obtaining more definitive reports from correspondents, and others experimented in ways to get independent indications or checks on the opinion reports.

Collection of individual farm reports, begun in 1911, was an effort to give each reporter a more clearly defined basis for comparison in reporting production changes than when he responded to a locality judgment type of question. Apparently, these data were not used extensively until after 1920 when Joseph A. Becker, who was statistician in Wisconsin and later the chief technician for the Crop Reporting Board, demonstrated that data representing individual farms provided more accurate information for the determination of acreage change. Inquiries on an individual farm basis were not used much until after 1923.

Statistics Conference of 1917

Leon Estabrook and Nat Murray gave attention to training men for better service. To this end, a general conference of the Bureau was held in Washington in January 1917. Leaders' comments are extracted below:

> In July, 1914, the title of the Bureau of Statistics was changed to the Bureau of Crop Estimates, in order to indicate to the public more clearly the real nature of its work. Civil Service examinations were held in all the States, and from the list of eligibles thus secured new Field Agents were appointed in many of the States. . . .
>
> It was and is the desire of the Bureau to appoint as Field Agents and Crop Specialists only men who have had practical experience in farming, men of mature years, men well educated in the fundamental principles of agriculture and statistics, men of the highest character and ability who would command the respect and be able to secure the cooperation of all State and local officials and prominent farmers in their States. . . . We would also expect that as these well qualified Agents become familiar with crop conditions and with the people of their States, and as they gradually accumulated data for every part of their States, they would come to be recognized as the leading authorities on agricultural production in their States. This has been our theory in the past and it is our hope for the future. . . .
>
> The next plan we have in mind is to urge upon Congress the desirability of furnishing each Field Agent with a clerk to attend to routine correspondence, look after the mail during the absence of the Field Agent, and to assist him in the preparation of his monthly report. . . .
>
> Of especial importance is the question of estimating acreage and numbers of livestock and I can not too strongly urge upon you the necessity for devoting a large share of your time and attention to these two subjects. . . . Our better organization and service may result in a closer approximation to the totals of the next census, and that following the census the Bureau can avoid serious deviation from the facts with respect to acreage, production and numbers of live stock.[49]

A statement made by W. F. Callander, Federal Statistician in Wisconsin, indicates his eagerness for truth, native intelligence, purposefulness, and untiring energy. Under the title of his remarks "Travel—on Foot," Callander said:

> There are times, I believe, when the field agent can with advantage and at a considerable saving of expense, make short trips of inspection on foot. On a walking trip one is not confined to fields along the road but is able to strike out across the country and in so doing will meet men working in the field whom it would not be possible, or at least convenient to interview, if the trip was being made by automobile or otherwise. But unless conditions are right and there is plenty of time at one's disposal, I would not advocate using "shank's mare" as a mode of conveyance.[50]

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[49] U.S. Bureau of Crop Estimates, Meeting of Field Agents, Crop Specialists and Administrative Officials, January, 1917, mimeographed.

[50] Ibid.

Murray elaborated on Estabrook's statement on the importance of acreage estimates when he said:

> . . . in making the final estimates last December the Bureau attacked the problem in several different ways. Assessors' figures were consulted wherever available. Comparisons with the reports of "usual" acreage were made. Individual farm reports of actual acreage in 1916 and 1915 were consulted. The relation between the acreage of one crop and the acreage of others was calculated. An inquiry was made among reporters as to the proportion of total crop area devoted to different crops. No single method of ascertaining acreage is without some defect. This composite method of estimating acreage is far from being perfected. The Field Agent, with his intimate knowledge of his State, is better able to analyze the various data and account for or harmonize differences than is the Statistician at Washington. Therefore it is contemplated that during the present year the Statistician will confer with each Agent individually, and go over with him the various data and the method of coming to a final acreage estimate.[51]

Cooperative Crop Reporting with States

Beginning as far back as 1852, some States had been utilizing the tax assessors to collect agricultural statistics each year. State statistical agents and special field agents had made use of these data to check on annual estimates. Many technical problems arose in using the data. Differences in definitions and methods of collecting and compiling had to be carefully analyzed in making comparisons between States or with national census data and national estimates. State statisticians were in a position to work more closely with the States and help in solving some of the problems.

A number of States issued their own agricultural estimates. This not only caused confusion but actually duplicated the national service. As the Federal-State statistician became established and known in a State, these conflicts and differences became more evident. The statistician was in position to discuss these matters with the State officials, usually the commissioner of agriculture, the State college, or experiment station officials that were heavy users of the statistics. A number of part-time statistical agents and special field agents had recognized the advantages of developing closer working relations with the States. The designation of a full-time State statistician in a State improved the opportunity to arrange a closer, harmonious relationship.

[51] Ibid.

In 1917, W. F. Callander developed a cooperative agreement with Wisconsin Agricultural Commissioner Alan Norgord, under which the Federal Statistician for the State compiled the agricultural statistics for both State and Federal purposes. This met with immediate approval by all concerned. At the annual meeting of the National Association of Commissioners, Secretaries, and Directors of Agriculture in 1917, Commissioner Norgord reported the signing of the cooperative agreement in glowing terms:

> The St. Louis meeting in 1917 was when we started a federal-state crop reporting service. William Callander was the federal reporting man (state statistical agent) in Wisconsin while I was Commissioner. He and I had talked over forming a cooperative crop reporting service before World War One, but we did not get down to business until this meeting called by Secretary Houston at St. Louis to organize agriculture for war. Then it occurred to me that while the war was going on we needed the best kind of crop reporting service possible to report the prospective production each year. I went to St. Louis and suggested to Secretary Houston that we form such an organization in Wisconsin. He was interested and sent a wire to Mr. Estabrook, head of the Crop Reporting Service, asking him to draw up a plan of cooperation between the U.S. Department of Agriculture and the Wisconsin Department of Agriculture as a basis for forming a cooperative crop reporting service in Wisconsin and have it on my desk when I got back from the meeting in St. Louis. The agreement was there and I called Mr. Callander, signed it, and Mr. Callander started in my office as the first head of a cooperative crop reporting service in the United States.[52]

Cooperation with the States ushered in a new dimension in the crop and livestock estimating program. The cooperative work grew rapidly after 1917 as other States joined the plan within a very few years. Cooperative agreements with States are based on the principle that the two can work together more economically than either can work alone. The plan is entirely voluntary. Each party to the cooperation is at liberty to discontinue with 30 days formal notice to the other. This plan of operation has resulted in the elimination of duplication of effort between the States and the Federal Government, making possible more service for less cost.[53]

[52] Holton, John C. Proceedings of the National Association of Commissioners, Secretaries, and Directors of Agriculture—1916–1955. 1960, pp. 151–52.

[53] Report of the Chief of the Bureau of Crop Estimates, Fiscal Year 1919. Leon M. Estabrook, Chief.

Bureau of Crop Estimates in World War I

Between the time of reorganization of the Bureau in 1914 and entry of the United States into the war in 1917, there was an increase in the demand for coverage of additional crops. Reports on two important truck crops, cabbage and onions, were started in 1914. In 1916 the coverage was extended to include potatoes, cantaloups, watermelons, celery, strawberries, sweet corn, peas, tomatoes for canning, and cucumbers for pickles. Forecasts of cotton production during the growing season were started in 1915.

By 1917 the one truck crop specialist that had been appointed in 1914 was supplemented by three additional truck crop men assigned to the Atlantic and Gulf Coast States. At the same time, three assistant fruit specialists were assigned to survey the important fruit areas, and set up an estimating program for apples.

The war created an urgent demand for statistical information on practically all phases of agricultural production. The Bureau was allotted $117,040 from the Food Production Act to meet the unusual demands for special information. The Chief of the Bureau summarized the work of the Bureau during the war in his annual report for fiscal year 1919:

> A vast amount of information was compiled and furnished in response to inquiries received by telephone, telegraph, letter, or personal call of representatives of the Food Administration, the War Trade Board, the War Industries Board, the Military Intelligence Office of the War Department, the Tariff Commission, the Federal Trade Commission, the Council of National Defense, other departments of the Federal and State Governments, Congress, and private individuals. . . .
>
> The Bureau compiled innumerable statements showing the production, consumption, surplus and deficiency, exports and imports, and prices of important agricultural products for all the principal countries before the war, and of production and requirements during the war, for the information of administrative officials of the Department of Agriculture, of other Federal departments, and various war-emergency organizations. . . . Many special inquiries were made, including:
>
> Quantity of commercial fertilizers used per acre of cotton and proportion of fields upon which used.
>
> Percentage of various crops to which commercial fertilizer and manure was supplied and quantity used per acre.
>
> Binder twine requirements for the grain crops of 1918 for use of the Grain Corporation.
>
> Emergency live-stock survey, to determine the number of farms, July 1, 1918 and January 1919.
>
> Uses made of wheat crop, for the United States Food Administration.
>
> Quantities of various crops fed to different classes of live-stock.
>
> Live-stock survey of January, 1919.
>
> Fertilizer inquiry of January, 1919, to ascertain quantity of commercial fertilizers and manure used for various crops.
>
> Wages of farm help.
>
> Prices farmers pay for equipment, machinery, and supplies.[54]

Following the armistice, November 11, 1918, there was a decline in the demand for special surveys by the various war agencies. Demand for food for shipment to Europe continued heavy, however, and there was reluctance to relinquish some of the service that had been developed during the war. Commercial potato production estimates were continued and expanded to include monthly stock reports. Estimates of poultry on farms were begun in 1919. Estimates of production of vegetables were continued at the wartime level until 1921 when a sharp drop in appropriations forced curtailment of this program. The war conditions and the position of the United States as the food basket for war-torn Europe emphasized the requirement not only for more statistics on more crops but for more accurate statistics.

By 1920, the Bureau was estimating production on 29 crops as compared with 13 crops 10 years earlier, and condition reports were being issued on 44 crops—just about double the number in 1910.

George K. Holmes and the Division of Foreign Markets [55]

The Division of Foreign Markets deserves special attention here because of its significant contribution to the development of the crop and livestock estimating work. This Division was the outgrowth of Jacob R. Dodge's interest in statistics over and beyond the estimates of production for the United States. By 1892, there was a section within his Division compiling information to increase exports to Latin America. Before he retired in 1893, he made a report to Secretary Rusk that resulted in the establishment of a separate Foreign Markets Section in 1894 that became a division in 1904.[55a]

[54] Ibid., p. 3.

[55] Discussion on this section is based largely on H. C. and Anne Dewees Taylor's book, The Story of Agricultural Economics in the United States, 1840–1932. (College Press, Ames, Iowa, 1952, pp. 524–533).

[55a] U.S. Department of Agriculture, Annual Report, 1892, p. 35.

This Division was responsible for gathering information and compiling statistics on foreign crop production, on exports and imports, and on various aspects of the manufacturing and processing industry. In addition, the Division made special studies on a wide range of subjects. Investigations were made of the world meat trade; the comparative healthfulness of meat animals in different countries; world cotton production; the British market for dairy products and sources of supply; freight rates and world production and trade in meat, barley, rye, potatoes, tobacco, and various other products.

Foreign trade in agricultural products was an important part of the economy of the Nation, so there was great interest in these investigations. But the Division held an important place in the Department for another reason. The Chief, George K. Holmes, was a man of unusual ability and breadth of knowledge. He had joined the Division of Statistics in 1895 and soon made an important place for himself. When he became Chief of the Division of Foreign Markets, he found himself thinking in terms of marketing and distribution as well as production, both foreign and domestic. In an article in the Yearbook of 1903 entitled "The Nation's Farm Surplus" he described the distribution to foreign markets of surpluses produced by the farmers of the United States. He prepared annual estimates of gross value of farm products together with the text for the Secretary of Agriculture's Annual Report. This report stimulated great interest in the importance of egg production from the "Great American Hen," a term quoted in the papers for some time. In 1907 he published a bulletin on the cost of handling produce from farm to shipping point and another on the U.S. meat supply and surplus.

The interest of the Department of Agriculture in marketing during this period continued to grow. The Bureau of Plant Industry had been developing standards for cotton, and in 1906 a specialist had been employed to study the quality factors in grain with a view to establishing quality standards that could be used in commerce. Holmes had been thinking about this subject also. In the Yearbook of 1904 he published an article on fruits entitled "Consumers' Fancies."

In 1908 the name of the Division of Foreign Markets was changed to the Division of Production and Distribution. The name of the Division was the same as the title of the report that Dodge presented to Secretary Rusk just before he retired in 1893.

In 1910 and in 1911 Congress expressed an interest in the marketing work, asking the Department to study the subject, but no funds were appropriated for the project. In 1912 the Appropriations Act for 1913 again directed the Secretary to study the matter and make such recommendations to the Congress as he deemed necessary. Secretary Wilson asked each branch of the Department of Agriculture to indicate what was being done in the Department and what might be done in a new division of markets. Heads of business concerns were called upon to supply information also. George K. Holmes was assigned to supervise the study and prepare a report.

On December 26, 1912, Secretary Wilson endorsed a publication prepared by the experts of the Department concerning systems of marketing farm products and the demand for such products at trade centers. It was a voluminous report that discussed the marketing work that was underway in the Department, and most of the ideas then current with respect to the problems and what might be done to alleviate them. Some special attention was given to the problem of market reporting. Studies had been made of the method of reporting in some of the European markets, particularly the Berlin market. After a discussion of the many problems that might be encountered, the report concluded that to maintain a market news service at each of the main trading centers it would be necessary to employ men to be in constant touch with the markets. These men would need to report by telegraph, daily or oftener, the prices of farm products and the state of the market with regard to supplies. The cost of such a service would be enormous—as much as $1 million—and the report did not recommend establishing the service. It did recommend that the Crop Reporting Service provide forecasts of probable production on crops. It also stated that a division of markets, if established, should be equipped for ascertaining in connection with other crop reporting services prospective quan-

tities of vegetables, fruit, berries, and other crops.[55b]

In his summary for the year ending June 30, 1912, Secretary Wilson reported the work of George K. Holmes under the subject heading "Agricultural Economics." In this report, the Secretary said:

> The Division of Production and Distribution has developed a scope of work in directions heretofore little, if at all, explored. It has created a general survey of agricultural conditions and accomplishments in the United States composed of the more important elements of production in quantity and value; of national surplus, deficiency, and consumption; of farm wealth and labor; and of economic achievement and agricultural progress.[55c]

Thus did the work of this division presage the establishment of the Office of Markets and probably to some extent the Bureau of Agricultural Economics.

A Growing Interest in Agricultural Economics

Developments in the other Bureaus of the Department were having an influence on the Bureau of Crop Estimates in a number of ways. As farm management work developed, demand for more crop and livestock estimates rose but it tended to emphasize the need for greater accuracy in the estimates.

Murray noted that in the period from 1910 to 1914 several young men in the Department formed a "Rural Economics Club" at the meetings of which he obtained many suggestions for special investigations. Among those members mentioned was E. A. Goldenweiser, a well-trained statistician and economist, who later became director of statistics and economics for the Federal Reserve Board. Another member mentioned was B. B. Hare.[56] Hare had taught economics and history at Leesville College (defunct) in South Carolina from 1906 to 1908. He came to the Department of Agriculture as assistant in agricultural education in the Office of Experiment Stations in 1911. He was appointed State statistical agent in South Carolina with the reorganization in 1914. He served as a Congressman from 1924 to 1940. In 1966 he helped celebrate the Centennial of the Statistical Reporting Service. George K. Holmes of the Bureau of Statistics was also a member of the group. Undoubtedly, W. J. Spillman, Chief of the Office of Farm Management, was a member. The significant point is that there was active interest on the part of a group of leaders in the broad implications of many widespread developments in more or less disassociated units in the Department that were related to the economic development of agriculture. These men recognized the desirability of improving communication among men working in these related fields.

The first step toward bringing together some of the activities was taken when H. C. Taylor, Professor of Agricultural Economics at the University of Wisconsin, came to the Department as chief of the Office of Farm Management in 1919. On July 1 of that year the name was changed to the Office of Farm Management and Farm Economics. On July 1, 1920, the Office was removed from the Secretary's office and set up as a separate unit.[57]

Another move in the direction of bringing together related lines of work was taken in 1915 when the Office of Markets combined with the Rural Organization Service to become the Office of Markets and Rural Organization. The program developed rapidly under the direction of Charles Brand.

As previously noted, the Grain Standards Act, the Warehouse Act, and the Standard Container Act were approved in 1916 and their administration assigned to the Office of Markets and Rural Organization. This greatly expanded the responsibilities of the Office. The Grain Standards Act carried an appropriation of $250,000 and the Warehouse Act, $50,000, which, with the regular appropriation of $872,590, made a total of $1,172,590 available for the Office. Marketing work from other bureaus had also been transferred to the Office. With this expanded program the Office offi-

[55b] Holmes, George K., Systems of Marketing Farm Products and Demand for Such Products at Trade Centers, USDA, Departmental Report 98, 1912; Caroline B. Sherman, "The Legal Basis of the Marketing Work of the United States Department of Agriculture," Agr. Hist. 11 (Oct. 1937): 289–301; Gladys L. Baker, Wayne D. Rasmussen, Vivian Wiser, and Jane Porter, Century of Service, pp. 35, 56–61.

[55c] U.S. Department of Agriculture, Annual Report, 1912, p. 195.

[56] Murray, op. cit.

[57] Wiser, Vivian. Preliminary Inventory of the Records of the Bureau of Agricultural Economics. Natl. Arch. and Records Serv., Publ. 59–1, 1958, p. 3.

cially became the Bureau of Markets in July 1917.

CHAPTER 7. POST WORLD WAR I, THE DECADE OF THE 1920'S

Henry C. Wallace Appointed Secretary of Agriculture

Henry C. Wallace was appointed Secretary of Agriculture March 5, 1921. When he came to Washington, he was described as one who made it his business to know farmers' needs and to further "good farming and good thinking on problems connected with food production and distribution." [58] He had been editor of *Wallace's Farmer* and in that position had become thoroughly familiar with the crop reporting activities.

When Wallace took the oath of office, U.S. agriculture had entered upon a sharp and damaging depression, and agricultural groups were turning to the Government for aid. President Harding's cabinet was divided on agricultural policy. His Secretary of Commerce, Herbert Hoover, represented the conservative attitude. He considered the proper scope of the Department of Agriculture to be limited to production. He indicated that the Department of Commerce should be concerned with the marketing of agricultural products. Wallace, on the other hand, took a broader view of the functions of the Department of Agriculture. At a dinner that the Standard Farm Paper Publishers' Association gave for New York businessmen, Wallace said, "The Department of Agriculture is charged with the duty of promoting agriculture in its broadest sense." To him, this meant any aspect of production or marketing of agricultural commodities.[59]

Bureau of Markets and Crop Estimates

There was some discussion, particularly after Charles Brand left as Chief of the Bureau of Markets in 1919, concerning the community of interest between the Bureau of Crop Estimates and the Bureau of Markets. Nat Murray, Assistant Chief of the Bureau of Crop Estimates, credits George Livingston, who succeeded Brand as Chief of the Bureau of Markets, with suggesting the combination of the two Bureaus. The Bureau of Markets and Crop Estimates was established in 1921, and H. C. Taylor became Chief of the Bureau.[60] Estabrook was named Associate Chief but continued to act as chairman of the Crop Reporting Board. Nat Murray was placed in charge of the rest of the crop reporting work that in the course of the year had at least four different designations.

Consolidation of Economic Work—Bureau of Agricultural Economics

When Henry C. Taylor became chief of the Bureau of Markets and Crop Estimates, it was only an intermediate step toward his ultimate objective of combining all agricultural economics in one Bureau. On May 25, 1921, the Secretary of Agriculture appointed an economic committee composed of bureau chiefs. The committee was directed to study economic conditions of agriculture, consult with agricultural leaders, draw up recommendations for dealing with the problems, and study the economic work within the Department. Economists consulted by the committee included Thomas F. Hunt, Andrew Boss, G. F. Warren, G. T. Christie, and Thomas P. Cooper. The report, made on June 18, 1921, recommended the consolidation of all economic research and service activities in a Bureau of Agricultural Economics. Taylor developed plans for the establishment of the Bureau of Agricultural Economics, but formal consolidation had to await legal authorization. On July 9, 1921, he issued instructions for integrating the Bureau of Markets and Crop Estimates with the Office of Farm Management and Farm Economics. G. F. Warren, Head of the Department of Agricultural Economics at Cornell University, was appointed in 1921 as a consulting specialist to assist Taylor, Chief of the Bureau of Markets and Crop Estimates, in the reorganization and consolidation.

The Bureau of Agricultural Economics was formally established on July 1, 1922, under authority of the Agricultural Appropriation Act. The Bureau was organized around three

[58] "A Century of Service—The First 100 Years of the United States Department of Agriculture." p. 101. 1963.
[59] Ibid., p. 102.
[60] Murray, op. cit., p. 717.

functional headings: production, marketing, and general. The production divisions included Farm Management, Cost of Production, and Crop and Livestock Estimates. The marketing divisions were: Cotton; Fruits and Vegetables; Warehousing; Livestock, Meats and Wool; Hay, Feed, and Seed; City Markets-Washington Center Market; Grain; Dairy and Poultry Products; and Cost of Marketing. Divisions assigned more general functions were Agricultural Finance, Agricultural Cooperation, Farm Population and Rural Life, Land Economics, Statistical and Historical Research, and Information.[61] The foreign work, in which Holmes had been so interested, was assigned to the Division of Statistical and Historical Research. Holmes, however, remained with the Division of Crop and Livestock Estimates.

Callander Appointed Chief of the Division of Crop and Livestock Estimates

Nat C. Murray continued as chief of the Division of Crop and Livestock Estimates of the Bureau of Agricultural Economics until he resigned in 1922 to return to private industry. W. F. Callander, who had been statistician in charge of Wisconsin and later in charge of Ohio, had been brought to Washington in 1921 as Assistant to the Chief of the Bureau of Markets and Crop Estimates. He was appointed Chief of the Division of Crop and Livestock Estimates in 1923.[62] William A. Schoenfield, Assistant Chief of BAE, was designated chairman of the Crop Reporting Board and served until 1924 when Callander was appointed chairman.

Joseph A. Becker, who had been the agricultural statistician in Wisconsin, was transferred to Washington after the reorganization in 1922. Becker had experience in farm management work, including the conduct of farm management survey activities, and taught farm accounting and cost accounting before becoming a statistical field agent in 1918. He was attached to the Washington staff to head research on methods and serve on the Crop Reporting Board. He operated as Assistant Chief of the Division.

[61] Century of Service, pp. 107–108.

[62] Personnel records of SRS—personnel action signed by Estabrook, May 1922.

Statistics Conference of 1923

The consolidation of the economic work in the Bureau of Agricultural Economics, had an immediate effect on the full interchange between workers in related fields. Henry C. Taylor was concerned with knitting the new organization together. To this end, he took an active part in organizing a national conference of the Crop and Livestock Estimates Division held at Indianapolis October 22 to 24, 1923. Arrangements were made to have members of other Divisions of the Bureau participate by presenting papers and entering into discussions.

The most discussed items centered around the problems of estimating numbers of livestock and acreage of crops. This called for considerable discussion of sampling and sample analysis. Two papers were of particular significance, one by Howard R. Tolley and one by Bradford B. Smith.

Tolley, in charge of the Division of Farm Management and an accomplished statistician, devoted his paper to "Testing Crop Reports for Accuracy." He dealt with the problem of statistical accuracy and, characteristic of the good teacher, discussed in a simple, understandable manner, standard deviation, the probable error, and the probable error of the difference between two averages. All simple enough concepts, but Tolley knew his audience was largely unfamiliar with the statistical terms and techniques, so his purpose was to introduce the subject and stir up interest in learning the use of the tools of the statistician. He was successful in his objective as evidenced by later developments.

Bradford B. Smith, a trained statistician and at that time in charge of the Machine Tabulation Section, gave a paper on "The Use of Correlation Methods in Forecasting." Smith, new in the Bureau, attracted interest to the use of correlation techniques. He had considerable influence, not only on the statisticians in attendance at the conference, but on research people in the whole Bureau.

These papers by Tolley and Smith dealt specifically with problems of particular concern to Callander, and several other members of the Division. Joseph A. Becker and Charles F. Sarle contributed to the objective of en-

couraging study of statistical methods by all members of the staff.

Becker presented a paper, "The Representative Sample in Relation to Agricultural Data." He went into the question of the adequacy of the sample data on which current estimates were based and pointed out statistical bias in the data. Becker presented the value of the individual farm inquiry and from the comments made by several statisticians it was evident that the individual farm inquiry (though collection of such data was started in 1911) was not in general use at the time of the conference.[63]

Becker also indicated that the bias involved in reports of livestock numbers was similar to that encountered in the acreage samples. He presented a brief analysis of the new procedure for collecting information on the pig crop under a cooperative arrangement with the rural mail carriers that had been started in June 1922. He showed that this sample also tended to be selective because it included a disproportionate number of the larger farms and therefore had to be analyzed carefully in using the survey results. The fact that an inquiry is biased does not mean that it is of no value.

The Agricultural Statistician for Iowa, Charles F. Sarle, presented several papers dealing with sampling and correlation methods in forecasting. Sarle was keenly interested in statistics as a tool in the service and was shortly to be transferred to the Washington office to take over the price reporting work. From this position he provided active stimulation for the development of an in-service training program in statistics.

D. A. McCandliss, Statistician for Mississippi, reported on the development of the "crop meter." This was a device with 12 keys and dials that was connected to the speedometer cable of a car. As the statistician drove along the road and came abreast of a field of corn he depressed the corn key. If the next field was cotton, he depressed the cotton key, which automatically threw the corn key out of gear and recorded the cotton frontage, and so on for other crops or other types of land use. This device to secure an objective measure of change of acreage from year to year proved quite useful for a number of years.

Another man who figured prominently in the 1923 conference was C. L. Harlan. He had come to the Division of Crop and Livestock Estimates from long experience in Iowa with the Corn Belt Meat Producers' Association and with the market news service of the Department of Agriculture. He had worked in the Chicago Stockyards where he dealt with market statistics. To Harlan belongs most of the credit for improvement of the livestock reporting during this period.

Crop Estimates in the Twenties

The decade of the 1920's was a period when agricultural thinking was turning to economic questions. There was an upsurge in the cooperative movement. The American Farm Bureau Federation, as well as the Farmers Union, was promoting the idea. The Secretary was asked to speak at a meeting in Chicago on April 6, 1921, at which a plan for a grain marketing cooperative supported by the Farm Bureau Federation was presented. In his speech the Secretary said:

> It is not the business of the Department to organize marketing associations, but it is properly its business to make available the most reliable information it can concerning the organization and operation of such associations.[64]

After July 1922, the Bureau of Agricultural Economics expanded economic research. Land grant universities were also expanding activities in agricultural economics research. There was growing pressure for the development of a national agricultural policy.

All these developments in cooperative marketing and economic research were creating an increasing pressure for more and more statistical information on all aspects of agricultural production and marketing.

Prospective Planting Reports

Taylor had promoted the idea of an annual outlook report. His immediate purpose was to provide information on the probable supplies and price trends early enough in the season

[63] This was checked in a personal interview with Becker in March 1966, and he verified the fact that these individual farm data did not come into general use until after 1920.

[64] USDA Press Release 705–21.

to permit farmers to adjust production and plans in light of prospective trends. Of primary value in preparing the analysis necessary for the report would be some information early in the year on what the farmers were planning to do. The Crop and Livestock Estimates Division set about plans to provide the kind of information that was needed for the outlook program. The Pig Crop Report, started in 1922, was an important part of the basic information. To meet the additional need for data on cropping plans, a survey was introduced in April 1923 on farmers' intentions to plant nine of the principal spring-sown crops. Cotton was one of the crops included. The report showed that farmers were planning to increase cotton acreage by 12 percent. A decline in cotton price which followed was blamed on the acreage increase shown by the intentions report. Actually, the increase as shown by the July acreage report was greater than the intentions report had indicated. Despite this, Congress in May 1924 enacted legislation prohibiting the inclusion of cotton in intentions to plant reports. This legislation remained in effect until 1958 when the law was repealed.

The first outlook conference was held April 20–21, 1923. In the development of the outlook reports, the statisticians of the Crop and Livestock Estimates Division took a leading part as committee chairmen in the preparation of the analysis and writing the reports for presentation to the conference.

The report of planting intentions for other crops was made a permanent part of the program, and the coverage has been expanded through the years. The first reports showed only the percentage changes as shown by the sample. Later, about 1929, it became obvious that the optimism of farmers led to an overstatement of the acreage intended. The 1931 reports, therefore, made allowances for the observed departures between intentions and harvested acreage. The next year the report showed farmers intended to increase spring wheat acreage by 53 percent over the harvested acreage in 1931. Because of heavy abandonment, the harvested acreage turned out only slightly more than 1931. This pointed up the need for using planted acreage for comparison with the intention reports. Estimates of planted acreage were started, and by 1938 sufficient series had been developed to analyze relationships between planted acres and intentions. At this time, the report of intentions for planting became a report of "prospective plantings" wherein the intentions were interpreted in relation to actual plantings.[65]

Livestock Program Expanded

Prior to 1920, reports on livestock were limited chiefly to estimates of the number and value of the different species on farms January 1, by States. Subjective reports from crop reporters giving their judgment of the percentage of change were the principal source of information used in the estimates. A beginning had been made in 1919, when individual farm reports as of January 1 were made, covering numbers "this year" and "last year" from which percentage change was computed, and in 1920 when the number of livestock for the current year was reported by age and sex classes. In 1918, a special livestock reporters' list had been built up. These reporters were asked to submit reports of the numbers on their farms at the beginning and end of each month, showing the items of increase (births and purchases) and the items of decrease (sales, slaughter, and deaths). Because of the small size and nonrepresentativeness of the sample, the results were not dependable.

Following World War I, the need and demand for more adequate statistics on livestock numbers and the production of livestock and livestock products grew apace. This was a period of rapid organization of farmers into general and commodity bureaus, unions, associations, and cooperatives. In the livestock industry, this was reflected in the development of local livestock shipping associations, the beginning of the invasion of stockyard markets by cooperative selling agencies, and the setting up of special livestock sections in the general farm organizations. This was a time, too, when the packing industry, both as organized in the Institute of American Meat Packers, and as individual packers, began to expand commercial research.

The postwar decline in prices of livestock and livestock products resulted in heavy losses to both producers and packers. This emphasized

[65] Becker, J. A. and Harlan, C. L., Developments in Crop and Livestock Reporting Since 1920. Jour. Farm Econ. 21 (4): 803–804, Nov. 1939.

the demand that something be done to stabilize the livestock industry, both as to production and marketing.

The problem of the hog crop was of immediate concern. The 1921 crop had been marketed without adequate information, and early in 1922 the supply ran out before packers had accumulated stocks sufficient for spring and summer demands. Hog prices soared but too late to benefit the farmer. Something needed to be done immediately to provide adequate information. The question was how to expand the sample to get the needed information.

The Division, with the support of the Chief of the Bureau, was giving attention to the problem. Secretary Wallace was much interested, and recognizing the necessity for additional funds to expand the program, he appeared before the House Committee on Appropriations and appealed for funds for livestock estimates. The additional appropriation was granted in the Appropriation Act of 1922–23, and work on expanding the livestock estimating work was begun.

Taylor tells the story of the beginning of the so-called "Rural Mail Carrier" survey which was brought to bear on the problem:

> One morning in the spring of 1922 Secretary Wallace and Postmaster General Work rode to the office together. The result was a suggestion that the rural mail carriers assist in gathering livestock statistics. It appears that the Postmaster General was happy to cooperate. Secretary Wallace at once took the matter up with the Bureau of Agricultural Economics and the suggestion was referred to the associate chief in charge of crop and livestock estimates, L. M. Estabrook, whose reaction was that the rural mail carriers had been tried and found wanting. The chief of the bureau then asked W. F. Callander, one of the younger members of the Division of Crop and Livestock Estimates, to find a way to use the rural mail carriers in collecting livestock statistics.
>
> Callander prepared a card of inquiry and suggested that the carrier leave one card in the mailbox of each of ten farmers on his route. The card called for facts regarding pig production on the farm of the farmer who made the report for the present and the preceding year, and asked for no information from the rural carriers themselves. No effort was made to make a census covering all farmers. Sample data was the aim. . . . The proposal was taken to Secretary Wallace who liked it and took the matter up with the Post Office Department where the plan of procedure was approved.[66]

A livestock section was established in 1922, and the name of the Division of Crop Estimates was changed to the Division of Crop and Livestock Estimates. Before deciding on a program for the new section, a number of conferences were held in different parts of the country, at which representatives of the Department, farm and livestock organizations, marketing agencies, railroads, and packers discussed the character of the information needed. As a result of these discussions, a program of reports was decided upon, and the reports were gradually developed during the next few years. The first pig crop report based on the rural carrier sample was issued in June 1922.

Another innovation was the acquisition of information from stockyard companies and direct buyers, railroad records of cars of livestock received and forwarded by stations, brand inspections covering shipment by States, and sanitary inspection records covering shipments into and (in some cases) from different States. These records of the movement of livestock to and from States were used in the development of the annual balance sheets for different species of livestock by States. These sheets showed as supply items the number on hand at the beginning of the year, the number born, and the number shipped into the States; and as disposition items the number shipped out, slaughtered on farms or locally, and death losses. The difference between the supply and disposition items was the indicated number at the end of the year. Preparation of the balance sheets and estimates began about 1926; estimates by States have been available since 1924.

An experimental individual farm inquiry on "milk cows on hand" and "milk produced yesterday," tried in Wisconsin in 1923, proved successful. It was adopted for the United States in the fall of the following year. The individual farm samples for one day of each month formed the principal basis for monthly reports of milk production per cow and annual estimates of milk production. The first quantitative estimates of milk production by States and the United States were published in March 1930 as part of the income report for 1924–28.[67]

Individual farm sampling of hens and eggs for one day each month was begun in 1924. The first estimate of chickens on farms and

[66] Taylor, op. cit., p. 248.

[67] Farm Value, Gross Income, and Cash Income from Farm Production. Mimeographed Report, Bur. Agr. Econ., Mar. 1930.

egg production for the United States by States was also part of the March 1930 income report.[68]

Objective Measures for Cotton

In 1925 Frank Parker, statistician for North Carolina, presented a plan for collecting counts on the number of plants, bolls of cotton, and other objective measurements of the cotton crop. The procedure established consisted of laying out definite routes through the cotton area. Usually, a two-man team traveled these routes in August and September. A stop was made every 10 miles, and the cotton fields were examined on each side of the road. Each of the men carried a pole 5 feet long, and they moved into the field a prescribed number of paces and measured off 15 feet of row. A record was made of the number of plants in the 15 feet, the number of large bolls, small bolls, burs, blooms, and squares. A sample of 10 open bolls, 10 large bolls, and 10 small bolls was taken. Observations with respect to other significant features of the field were also noted. While one man drove, the other's job was to cut the bolls and record the results of the observations before reaching the 10-mile point for the next stop and count. The cotton counts were started in 1928 in most cotton producing States.

The counts on cotton provided an independent indication of probable yield. Corn and wheat counts were developed later and used in a similar manner. The counts were continued up to World War II. Difficulty in securing gasoline and tires and limitation of travel funds necessitated discontinuance of the procedure.

An important aspect of field counts was the opportunity afforded the statistician to observe crop conditions in a systematic manner. One of the important requirements for an agricultural statistician has always been that he know and understand agriculture. A trained and experienced man derives a great deal of information from observations of the crops. Type of soil and its condition are important to him. Diseases can often be spotted quickly, while the color of the plant tells a great deal about future prospects. Variety is important in many crops. Condition of pasture is important not only to the livestock enterprise but is also an indicator of moisture and general crop prospects. An agricultural statistician will often say that crops talk if you understand their language.

[68] Ibid.

Decentralization of the Division

When the State statistical offices were established in 1914, the statistician in charge immediately began building up the crop reporting lists. The program of Federal-State cooperation that started in 1917 developed rapidly. By 1922 the number of States cooperating had reached 26. As the office became better established and clerical help and assistant statisticians were assigned, the list building and control progressed more rapidly. States with assessors' enumerations had an excellent source of names. When the rural carrier surveys were started in 1922 and later expanded to include acreage surveys, another source of names became available. To strengthen the sampling basis for the reports and improve the efficiency of the organization, Callander proposed that maintenance of the mailing lists and tabulation and analysis of the returns be delegated to the State offices.

The idea of decentralizing the operations was tried out in 1927 with the best equipped offices. The experiment proved successful and although some of the staff still had reservations on some reports, the plan was continued until by 1932 practically all lists of correspondents had been transferred to the field. At that time, of a total list of about 250,000 voluntary reporters, only about 7,000 continued to report to Washington. For the most part these consisted of special lists involving dairy and poultry processing plants, cold storage plants, and chainstores, most of which involved multiple State estimates.

This broad-scale delegation of responsibility to State offices puts the reporting service in a unique position in terms of the high degree of decentralization achieved.

The Agricultural Census of 1925

The crop and livestock estimating program had depended from the beginning on the agricultural census for a new base or benchmark each 10 years. Annual estimates provided by the crop and livestock estimating program were basically projections from the census base by applying the percentage change from the current samples to the preceding year.

Much of the statistician's effort in preparing annual estimates was devoted to a comparison of the sample with patterns in the census and devising procedures to avoid the trap of cumulative bias. At times this bias led to wide divergence between the estimates and the findings that became available subsequently for a census year. The statisticians of the Division of Crop and Livestock Estimates had, therefore, always been much interested in the census and had collaborated closely with the Bureau of the Census.

Others, too, are interested in the census. Those engaged in economic research, farm management advisers, and business people are all interested in reviewing trends, following changes, producing patterns, the way competing crops divide the territory, and the way supplementary or complementary enterprises are combined in farming business by locality.

From time to time, various interested groups had stated that 10 years was too long for factual checks on so important and complex a business as agriculture. As far back as 1902, the National Board of Trade had set up a Committee of Inquiry into the census and recommended a quinquennial census especially for agriculture. The committee said in this regard:

> In view of the advantage to be expected from the Census Bureau being placed on a permanent basis, and the promise of a shortened period for the presentation of results, the committee favors a census report every five years, especially for agricultural data which form a basis for calculation of area and production by other official service, government and otherwise, as to the more prominent crops, and as to the number of farm annuals.[69]

Of course, the statisticians of the Division of Crop and Livestock Estimates were anxious to get more frequent benchmarks. Others, however, put forth the argument that a quinquennial agricultural census could provide much more information than would be possible to include in the regular decennial census enumeration.

The first quinquennial census of agriculture was taken in January of 1925. The State Statistician's office of the Division handled the field work, including the hiring and training of field enumerators.

The 5-year census greatly assisted the crop and livestock estimators, since it reduced the period over which they had to project on the basis of samples. Only in recent years has anyone dared to advance the theory that properly designed samples might give as good or even better results at much less cost than a full census enumeration.

Statistical Training

In early days, statisticians dealt with samples largely because they realized there was little possibility of obtaining what they considered the ideal—a complete count. Most of their efforts were directed to extracting reliable information from data which they had or could obtain within the limits of funds available.

The theory of probability developed around games of chance. The mathematician dealt with the calculus of probability in the abstract, and it was a long time before the operating statistician recognized the powerful tool the theory offered.

In the middle twenties, a very real interest was developing among practicing statisticians in sampling theory. Among the statisticians in the Division of Crop and Livestock Estimates, early interest in the sampling problems appear in Becker's discussion of the problem in his work in Wisconsin. His papers presented at the 1923 Conference pointed out that the "samples" being used did not meet the requirements of the sampling theory of the time.[70]

At the same conference John B. Shepard of the Washington staff advanced a theory that a properly designed sample of 4,000 or 5,000 farms in New York State, enumerated in each of the intercensal years, could provide accurate information for livestock and crops for about one-fourth the costs of a decennial census. He claimed such an annual enumeration would make it possible to shorten the questionnaire used by the census.[71] Shepard did not elaborate on the idea but from later publications, intra-office memoranda, and discussions it is amply apparent that he was thinking in terms of sampling techniques which were to be adopted some 40 years later.

Charles F. Sarle's duties included research. His first project was a study of the adequacy

[69] Taylor, p. 270; Natl. Bd. Trade Proc., pp. 86–88, 92–93. Jan. 1903.

[70] Statistical Conference, Indianapolis, pp. 22–27. Oct. 22–24, 1923.

[71] Ibid., p. 119.

and reliability of farm prices. The results were issued in four statistical bulletins in 1926.

He recognized, as did Callander, that if the Division was to progress, it was essential that the competence of the statisticians be increased. The need was particularly urgent for training statisticians in charge of State offices. This was not alone to equip them to do a better job in their assigned duties but to enable them to do a better job of training new statisticians assigned to them. Furthermore, if they were recognized as competent professional statisticians in their States they could exert more influence with the land-grant colleges and universities to increase and upgrade the statistical training offered, and thereby increase the pool of trained statisticians from which the Division could recruit.

Sarle suggested to Callander that an intensive 6-week training course be established in Washington for statisticians in charge of State offices. The plan was to have about half of them attend in each of the first 2 years and to have assistant State statisticians attend in the third year. The course was planned in consultation with H. R. Tolley and with statisticians in the Division and the Department.

The first school was held in 1927 and repeated the next 2 years. It was an intensive course running from 8 a.m. to about 5 p.m., with heavy evening work assignments. The group stuck with the program and was interested throughout. The program measured up to expectations and more. It did not produce trained statisticians, but it did provide the background for continuing interest and stimulated further study, particularly in sampling techniques and application. Several of the statisticians collaborated with their State universities by teaching one or more courses in crop and livestock estimating methods.

Correlation Techniques

In connection with the outlook work, O. C. Stine, Chief of the Division of Statistical and Historical Research, and H. R. Tolley, Chief of the Division of Farm Management and Costs, had built up a staff to study trends. Some of the men assigned to this project were M. J. B. Ezekiel, L. H. Bean, B. B. Smith, G. C. Haas, E. J. Working, H. B. Illough, and E. M. Daggitt.[72] While studies produced by all these men influenced crop and livestock estimating work, the most significant contributions were made by Ezekiel and Bean.

Ezekiel experimented with modifying the usual multiple correlation methods to reveal curvilinear relationships that logically must exist in many situations. Briefly, his method was to compute the standard linear multiple correlation and then test the relationships by systematic approximations to ascertain whether a curved relationship was justified because it more nearly fit the observed data. Ezekiel published his method in 1924.[73] His work immediately had a profound influence on statistical research in all fields.

Sarle had reported the results of weather and corn yield studies with H. A. Wallace at the Indianapolis Conference in 1923. Becker had also used simple dot charts with freehand regression lines that reflected the curvilinear relationship that often appeared in the relations between condition and yield. In connection with an in-service training course for field statisticians, the Ezekiel method of multiple curvilinear correlation was taught, but Sarle also used a graphic approach as a quick method of discovering the presence or absence of relationships between variables. Several statisticians tried fitting free hand curves in lieu of the laborious methods required by the Ezekiel method.

L. H. Bean's experimentation with the graphic approach led to improvements in graphic technique. He showed that it was possible to develop the net relations between variables by graphic methods and do away with the lengthy and laborious methods of the Ezekiel method. When applied to problems where the true relationships were known, both methods gave the same results.[74]

[72] Taylor and Taylor, p. 454.

[73] Ezekiel, M. J. B., A Method of Handling Curvilinear Correlation for Any Number of Variables. Jour. Amer. Statis. Assoc. 1924, 19: 431–53: M. J. B. Ezekiel, Methods of Correlation Analysis. New York. 1930.

[74] Bean, L. H., Application of a Graphic Method of Multiple Curvilinear Correlation. U.S. Dept. Agr. (Mimeo.), Washington, 1929; and Bean, L. H., A Simplified Method of Graphic Curvilinear Correlation and Application of a Simplified Method of Correlation to Problems of Acreage and Yield Variations, Jour. Amer. Statis. Assoc. 24: pp. 386–97, Dec. 1929, and 24: 428–39, Dec. 1930.

The development of the new simplified correlation techniques spawned a correlation fad in which all sorts of so-called correlation studies were made. The logic of a curve was at times overlooked so long as a line could be drawn to fit the observations. The advantages of the new procedure far exceeded the occasional misuse by the "curve drawer" as some of the inexperienced practitioners were called.

Statisticians of the Division of Crop and Livestock Estimates extended their use of the dot chart as a means of interpreting the reported condition figures. The dot chart often showed that the relationship between condition and final yield was a curve. It was found also that the use of dot charts of condition and yield with a freehand regression line was more useful and required less work than the computation of the "pars," which assumed a straight line positive relationship, for projecting probable yield.

Investigation also brought to light some errors in the basic assumption that high condition is directly related to high yield. When the condition of wheat in Maryland was plotted against final yield, it was found that the relationship was negative or the reverse of the basic assumptions. Sarle brought this to the attention of the State Statistician. Investigagation showed that this was the result of a disease, *Septoria Nordorum,* particularly on certain varieties of wheat, which was progressively worse when rainfall and high humidity encouraged lush growth. A farmer observing a lush stand reported a high condition, not recognizing the development of the disease before harvest time. The statistician developed correlation analysis of rainfall and temperature to aid estimates or forecasts of Maryland wheat yields during the season.[75]

Weather and crop yields relationships were developed for some other crops, particularly early potatoes in the South and apple sizes in the Hood River Valley of Oregon.[76] F. V. Waugh made a study of the effect of weather on yield of potatoes in Aroostook County, Maine.

[75] Newell, S. R., Factors Affecting the Yield of Wheat in Maryland. Master's Dissertation, American Univ., 1929. (Unpublished.)

[76] Newell, S. R., Factors Affecting the Size of Apples in the Hood River Valley of Oregon. U.S. Dept. Agr. Mimeograph, 1929.

The Great Depression

Farm policy was an issue in the election of 1928. Arthur M. Hyde, who was appointed Secretary of Agriculture by President Hoover on March 6, 1929, was from Missouri. He graduated from the University of Michigan in 1899 and obtained a law degree from the University of Iowa in 1900. He practiced law, had farm and lumber interests, and owned an automobile agency. He was elected Governor of Missouri in 1920 where he promoted improved rural education, provided for wider dissemination of technical information among farmers, and carried on a vigorous road improvement program.

During the campaign Hyde had supported the idea of a Federal Farm Board working through cooperative groups, as opposed to direct farm relief such as proposed in the McNary-Haugen proposals. He embraced the hope that general prosperity would, with minimum help by the Government, lift the farmers out of the economic slump that had prevailed throughout the twenties.[77]

The Farm Board, President Hoover's answer to persistent urging for financial relief to farmers, was established under the provisions of the Agricultural Marketing Act approved June 15, 1929. The Act went further than the Administration wanted to go in participation in agricultural affairs but not nearly so far as farm organizations would have liked. Congress stated that its policy was to promote effective merchandising of agricultural products and thereby place agriculture on a basis of economic equality with other industries.

Disaster struck in the stock market crash of October 29, 1929, which touched off the longest and most severe depression the Nation ever experienced. The entire economy was gravely affected, and agriculture sank close to disaster. To add to the woes, floods in the South in 1929 were followed by serious drought in many areas in 1930. The Drought Relief Act, approved on December 20, 1929, was one of many emergency measures. Increased appropriations for disaster-type loans to farmers were intended for purchase of

[77] Century of Service, U.S. Dept. Agr., pp. 130–31. 1963.

seed for planting new crops or for feed to maintain livestock, but in actual practice some of the money went for farm family living expense. Farmers were under extreme pressure for immediate cash to make payments on land, machinery, and livestock. Money was increased for Federal-aid roads, and large sums were appropriated for providing work for the unemployed in construction and improvement of National Forest roads and trails. The Secretary noted that nearly all of the increase in departmental expenditures had resulted from putting more men to work on the roads and making direct loans to farmers suffering from drought, flood, and unprecedented economic distress.

A Federal Drought Relief Committee was established, headed by the Secretary, in 1930. In addition to recommending loan policies, it aided stricken counties to obtain reduced railroad rates for shipment of hay, feed, and water. In 1931 the Secretary emphasized the need for curtailment of acreage and livestock breeding through voluntary concerted action.

Crop and Livestock Estimates in the Emergency

Under these depressed and extreme conditions, the problems of the Division of Crop and Livestock Estimates were multiplied manyfold. It became more difficult to obtain voluntary reports from farmers in distress. Samples required much more independent checking to maintain comparability with the past.

At the same time, demand for information increased tremendously. Special reports on flood or drought damage were immediately required. The Washington office and the State Statisticians were pressed into extra service. Disaster loans were predicated on factual information the Division was best able to obtain. Arrangements for special freight rates called for data on where supplies were needed and where they could be obtained.

Cooperative marketing organizations required reliable information on supplies and prospective supplies to operate effectively. Overall statistics would not suffice because the need was for detail by producing areas and often by varieties.

Special outlook reports were issued on a number of products. Statisticians of the Division were heavily involved in all of the outlook work of the Bureau of Agricultural Economics. Farm labor and wage reports had to be supplied and analyzed. Special information was also called for by administrators, legislators, and others to develop policy and guide action.

Despite the additional special demands, the Division continued to make progress in the regular program. During 1930 improved forecasts and estimates were developed for more than 20 vegetable crops. Seven statisticians were assigned to field investigations on these crops. Tentative estimates of farm income by States for the 5-year period 1924 to 1928 covering 78 crops and 14 items of livestock and livestock products were completed. In 1931 the regular monthly report was expanded to include milk estimates, and a new series of reports on fruit and potato prospects was inaugurated. Two special drought surveys were made, one in August and another in November.

As usual, the Division cooperated with the Bureau of the Census on the 1930 Census enumeration but not to the extent of performing field services as in 1925. Average farm prices by counties were prepared for 156 crop and livestock items for the marketing season of 1929 and values of 30 livestock items as of April 1930.

Research Activities Curtailed

The Division did not have special or earmarked funds for research. All the improvements that had been developed, particularly during the early twenties, had been accomplished by working in special studies between the regular reporting programs and not a little by the enthusiasm and interest of the entire staff in the use of considerable amounts of "midnight oil."

There was no 5-day week in those days, and with the depression demands for special reports and analysis the staff often worked around the clock. The result was that little time was left to delve into the kind of investigations that had resulted in the abandonment of the par methods, statistical analysis of the samples,

studies of weather-crop relations, and many other improvements.

Sarle, who had been relieved of routine work on price reports about 1926, had given considerable attention to the research part of his job for several years. He, too, found himself drawn into the emergency programs until he left in the fall of 1929 for graduate work, after which he transferred to the Farm Board in October 1930 and thence to the Agricultural Adjustment Administration.

This curtailment of research, made necessary by the general economic conditions, interrupted the momentum that was developing in the twenties. This was a loss to the Division that was felt for a number of years thereafter.

PART IV. AN ERA OF TURBULENT EXPANSION, 1930-66

PROLOGUE

A period of transition in agricultural estimates started with the Agricultural Ajustment Act, followed by World War II and the second agricultural revolution.

1930 to 1966

The condition of agriculture continued to worsen. Prices received by farmers declined following the crash of 1929 and by 1932 had plummeted to the lowest level since 1899. In 1930 the farm price of wheat dropped to 66 cents a bushel and reached a low of about 29 cents in 1931 and 1932. Cattle and hog prices followed much the same pattern.

On June 15, 1929, President Hoover approved the Agricultural Marketing Act under which the Federal Farm Board was established. While the Board devoted the major part of its efforts to aiding procedures to develop a strong cooperative marketing system, it also established stabilization corporations to purchase surplus wheat and cotton. In 1932, the Board reported on its failure to stabilize prices. The conclusion was that no measure of improving prices other than increasing the effective demand of consumers can be successful over a period of years unless it provides a more definite control of production.[78]

In his inaugural address on March 4, 1933, President Franklin D. Roosevelt said: "This Nation asks for action and action now." The first action in the area of agriculture was not long in coming. The Agricultural Adjustment Act of 1933 was cleared by both Houses of Congress on May 12 and approved by the President on the same day.

In his message to Congress on March 16 the President had recommended quick action on the bill as an experiment on "an untrod path." It was a revolutionary development. It changed the philosophy of the Department by expanding the scope of its activities to include authority and funds to alleviate distress situations in agriculture.

The active programs that were developed had an immediate effect on the crop and livestock estimating work of the Bureau of Agricultural Economics. The activities of the Crop and Livestock Estimates Division that were started and developed as a result of the Agricultural Adjustment Act of 1933 and its successor Soil Conservation and Domestic Allotment Act of 1936 might be said to have marked the beginning of a revolution in the crop and livestock estimating work.

World War II started in Europe on September 1, 1939. Food demand in Europe increased rapidly. The surplus food problem vanished and was followed by programs to increase production. The Lend-Lease Act was approved March 11, 1941. Production goals were promulgated in 1941 and the Steagall Amendment was passed to provide price supports for nonbasic crops. The United States entered the war after the Pearl Harbor attack on December 7.

Farm production reached a new high in 1942 and was maintained at close to that record during the war years. This was accomplished in spite of a shrinking labor supply and difficulty of obtaining machinery and farm materials. Factors that contributed to this accomplishment were widespread progress in mechanization, greater use of lime, fertilizer, cover crops and other conservation practices, use of new and improved varieties, and control of insects and diseases. Along with the wartime need for food and the doubling of prices received by farmers for their products, these factors provided the driving force for increasing production and revolutionized agricultural practices.[79]

[78] Rasmussen, Wayne D. Readings in the History of American Agriculture. pp. 253–254.

[79] Ibid., p. 275.

Following the war, farm population continued to decline. Between 1950 and 1965, farm population declined from 25,058,000 to 12,400,000. In the same period the number of farms declined, partly as a result of increasing urban growth, but more from the combination of farm units. The larger farms were able to utilize the expensive new farm machinery more economically to meet the need for lower unit costs of production.

Specialized farming increased and vertical integration of the operations of production, processing, and marketing were changing the pattern in many agricultural enterprises.

The role of Government in agriculture was altered to deal with critical issues arising from each successive development. Unprecedented demands for data accompanied the new Government programs.

CHAPTER 8. A NEW ERA STARTS WITH HENRY A. WALLACE

A bleak, desperate situation confronted Henry A. Wallace as he became the 11th Secretary of Agriculture on March 4, 1933. Like his father, the seventh Secretary of Agriculture, and his grandfather, he had gained nationwide attention through his editorials in "Wallace's Farmer." He was also nationally known as an agricultural economist and a corn breeder. His hybrid corn grown on his farm had won the Iowa corn tests. He had played a part in the McNary-Haugen farm relief movement, and he had also used his voice and pen to urge Government action to help farmers obtain equality of bargaining power. In his writings, he spoke of complex causes such as America's position as a creditor nation and the relative fluctuations in farm prices as compared with prices for industrial products. He also wrote of the need for balanced production, the ever-normal granary, stabilization of the purchasing power of the dollar by varying the gold content, and better utilization of land—all to the end of securing equality for agriculture.[80]

The Agricultural Adjustment Act

Secretary Wallace believed that the farm crisis called for immediate legislative action. On March 8, 1933, he and Rexford Tugwell, the new Assistant Secretary of Agriculture, urged the President to ask Congress for action at the special session called for March 9. President Roosevelt agreed and directed the Secretary to call a conference of farm leaders. Representatives of the American Farm Bureau, the National Farmers Union, and the National Grange were among the 50 farm leaders that appeared in Washington for the conference on March 10. Agreement was reached and a committee from the group called on the President on March 11, proposing that broad emergency powers be recommended to Congress.

President Roosevelt directed the Department to draw up the legislation. This was quickly accomplished and on March 16 the proposed legislation was forwarded by the President to Congress with the recommendation that quick action be taken. The act cleared both Houses and was signed by the President May 12.

The emergency nature of the situation and the variety of the proposed solutions are indicated by the fact that the Emergency Farm Mortgage Act of 1933 and an act authorizing the President to inflate the currency were added as Title II and Title III of the Agricultural Adjustment Act.

To restore prices of agricultural commodities to the 1910–14 level, the Secretary of Agriculture was authorized to secure voluntary reduction of the acreage of basic crops through agreements with producers and through direct payments for participation in acreage control programs; to regulate marketing through voluntary agreements among processors and distributors; to license processors, associations of producers, and others handling agricultural commodities to eliminate unfair practices and charges; to determine the necessity for and the rate of processing taxes; and to use the proceeds of taxes and appropriated funds for the cost of adjustment operations, for the expansion of markets, and for the removal of agricultural surpluses. Wheat, cotton, field corn, hogs, rice, tobacco, and milk and its products were designated as basic commodities. The list was expanded by the Jones-Connally Act of April 7, 1934, to include rye, flax, barley, grain sorghum, cattle, and peanuts. On May 9, 1934, the list was expanded to include sugarbeets and sugarcane, and on August 4, 1935, potatoes were added.

[80] A Century of Service, pp. 143–144.

Despite some reluctance on the part of George N. Peek, the first administrator of the act, and of coadministrator Charles J. Brand, who favored marketing agreements and diversion of surpluses to export or other uses as the best method, Secretary Wallace and President Roosevelt chose production control as the major method to be used in raising prices. Chester Davis, who headed the Division of Production under Peek and who later succeeded him as Administrator, and M. L. Wilson, head of the Wheat Section, agreed with Wallace on the decision to follow the production control route.[81]

There was turmoil in the Department in deciding what procedures could be put into operation most rapidly. Everyone recognized that the official acreage and livestock numbers collected by the Division of Crop and Livestock Estimates would be at the base of any allotment program. That they would be scrutinized as never before was a certainty. There was serious discussion of the desirability of rushing through a special agricultural census to precede the actual allotment of acreage for each crop. The idea was dropped, however, because it was evident that a census would require too much time to meet the pressing need for prompt action. Consideration was also given to assigning the acreage allotment work to the Division of Crop and Livestock Estimates. It was a tempting idea to some of the administrators because here was a readymade technical staff with a well-trained field organization that could be put into action immediately. More deliberate consideration brought out the danger of taking what appeared to be the quick, easy way of meeting the emergency. Callander, Head of the Division of Crop and Livestock Estimates, pointed out that dependable, unbiased statistics were needed to guide policy decisions and to serve as a basis for operations.

Most members of the staff were relieved when the Division was not assigned responsibility for the administration of the Agricultural Adjustment Act. This did not mean they were not involved, however. The entire Washington staff, plus some statisticians brought in from the field, literally went on a round-the-clock schedule. One immediate job that loomed large was how to handle millions of agreements or contracts that would be sent in by the farmers. Where to put the large clerical force that would be required, how to instruct this large group of inexperienced clerks, and how to process the contracts and finally issue benefit checks were burning questions.

The Division of Crop and Livestock Estimates with the help of the administrative office of the Bureau of Agricultural Economics went to work. Stack space that had been built for the library in the still unfinished South Building was taken over. Punchcard equipment was commandeered from all sources. Meanwhile, contract forms were being designed and duplicated, instructions were being prepared, clerks were being hired, experienced people were called in from wherever they could be found. In all of this the Head of the Division, the Assistant Head, and technical staff took the lead. Machine tabulation arrangements were completed, and operations started.

Appropriated Funds Cut

As the workload of the Division was expanding, appropriated funds took a sharp drop from about $804,000 in 1932 to slightly more than $700,000 in 1934. A drastic reduction of personnel was threatened. When the Head of the Division and the Chief of the Bureau of Agricultural Economics brought the serious situation to the attention of the Department, an allotment of money from the President's emergency funds was immediately arranged. In 1934, the allotment amounted to about $750,000. This relieved the situation and permitted the Division to provide the additional services required under the adjustment program.

A number of staff members in Washington and the field were assigned to work as special consultants to various program sections in the Agricultural Adjustment Administration. Several former statisticians returned to work on particular programs. Logan Shutz, a former statistician for Texas, worked with the Cotton Division; C. F. Sarle worked with the corn-hog program; and E. C. Paxton, former statistician for Kansas, and more recently Agricultural Attache in Australia, worked with the Wheat Division. S. R. Newell was assigned as a Special Assistant with the General Crops

[81] Ibid., pp. 145–147.

Section for work on marketing agreements for citrus fruits. For this work, a complete count of tree numbers was made to provide a basis for improving the regular estimates for this crop. These men were all officially on the rolls of the AAA, but worked closely with the Crop and Livestock Estimates Division.

Farm Prices Index [83]

One of the most important activities at the time was the work on farm prices. The Agricultural Adjustment Act of 1933 set up the objective of restoring prices to farmers at a level that would give agricultural products the same purchasing power they had in the base period. The base period for most crops was August 1909 to July 1914.

Data on prices received by farmers had been collected since 1866, the first published attempt at an index number of prices received by farmers was in 1910 and included 10 crops. Through the years this index has been changed in scope and method of computation.

An annual inquiry on prices of 74 items bought by farmers was begun in 1910. The Bureau of Agricultural Economics first published an index of prices paid in 1928. This was used to measure the purchasing power of farmers. Attention was focused on these series as the concept of parity price was legally formalized.

The significance of both index numbers was greatly increased with the passage of the Agricultural Adjustment Act. The Division immediately undertook a careful review of the series to bring them up to date with the latest information available and adapt them to better meet the contemplated requirements.

The index of prices paid received first attention. It was revised in 1933 at which time budget weights used in combining the subgroups were shifted to averages for the period 1924–29. The report in which this revision was published pointed out that considerable additional information regarding farmers' purchases had become available since the initial publication in 1928. Changes in the revised index resulted from the addition of a few new commodities, revised weights in a few instances, and additional prices for some commodities extrapolated for years before 1927. Interest and taxes were introduced into the index of prices paid in August 1935. An amendment to the Agricultural Adjustment Act of 1933 provided that purchasing power should reflect interest payments per acre on indebtedness secured by real estate and tax payment per acre on farm real estate.

The index numbers of prices received by farmers were revised in 1934. The principal changes were (1) the use of improved price series for dairy products and tobacco, (2) the addition of prices of 20 products including a group of truck crops, and (3) a shift in weights from marketings during 1918–23 to those of 1924–29.

While development of index numbers was the responsibility of the Division of Statistical and Historical Research of the Bureau of Agricultural Economics under the direction of O. C. Stine, the collection of information, computation of prices, and preparation and publication of reports was the responsibility of the Farm Price Section of the Division of Crop and Livestock Estimates. Both divisions were under extraordinary pressure in 1933.

Acreage Allotments [84]

The emphasis on production adjustment placed a heavy responsibility on the crop and livestock estimating organization. This is well illustrated in the cotton program of 1933, under which farmers agreed to plow up before harvest 25 to 50 percent of their cotton acreage. The objective was to eliminate 10 million acres, or about one-fourth of the growing crop. Under the second series of contracts signed early in 1934, farmers agreed to plant between 55 and 65 percent of their base acreage which was defined as the average planted acreage for 1928–1932. The Division of Crop and Livestock Estimates was asked to supply county estimates of acreage and yield in the base period and in the current year as the basis for county quotas and for appraising the validity of the aggregates of the contracts submitted by the growers.

The sharp decline in the winter wheat prospects due to weather saved the wheat farmer

[83] For a detailed discussion of the price indexes, see Stauber, B. Ralph, Koffsky, N., and Randall, C. Kyle. The Revised Price Indexes. Agr. Econ. Res. II(2): 33–62, Apr. 1950 (Revised Price Indexes), published by U.S. Dept. Agr., Bur. Agr. Econ.

[84] A Century of Service, pp. 148–154.

from a plowup campaign similar to that adopted for cotton. A formal proclamation on the wheat program was issued on June 20, 1933. Adjustment payments of around 30 cents per bushel were made for the crop years 1933, 1934, and 1935 on 54 percent of the average amount of wheat produced on the growers' farms during 1928–32. In return, the wheat farmer agreed to reduce his wheat acreage for 1934 and 1935 by a percentage to be determined by the Secretary, but not to exceed 20 percent. The cut in wheat acreage required under the contract was 15 percent for 1934 and 10 percent for 1935. Reduction in wheat stocks resulting from the drought of 1933 and 1934 made it possible to avoid large cuts like those imposed for cotton. Again, this required county estimates of acreage and yield.

Production controls for tobacco were distinguished from controls for other commodities by the use of different base years. The period August 1919 to July 1929 was the base for determining the parity price goal and for acreage and quantity control. Another distinguishing feature of the program for tobacco was the use of marketing agreements in 1933 to raise the price of several kinds of tobacco in anticipation of the price-increasing effect of controlled production. County estimates of acreage and yield by types of tobacco were called for.

The corn-hog program was the last of the major adjustment programs to be launched. The critical situation facing producers had to be balanced against the need for two separate but closely interrelated commodities.

By July 1933 the reduced prospects for corn due to unfavorable weather had resulted in the decision that corn producers not be requested to join in a plowup campaign similar to that applied to cotton. However, since the short 1933 corn crop would not bring about decreased hog production until 1934–35, attention was directed to finding a solution for the heavy supplies of hogs expected to be marketed during the winter of 1933–34. A large increase in breeding had been stimulated by the cheap corn of the preceding year. The decision was to purchase and slaughter about 4 million pigs weighing under 100 pounds and approximately 1 million sows about to farrow.

The hog slaughter and corn loan programs were regarded as emergency measures. The general corn-hog adjustment program was announced by the Secretary on October 17, 1933. But the general signup campaign did not get underway until late January 1934. Participation in the program required growers to cut their corn acreage 20 to 30 percent below the average acreage planted in 1932 and 1933. Growers were also required to reduce the number of hogs produced for market by at least 25 percent. The provisions on corn were later modified to adjust to the drought emergency. The contracts for 1935 required 10-percent reductions in corn acreage and hog production. County estimates for corn and hogs had to be developed by the crop and livestock estimating organization.

The needs for detailed data on acreage and yield estimates, livestock numbers, prices received for commodities sold, and prices paid for commodities bought added substantially to the workload of the crop and livestock statisticians.

Personnel Expansion—"Corn-Hog Juniors"

In 1934 and 1935 the farmers submitted their contracts to the county agent's office. The State Statisticians were responsible for establishing the county quotas, planning and conducting the tabulation carried on in the county agent's office, and supervising the adjustments necessary to come within the quotas.

This sudden expansion of responsibilities called for a fast buildup of staff, particularly in the field offices. Beginning in the fall of 1933 and through 1935, the Civil Service register was quickly exhausted with the hiring of some 90 junior agricultural statisticians. This was the largest number of statisticians hired in any comparable period in the history of the organization and probably the largest number in any similar period since that time. Because it was so unusual and because the corn-hog program was the most pressing job at that particular time, the term "corn-hog juniors" was applied to the entire group of new recruits.

Up to 1934, the practice had been to assign a new junior statistician to a field office where he was trained in all operations from the mailing of schedules to editing the returns, tabulating and computing, and on to the preparation of the report. Generally this training continued for about a year before the employee was con-

sidered ready to make independent field trips, observe crops, interview farmers and business men, and handle other similar jobs independently.

With the fast moving action programs inaugurated under the Agricultural Adjustment Act, it was apparent that steps had to be taken to train the large group of new employees to assume operational responsibilities more quickly. The State Statisticians, and many of their assistants, had been through the in-service training classes during the 1920's and were therefore better equipped to give the young men training in technical aspects of the work. To coordinate their efforts, the Washington office provided a series of four field memoranda that amounted to a brief correspondence course in statistical methods used in the service.[85] These memoranda served the immediate needs but continued to be used for a number of years by State statisticians for indoctrinating new employees. The junior statisticians moved into action very quickly by accepting a considerable part of the workload involved in determining quotas and reviewing and adjusting the county allotments. After the Agricultural Adjustment Administration set up its own State and county organization in 1936, the agricultural statisticians were relieved of much of the time-consuming negotiations but they continued to act in an advisory capacity to the State and county units.

After more than 30 years the name "corn-hog juniors" is still used with some pride by many of the men who remained in the organization. On the whole it was a rather outstanding group. Some were enticed away by attractive commercial offers, some hold important positions in other Government agencies but a goodly number advanced to highly responsible positions in the Statistical Reporting Service.

The Dust Bowl

In 1934, the woes of the crop statisticians were compounded with the beginning of the most severe and prolonged drought of modern times. The area affected covered the Corn Belt and southern Great Plains. The first of numerous devastating duststorms blew up in the "Dust Bowl" in early May. A great exodus of farm people from the most affected areas followed.

Yield and production of hay dropped to the lowest point on record, starting with 1900. Pasture and range conditions, too, reached new lows. The yield of corn of 15.7 bushels per acre was the lowest in the record dating back to 1866. Conditions improved somewhat in 1935, but 1936 was almost a duplicate of 1934. Such conditions had never been seen before nor since. The situation in 1936 was in some ways more serious mostly because effects of the earlier period were cumulative. President Roosevelt appointed an Interdepartmental Great Plains Drought Area Committee on July 22, 1936.

In large areas crops were wiped out. There remained the problem of saving as much livestock as possible. Relief loans mounted, emergency field programs had to be implemented—to say nothing of coping with great social problems evolving many sections.

Urgent requests for data confronted the crop and livestock reporting service. How much feed was available and where? How many cattle and hogs were involved? Could they be moved, and to where? What was the progress of the drought? These were only a few of the questions put to the Division.

The urgency was such that a month was too long to wait for regular crop reports. Semi-monthly and even weekly reports were called for. Special stocks reports giving the supply of feed grains by position were released. Reports on special conditions not only for the stricken areas but for other areas were required to provide information on where livestock were suffering and where they might be shipped. These reports had to give a great deal of information by areas within the States, mostly by counties. Inventories of livestock, too, had to be pinpointed by counties or groups of counties. Those in the Department who were arranging for special freight rates had to have this kind of information to make arrangements with the railroads involved.

Some State statisticians were assigned to work with the drought committees in the

[85] Newell, S. R. Field Memorandum—CEM148—Statistical Methods for New Appointees. Mimeographed in 4 parts. Files of the Statistical Reporting Service, Jan. 1934.

States. The regional livestock statisticians, Fred Bier in Colorado and George Scott in California, together with C. L. Harlan, in charge of the Livestock Section in the Washington headquarters office, gave a considerable part of their time to the drought program.

This difficult period finally abated in 1937 but scars remained for a long time. The Great Plains Drought Committee was continued as the Great Plains Committee. The State statisticians and the regional livestock statisticians continued to work closely with the committee that in a number of ways supplemented the program of the crop and livestock reporting service.

The Agricultural Adjustment Act Declared Unconstitutional

The Agricultural Adjustment Act was declared unconstitutional by the Supreme Court in the Hoosac Mills case on January 6, 1936. The Department had been alerted to the possibility of an unfavorable decision by the invalidation of the National Industrial Recovery Act on May 27, 1935, and had worked on a variety of plans which could be presented to Congress. The Secretary felt a new approach satisfactory to the Court's constitutional interpretation had to be found before the spring planting season.

On the same day as the Court's decision, Secretary Wallace called a meeting of farm leaders to advise the Department. Seventy farm leaders met in Washington on January 10 and 11. The Program Planning Division of the Agricultural Adjustment Administration had recommended that soil conservation be adopted as a major objective of the adjustment program.

Representatives attending the conference reached unanimous agreement on recommending legislation to provide for rental and withdrawal from commercial crop production of the land necessary to promote soil conservation, and bring about a profitable balance of domestic production with effective demand. Other recommendations included the maintenance of valid parts of the Agricultural Adjustment Act, particularly those parts authorizing marketing agreements and orders and Section 32 authorizing the use of 30 percent of the customs receipts for surplus removal.

Congress adopted the soil conservation and good farm management approach to the farm problem in the Soil Conservation and Domestic Allotment Act. This act, passed as an amendment to the April 27, 1935, legislation on soil erosion control, was approved on February 29, 1936, just 54 days after the invalidation of the Agricultural Adjustment Act.[86]

From the standpoint of the work of the Crop and Livestock Estimates Division, the whole episode amounted to a brief interlude in the activities with the Agricultural Adjustment Administration. The immediate result, which required hasty adjustments in program and personnel, was the reduction of around $200,000 in the emergency funds allotted for the work. The drought of 1936 was still making extraordinary demands for the statistical services, and the new adjustment program rapidly built up to even greater demand for special services.

Adjustment Programs and Crop Reports

The acreage allotment plan and later the soil conservation program gave rise to frequent questions as to why the crop and livestock reporting service could not simply tabulate the allotments or summarize the acreage adjustments to determine the acreage of the various crops. This sounded easy but in practice such a process would be far too slow to meet the requirements of a timely reporting service. Furthermore, all farmers did not participate in the program and many that did would not always plant up to the allotment. State and local offices operating the adjustment program made the information available to the State statistician as it became available, and it was very useful as collateral check information. Compliance checks were slow and not always fully dependable. In several instances the State statisticians were asked to make special area surveys to check on compliance.

Control or adjustment programs introduced new difficulties with voluntary crop reporting. Individual biases were subject to change when it became known that the official estimate served as the basis for amending acreage allotments. Then, too, a farmer who puts his entire farm into, say, a soil conserving program had

[86] A Century of Service, pp. 166–67.

a tendency to stop reporting, thinking it not important since he was not producing commercial crops. Problems such as these tended to accentuate the need for more objective methods for estimating acreage and yield or estimating numbers of livestock.

The crop and livestock work, since its beginning, has been built as a cooperative undertaking with the farmer and other reporters. It has been emphasized to respondents that their reports are used only by technicians in the service in combination with other reports for estimating purposes. In fact, no figures have ever been released or published that would disclose any individual's operation. For this reason, experience has shown that the cooperative crop and livestock reporters by and large report accurately.

The wisdom of the decision, previously noted, to take every precaution to keep the crop and livestock estimating function independent of any regulatory or administrative responsibility for the production control programs has been repeatedly demonstrated. To preserve and further the confidence between the reporter and the service, the heads of the division have always resisted any suggestion that there be a Federal law requiring the respondent to report or requiring that a field statistician or his assistants be allowed access to a farm or place of business.

Leadership Changes

Joseph A. Becker became Head of the Division and Chairman of the Crop Reporting Board in August 1935 when Callander resigned to become Assistant Administrator and Comptroller of the Agricultural Adjustment Administration. Becker had been the principal statistician for the Division, taking over the work Nat C. Murray had carried during the time Estabrook had been the Chief of the old Bureau of Crop Estimates from 1914 to 1922. Becker took the leadership in adapting the work of the Division to the extraordinary responsibilities falling on the Division from the beginning of the depression in 1929, through the drought of 1930, and the period immediately following the passage of the Agricultural Adjustment Act in 1933 when the Division was called upon to assist in setting up methods and procedures for administration of the Act.

On January 1, 1936, D. A. McCandliss, who was Agricultural Statistician for Mississippi, was transferred to Washington as Assistant Head of the Division of Crop and Livestock Estimates. McCandliss did not really want to stay in Washington, and on March 1, 1937, a personnel action was processed to transfer him back to the position of Statistician in Charge in Mississippi. Before this action became effective doctors ordered Becker to take an extended period of sick leave to regain his health.

Callander was recalled from the Agricultural Adjustment Administration to resume the position as Head of the Crop and Livestock Estimates Division and Chairman of the Crop Reporting Board on May 1, 1937. McCandliss remained as Assistant Head of the Division until March 16, 1938. On April 27, 1938, Becker was restored to the rolls as technical assistant, and on May 1 of that year Paul L. Koenig, who had left the Division in July 1935 to become Executive Assistant to the Director of the Land Utilization Program of the Resettlement Administration, returned to the Division as Administrative Assistant to the Head of the Division.[87]

The First Agricultural Marketing Service Established

By 1938 the Bureau of Agricultural Economics had grown to 20 program divisions and three special sections. The Assistant Chief for Marketing and Regulatory work had primary responsibility for nine commodity divisions and the Cold Storage reports section. The Division of Crop and Livestock Estimates, a functional division, was considered as a staff division of the Bureau, but viewed operationally as a marketing service, it was linked closely with the Assistant Chief.

By Secretary's Memorandum 783, dated October 6, 1938, the Division of Crop and Livestock Estimates and the marketing and regulatory work were transferred to a new organization called the Agricultural Marketing Service, and C. W. Kitchen, who had been the Assistant Chief of BAE in charge of this work, was appointed chief of the new service.

With the transfer of the Division of Crop and Livestock Estimates to the Agricultural

[87] Personnel records of the Statistical Reporting Service.

Marketing Service, the name of the division was changed to the Agricultural Statistics Division. Responsibility for seed statistics was transferred to the Statistics Division from the Hay, Feed, and Seed Division. Statistics on hatchery production, fluid milk, and manufactured dairy products were also transferred from the Dairy and Poultry Products Division and the Cold Storage Reports Section (formerly attached to the office of the Assistant Chief of the BAE) to the Agricultural Statistics Division.

The Federal Crop Insurance Corporation was established in 1938. To ascertain insurance rates, an added demand arose for county statistics on acreage and yield per acre of crops to be covered by insurance. Data provided for the soil conservation program were utilized as far as available, but information for additional crops and areas had to be developed. The Corporation provided funds for the additional work involved.

Wickard Appointed Secretary of Agriculture

Henry A. Wallace resigned as Secretary of Agriculture on September 4, 1940, to run as candidate for Vice President. On September 5, 1940, Claude R. Wickard was appointed Secretary.

Secretary Wickard graduated in animal husbandry at Purdue University, returned to farming, and was selected as a master farmer in 1927. He was elected to the Indiana State Senate in 1932 where he gained the respect of the State agricultural leaders for his sincerity and determination in fighting for constructive and progressive legislation. He was selected to represent Indiana on the National Corn-Hog Committee of Twenty-five, the group that helped set up the original corn-hog program of the Agricultural Adjustment Administration. Wickard went to Washington to implement the recommendations of the Committee and in 1935 became Chief of the Corn-Hog Section.

When the Agricultural Adjustment Administration's agricultural conservation program started in 1936, he became Assistant Director and then Director of the North Central Division. On March 1, 1940, he was appointed Under Secretary of Agriculture. In his 6 years with the Department, Wickard had proved himself a capable protagonist of the Administration's farm program and a popular spokesman for the Midwest. His appointment as Secretary met with congressional and public approval.[88]

Wickard was to face a most difficult period for the Department and the Nation. About 14 months after his appointment the attack on Pearl Harbor signaled the actual entry of the United States into World War II. He had already called for the development of war production goals and soon after made famous his slogan, "Food will win the war and write the peace."

Statistical Research

In the beginning of the crop estimating program the principal source of data was voluntary mail reporting by farmers. This was the cheapest method for collecting a large volume of statistics, but inherent weaknesses were recognized. Through the years refinements were introduced, collateral check information was developed, supplementary surveys were added, and with improved analytical techniques remarkably accurate estimates of production of crops and numbers of livestock were provided. The system was still dependent upon periodic benchmarks, census enumerations, and the skill of the agricultural statistician in projecting basic trends during the intercensal years. The samples with which he worked were biased, did not meet the requirements necessary for sophisticated statistical analysis, nor could they provide a reliable basis for estimating some of the changes taking place in the fundamental patterns in agricultural production. The mail sample could not provide reliable information on number of farms, size of farms, or total land in farms, yet these were basic factors needed in analyzing the current samples and projecting the trend between the census periods.

The subject of research into methods of improving the estimates, sometimes a little dormant in the rush of meeting the current program but always viable, sprouted quickly, particularly when touched with the sunshine of a bright idea, or most potent of all, a few extra dollars. During the early days of the Agricultural Adjustment Administration, the urge for methodological research began to stir vigorously. That program pointed up dramat-

[88] A Century of Service, pp. 273–74.

ically the vital role of accurate statistics in developing agricultural policy and administering the so-called action programs. Then, too, in the operation of the programs considerable material that could be used in studying sampling techniques began to become available. At the top level Secretary Henry A. Wallace understood and was sympathetic to the problems of the crop estimators. W. F. Callander, Head of the Division, was always a strong advocate of research, and from time to time had managed to squeeze out a few dollars for research. Joseph A. Becker, Assistant Head of the Division, developed many techniques to strengthen the work and seized any opportunity to advance research.

In 1934, Callander succeeded in getting C. F. Sarle, who was then with the AAA, transferred back to the Division. Sarle returned in November 1934. His job was to be in charge of fundamental research in statistical methodology.

At about this time another development that was to have a profound effect on the research and development of the statistical work in the Division was taking shape at Iowa State College at Ames, Iowa. In 1933, the College had set up a Statistical Laboratory with Professor George W. Snedecor as Director. One of its functions was to coordinate all teaching activities in statistics. It was developed, however, as a research, consulting, and service organization that was available to outside agencies for research on statistical problems.[89]

The Bankhead-Jones Act, providing for expansion of research on basic problems confronting agriculture, was approved June 29, 1935. The possibility of securing some of these special research funds to study the basic statistical problems involved in agricultural estimating was discussed with James Jardine (brother of a former Secretary of Agriculture), who was charged with the administration of the act. He agreed that such research was appropriate and expressed interest in agricultural estimates problems.

Meanwhile, there had been a resurgence of interest in the Crop and Livestock Estimates Division in the possibility of an annual sample survey of factors available only from the census and studies of weather influence on crop yields. Sarle pushed both of these ideas when he returned as did other members of the staff—notably Becker, who was appointed Head of the Division in August 1935, and John B. Shepard. Technicians in the Bureau of the Census were also drawn into the discussions of the sample idea. Consideration of this plan immediately raised the problem of the design of the sample for making an adequate survey. Legislation to implement such surveys was proposed on several occasions but congressional approval was never forthcoming. Nevertheless, with the great interest that was developing in probability sampling, in both the Government and private agencies, agricultural statisticians realized that the demands for more and more accurate statistics required the sharpening of the sampling tools.

During 1936, conferences were held between the U.S. Department of Agriculture and Iowa State College relative to the research needed for the advancement of the agricultural estimates statistical program. With the active support of Secretary Henry A. Wallace, W. F. Callander, and Charles F. Sarle, together with George W. Snedecor, T. W. Schultz, and others of the Iowa State College, an allotment of special research funds for agricultural estimates was obtained in 1938 to implement cooperative work with the Statistical Laboratory at Ames for research on fundamental statistical problems of interest to agriculture.

The research program with the laboratory covered a wide range of statistical activity. A number of studies were made on the effect of weather on crop yields. One of the earliest of this type was a study of the "effect of the amount and distribution of rainfall and evaporation during the growing season on the yields of corn and wheat." Another was a study of "climatological measurements for use in prediction of corn yields." The problem of yield forecasts was particularly pressing at the time, and these studies were designed especially to aid the Division in its operating program.

Other studies were related to immediate service needs. One in particular was "an experiment in preharvest sampling of wheat fields." The immediate problem came from complaints of wheat growers with the way the

[89] Statlab. Rev. II, Aug. 1957—Statis. Lab. of Iowa State Col., Ames, Iowa.

so-called "protein premium" was applied in marketing wheat. S. R. Newell, who was then Assistant to the Chief of the Agricultural Marketing Service, had discussed the problem with growers and the trade. Their proposal was to get preharvest estimates of the quality of wheat by areas as a basis for determining the amount of premium that should be paid in any given year. The problem was referred to the agricultural statisticians. The Laboratory designed a sample to implement the service. The service was provided for 2 years for the winter wheat area and continued in Kansas for 1 or 2 years more. These activities were consonant with the long-time objective of the Division to get objective measures of acreage and yield per acre. A. J. King from the Laboratory and Miles McPeek from the grain statistics section conducted the research.

Cooperative research studies conducted by the Laboratory also involved area sampling. Questions of sampling design, components of sampling error, and components of cost were thoroughly investigated.[90]

In 1938 a project was set up in New York City, under the Works Progress Administration (WPA), and a large force of clerks was assigned to study and experiment with area sampling techniques based on the aerial maps provided by the Agricultural Adjustment Administration. This project, directed by Glenn D. Simpson until 1940, led to an article in the Journal of Farm Economics entitled "New Developments in Agricultural Sampling" by A. J. King and G. D. Simpson.[91] A number of other studies by Snedecor, Jessen, Strand, King, Houseman, and others dealt with the suitability of various political and geographic subdivisions such as counties, townships, and sections as sampling units. These were forerunners of the "Master Sample" which was one of the most significant achievements of the cooperative program with the Laboratory.

The Master Sample is Developed

During the war as manpower became more and more limited, the assignment of Crop and Livestock Estimates personnel to the Ames Laboratory was reduced, but the interest in area sampling continued to increase. Rensis Likert, Head of the Division of Special Surveys, Bureau of Agricultural Economics, was working on a group of Bureau-wide projects. It became apparent that there was need for a procedure to provide effective samples for various studies; particularly, for accumulation of data relating to a representative group of farms. It occurred to Likert that by designing a large sample, from which subsamples could be drawn and the data systematically accumulated, many important interrelationships affecting farm production, income, and living could be analyzed.

In April 1943 Likert discussed the idea with the Laboratory, and it was agreed that the Laboratory would provide a national sample of about 5,000 farms to which the name "Master Sample" was applied. As a greatly increased demand for this type of sampling became apparent, a size of 25,000 farms was considered. Later, as the Agricultural Statistics Division became more interested in the plan, the proposed size was expanded to 300,000 farms in order to provide State estimates of acreages of major crops.

About this time the Bureau of the Census was planning for the 1945 agricultural census. The Bureau of Agricultural Economics was interested in having the census identify the schedules of farms in the Master Sample so the census information could be used for subsequent sampling purposes. The Bureau of the Census became interested in using the Master Sample as a means for collecting supplementary information. Accordingly, an agreement between that Bureau and the Bureau of Agricultural Economics and the Statistical Laboratory was drawn up to develop the most efficient sample feasible. Under this agreement, the Master Sample was completed in time to be used in association with the agricultural census of 1945.[92]

The Master Sample was broadened to include incorporated and unincorporated segments in addition to the open country, or farm, segments. Nationally, it was broken down

[90] Jessen, Raymond J. Statistical Investigations of a Sample Survey of Obtaining Farm Facts. Iowa State Univ. Res. Bul. 304, June 1942.

[91] King, A. J., and Simpson, G. D. New Development in Agricultural Sampling. Jour. Farm Econ. 22(1): 341–49, Feb. 1940.

[92] King, Arnold J. History of Master Sample for Agriculture. Jour. Amer. Statis. Assoc. 40(229): 38–45, Mar. 1945.

between these areas about as follows: incorporated places—about 1 percent of the land area; unincorporated places—about 3 percent; and open country—about 96 percent. Land areas were selected for all of the 3,070 counties in the United States and included about 300,000 farms. It was adaptable to many different types of surveys either for use as a whole or for the selection of smaller subsamples. The Master Sample was perfected under the direction of Arnold King and R. J. Jessen. The Division of Crop and Livestock Estimates participated from the outset in drafting plans and in preparation of the Master Sample materials.

The University of North Carolina organized a statistical laboratory at Raleigh, N.C. Gertrude Cox, who had been with the Ames Laboratory, was named Director. In 1940, the Agricultural Statistics Division entered into a contract with that Laboratory, under which a program similar to that conducted at Ames was inaugurated. The Raleigh Laboratory made a number of studies on special problems, particularly in southern crops such as cotton and peanuts.

In 1943, Earl E. Houseman, who had been engaged in research on sampling techniques at the Ames Laboratory since 1938, transferred to Washington. He effectively introduced probability sampling techniques, primarily in numerous special surveys dealing with manpower, farm labor, and employment.

During the war the Bureau was heavily involved with furnishing information to be used in planning for maximum agricultural production, meeting war problems, and postwar planning.

The Department assigned responsibility to the BAE for the development of production goals. Statisticians of the Agricultural Statistics Division were called upon to assist in acquiring material necessary for the production goals. Secretary Wickard announced the goals at a series of meetings held throughout the country with agricultural leaders during July 1941.

Agricultural Statistics in World War II

When World War II started in Europe on September 1, 1939, and the National Defense Advisory Commission was formed the following spring, the Division was called upon for inventories of food supply and appraisal of requirements under several assumed war situations. The Division was reasonably well equipped to meet most of the new requests until the entry of the United States into the war after Pearl Harbor on December 7, 1941. As the war progressed, many special farm surveys quite unrelated to crops as such were called for such as the number of tractors on farms, requirements for repair parts, needs for steel for farm implements and facilities. This information was needed to determine priorities for critical materials.

All facilities of the Department were marshaled to serve the war effort. An early step in this direction was the reorganization of 1942. By Executive Order 9069, dated February 23, 1942, three new administrations were established and the Agricultural Defense Board replaced the Program Board as the top level advisory group to the Secretary. The three administrations were (1) Agricultural Conservation and Adjustment Administration, (2) the Agricultural Marketing Administration, and (3) the Agricultural Research Administration. Five line organizations were left in their former independent status: Farm Security Administration, Rural Electrification Administration, Commodity Credit Corporation, Farm Credit Administration, and Forest Service. The Agricultural Defense Board, the name of which was changed to Agricultural War Board on February 25, 1942, was composed of the eight group administrators and the heads of the Office of Defense Relations, the Bureau of Agricultural Economics, and the Extension Service.[93]

The Bureau of Agricultural Economics continued as the staff agency for Planning and Economics Research and H. R. Tolley was named Chief of the Bureau.

In the reorganization of 1942, the Agricultural Statistics Division was transferred to the Bureau of Agricultural Economics. On July 1, 1942, Callander relinquished his position to become Statistician for the State of Florida. Paul L. Koenig, who had been the Assistant Head with primary responsibility for administration, was appointed Head of the Division. Joseph A. Becker, the Assistant for

[93] A Century of Service, pp. 283–84.

Technical Work, was designated Chairman of the Crop Reporting Board where he remained until he transferred in August 1944 to the Office of Foreign Agricultural Relations.

The war period was difficult with manpower at a premium. Many experienced statisticians were drawn into the armed services. Travel was difficult and at times practically impossible. Gas and tire rationing necessitated discontinuance of some field surveys, such as cotton boll counts. Nevertheless, the service conducted many special inquiries related to war-induced problems.

Food rationing and price control required dependable estimates of current and prospective production. These data were especially needed by the War Food Administration, established as an adjunct to the Department of Agriculture, to promote adequate production of essential commodities. It also administered the allocation of available supplies among war agencies and domestic civilian outlets in accordance with priorities determined by the War Production Board. Butter and cheese were among the foods for which more frequent reports of production and more detailed data of stocks by location became imperative. Dr. Harry C. Trelogan, in charge of War Food Orders covering dairy products, turned to agricultural statistics to acquire the data. He arranged to finance a new dairy statistics office in Chicago where the data could be assembled and distributed expeditiously. He then located butter and cheese order administrators in adjoining offices. The weekly reports later proved indispensable for orderly decontrol of prices and removal of subsidies. Although the War Food Administration offices were closed thereafter, industry has insisted upon maintenance of the Chicago dairy statistics office issuing weekly reports to this day.

The farm labor supply became critical as workers went into the armed service or took high-paying jobs in war industries. Congress appropriated $235,000 to the Bureau of Agricultural Economics in 1944 and about half that amount the next fiscal year to obtain information on the matter. A series of nationwide mailed inquiries covering about 325,000 farms was inaugurated. These were supplemented intermittently by interview surveys of some 20,000 farm operators in 158 counties in 42 States. With farm wage rates reaching unrealistic levels in specialized crop areas, the Division also made 60 local area surveys to provide statistics needed in making decisions regarding the stabilization of wages for farm workers. These special crop area surveys were conducted in 15 States and were concerned primarily with wages paid to harvesters of fruits and vegetables. Surveys of farm labor supply centers or camps were made to obtain data on migratory farm workers. An unusual request resulted in a survey of prisoner of war camps to obtain data needed to establish workload standards for war prisoners used in the harvest of cotton, corn, peanuts, and similar crops.

At the request of the Federal Communications Commission, about 2,500 farms were contacted to obtain information on program preferences of rural radio listeners. The critical need for statistics on a wide range of topics resulted in the inauguration of a series of Quarterly Surveys of Agriculture made in April, July, and October 1945 and January 1946. These involved interviews of a sample of 3,000 farmers in 101 counties and obtained data on farm operations, family living, and health problems. Emerson Brooks, who had been refused a release by the Department to serve in the Army, was in charge of the Division's survey activities.

CHAPTER 9. POST WORLD WAR II

BAE Reorganization of 1945

Germany surrendered on May 7 and Japan on August 14, 1945. By Secretary's Memorandum 1139, dated December 12, 1945, the Bureau of Agricultural Economics was reorganized. Program planning work was transferred to the Office of the Secretary with a Policy and Program Committee established to coordinate it. In the Secretary's memorandum the Bureau of Agricultural Economics was designated as the authorized source of economic information and assigned to supervise and coordinate economic and statistical research in the Department. Its functions were grouped under four Assistant Chiefs in charge, respectively, of agricultural statistics, income and distribution research, production research, and program analysis and rural life research. By the same memorandum, the Outlook and Sit-

uation Board was established to provide technical review and approval of all economic outlook and situation reports.[94]

Oris V. Wells was appointed Chief of the Bureau of Agricultural Economics on May 16, 1946. Wells had been in the Department for a number of years. He had been a Chief Program Analyst from 1941 to January 1946 when he was made Assistant Chief of the Bureau for prices, income, and marketing.

On July 1, 1946, he issued a memorandum [95] setting forth the reorganization of the work of the Division of Agricultural Statistics with the work of the division rearranged in six divisions as follows: (1) Field Crop Statistics, (2) Fruit and Vegetable Statistics, (3) Livestock and Poultry Statistics, (4) Dairy Statistics, (5) Agricultural Price Statistics, and (6) Special Farm Statistics. The Crop Reporting Board was continued.

W. F. Callander, detailed from his position as Statistician for Florida to take charge of the agricultural census returned as chairman of the Crop Reporting Board in January 1946. The six new divisions reported to him. He was authorized to appoint two principal assistants. Agricultural Estimates, Bureau of Agricultural Economics was the term given in Wells' memorandum to refer to the new statistical divisions, the State statistical offices, and other technical, supervisory, and general operational units functioning under the direction of the Assistant Chief in Charge of Statistics.

In 1946, Callander made the following appointments: Principal Assistants—Paul L. Koenig to have primary responsibility for direction and coordination of State statistical offices and maintenance of State cooperation, and to serve as Vice Chairman of the Board; R. K. Smith to be primarily responsible for coordination of technical policy and work programs, to be Chief Technical Consultant of the Board, and in the absence of the Chairman and Vice Chairman to act as Chairman of the Board; J. E. Pallesen to continue as Secretary of the Board; and Walter Hendricks to continue in charge of statistical methodology.

Division Chiefs appointed were: C. E. Burkhead—Field Crops; Reginald Royston—Fruit and Vegetables; C. L. Harlan—Livestock and Poultry; B. H. Bennett—Dairy Statistics; B. R. Stauber—Farm Prices; and C. F. Sarle —Special Farm Statistics.[96]

Marketing Act of 1946

Cooperative work with State departments of agriculture, similar to that in crop and livestock estimating, was started in market news, and standardization and grading shortly after the establishment of the Bureau of Markets in 1917. In most instances, functions related to State activities in marketing services and regulatory work were the responsibility of the State Departments of Agriculture.

As early as 1917, commissioners of agriculture had proposed legislation to provide Federal funds for grants-in-aid to the States for marketing and regulatory work cooperative with USDA. The arrangement would be comparable to research grants given to State colleges of agriculture and experiment stations. At the meeting of the National Association of Commissioners, Secretaries, and Directors of Agriculture in 1919, Secretary Houston in his address to the group replied to such a request saying, "It would be neither appropriate nor desirable for the Federal Government to make available to the States directly any funds for the support of their regulatory or administrative agencies."[97]

The idea reappeared periodically in succeeding years, particularly, with the increased influence of the National Association of Marketing Officials during the depression years following 1929. Commissioner of Agriculture W. Kerr Scott of North Carolina took the lead in 1939 to have Senator Bailey of North Carolina introduce Senate Bill 2212 that would authorize an appropriation of $5 million to be allotted to the States on a matching basis for conducting marketing services programs in cooperation with USDA.

[94] U.S. Department of Agriculture Preliminary Inventories. Record of Agricultural Economics, 1958, p. 9.

[95] Bureau of Agricultural Economics—Unnumbered memorandum dated July 1, 1946, signed by O. V. Wells, Chief, and approved by N. E. Dodd, Acting Secretary of Agriculture.

[96] U.S. Department of Agriculture, Bureau of Agricultural Economics. Organization of Agricultural Estimates—C.E.M. 1255, July 26, 1946.

[97] Proceedings of the National Association of Commissioners, Secretaries, and Directors of Agriculture, 1919, pp. 143–47.

The Bailey Bill passed the Senate without opposition but got nowhere in the House. Congressman Harold Cooley of North Carolina, a ranking member of the House Agricultural Committee, introduced a similar bill, H.R. 9023, in 1940. This bill was rewritten in 1941 but it was never cleared by committee.

In 1945, Congressman Hope of Kansas drafted a Marketing Bill that revised and expanded the bill prepared by Congressman Cooley. At the same time Congressman John Flannigan of Virginia, Chairman of the House Agricultural Committee, prepared a bill to provide for expanding agricultural research. The two bills were combined and, as cleared by the House Agricultural Committee, were generally referred to as the Hope-Flannigan Research and Marketing Act. It was passed unanimously by both Houses and was approved August 14, 1946.[98] Congressman Hope's bill appeared as Title II of the Act and was designated the "Agricultural Marketing Act of 1946."

In the opinion of Congressman Hope and many agricultural leaders, the solution of farm income problems, particularly those relating to perishable commodities, lay in a better system of marketing and distribution.[99] Title II authorized the Secretary to set up a separate marketing agency in the Department, to bring together, emphasize, and direct a cohesive program of related research, service and extensions. Instead, Secretary of Agriculture Clinton Anderson established a unit within his office to approve projects and allot funds for Federal and State agencies equipped to perform innovative marketing research service. Under this scheme the BAE obtained funds for developing new statistical series such as market milk sales and consumption. State Departments of Agriculture received funds on a matching basis—e.g., Federal funds were required to be matched at least 100 percent with funds from State sources.

A variety of agricultural estimates projects were initiated with matched funds to secure statistics of acreage, production, and prices for specialized producing areas. County estimates for crop and livestock were frequently acquired. Need for such localized data was widely felt not only by the marketing bureaus of the States, but also by extension agents, experiment stations, research workers, legislators, and business organizations coping with marketing problems.

Approved statistical projects were directed by the State Agricultural Statisticians. Their affiliation with the Federal Statistical Service assured coordination in the use of uniform methods, leading to comparability of the information with other States.

The Research and Marketing Act, as the Hope-Flannigan Bill later became known, was intended to initiate marketing services rather than support services indefinitely. Accordingly, the projects were designed to explore the feasibility and test the value of proposed new statistical series. Proof of their acceptance came if, upon completion of a project, another source of funding was found to continue the service. Among the statistical series thus started as a multistate endeavor were quarterly pig reports for Corn Belt States which later were financed in regular appropriations. This method of trying out statistical services prior to their acceptance in annual appropriations was in decided contrast with the much more common procedure whereby interested farm or industry groups importuned Congress to appropriate for specific data.

In 1946 Callander, to expand and strengthen the Division's organization in this phase of the work, established the Special Farm Statistics Branch in the Division and brought Charles F. Sarle back from the Weather Bureau as Director of the new Branch. It was the work of this Branch in conducting enumerative surveys during the next 15 years which developed the operating procedures employed when the expanded program got under way in the 1960's under the leadership of Harry C. Trelogan.

New Demands for Agricultural Estimates

Upon Callander's retirement December 31, 1949, Sterling R. Newell was appointed Assistant Chief of the Bureau of Agricultural Economics for Agricultural Estimates and Chairman of the Crop Reporting Board.

Newell had entered the Division of Crop and Livestock Estimates in 1926. He had left in 1934 to go into the Marketing Research Division of the Bureau of Agricultural

[98] 60 Stat. 1082.

[99] Hope, Clifford R. A Visualized Program for Marketing. USDA Graduate School, 1951, 12 pp.

Economics. He was later appointed Assistant to the Chief of the first Agricultural Marketing Service in 1938 and occupied various administrative positions in succeeding years until he returned to the Bureau of Agricultural Economics on January 1, 1950.

The most significant development in the reporting program of agricultural estimates during the forties and fifties was the increased demand for more frequent, accurate, and detailed reports. Over the years, there had been many requests for more timely reports particularly in emergency situations such as drought, floods, and freezes. But the demand that was growing in the forties and through the fifties was for much more detailed and factual data on a broad front.

This was symptomatic of fundamental changes occurring in agricultural production and marketing. The peak in agricultural production reached during the Second World War was attained despite the fact that the percentage of the total population gainfully employed in agriculture had declined to 18 percent in 1940 as compared with 27 percent in 1920 and 21 percent in 1930. Rising farm production was the result of many things, including the increasing use of improved mechanical equipment, introduction of improved varieties of crops and breeds of livestock, and many technological changes resulting in more efficient use of resources. The capital required to engage in farming increased greatly. The general-purpose farmer with a quarter section of land had to reappraise his program in light of his land resources and changed competitive situation. Often the answer was specialization on the land available or to obtain more land resources either by purchase or lease. Prudent management became more dependent upon reliable statistics for farm and market planning and operational decisions. The accuracy of the statistics were subjected to closer scrutiny.

Vertical Integration

Beginning in the early forties, a new set of forces became more evident. These have been generally referred to as vertical integration of the production, marketing, and distribution functions.[1] The idea of integration of the production and marketing functions was not new. Cooperative marketing represented the effort of producers to project their management beyond the farm gate into marketing. They pooled their sales, seeking large volume to effect economies that would accrue. Many such organizations developed during the twenties, particularly after the passage of the Capper-Volstead Act exempting cooperatives from the antitrust laws that was approved February 18, 1922. The extent of integration varied, often going only as far as the shipping point or wholesale market. The California Citrus Exchange was illustrative of a number that assembled and packed a large part of the members' output for sale through cooperatively operated outlets at terminal markets. A distinguishing feature of the operation of cooperative marketing associations was retention of grower control after the product entered the marketing system.

A limiting problem that beset cooperatives was the purely voluntary feature of membership. Those who did not choose to join dealt on the "outside" reaping some of the benefits, but at the same time reducing the effectiveness of the cooperative. The Agricultural Adjustment Act provided for marketing agreements and orders. This provided for grower referendums whereby if an agreement was accepted by two-thirds of the growers it became mandatory on all growers of that crop in the area. These were effective in achieving an acceptable degree of grower control for only some commodities; notably milk, fruits, and vegetables in some areas.

The vertical integration that had its beginnings around the early forties was best illustrated by the broiler chicken industry. Agricultural research produced new breeds, effective disease control, and feeding regimens that enabled farmers to feed to broiler weight in a short time in confined quarters for delivery to the market or processor on closely estimated schedules. The industry started out as an individual farm operation. As it progressed, it soon became evident that the specialized housing and feeding essential for economical production was amenable to unified management and conducive to integration with chick hatcheries, feed processors, and poultry dressing plants.

Old sources of data on production, movements, and prices disappeared as market ex-

[1] USDA—A Chronology of American Agriculture, 1790–1965.

change of ownership was replaced by contracted arrangements among the integrators. At the same time needs for data were accentuated to facilitate intelligent management. Also the operations were sufficiently synchronized to permit estimation of prospective market supplies well in advance. Major adjustments in statistical services were necessitated throughout the period of transition which was characterized by variable rates of change in different producing areas.

Market Flow Statistics

The call for new, more detailed, and more accurate reports was frequently repeated as vertical integration pervaded agriculture and led to a concept of "market flow" statistics within the Statistical Reporting Service. The term is descriptive of an objective of reports to provide detailed data at frequent intervals depicting the allocation of resources to production of a commodity, the progress of growth, and the movement from the producer into market channels. The weekly butter and cheese reports were forerunners of this type of service. Weekly broiler reports and reports of eggs set and chicks hatched were started in 1948. Weekly hatchery reports for turkeys in the 10 principal producing States were started in 1954. In this instance reports were increased from a once-a-year inventory summary to weekly reports by type of bird, representing an increase from one to more than 100 releases a year.

An experimental project was begun with Research and Marketing Act funds in three States in 1948 to develop techniques for providing quarterly reports of cattle on feed. At the time, cattle feeding was becoming a specialized enterprise in a number of areas. Tremendous feeding yards were operating in Arizona, California, and Texas and increasing rapidly in Colorado, Nebraska, and a number of other States. Investments in these facilities were very large and were increasing. The operators watched the experimental work in Iowa, Nebraska, and Illinois very closely. When they were convinced that the techniques were sufficiently developed to make quarterly reports feasible, the industry made strong representations to the Department and the Congress that at least quarterly, and preferably monthly, reports of the number of cattle on feed would be an important factor in orderly production and marketing of better grade beef. Quarterly reports of cattle on feed were started in 13 States in 1955. By 1966, quarterly estimates were made for 32 States and monthly for 5 States.

Specialized weekly vegetable market-flow type statistical reports were introduced in 1960 for Florida and Texas tomatoes. These reports show weekly plantings, rate of development, and harvest for a perishable crop whose price to growers fluctuates widely in response to the supply situation. As these two areas produced the bulk of the winter and spring crop of tomatoes, they are highly competitive.

Statisticians, and surely many workers in other fields, encounter numerous instances which show clearly that the user of a report is often not willing to accept a figure or a statement on faith alone. Statisticians are often asked the question, "How accurate is this estimate?" This kind of question comes from farmers about as often as from businessmen. The Statistical Reporting Service is increasingly aware that statistics that were satisfactory only a few years ago do not suffice today, and that the statistics of today will not meet the needs of a few years hence. Therefore, the agency is continually concerned with improving the service to meet current and future demands.

Weekly Crop-Weather Reports

More frequent crop reports was one answer, but not altogether an acceptable solution to an insistent demand on the part of producers, analysts, agricultural editors, businessmen, and others for more accurate statistics and faster release. Ten days from the time that data, received from voluntary reporters, were released as national estimates, was too long in the eyes of many users as early as 1950. Additional crop reports would be too expensive, and satisfactory technology for speeding data handling and transmission to cut the time simply did not exist. Another alternative was advanced.

In some of the Federal-State crop reporting offices, the statistician had developed an arrangement with the Weather Bureau and the

State Extension Service whereby a weekly crop-weather report was issued. The Weather Bureau's weekly data from cooperative observers were summarized along with observed crop conditions so that county extension agents could distribute a weekly letter. The statistician summarized the various parts each Monday, and released the report Tuesday at noon. In States having the service, the report seemed to meet many of the immediate needs.

R. K. Smith, Director of Agricultural Estimates, took the lead in developing cooperative arrangements with additional States, and by 1958 had expanded the plan for weekly crop-weather reports to all States. Each State also sent a wire report to Washington where a statistician from the Statistical Reporting Service, meeting with climatologists of the Environmental Services of the Department of Commerce (Weather Bureau), prepared and issued a national report each week by noon on Tuesday.

These reports have had an enthusiastic reception by a very wide range of users throughout the country. They do not carry quantitative estimates of production, but they do provide sufficient information on farm and weather developments in specific areas to enable the user to note significant changes occurring in the interim between monthly reports.

Congressional Investigation of the 1951 Cotton Report

Historically, cotton estimates have been the most volatile of all estimates handled by the Crop Reporting Board. It was naturally so because from early days, agriculture in the South had been most commercialized and cotton was predominant. It was the most important export crop for many years. During 1841–60, the value of cotton exports was almost half the value of total exports.

Changes in cotton prospects were reflected almost immediately in highly speculative cotton exchanges. They were sensitive to rumors of all sorts and the need for unbiased official estimates was of greatest importance. It has been noted that the cotton estimate set off the demand for tighter controls and the formation of the Crop Reporting Board before there was a forecast of probable production during the growing season. It has been noted, too that when Nat Murray in 1911 suggested interpreting monthly conditions for quantitative forecasts for all major crops, "Tama Jim" Wilson approved the plan for all crops except cotton because, as he said, "Cotton is dynamite."

In 1902, the Bureau of the Census began collecting monthly statistics on the bales of cotton ginned. Consequently, the estimates of the Crop Reporting Board were checked for accuracy each year by comparing them with the amount of cotton ginned. An act of May 3, 1923 (43 Stat. L 115), required semimonthly cotton crop reports between July 1 and December 1. This act was superseded March 3, 1927 (44 Stat. 1372), by an act providing for a report of the acreage of cotton in cultivation as of July 1 and five monthly reports of production as of August 1 to December 1. It also required that the Census Bureau ginnings reports be issued simultaneously with the crop report.[2] Such specific legislation testified to the national concern attached to this crop.

Through the years, with the constant checks, the institution of various techniques such as frontage measurements for acreage, and boll counts, the Board's cotton forecasts and estimates became increasingly accurate. This is not to say that variations had not occurred from time to time and criticisms had not arisen. By and large, though, the reports were accepted and relied upon by all segments of the industry.

The crop of 1951 was produced under widely variable conditions from extremely wet weather in the early season in some areas to extremely dry weather in others. The season seemed to start out very well, with the August 1 forecast indicating a crop of 17,266,000 bales, and remained favorable through the next month so that a September 1 forecast of 17,291,000 was issued. During September, farmers were beginning to realize that continuing drought, shedding of bolls, and bollworm damage in late cotton were causing more damage than expected, and the October 1 forecast was reduced by 360,000 bales. Bad weather continued and as picking of late cot-

[2] Joseph A. Becker—memorandum to C. W. Kitchen, Chief of the Agricultural Marketing Service, October 1940 (in files of Field Crop Statistics Branch, SRS).

ton got underway around November 1, farmers became aware of extensive damage. Ginners, too, recognized the drop, and it became evident that abondonment of acreage exceeded expectations. The forecast dropped 1,160,000 bales from the October 1 figure. The total decline, amounting to about a million and a half bales in 2 months from September 1 to November 1, was unprecedented.[3]

The reaction ranged from severe criticism from some quarters to enthusiastic commendation in others. Two prominent farmers from Alabama discussed the situation with the Chairman of the Board. One said he didn't see how it was possible to make such a ridiculous error, while the other spoke up and defended the Board saying, "This year was one that none of us knew what was in the field until picking was well underway."

The House of Representatives' Agricultural Committee was concerned and appointed a subcommittee to investigate the Agricultural Estimating Service. Thomas Abernethy of Mississippi was Chairman of the subcommittee. The committee held extensive hearings during which the Chief of the Bureau of Agricultural Economics, the Assistant Chief and Chairman of the Crop Reporting Board, and staff members collaborated in a full-scale investigation and analysis of procedures. Outside witnesses were also invited to appear.

The problems encountered with cotton were explored objectively, and the committee was critical on many points. The fact that the Agricultural Estimating Service had found it necessary, because of gasoline and tire shortages during the war, to drop the cotton boll counts and restrict travel generally was viewed as a serious loss. Some members of the committee were concerned that the service had never had funds appropriated for research to develop new estimating and forecasting methods. The chairman of the committee commented in the foreword to the report:

> The members of the subcommittee which studied this matter do not pose as experts on sampling surveys, statistics, or crop reports. Rather than trying to become experts on this subject and issue a report in which the technical advantages of certain statistical methods, as compared to others, have been thoroughly analyzed and classified, the committee felt that it would be much more beneficial for it to go thoroughly into the methods and procedures used by the Board on a nontechnical basis and to make its report accordingly. . . .
>
> When the anticipated throng of witnesses with suggestions for improving the crop reports failed to materialize, the committee instructed its counsel to seek suggestions, recommendations, and comments from groups and individuals who might be presumed to be informed on this subject and to have information of value to the committee in its study. . . .
>
> The report which follows, therefore, does not presume to make a concise series of hard and fast recommendations which the committee finds will improve the crop reporting service, although it will make some very specific recommendations which the committee believes will be of value. In the main, the report will be a general discussion of the details of the methods and procedures now used by the Board, with observations and suggestions by the committee which it believes are at least worthy of consideration by the Bureau of Agricultural Economics and by all those who are interested in improving the crop reporting service.

Many of the suggestions and recommendations made by the committee dealt with ways to strengthen and improve the service. There were several concerned with improving the reporting lists. Others emphasized the development of objective measurements of coverage and yield, even though "such sources will doubtless require some additional funds."

Prior efforts to carry on consistent research relating to many of the suggestions had been limited by both funds and urgent demands for data. Even the research conducted in cooperation with the statistical laboratories had been severely restricted by contingencies.

The committee summed up recommendations in the section on "Research, Analysis, and Experimentation" of the report.[4]

> It is recommended that the Bureau of Agricultural Economics establish a unit devoted entirely to research, analysis, and experimentation directed at discovering the shortcomings in the Bureau's present methods and developing improvements therein. Such a unit should be free from any responsibility in connection with the issuance of current reports, should have sufficient budget and field personnel to permit whatever field operations are necessary to its proper functioning.

[3] Summarized from a statement by O. V. Wells, Chief of the Bureau of Agricultural Economics and S. R. Newell, Assistant Chief, before the Subcommittee of the House Agricultural Committee investigating the Agricultural Estimating Service of BAE, January 22, 1952 (mimeographed).

[4] U.S. Congress. Crop Estimating and Reporting Services of the Department of Agriculture Report and Commendations of a Special Subcommittee of the Committee on Agriculture. pp. 31–32. House of Representatives, 82d. Cong., 2d Sess., June 16, 1952. (Committee print unnumbered).

The committee cannot place too much emphasis on their recommendation. Many of the other recommendations made by the committee in this report are in the nature of suggestions which should be thoroughly considered by such a research unit before being adopted.

CHAPTER 10. INAUGURATION OF A LONG-RANGE PLAN FOR THE DEVELOPMENT OF THE STATISTICAL REPORTING SERVICE

On February 8, 1952, during the investigation by the subcommittee, Congressman Abernethy wrote to O. V. Wells, Chief of the Bureau of Agricultural Economics, asking two questions:

(1) Are you satisfied with the results of your present system of crop estimating and reporting?

(2) Do you know any steps which might be taken to improve the accuracy of these forecasts and reports?

In his reply, dated February 21, 1952, Wells said, in part:

> In answer to the first question, we believe that, taking into account the number and timing of reports issued in relation to the resources available, the Crop Reporting Service is a remarkably dependable and economical operation. Nevertheless the answer to your question is that we are not wholly satisfied with the results of the present system. Our crop and livestock estimates are necessarily based upon sampling data and are also often forecasts, based upon assumption as to average weather or probable behavior of farmers over some specified future period. . . .
>
> In discussing this second question in more detail, there are some overall considerations which should be kept in mind. The Crop and Livestock Reporting Service was originally started for the purpose of providing general information to farmers and others interested in agriculture, chiefly on an annual basis. However, the Service has now become the source of official information on many phases of agriculture which is extensively used throughout the whole economy, with increased emphasis upon the use of closely timed monthly and other short-term reports as well as the need for breaking some of the annual estimates down on a county basis.[5]

Wells outlined in brief a number of steps which might be taken, such as expanding reporter lists; improving reporter response; increasing field travel; speedup of service; developing and testing new techniques, including the use of personal enumeration for certain types of reports; and strengthening the field offices.

[5] SRS correspondence files.

Wells summed up his recommendations in these words:

> To undertake a comprehensive research and testing program along the lines above indicated would necessitate development of a unit of qualified technicians and a reasonable fund to employe enumerators. Since much of the basic office or laboratory research has already been done, a number of "pilot" operations should be undertaken in selected States or areas on a sufficient scale to indicate the feasibility of actually using such methods, both from the viewpoint of the technical estimating and actual administrative or operating problems involved. . . .
>
> Such a program adequately staffed is the most constructive method for future development of the service. A number of proposals have been made for adoption of new techniques. Whether these proposals would result in any considerable improvement, whether they are adaptable to the timing of the program, how expensive they are in relation to the greater accuracy that might be expected, are all problems that would have to be studied through actual operations paralleling the methods being used currently.
>
> The size and scope of such a program could vary considerably but it should be large enough to permit experimentation on a scale extensive enough to be proven in actual operation. As a matter of fact, it is now the laboratory findings that need testing at a "pilot plant" stage.
>
> A unit set up to do this work should be separate and free from the demands for current operations. Its personnel should be available to aid the entire staff in analysis of sampling problems that will arise in the building of reporting lists on sound sampling principles, study of weather-crop relationships and to carry out experimental work in the field without interruption to the current program. A unit capable of carrying out a reasonably satisfactory program would require an additional fund of $265,000 of which around $80,000 would be used in employing field enumerators and other temporary personnel.[6]

This recommendation for a research unit by the Chief of the Bureau was accepted by the committee with the following comment:

> . . . appropriation of the necessary funds for an adequate research unit as outlined herein will do more in the long run to improve the Bureau's reports than any other similar investment which could be made.[7]

Development of the research staff actually got underway in the summer of 1952. Walter Hendricks, the statistical consultant for agricultural estimates and the only full-time technician available, immediately turned his full attention to planning. In the Division of Special Farm Statistics, Emerson Brooks, who had long experience in developing and conducting surveys, adjusted the work of his division so he could devote a major part of his facilities

[6] Ibid., pp. 49–53.

[7] Ibid., pp. 32.

to a study of the problems. Ralph Stauber, Chief of the Division of Agricultural Price Statistics, as an extracurricular activity served as head of the Mathematics and Statistics Department of the USDA Graduate School. He was well trained in technical statistics and had much experience in conducting surveys; he also devoted considerable time—much of it overtime—assisting in the planning of the research. R. K. Smith, Assistant Chief and Vice Chairman of the Crop Reporting Board, was a constant counselor.

To assist in developing the research and development program, the Chief of the Bureau, O. V. Wells; the Associate Chief, F. F. Elliott; and the Assistant Chief, S. R. Newell, selected a panel of six consultants to study and review the needs and advise on the program. Three consultants, whose primary interest was considered to be use of statistics, were Professor Thomas K. Cowden, then Head of the Agricultural Economics Division at Michigan State University (when he became Dean of Agriculture, he designated Professor Lawrence L. Boger, who took his place as department head and was designated a member of the panel); Professor Earl O. Heady, Head of Agricultural Economics at Iowa State University; and Professor Tyrus R. Timm, Head of Agricultural Economics at Texas A. & M. Three consultants, who were primarily statisticians, were Professor Walter T. Federer, Cornell University; Professor George M. Kuznets, University of California; and Professor Fred F. Stephan, Princeton University.

This group met periodically with the Associate and Assistant Chiefs of the Bureau and members of the research staff of Agricultural Estimates to advise on plans, review the results of research, and make recommendations on future programs.

American Farm Economic Association Helps

About 1955, the American Farm Economics Association appointed an Agricultural Data Committee to study the agricultural data needs of the Nation. The committee included representatives of colleges, universities, industry, and other users. The chairman was Walter H. Ebling, State statistician for Wisconsin. The committee worked closely with the Marketing Committee of the Association of State Departments of Agriculture and the Organization and Policy Committees of the State Experiment Stations and the State Agricultural Extension Service. Ebling made two comprehensive surveys of all States. The results of these surveys and the studies were four main recommendations: (1) More complete coverage of agricultural data at the county or other local level; (2) greater accuracy and refinement at the State and national level; (3) more frequent reports and speedier release of such reports, and (4) additional subject-matter coverage in sufficient detail to serve local needs.

Pilot Operations Started

Much of the research that had been done at Ames and North Carolina, as previously discussed, was used as a foundation for a new research and development program. The Master Sample developed at Ames was the basis for the design of the original probability sample put into practice.

This project is described as:

> An enumerative survey was made in June of a representative sample of some 700 agricultural areas, covering approximately 3,000 farms, in 100 counties of the 10 (Southern) State area. Part-time enumerators obtained from the individual farmer a record of the crops planted, the numbers of livestock, and other factors relating to his own farm. This survey was repeated in June 1955 and again in 1956 when 13 additional States, mostly in the North Central area, were added.
>
> To develop a basis for forecasting during the growing season, a sample of the farms covered in the June survey was selected and fields designated for objective yield determinations to be made later in the season. During 1954, 1955, and 1956, actual measurements of crops were made in these fields and the final estimates of production were obtained on those individual fields at the end of the season. The measurements during the season were then related to the final production. From this work some experimental formulas were developed that could be used during the growing season for forecasting probable outturn. The crops covered during the experimental period were corn, cotton, wheat, and soybeans.[8]

Agribusiness Takes an Interest

Shortly after Newell was appointed Assistant Chief of BAE and Chairman of the Crop Reporting Board in 1949, Wayne Darrow called to discuss the crop reports. Darrow, formerly Director of Information for the Agricultural

[8] USDA. A Program for the Development of the Agricultural Estimating Service. 3 pp., Feb. 1957 (mimeographed).

Adjustment Administration and Associate Director of Information for the Department, currently and for many years publisher of the Washington Farmletter, had always taken an active interest in the work of agricultural estimates and was an important user of the reports.

At a conference with Newell in the summer of 1950, Darrow discussed the importance of the crop and livestock reporting work. He was much concerned with the urgency for strengthening the service to improve the accuracy of the reports and speeding up the release of the information. He was particularly concerned with developing some ways of obtaining more objective information on which to base the estimates of acreage and yield of crops, and estimates of livestock numbers including the expansion of the livestock reports, particularly those relating to hogs and cattle feeding operations. His thought was to establish offices in each agricultural county to keep in close touch with producers and obtain direct information by contact or enumeration of agriculture in the county. Nevertheless, he was anxious to have the benefit of research to get practical recommendations on what might be done.

As work was started on long-range plans, Darrow kept in close touch with the various ideas advanced and the progress of the research. To aid in attracting farm and business interest in the program, an informal committee was set up, in consultation with and sponsored by Dana Bennett, Director of the Foundation for American Agriculture. This group met on call to review plans and proposals and was very helpful in implementing the plan as finally adopted.

Reorganization in 1953

Shortly after Ezra Taft Benson was appointed Secretary of Agriculture on January 21, 1953, a study was started of the organization of the Department. As a result of that study, the Bureau of Agricultural Economics and the Production and Marketing Administration were abolished. The work on farm management and costs, land economics, and agricultural finance that had been in BAE and the cotton ginning research and administration of the Insecticide, Fungicide, and Rodenticide Act that had been under PMA, were all transferred to the Agricultural Research Service.

A new Agricultural Marketing Service was composed of the agricultural estimating work, statistical and economic research, and the outlook and situation work of BAE, and the major part of the marketing research, services, and regulatory activities, the school lunch, and direct distribution activities of the Production and Marketing Administration. Oris V. Wells, who had been Chief of BAE, was appointed Administrator of the new Service.[9]

In many ways the Agricultural Marketing Service resembled the kind of marketing bureau that Congressman Clifford Hope had in mind when he sponsored the Marketing Act of 1946. Except for the addition of the cold storage reports, the agricultural estimating function was continued much as under the BAE. The name was changed to the Agricultural Estimates Division, and S. R. Newell, formerly Assistant Chief of the Bureau, became Director of the Division and Chairman of the Crop Reporting Board. R. K. Smith was designated Deputy Director and Vice Chairman. Glenn D. Simpson continued as Secretary of the Board with added responsibilities for field operations. The six divisions under BAE became branches in the new organization. The chiefs of the divisions became chiefs of the branches, as follows:

Agricultural Prices Statistics Branch—B. Ralph Stauber
Special Statistics Branch—Emerson M. Brooks
Dairy Statistics Branch—B. H. Bennett
Field Crop Statistics Branch—Charles E. Burkhead
Fruit and Vegetable Statistics Branch—Reginald Royston
Livestock and Poultry Statistics Branch—A. V. Nordquist

The Long-Range Plan Presented to Congress

The Subcommittee on Agriculture Appropriations of the Committee on Appropriations, House of Representatives, had shown interest in the work of the Agricultural Estimates Division and had followed closely the developments since the investigation of 1952. On July

[9] A Century of Service, p. 377.

31, 1956, the Chairman of the Subcommittee, Congressman Jamie L. Whitten of Mississippi, wrote to Secretary of Agriculture Benson expressing the interest of the committee in the crop and livestock estimating work. In the closing sentence of his letter he said:

> In brief, we would like to have a report that would cover the USDA's recommendations for the immediate and longrange program for the development and improvement of the agricultural estimating work of the Department.[10]

The hearing on the 1958 appropriations was held on February 7, 1957. At that time, Newell presented "A Program for the Development of the Agricultural Estimating Service."[11]

The essence of the plan was contained in four major segments or projects. It was recognized that all four projects could not be implemented at one time. They were therefore listed in order of priority.

Project A contained the plan for meeting the most fundamental needs of the service, and at the same time provided the framework for implementing the other projects:

> OBJECT—To provide:
>
> a. Additional and improved estimates of acreage, yield and production of major crops and livestock numbers by species at the county, state, and national levels that are necessary for the determination of local and national agricultural policy and to meet the needs for local data in the administration of national programs.
> b. Estimates of total cropland, changes in numbers of farms and farms keeping livestock, and farm employment, by States.
> c. A basic organization for carrying out future steps in the long-range development of agricultural estimates by strengthening the system of voluntary reporting and providing the necessary facilities for obtaining annual interview surveys at the state and national levels, and to conduct special surveys as required from time to time for special studies or investigations provided for in other agencies of the Department.
>
> METHOD OF PROCEDURE:
>
> For its raw data the Division is dependent almost entirely upon the voluntary cooperation of farmers and other reporters who submit their questionnaires by mail. This is an economical method and one that has worked quite well over a period of years, but like all methods, it has some limitations. It is anticipated that this procedure would be strengthened by more intensive work on the reporting lists and supplemented with some new procedures and methods that have proven their dependability in other statistical agencies and by the research that has been carried on by the Division of Agricultural Estimates since 1954.
>
> A sample covering some 60,000 to 75,000 farms, scientifically distributed to be representative of the 48 States, would be established to strengthen the basis for state and national estimates. This sample would be enumerated completely each spring to obtain acreage of crops planted and livestock numbers, and partially enumerated in the fall to obtain final acreage harvested, yields, and end-of-the-year livestock inventories. The large-scale mail inquiries presently carried on would be improved and continued as an integrated part of the enumerative surveys to add strength to the total information which would be necessary in order to arrive at more reliable estimates of crops and livestock by counties.

The significance of this project is that it provided the basis for a fundamental change in the entire agricultural estimating methods. From the beginning of the service, the methods have been based on projection between the census years. While the system of voluntary reports by mail had been developed to a point where it produced remarkably accurate estimates in most years, the statisticians were constantly bedeviled by lack of objective indications of acreage and yield. Mail techniques could not meet the need for measuring changes in total land in farms, or changes in the number of farms. This deficiency had been recognized back in the days of Dodge and, as noted elsewhere, continued through the years. The most recent effort was the proposal for an annual sample census that never developed.

Statistical science progressed substantially in the preceding decade. The cooperative fundamental research at the statistical laboratories provided the basic research for the development of the program. Launching Project A with the annual enumerations of a large probability sample of agricultural segments throughout the country and the monthly objective measurements in sample fields for improving forecasts and estimates of yield enabled the Division to utilize the most sophisticated statistical techniques currently available. This project does not eliminate the use of mailed voluntary crop reports, but it does make available indications based on a probability sample and provide the basis for putting the mailed inquiries on a probability basis.

Project B dealt with the improvement of the farm price reporting work.

[10] Jamie L. Whitten—letter to Secretary Ezra T. Benson, July 31, 1956. U.S. Dept. Agr. Appropriations for 1958, Part 2, p. 886.

[11] The long-range program as presented was drafted by Sterling R. Newell and Emerson M. Brooks, but it was of course a synthesis of ideas and proposals generated by many people over a period of several years.

OBJECT—To strengthen Agricultural Price Statistics:
a. By initiating a thoroughly modernized method of collecting data on prices received and prices paid by farmers to supplement and, to some extent, replace the existing system, which is based largely upon the use of a mailed questionnaire.
b. By expanding coverage to include prices for important commodities for which price data are not available or for which existing data are inadequate.
c. By providing more timely data by eliminating delays in the present operation.

METHOD OF PROCEDURE:
The proposed plan contemplates the employment of a corps of price enumerators in each State, usually one enumerator to each price reporting district (there are generally 9 districts per State). These enumerators, operating under the guidance of the State Statistician, would make periodic contacts with dealers and merchants selected under a scientific sampling scheme to ascertain prices received by farmers and prices paid by farmers for the various commodities, and would base their reports to the fullest extent practicable upon documents of sale. Once the new program is in operation, the mechanism would be available to remedy the existing gaps in data and coverage consistent with available facilities.

The collection of price information would continue to utilize the mail questionnaire for a considerable part of its work. Some prices cannot be adequately covered by this method, and many other related statistics are needed where field enumeration should be employed. A part of the field enumeration force set up under Project A would be utilized in carrying out this project. The relatively small enumeration force that would be available on a continuing monthly basis would provide a corps of trained interviewers available for handling quickly many of the special surveys the Division is constantly called on to carry out.

Project C deals with the ever-growing demand of the entire economy for faster handling of the statistical reports.

OBJECT—
a. To speed up transmission of data from the State offices to Washington, data processing in Washington, and distribution of reports to farmers and the general public.
b. To provide more frequent reports during critical periods on situations brought about by drought, floods, freezes, and the like.

METHOD OF PROCEDURE:
It is proposed that certain data be transmitted to Washington from the State offices by telegraph in secret code. This could be done before the analysis of the data is completed in the State offices. Data processing in the Washington office might be expedited by modern electronic computing devices. Tests of such equipment indicate that considerable time might be saved by the use of these machines. As further tests are still being made, no recommendation is made now for the purchase of such equipment. But experience to date indicates that a great deal of attention must be given to mechanization in the near future.

When the plan was presented, this project emphasized mostly the need for faster communication and processing of the information. At that time, the subject of electronic data handling was recognized but the full potential of electronic equipment could not be adequately appraised. As a matter of fact, the development of the electronic equipment was proceeding at such a rapid rate that any appraisal at that time would not have been very significant even for a year ahead.

As the program developed in the next few years and changes took place when the Department was reorganized in 1961, this segment of Project C has been one of the important developments in the long-range plan.

Project D was placed in the long-range plan to take cognizance of the demands that are constantly being made for additional statistics.

OBJECT—
To provide additional data needed at county, State, and national levels for a wide range of subject matter not now provided or provided with insufficient detail, accuracy, or timeliness.

METHOD OF PROCEDURE:
It is proposed to undertake additional work as the basic organization is developed under Projects A, B, and C. The additional personnel provided under these projects will, after the new basic procedures are established, permit readjustment of the entire program, and furthermore, some additional programs would be possible without expanded facilities. On the other hand, many of the additional services would require added facilities as, for example, the periodic inventories of fruit tree numbers, monthly employment on farms by States, varietal breakdowns on seed crops, and similar specialty crops. With the expanded organization it is believed that such surveys can be carried on much more efficiently than would be possible at the present time. To undertake any of these services without the basic organizations anticipated for carrying the first project would be much more costly than would be the case otherwise.

Actually, a considerable number of the developments discussed in the preceding section —developments of the program in the 1950's —would be included in this project.

The Congressional committee accepted the plan as the blueprint for the long-range development of the crop and livestock estimating work. No request for appropriations was made at the time. Although Chairman Whitten expressed his interest and appreciation for the comprehensive reply to his request, he said that requests for funds should be presented

through the usual budgetary channels. Congressman Fred Marshall of Minnesota, ranking member of the subcommittee, led the discussion for the committee and became an active advocate for putting the program into operation. Other members were also interested, particularly Congressmen William Natcher of Kentucky and Carl Anderson of Minnesota.

The Long-Range Plan Becomes a Reality

By 1957, funds for research and development work had been increased to about $500,000. The fieldwork continued in the Southern and North Central States on a pilot basis. At the same time, work was progressing on the development of models for forecasting yields, using the objective field measurements of cotton, corn, wheat, and some other crops. Cooperative studies with the Ames Laboratory were conducted on the validity of the objective corn yield estimates and the theoretical and applied problems relative to sample surveys and the development of methods of making objective forecasts of yields.

The record of appropriations for agricultural estimating work after the committee investigation of 1952 until 1961 is interesting. The strong recommendations made in 1952 by Congressman Abernethy's subcommittee resulted in the inclusion of a request by the Department for an increase of $100,000 in the appropriation of 1954. The $100,000 request was approved by the Appropriation Committee. Efforts to increase the amount met with little success until 1956. There were two reasons. First, the Department was following an extremely conservative policy toward this program. A second factor was the policy of the Division of Statistical Standards of the Bureau of the Budget. It took the position that the Department's function was primarily to estimate total U.S. production, regardless of legislation that required estimates by States. The Budget Bureau also took the position that national estimates could be accomplished by enumerating a relatively small national sample. State estimates were considered relatively unimportant for most commodities. This idea was presented at the annual meeting of the American Farm Economic Association held at Corvallis, Oreg., in August 1953.[12] A storm of protests arose from the users of statistics.

Despite the evidence of need, the Department conservatism was bolstered by the Division of Statistical Standards of the Bureau, and for 2 years further financial support for research and development came only from diversions of the Division's operating funds and the help of O. V. Wells, Administrator of the Agricultural Marketing Service, in economizing in other research to help the statistical program. It is appropriate to say here that Wells, a keen statistician in his own right, had for many years been much interested in better statistics in the whole field of economics.

A small increase of $104,000 was allowed in the Department budget for 1956 and another of $289,000 in 1957. These funds were used largely in research and development. From then until 1960, when the 1961 budget was being prepared, no increase was allowed. This occurred despite the fact that the Appropriations Committee had expressed interest in activating the long-range plan presented at the appropriations hearings for 1958.

When the 1961 Department estimates were asked for, Newell presented a request for an increase of about $2.2 million for Project A. The Department allowed approximately $500,000 with a note to the Bureau of the Budget that the Department would be willing to recommend an additional $700,000, or a total of $1.2 million if additional ceiling was allowed. The Bureau of the Budget allowed only the $500,000.[13]

The hearings before the House Committee reflect quite clearly the displeasure of the committee with the handling of this item. The very great interest of Congressman Fred Marshall of Minnesota and Congressman William Natcher of Kentucky became clearly evident.

Marshall, a farmer and cooperating crop reporter, had followed the agricultural estimating program for a long time. He was a user of

[12] Stapp, Peyton, How the Office of Statistical Standards Can Help Develop a Program. Jour. Farm Econ. 25 (5): 865, Dec. 1953.

[13] U.S. Congress. Department of Agriculture Appropriations for 1961—Hearings before the Subcommittee on Appropriations. House of Representatives, 86th Cong., 2d Sess., Pt. 2, pp. 124–29.

the reports, particularly the pig reports, and on frequent occasions had commented on the importance of good statistical reports. Senator Milton Young of North Dakota likewise exhibited enthusiasm for the work.[14] When the House Bill reached the Senate subcommittee on agricultural appropriations, Senator Young took an active part in supporting the program.

The House bill provided an increase of $750,000 for the long-range plan, an increase of $250,000 over the budget allowance, which the committee said was to be considered as the first step in implementing the long-range plan. This action established the legislative policy with respect to the future development of the agricultural estimating work. When these additional funds became available on July 1, 1960, steps were taken to implement Project A on a full operational basis in 11 States. This marked the beginning of a revolutionary change in the crop and livestock estimating work in the Department of Agriculture.

Reorganization of 1961—Statistical Reporting Service Established

Orville L. Freeman became the 16th Secretary of Agriculture on January 21, 1961. Secretary Freeman, a lawyer, had served three terms as Governor of Minnesota. A graduate of the University of Minnesota with bachelor of arts and law degrees, Freeman had spent summers on the family farm homesteaded by his grandfather in the 1850's. When appointed in 1961, he was the youngest man ever to occupy the position of Secretary of Agriculture.

On February 24, 1961, Secretary Freeman announced plans to reorganize research in agricultural economics and statistical reporting under the guidance of a Director of Agricultural Economics, effective April 3, 1961, and named Willard W. Cochrane, Director. The Director of Agricultural Economics was administratively at the level of Assistant Secretary, and exercised general direction and supervision of the newly created Economic Research Service and the Statistical Reporting Service.

The Economic Research Service brought together the economic research functions carried on by the Agricultural Marketing Service, the Agricultural Research Service, and the Foreign Agricultural Service. (O. V. Wells retired on May 31, 1961, to become Deputy Director General of the Food and Agriculture Organization of the United Nations at Rome.) Nathan M. Koffsky was designated Administrator of ERS.

Harry C. Trelogan Appointed Administrator

The Statistical Reporting Service was composed of the Agricultural Estimates Division, including the Crop Reporting Board; the Statistical Standards Division; and the Market Surveys Branch of the Market Development Research Division—all of which were units of the Agricultural Marketing Service.

Harry C. Trelogan, Administrator of the new service, received his doctorate in agricultural economics from the University of Minnesota in 1938. He had served in the Department of Agriculture in a number of important positions. At the time of his appointment as Administrator, he was Assistant Administrator for Marketing Research in the Agricultural Marketing Service. In his long association with agricultural economics, he had become thoroughly familiar with the agricultural estimating work.

Newell became Deputy Administrator and continued as Chairman of the Crop Reporting Board. The administration was organized in three divisions and the Crop Reporting Board.

The Agricultural Estimates Division, with R. K. Smith as Director, included the five branches concerned with crop and livestock estimating, as follows:

Agricultural Price Statistics Branch—B. Ralph Stauber, Chief

Dairy Statistics Branch—Ira E. Wissinger, Chief

Field Crop Statistics Branch—Charles E. Burkhead, Chief

Fruit and Vegetable Statistics Branch—Russell P. Handy, Chief

Livestock & Poultry Statistics Branch—Robert H. Moats, Chief.

Glenn D. Simpson was appointed Director of the Field Operations Division, and Emerson M. Brooks was made Deputy Director. The Division consisted of the Survey Operations Group with Bruce M. Graham as Chief, and 43 State offices.

[14] Ibid, pp. 125–28.

The Standards and Research Division, under the direction of Earl E. Houseman, was made up of the work of the Statistical Standards Division and the Market Surveys Branch of the Market Development Research Division transferred from AMS, and the Research and Development staff of the Agricultural Estimates Division. The Standards and Research Division was organized with four branches:

Research and Development Branch—Bruce W. Kelly, Chief

Special Surveys Branch—Trienah Meyers, Chief

Statistical Clearance Branch—J. Richard Grant, Chief

Data Processing Branch—V. Nicholson, Chief. This branch was the nucleus of the Washington Data Processing Center established in 1962 with J. Frank Kendrick as Chief.

This Division, in addition to the research and development activities connected with the agricultural estimates program, carried out special market surveys, provided statistical consultant services to other agencies of the Department, coordinated plans for Department surveys, and cleared all questionnaires for presentation to the Division of Statistical Standards of the Bureau of the Budget.

The research and development program, under Bruce Kelly, expanded greatly from 1960 on. Under his direction cooperative research with the Statistical Laboratory at Iowa State University at Ames was concerned chiefly with objective yields on a number of crops. The laboratory at the North Carolina State University at Raleigh carried on studies in response errors. Studies of the use of aerial photography in estimating crops and livestock were undertaken with the University of California, and Texas Agricultural and Mechanical College studied the use of multiple frame sampling.

Washington Data Processing Center

As field enumeration increased with the extension of Project A of the long-range plan to additional States in subsequent years, it became evident that the electronic data processing unit initiated in 1958 was entirely inadequate to meet the requirements of the growing reporting program. At the same time, the Department was studying various electronic data units being set up or proposed by other agencies of the Department. As a result of the studies, it was concluded that it would be more economical for all agencies to establish a few large units where the costly equipment could be more efficiently utilized. Accordingly, on July 1, 1962, the Secretary of Agriculture provided for the establishment of three data processing centers—one at Kansas City, one at New Orleans, and one at Washington, D.C. The Statistical Reporting Service was the agency in Washington with the greatest need for such a facility and with more technically qualified people available, so the Washington Center was assigned to the Statistical Reporting Service.[15]

The Center, a Department of Agriculture facility, is under the direction of the Administrator of the Statistical Reporting Service. Operating costs are derived from charges made to agencies that use the services. This applies equally to SRS. Tabulation of the enumerative surveys made under the long-range plan, as well as other surveys made for the use of the Crop Reporting Board, are priced by the Center and paid for by the SRS.

Until the enumeration of the large probability sample was expanded to a full operation in all States, it was necessary to carry on the older methods more or less parallel with the new sampling methods. By 1966, funds had been increased sufficiently to put the enumeration program, proposed in Project A, on a full operational basis in all of the 48 contiguous States.

The development of the Center required a great deal of planning. The first problem was to secure satisfactory space to accommodate the large amount of machinery required as well as the office space to house the personnel needed to operate the new facility. One limiting factor was the necessity for a location adjacent to the Crop Reporting Board where the security requirements provided by law and the rules and regulations of the Department could be assured. The unit had been located in temporary space in another Government building and operations were carried on with rented equipment and rental of time on equipment of other agencies.

[15] Secretary's Memorandum No. 1509, July 1, 1962.

A permanent location that could be adapted to the requirements of the Data Processing Center with contiguous space for the crop and livestock estimating work and the Crop Reporting Board was finally made available in the subbasement and basement of the second wing of the South Building.

A complete renovation of the subbasement was required for the Data Processing Center. This area was transformed into an attractive location for the extensive machine installation and associated office facilities for the supporting personnel. Meanwhile, plans had been developed for the necessary machinery and its procurement. Personnel operating in the temporary location were ready to move to the permanent location as soon as it was ready.

The appropriation act for fiscal year 1966 (the fiscal year began July 1, 1965) provided $993,000 for procuring equipment and $740,000 for converting operations to the new electronic equipment. The appropriation act of 1967 (beginning July 1, 1966) provided an additional $543,500 for conversion.

Operation of the Center actually began in January 1966, but the official opening ceremony was held on April 1, 1966, marking the beginning of the celebration of the 100th year of continuous crop and livestock services to the Nation.

The New Agricultural Estimating Service

The opening of the Washington Data Processing Center provided facilities for processing data rapidly upon receipt from the field. Thus, the stage was set for the most revolutionary change that has occurred in a century.

As noted throughout this story of the service, the original objective was to measure agricultural production. Early emphasis therefore centered on a major survey in November and December of the acreage of crops harvested and the final yield. During the growing season qualitative monthly reports were issued on the condition of crops. As time went on and commercial production became more important, these production and condition reports did not suffice and quantitative forecasts were made during the season. Later, it developed that estimates of acreage planted were required and surveys were made in June to obtain this information. The information was obtained from voluntary mail reports from farmers. Statisticians were fully aware of the inadequacies of the system and wished for some way of securing samples that could be appraised and analyzed statistically.

Under the new plan the principal emphasis is placed on securing a statistically reliable sample of acreage of crops planted. In June of each year, an enumeration is made of a scientifically designed sample of some 17,000 area segments spread throughout the United States. The enumerator gets a complete report on acreages within the assigned segments. Spot checks are made currently on the work of the enumerator by field supervisors to make sure he is following instructions in detail.

The enumerator's report is sent to the State statistician, who makes a check on the questionnaires, punches the data on cards, and forwards them immediately for electronic processing in the Washington Data Processing Center. Here the data are summarized and expanded into State, regional, and national indications. These summarizations are returned to the State statisticians for use in making their recommendations. Sampling errors for each item are computed during the processing run and are available to the State statisticians and the Crop Reporting Board.

In each State the statistician also conducts a mail survey. The mail survey is required to supplement the data obtained from the probability sample, because the probability area sample for a single State is too small to provide State and sub-State estimates with an acceptable degree of reliability. The State statistician thus has the results of the enumerative survey and the mail survey for analysis in making his recommendations to the Board.

At the meeting of the Board, each member is given all the indications available on the acreages of corn, wheat, cotton, or other crops planted for the United States and the major regions to enable him to exercise independent judgment with respect to each estimate. He is also given the standard errors computed from the enumerative survey so that he can appraise the degree of precision and reliability that can be attached to these indications.

The Board first establishes the U.S. figure and then the regional figure for the crop under consideration. Each individual State estimate is established on the basis of the results of the State enumeration, the results of the State

mail sample, and the statistician's recommendations. The sum of the State estimates is compared with the national estimate and usually they are in close agreement. Differences are reconciled by appropriate adjustment in individual State estimates within the range of the standard error.

This procedure is just the opposite of the former practice wherein the national figure was built up by summing the State estimates.

The new procedure takes advantage of the fact that sampling errors of the national totals for major crops and livestock items are much lower than for individual States. State data, for example, may have a sampling error that is several times larger than that of the national total. Therefore, in starting with the national total, the Board is on firmer ground than the other way around.

The June enumerative survey is also the basis for estimating numbers of farms. It has been found that the number of farms can be estimated each year with a standard error of about 1 percent for the United States. It is also the basis for determining the number of farms keeping livestock.

The enumerative survey in December is made on a subsample from the June survey and deals primarily with livestock. Supplementing this sample is an enumeration of large livestock farms.

Visualized in the plans for the future is a large-scale June probability mail survey. When it is fully implemented, a fall production and acreage inquiry will be made of the June respondents. The returns from this survey will be used for adjusting June planted acreage estimates, for determining utilization of the planted acreage and supplementing preharvest objective yield indications. The acreage and production survey will be large enough to be useful in making county estimates for specific items.

Reorganization of the Statistical Reporting Service in 1966

To utilize the new techniques and facilities most effectively, a careful and detailed study of the organization was started in 1965. In the fall of 1966, results of the study were presented and on November 10, 1966, the Administrator promulgated the new organization.[16] The following organization chart of the Statistical Reporting Service shows the structure and administrative alignment of the several groups.

The need for this realignment evolved as the enumerative technique increased in volume and complexity of the data, and electronic processing made a more comprehensive analysis possible. The four divisions shown in the chart represent the principal responsibilities involved in providing a particular report. (1) The research needed to develop and guide the statistical techniques and to continuously appraise the statistical adequacy of the results—the Standards and Research Division. (2) The design and preparation of survey forms, preparation of instructions relating to the collection of data by enumeration or mail procedures, and provision of technical assistance to the field offices for data collection and processing—the Survey and Data Division. (3) Electronic processing of the data gathered—Washington Data Processing Center. (4) Determination of data requirements to achieve a particular statistical output, definition of output of crop and livestock estimating surveys, and preparation of all estimates and forecasts —the Agricultural Estimates Division.

As in any organization, all of the divisions work together, but defining the principal areas of responsibility for each creates more efficient operation within the total program because each unit can maximize the products of its particular skills.

The field offices—the 44 State statistical offices—are by far the largest part of the whole organization. More effective and better coordinated use of these offices is provided by a new assistant administrator. Thus, the responsibility for overall administrative direction and coordination of field operations is placed at the top administrative level of the whole service.

Maintenance of favorable relationships with State statistical agencies is closely aligned with the field office management. Gradual expansion of cooperation with States has led to formal agreements, involving some contribution of resources from the cooperating agency,

[16] USDA Statistical Reporting Service, Reorganization. SRS General Notice No. 28, Nov. 10, 1966.

STATISTICAL REPORTING SERVICE

ADMINISTRATOR
Harry C. Trelogan

ASSISTANT ADMINISTRATDR — R. P. Handy

DEPUTY ADMINISTRATOR AND CHAIRMAN CROP REPORTING BOARD — G. D. Simpson

ASSISTANT TD THE ADMINISTRATOR — J.L. Aschwege

STAFF DFFICER FOR CAREER DEVELDPMENT AND FDREIGN PRDGRAMS — E. M. Brooks

ASSISTANT STAFF OFFICER — M. Mc Peek

STAFF DFFICER FOR PPBS AND WDRK MEASUREMENT — G.D. Harrell

ASSISTANT STAFF OFFICER — W. J. Marston

AGRICULTURAL ESTIMATES DIVISIDN

DIRECTOR
B.W. Kelly

DEPUTY DIRECTOR
J. W. Kendall

METHODS STAFF
CHIEF
C. E. Caudill

SURVEY AND DATA DIVISION

DIRECTOR
J. W. Kirkbride

STANDARDS AND RESEARCH DIVISION

DIRECTOR
E. E. Houseman

WASHINGTDN DATA PROCESSING CENTER

DIRECTOR
G. D. Bearden

DEPUTY DIRECTOR
W. S. Wise

CHIEF — C. E. Burkhead
FIELD CROP, FRUIT, AND VEGETABLE STATISTICS BRANCH

CHIEF — E. B. Hannawald
LIVESTOCK, DAIRY, AND POULTRY STATISTICS BRANCH

CHIEF — B. R. Stauber
AGRICULTURAL PRICES AND FARM LABOR BRANCH

CHIEF — B. M. Graham
DATA COLLECTION BRANCH

CHIEF — M. D. Biallas
SYSTEMS DEVELOPMENT AND PROGRAMMING BRANCH

CHIEF — M. R. Kaehn
DATA SERVICES BRANCH AND SECRETARY CROP REPORTING BOARD

CHIEF — W. E. Kibler
RESEARCH AND DEVELOPMENT BRANCH

CHIEF — M. Weidenhamer
SPECIAL SURVEYS BRANCH

CHIEF — J. R. Grant
STATISTICAL CLEARANCE BRANCH

CHIEF — J. L. Wheaton
AGENCY PROGRAMS BRANCH

CHIEF — E. Fry
MATHEMATICS AND SURVEY APPLICATIONS BRANCH

CHIEF — D. H. Banks
OPERATIONS BRANCH

CHIEF — A. R. Nesuda
STANDARDS AND PROCEDURES BRANCH

CHIEF — L. M. Denit
PRODUCTION CONTROL BRANCH

SRS Staff: Professional 530, Clerical 805, Total 1,335 Federal Employees, of these , 71 Professional and 45 Clerical are in the Washington Data Processing Center.

Agricultural Statisticians: Total 459, of these, 335 are in State Offices, 124 in Washington.

44 STATE STATISTICAL OFFICES

SRS-AE-USDA-JUNE 1968

with 52 agencies in 47 States. The contributions range from a few hundred dollars to around $400,000 in two States; aggregating more than $3,000,000 in 1967–68. Contributions are accepted in numerous forms: Office space $179,000, ADP equipment $128,000, printing and reproduction $183,000, personnel assistance $2,096,000, travel funds $177,000, and miscellaneous items $270,000. Projects conducted for States cover a wide range of statistical activities including such diverse services as State farm census, objective yield estimates for specialty crops, surveys of equine populations, turf grass acreage, storage holdings of products subject to unusual hazards in particular seasons, and preparation of annual statistical bulletins.

The Statistical Reporting Service also performs surveys, under reimbursable arrangements, for a number of other Government agencies seeking data beyond those provided for in the SRS appropriations. Among these are county estimates for specified crops for the Federal Crop Insurance Corporation, wage rates paid on farms and in food processing plants for the Department of Labor, and grazing costs experienced with cattle and sheep for the Forest Service and the Bureau of Land Management. Because of its unique ability to acquire primary data from farms and closely related industries, requests for these services in some years have aggregated in excess of a million dollars. Advantages accruing from these activities include less expensive and higher quality estimates, fewer calls upon respondents for data, and acquisitions of data bearing a complementary relationship to crop and livestock estimates, especially for checking the reliability of regular estimates for particular localities.

The Statistical Reporting Service is the chief statistical agency of the Department of Agriculture. It is the outstanding organization of its kind in the world. The Crop Reporting Board is respected nationally and internationally. The vast volume of statistical information issued by the Service constitutes the factual base on which the complex system of production and distribution of the essential food and fiber for the Nation is dependent. The statistics are grist for the economic analyst's mill and the basis for innumerable national and international programs and policy decisions that affect the entire economy.

The Service and all of its predecessor organizations, by whatever name, have been built by people, many people, who deserve the real credit for its accomplishments. There always have to be leaders who must take blame and bow nicely for the credit. The leader nevertheless is responsible for providing ideas, encouragement, and energy in developing the environment that keeps the team working.

The Statistical Reporting Service of the U.S. Department of Agriculture, under the administration of Harry C. Trelogan, with an annual appropriation of about $14 million was, in 1968, the largest agency in the world devoted to collecting, processing, analyzing, and disseminating current statistics concerning the agricultural economy. Its staff of 500 professional employees and 1,000 clerical workers located in offices from Boston to Honolulu and from Orlando, Fla., to Palmer, Alaska, are carefully selected and trained in the preparation of hundreds of reports each year pertaining to the Nation's agriculture. It has come a long way since 1866, but the words of J. R. Dodge, written in 1887, are still true and will probably be so for many years to come.

> The statistics of this country do not now suffice to meet the wants of legislators and businessmen . . . This pursuit of current statistical information has become so eager that data attainable, existent and nonexistent, are alike required, in season and out of season, of a character possible and impossible. Such demands, often unreasonable and annoying, attest, nevertheless, the growing importance of statistics.[17]

A century and more of grappling with problems of providing timely, accurate, and comprehensive agricultural statistics has delineated some basic concepts, principles, and procedures that can be briefly summarized.

1. In the complex society and dynamic world in which we live current indications on the production, marketing, and utilization of agricultural output are essential to synchronize manifold activities independently conducted within agriculture and to harmonize them with other parts of the economy. The past cannot be studied, the present cannot be appraised, and the future cannot be forecast unless there are available meaningful statistics concerning the economy.

[17] Report of the Commissioner of Agriculture, 1887, p. 523.

2. Public and private needs for the data are best met with a statistical service planned and directed by a central Government agency with direct lines to a well-trained and adequate field staff.

3. Integration of the Federal statistical program with related State agricultural statistical services is distinctly advantageous. A half century of close cooperation between the Federal and State governments in conducting a highly coordinated statistical program has demonstrated the value of such arrangements. A joint Federal-State endeavor under one supervisory head avoids duplication of effort, saves money, reduces demand upon correspondents and provides both the Federal and State governments with uniformly consistent data covering a broader range than either could provide independently.

4. A fact-finding function independent of political and economic pressures contributes to objectivity. Freedom from policy and program responsibilities is conducive to freedom from bias.

5. A statistical program must be adaptable and techniques and procedures flexible, to meet the constantly changing and expanding demands of a dynamic agricultural economy. It is true of the statistical field as well as elsewhere that "You cannot put your foot into the same river twice."

6. A competent research staff freed of involvement in day-to-day operations is a requisite for adapting new statistical technology to emerging requirements.

7. Recruiting, Training, Supervising, Appraising, Promoting, Awarding, Motivating, and Servicing employees merit close attention to maintain a competent, progressive staff with high esprit de corps for the specialized work entailed in agricultural statistics.

8. The lifeblood of a successful statistical service is continuing rapport with farmers and others who provide the primary data, with the Department and other agency officials, and with the Congress. A statistical service based on voluntary reporting must work continuously to assure its respondents that their efforts yield fruitful results, that analyses are done honestly, efficiently, and skillfully, and results are disseminated equitably.

PART V. APPENDIX

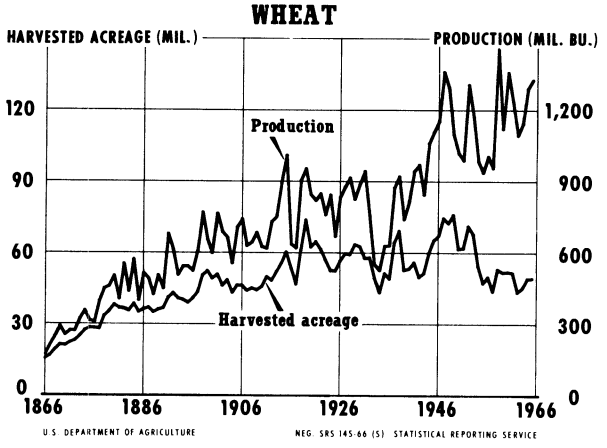
CHAPTER 11. A CENTURY OF AGRICULTURE IN CHARTS AND PICTURES

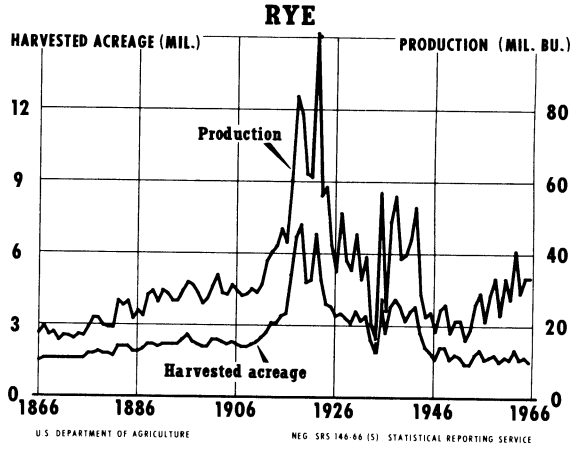
A Picture of Agricultural Statistics, 1866–1966

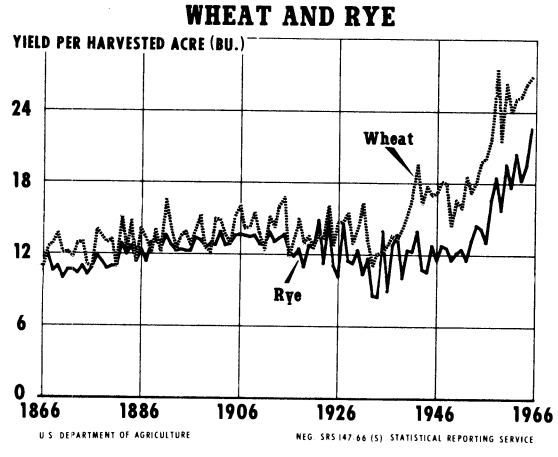
Throughout the preceding chapters, the primary objective has been to tell the story of the development of the crop and livestock estimating work of the Department of Agriculture. In developing that story some of the more important factors that have influenced the progress of the program have been discussed. The end product of the statistical reporting work is a volume of statistics that cover almost every phase of the large and complicated agricultural industry.

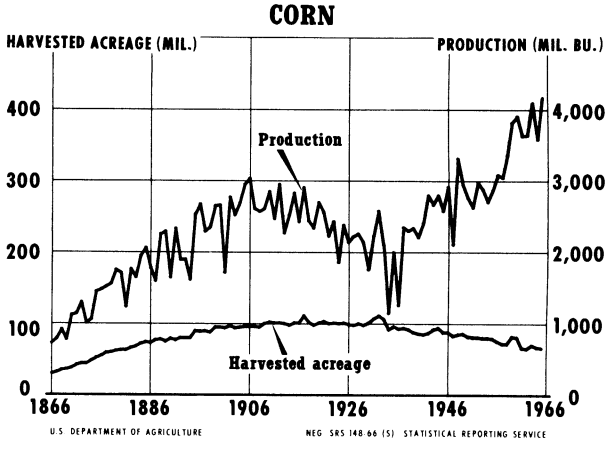
These statistical series, individually and collectively, represent the net effect of a combination of a host of factors in addition to those mentioned in the text. For example, the general pattern of crop production has been that of a declining acreage and rising production. This, of course, is a reflection of a vast amount of research into improved varieties, hybridization, soil conservation, improved fertilizer and fertilizer practices, and better machinery. These are but a few of the things that are summed up in a time series chart of acreage-production of a crop such as wheat, corn, or potatoes. The agricultural statistician must be cognizant of the numerous factors that go into the reshaping of the Nation's agriculture. Discussion of such detail is not in the province of this chronicle. Growth in the statistical series themselves reflects the magnitude of change.

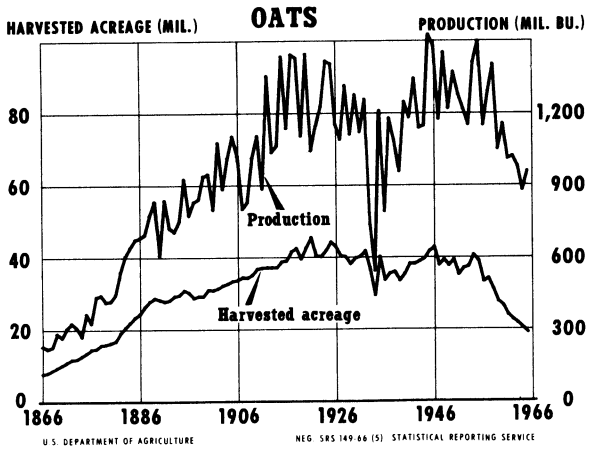
The following charts represent an effort to provide a panoramic view of a century of agriculture as painted by the statistician's broad brush.

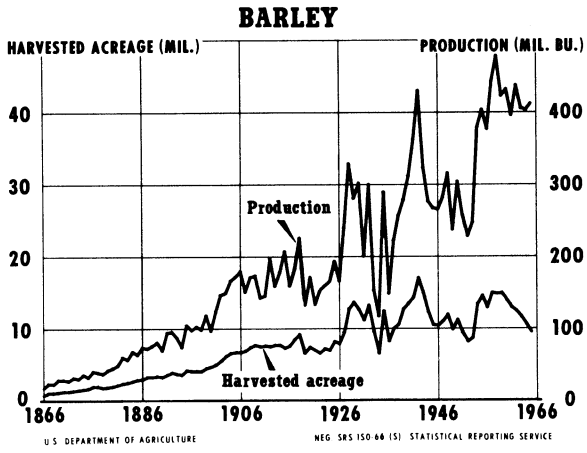


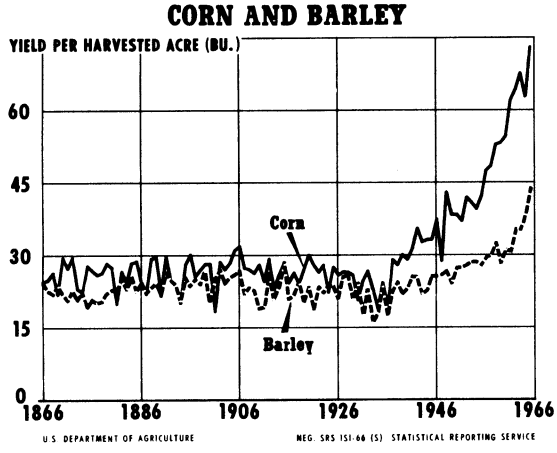


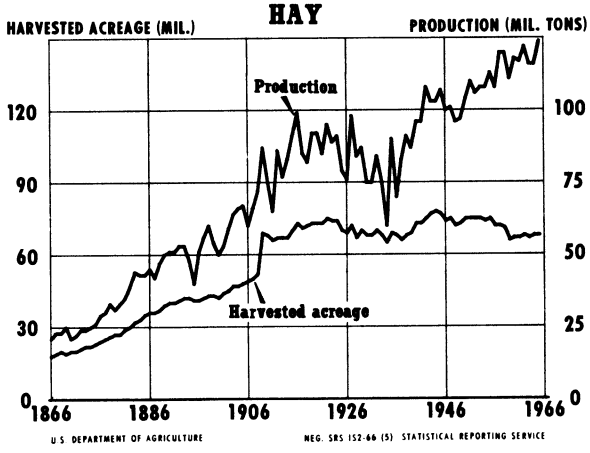


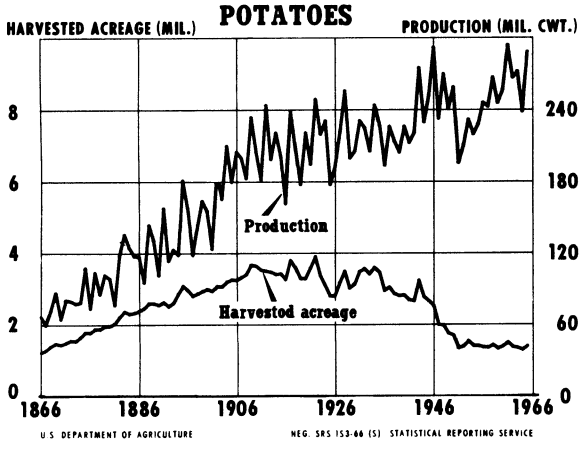


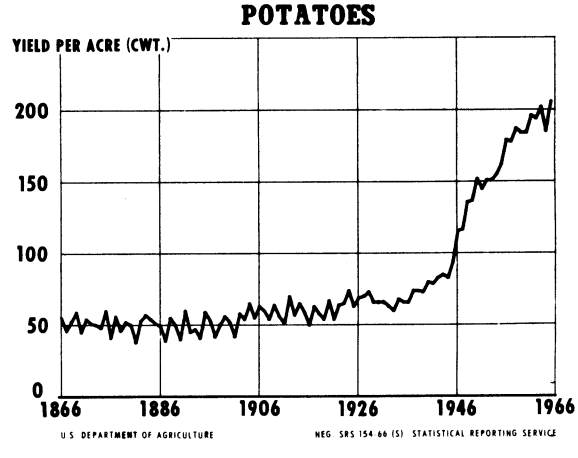

OATS
HARVESTED ACREAGE (MIL.)
PRODUCTION (MIL. BU.)
80
60
40
20
0
1,200
900
600
300
0
Production
Harvested acreage
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 149-66 (5) STATISTICAL REPORTING SERVICE


BARLEY
HARVESTED ACREAGE (MIL.)
PRODUCTION (MIL. BU.)
40
30
20
10
0
400
300
200
100
0
Production
Harvested acreage
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 150-66 (5) STATISTICAL REPORTING SERVICE

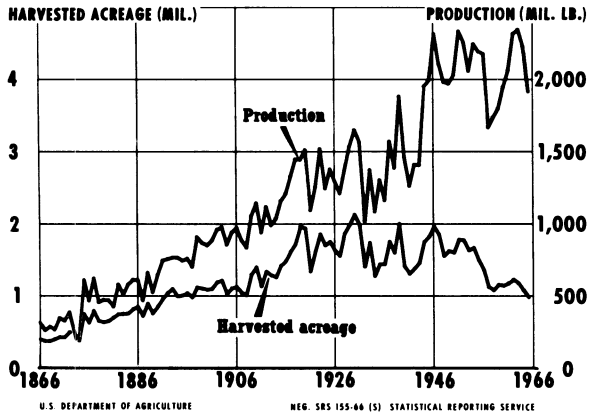

CORN AND BARLEY
YIELD PER HARVESTED ACRE (BU.)
60
45
30
15
0
Corn
Barley
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 151-66 (5) STATISTICAL REPORTING SERVICE


HAY
HARVESTED ACREAGE (MIL.)
PRODUCTION (MIL. TONS)
120
90
60
30
0
100
75
50
25
0
Production
Harvested acreage
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 152-66 (5) STATISTICAL REPORTING SERVICE

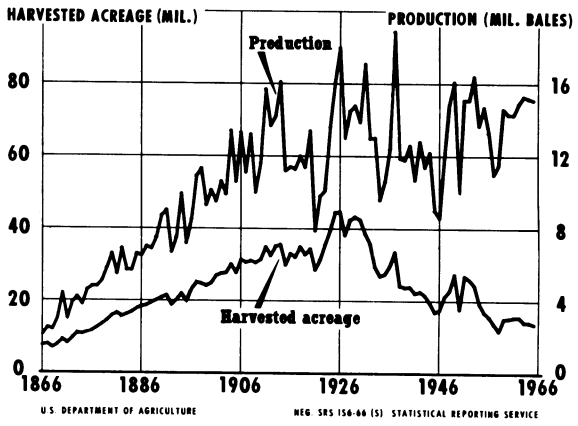

POTATOES
HARVESTED ACREAGE (MIL.)
PRODUCTION (MIL. CWT.)
8
6
4
2
0
240
180
120
60
0
Production
Harvested acreage
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 153-66 (5) STATISTICAL REPORTING SERVICE


POTATOES
YIELD PER ACRE (CWT.)
200
150
100
50
0
1866
1886
1906
1926
1946
1966
U.S. DEPARTMENT OF AGRICULTURE
NEG. SRS 154-66 (5) STATISTICAL REPORTING SERVICE

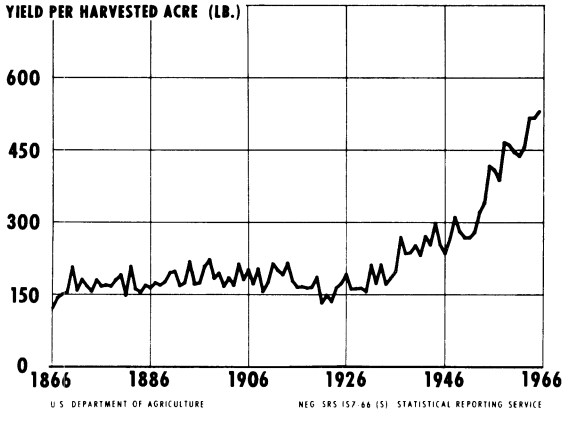
TOBACCO



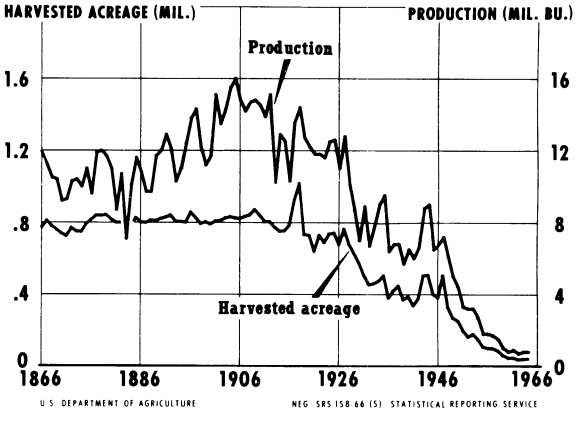
COTTON



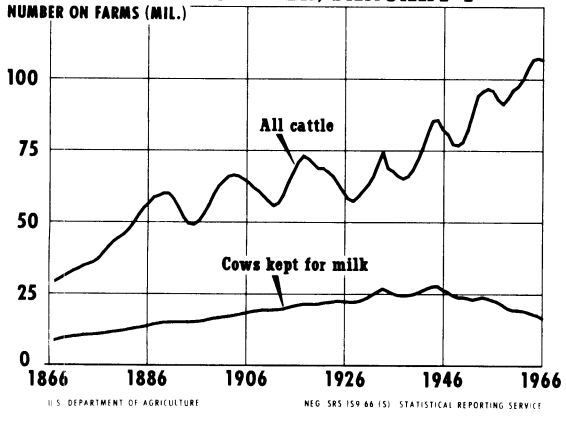
COTTON



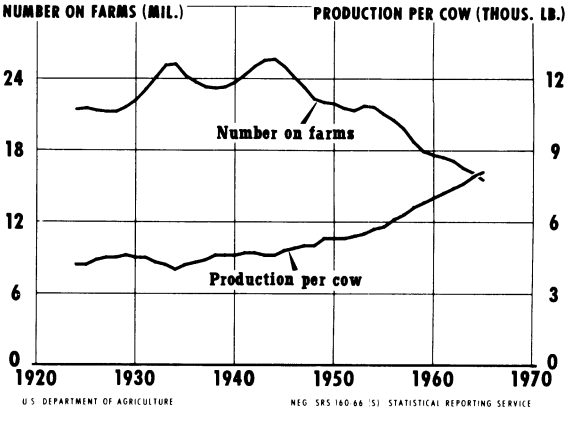
BUCKWHEAT



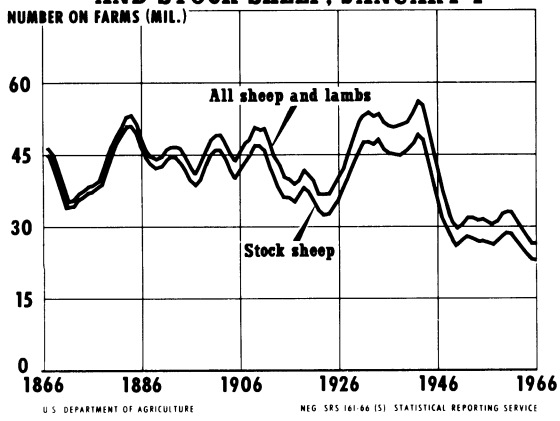
ALL CATTLE AND COWS KEPT FOR MILK, JANUARY 1



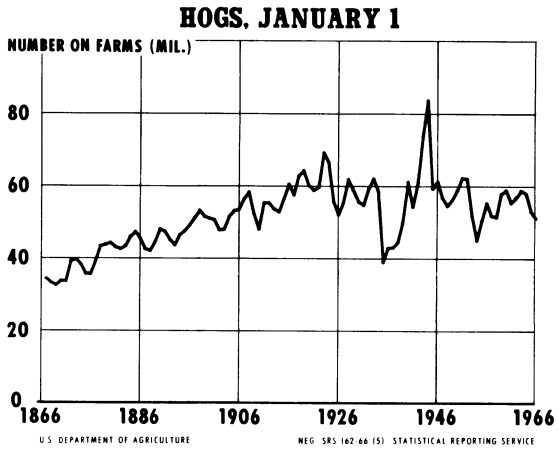
MILK COWS AND PRODUCTION PER COW



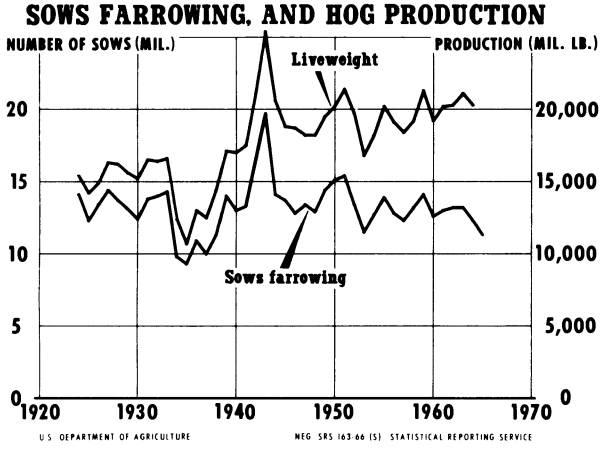
ALL SHEEP AND LAMBS, AND STOCK SHEEP, JANUARY 1



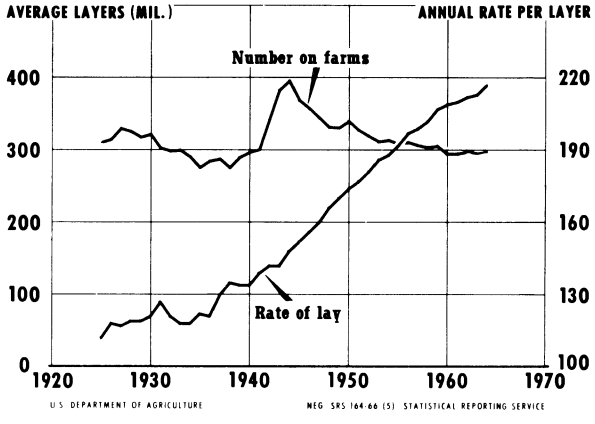
HOGS, JANUARY 1



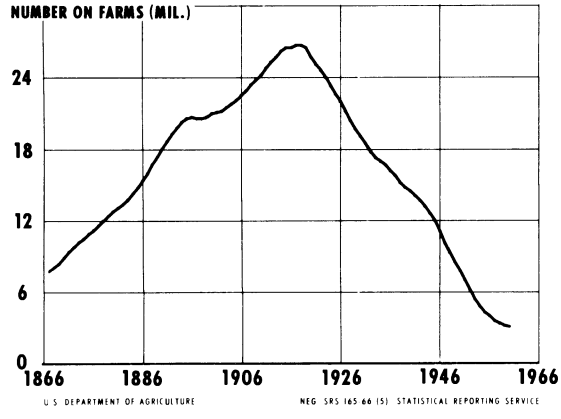
SOWS FARROWING, AND HOG PRODUCTION



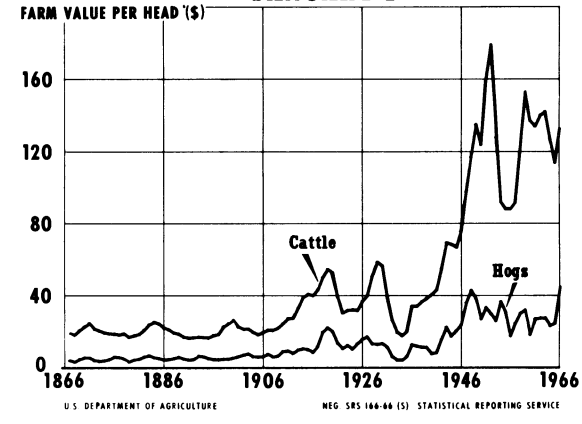
ANNUAL AVERAGE NUMBER OF LAYERS AND ANNUAL RATE OF LAY



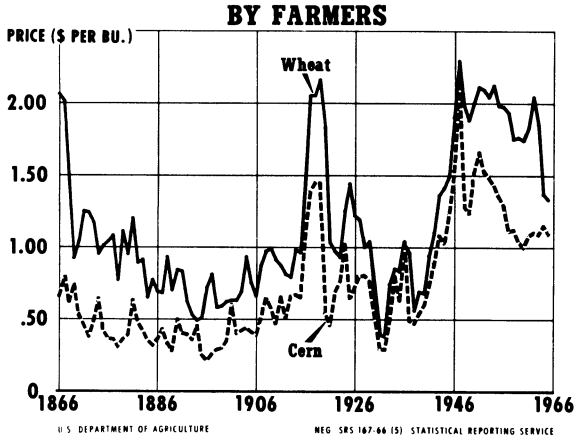
HORSES AND MULES, JANUARY 1



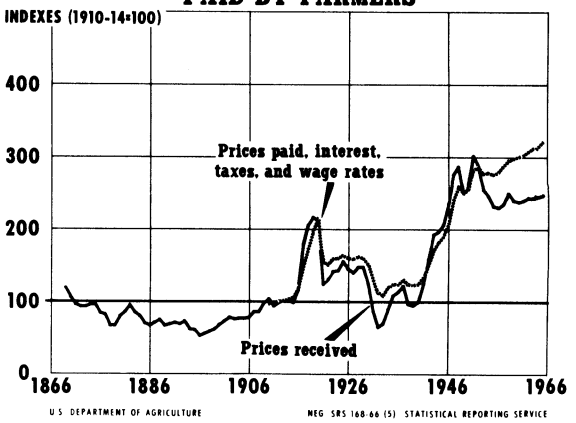
HOGS AND CATTLE, VALUE PER HEAD, JANUARY 1



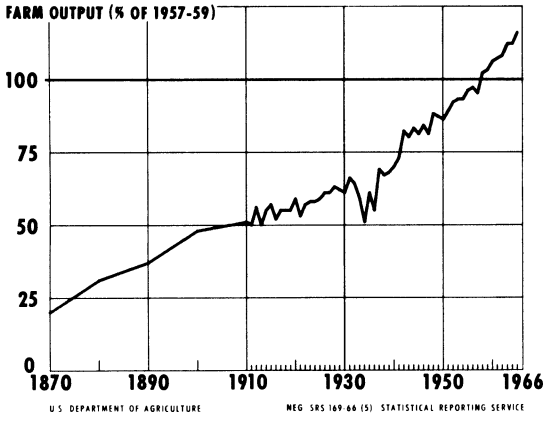
WHEAT AND CORN: PRICE RECEIVED BY FARMERS



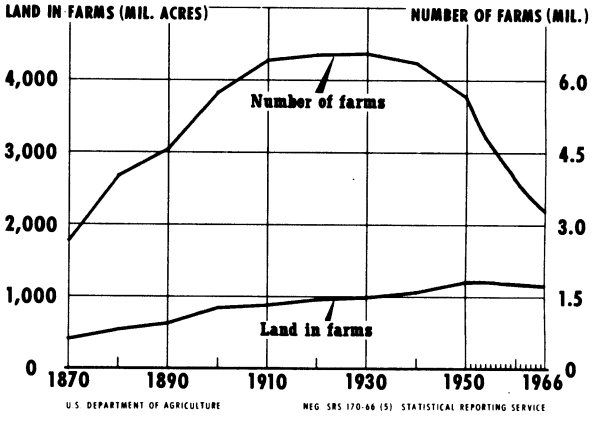
INDEXES OF PRICES RECEIVED AND PAID BY FARMERS



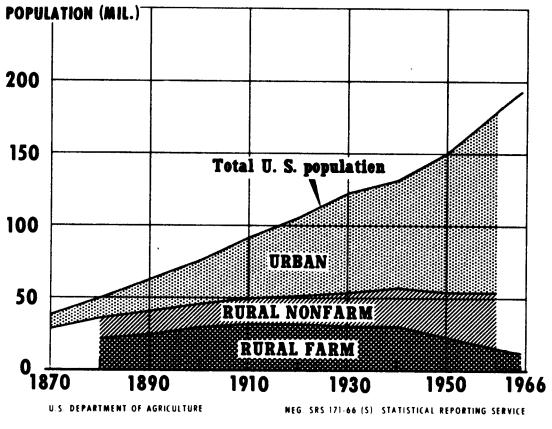
FARM OUTPUT



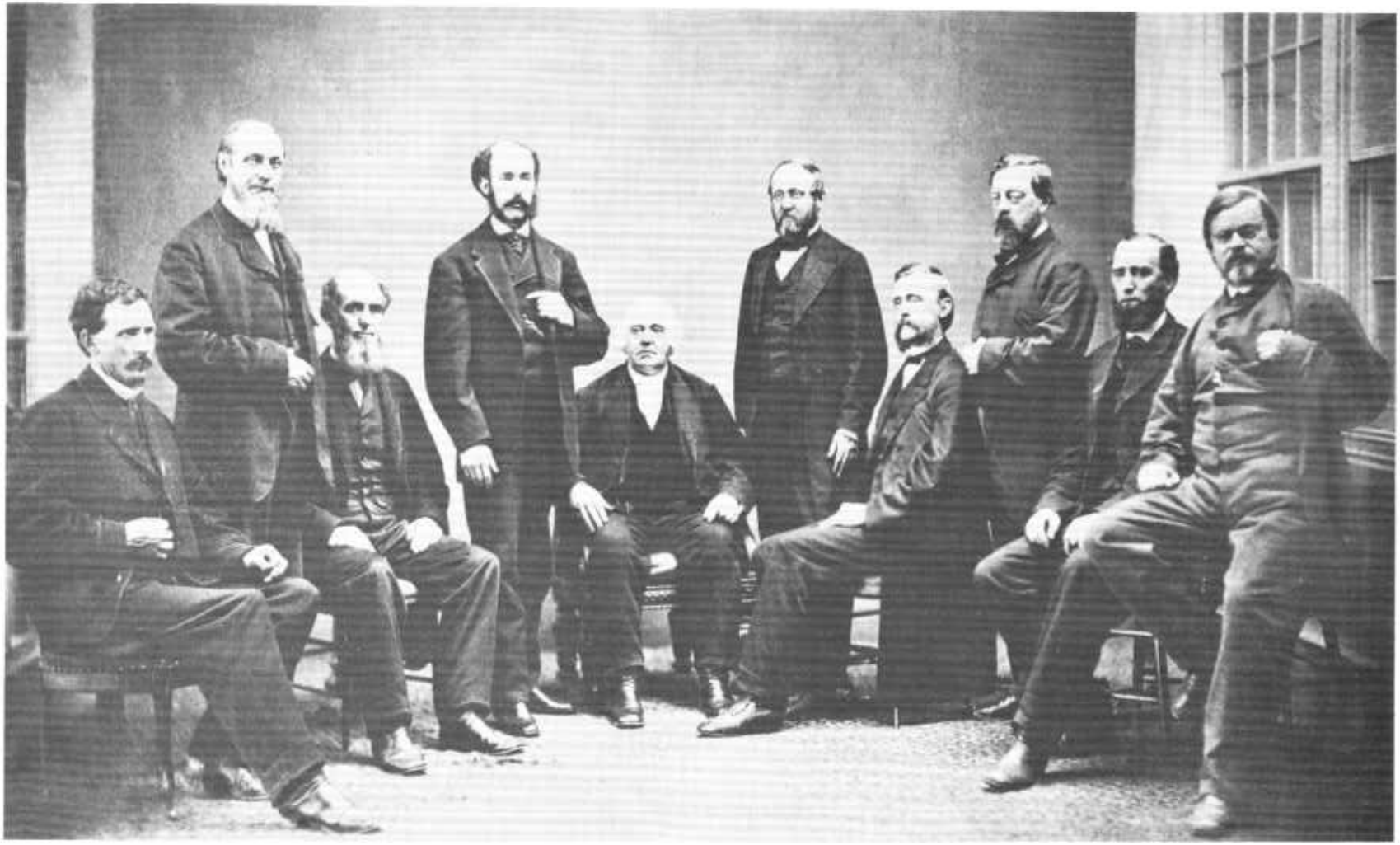
FARMS AND LAND IN FARMS



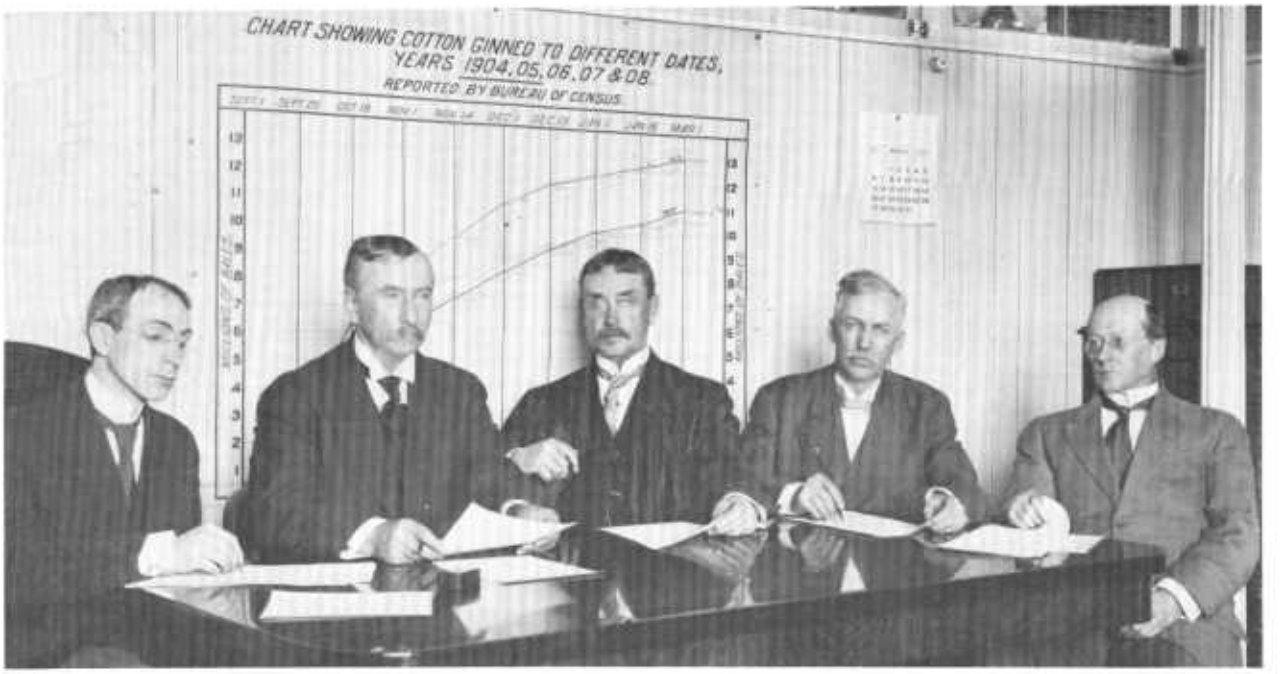
U. S. POPULATION BY RESIDENCE



Picture	*Page*	*No.*
Chart	105	DN–3068
Newton and staff	114	2085C
Olmsted and staff	115	BN 33076
WWI crop report	115	BN 33074
Agr. Statisticians Conference 1917:		
Top	116	BN 33078
Center		BN 33075
Bottom		BN 33077
Estabrook and board	118	BN 33079
Statistical class, 1928	118	BN 33080
Conference of Agricultural Statisticians	119	BN 33081
Callander and board	120	BN 33082
Brannan signs crop report	120	N 11170
1962 Crop Reporting Board	121	BN 33083
Bollman	122	BN 33071
Dodge	122	BN 33253
Hays	122	BN 33085
Olmsted	122	BN 33084
Clark	123	3407C
Estabrook	123	BN 33086
Murray	123	BN 33087
Callander	123	BN 417
Becker	124	BN 239
Koenig	124	BN 7059
Newell	124	BN 388
Simpson	124	BN 33072
Trelogan	125	BN 33073



Isaac Newton and staff, 1867. Isaac Newton was named the first Commissioner of the Department of Agriculture by President Abraham Lincoln on July 1, 1862. Newton is seated center; the fourth man from right is J. R. Dodge.



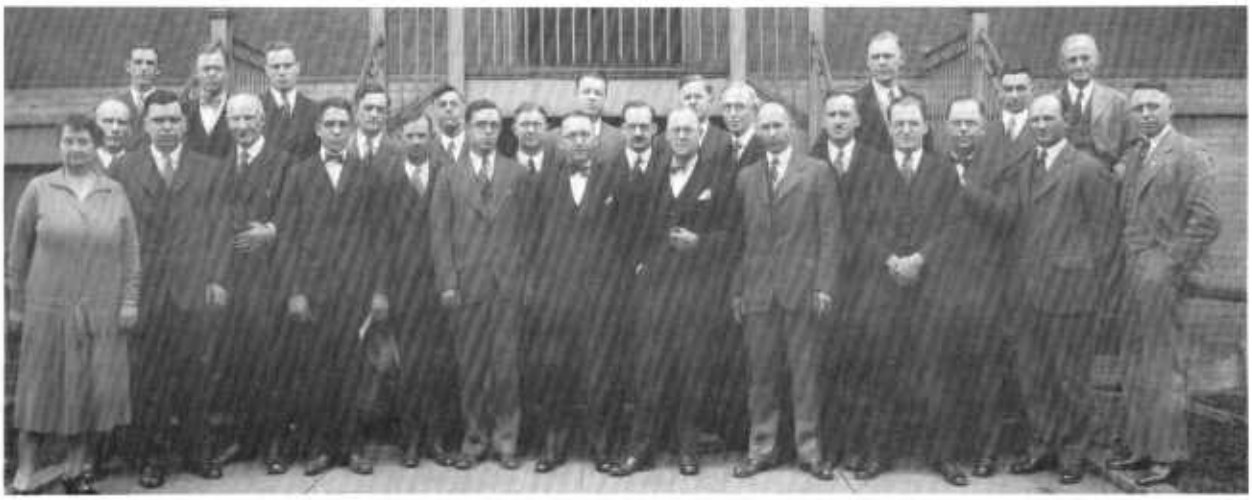
Victor H. Olmsted and staff, 1910. Left to right: Nat C. Murray, W. C. Duncan, V. H. Olmsted, John J. Darg, George K. Holmes.

The crop report was exciting news during World War I. Secretary of Agriculture Meredith looks on from far right, and Chief Statistician Estabrook from the stairs.

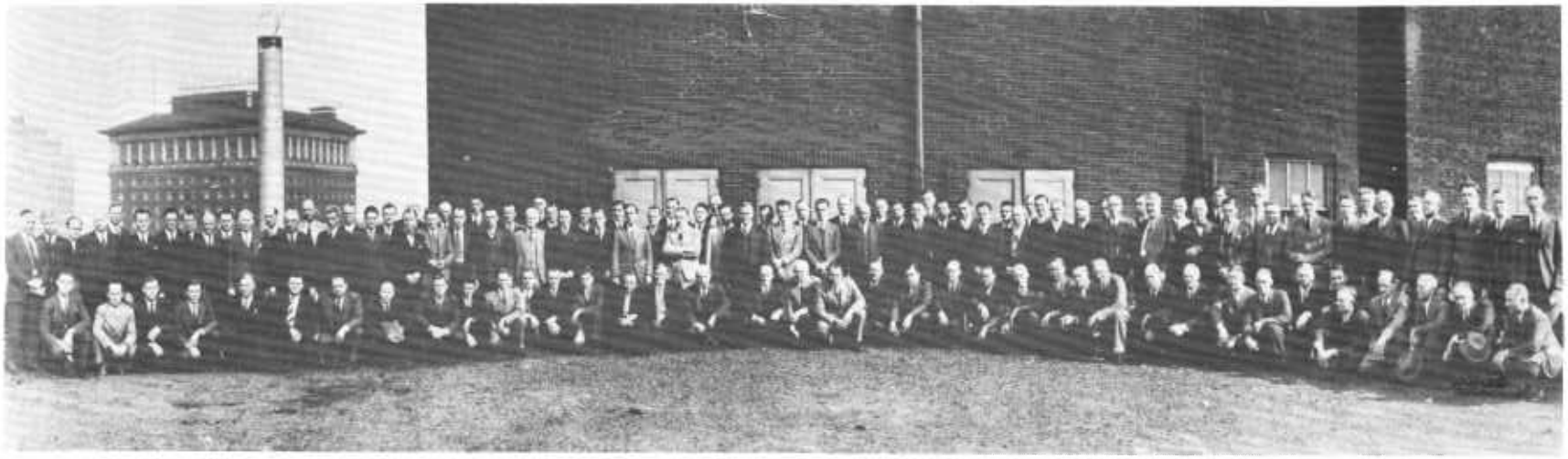
Conference of Agricultural Statisticians, Washington, D.C., 1917. The names, titles, and territories of those in the picture, numbered from left to right, are:

1. E. E. Kaufman, Assistant Field Agent, California. 2. Frank Andrews, Chief, Division of Crop Records, Washington, D.C. 3. V. H. Church, Field Agent, Mich. 4. J. L. Cochrun, Field Agent, Ohio. 5. Lucas Moore, Field Agent, Ky. 6. P. E. Jamieson, Clerk, Washington, D.C. 7. C. E. Gage, Clerk, Washington, D.C. 8. G. L. Morris, Field Agent, Tenn. 9. V. A. Sanders, Field Agent, Maine, N.H., Vt., and Mass. 10. V. H. Olmsted, Field Agent, Va. 11. F. S. Pinney, Field Agent, Iowa. 12. F. G. Kelsey, Field Agent, N.Y., Conn., and R.I. 13. Z. R. Pettet, Field Agent, Ga. 14. P. W. Shaw, Special Agent, Miss. 15. S. A. Jones, Chief, Division of Crop Reports, Washington, D.C. 16. F. J. Blair, Truck Crop Specialist, Washington, D.C. 17. H. F. Bryant, Field Agent, W. Va. 18. L. M. Harrison, Field Agent, Ariz. 19. J. E. Pickards, Field Agent, Calif. 20. H. B. Cramer, Chief Clerk of Bureau, Washington, D.C. 21. H. A. Marks, Assistant Truck Crop Specialist, Eastern United States. 22. A. J. Surratt, Field Agent, N. Dak. 23. C. M. Daugherty, Statistical Scientist, Washington, D.C. 24. J S. Dennee, Field Agent, La. 25. C. S. Bouton, Field Agent, Ark. 26. W. W. Putnam, Field Agent, Colo. 27. J. E. Woodworth, Field Agent, Okla. 28. Perry Elliott, Clerk, Washington, D.C. 29. B. B. Hare, Field Agent, S.C. 30. G. K. Holmes, Statistical Scientist, Washington, D.C. 31. E. A. Logan, Field Agent, Mo. 32. Edward Crane, Chief, Clerical Section, Division of Crop Reports, Washington, D.C. 33. L. M. Estabrook, Chief of Bureau, Washington, D.C. 34. D. F. Houston, Secretary of Agriculture, Washington, D.C. 35. N. C. Murray, Assistant Chief of Bureau, Washington, D.C. 36. W. F. Callander, Field Agent, Wis. 37. Frank Parker, Field Agent, N.C. 38. C. C. Hare, Field Agent, Fla. 39. R. F. Hare, Field Agent, N.M. 40. R. G. Risser, Assistant Truck Crop Specialist, Western United States. 41. Guy Fitzpatrick, Field Agent, Mont. 42. F. W. Gist, Field Agent, Ala. 43. G. F. Frick, Clerk, Washington, D.C. 44. E. T. Marchetti, Field Agent, Wash. 45. J. C. Folger, Assistant Fruit Crop Specialist, Western United States. 46. G. L. Morgan, Field Agent, Pa. and N.J. 47. P. H. Kirk, Field Agent, Minn. 48. J. A. Ramey, Field Agent, Miss. 49. S. D. Fessenden, Field Agent, Ill. 50. E. C. Paxton, Field Agent, Utah and Nev. 51. G. C. Bryant, Field Agent, Ind. 52. W. L. Pryor, Cotton Crop Specialist, Cotton States of United States. 53. F. L. Kent, Field Agent, Oreg. 54. A. F. Krueger, Clerk, Washington, D.C. 55. F. N. Gray, Field Agent, Tex. 56. A. E. Anderson, Field Agent, Nebr. 57. H. O. Herbrandson, Field Agent, S. Dak. 58. A. D. Cook, Field Agent, Wyo. 59. J. J. Darg, Field Agent, Md. and Del.

Leon Estabrook and Board members, 1921. Left to right: George K. Holmes, Charles Gage, Leon Estabrook, Frank Andrews, Edward Crane, and Nat C. Murray.



Statistical class of 1928. Front row, left to right: Mrs. Ward, D.C.; C. D. Stevens, New England; J. J. Dennee, Oregon; J. A. Becker, D.C.; M. R. Wells, Arizona; C. F. Sarle, D.C.; N. I. Nielsen, California; J. H. Jacobson, Idaho; F. O. Black, South Carolina; P. L. Koenig, Pennsylvania; G. S. Ray, Ohio; H. M. Taylor, Virginia; (Unknown). Second row, left to right: C. L. Harlan, D.C.; V. C. Childs, Georgia; C. E. Gage, D.C.; A. J. Surratt, Illinois; J. B. Shepard, D.C.; V. H. Church, Michigan; J. G. Diamond, Montana; C. G. Carpenter, D.C.; S. A. Jones, D.C. Back row, left to right: P. S. Newman, South Dakota; S. R. Newell, Maryland; F. K. Reed, Kansas; C. H. Robinson, Texas; R. L. Gillett, New York; (Unknown).



Conference of Agricultural Statisticians, St. Louis, Mo.—March 21–25, 1938.

Back row (*left to right*) : 1. McCandliss—Miss. 2. Walker—S. Dak. 3. *Smith—Cotton Coop. 4. Gillett—N.Y. 5. Garrett—Ala. 6. McPeek—Kans. 7. Childs—Tex. 8. *Robinson—Census 9. Taylor—Va. 10. *Jenkins—Census 11. Harlan—D.C. 12. Orr—D.C. 13. Morgan—N.J. 14. Lowe—Mich. 15. Carpenter—D.C. 16. Bryan—Ark. 17. King—D.C. 18. Smythe—D.C. 19. *Newell—Research 20. Church—Mich. 21. Morgan—D.C. 22. Kirk—Minn. 23. White—Ill. 24. Rasor—Tex. 25. Moats—Ill. 26. Simpson—Wyo. 27. Jones—D.C. 28. Straszheim—Ind. 29. Newman—Wash. 30. Wiland—D.C. 31. Schiller—Calif. 32. Nordquist—Nebr. 33. Tuttle—D.C. 34. Sarle—D.C. 35. Jones—S. Dak. 36. Ebling—Wis. 37. Bair—N. Eng. 38. Brooks—Ky. 39. Borum—Wash. 40. Royston—D.C. 41. Justin—Ind. 42. Marsh—Tenn. 43. Burkhead—Okla. 44. Bryant—Ky. 45. Parker—Miss. 46. Kuzelka—Mont. 47. Black—S.C. 48. Kimball—D.C. 49. Graham—Wis. 50. Wilson—D.C. 51. Henderson—D.C. 52. Hale—D.C. 53. Stevens—N. Eng. 54. Creer—N. Dak. 55. Sabin—D.C. 56. Huey—N.Y. 57. Gasteiger—Pa. 58. *Wilson—Canada 59. Palmer—Iowa 60. *Pettet—Census 61. Gilbert—W. Va. 62. *Bjorka—L.S.M.&W. 63. Bodin—Minn. 64. Parker—N. Car. 65. Davis—D.C. 66. Ray—Ohio 67. Langley—Ga. 68. Brittain—Mo. 69. Merrill—D.C. 70. Light—S. Car. 71. Whittier—Mo. 72. Pallesen—D.C. 73. Caparoon—D.C. 74. Rhodes—N.C. 75. Marks—Fla. 76. Guellow—D.C. 77. Blair—Calif. 78. Robinson—Ill. 79. Brewer—W. Va. 80. Bormuth—Wis. *Front row* (*left to right*) : 81. Collins—Kans. 82. Mackey—Tex. 83. Clark—Mich. 84. Hackendorf—Va. 85. Whitaker—D.C. 86. Satterfield—Ark. 87. Daniels—N. Mex. 88. Ross—Idaho 89. Ewing—Md. 90. Stuart—N. Car. 91. Collins—Tenn. 92. Peters—D.C. 93. Kienholz—N. Dak. 94. Bennett—D.C. 95. Knutson—Wyo. 96. Anderson—Nebr. 97. Callander—D.C.(Chief) 98. Blood—Okla. 99. Paxton—Ariz. 100. Boster—Ala. 101. Swedlund—Colo. 102. Frost—Ohio 103. Wilson—N. Eng. 104. Finley—Tex. 105. Schutz—La. 106. *Overby—Cotton Coop. 107. Heidelberg—Miss. 108. Dennee—D.C. 109. Floyd—Ga. 110. Carl—Iowa 111. Surratt—Ill. 112. Reed—Colo. 113. Marsh—Ark. 114. Townsend—Fla. 115. Beier—Colo. 116. Shepard—D.C. 117. Andrews—Utah 118. Diamond—Mont. 119. Scott—Calif.

* Not in Division.

W. F. Callander and Board members, 1938. Left to right: Joe Orr, W. F. Callander, Asa Tuttle, Jerry Borum, John A. Hicks, R. K. Smith, and Hubert Collins.

Secretary Charles F. Brannan signs a crop report, 1950. S. R. Newell, Assistant Chief of the Bureau of Agricultural Economics and Chairman of the Crop Reporting Board (seated, right) watches the signing, as do members of the Board (left to right): R. S. Royston, C. E. Burkhead, H. V. Edwards (Illinois), M. M. Justin (Indiana), D. D. Pittman, H. R. Walker, R. F. Gurtz, F. V. Graham (South Dakota), R. K. Smith, and E. C. Paxton (Utah).

Glenn D. Simpson, Chairman of the Crop Reporting Board, and Board members, July 5, 1962. Clockwise from left front: J. W. Kirkbride; C. O. Parker (Louisiana); S. L. Guy (West Virginia); Harold Edwards; R. K. Smith; M. Koehn (standing); Glenn D. Simpson, Chairman of the Crop Reporting Board; C. E. Burkhead; W. D. Blachly (Texas); Donald Jones (Colorado); H. L. Rasor (North Carolina); and Leonard Orvold.

Lewis Bollman, 1863–65

Jacob Richards Dodge, 1866–78; 1881–93

Willet Hays, (also Assistant Secretary of Agriculture), 1905–06

Victor H. Olmsted, 1906–07; 1909–13

Charles C. Clark, 1907–09

Leon M. Estabrook, 1913–21

Nat C. Murray, 1921–22

William F. Callander, 1923–35; 1937–42; 1946–49

Joseph A. Becker, 1935–37

Paul L. Koenig, 1942–46

Sterling R. Newell, 1950–61

Glenn D. Simpson, Deputy Administrator and Chairman, Crop Reporting Board, 1961–

Harry C. Trelogan, Administrator, 1961–

CHAPTER 12. A CHRONOLOGY OF DEVELOPMENT AND PROGRESS, 1866–1966

Crop and Livestock Estimates

1825 Erie Canal completed—accelerated migration and development of new agricultural lands in western New York and Ohio Valley

1830 The beginning of the railroad era foreshadowed the decline of canals & speedup of agricultural production in the Mississippi Valley and later the Great Plains

1836 U.S. Patent Office established as a separate bureau and Henry Ellsworth appointed Commissioner

1837 Steel plows manufactured by John Deere

1839 Ellsworth obtained $1,000 appropriation in the Patent Office fund for "the collection of statistics and distribution of seed"

1840 President Van Buren's proposal to establish a Bureau of Agriculture, resulted in inclusion of agricultural data in the Census of 1840

1841 Ellsworth issued first crop report, based on Census of 1840

1848 Patent Office stopped making crop reports

1855 James T. Earle, President of the Maryland State Agricultural Society, proposed to State agricultural societies that they appoint men in each county to report on crops, and that these reports be summarized by interested offices and made available to all societies

1858 Orange Judd, Editor of "The American Agriculturalist" solicited comments on crop conditions from subscribers and published his appraisal of crop conditions. In 1862, specific questionnaires were sent to persons selected as crop reporters

1862 U.S. Department of Agriculture established, May 15. Land Grant College Act and Homestead Act approved

1863 USDA Division of Statistics established and Lewis Bollman appointed Chief. Issue of monthly reports of information on condition of crops started in July

1865 Civil War ended April 9

1866 Beginning of continuous series of annual statistics on production of major crops, livestock numbers, and annual farm prices

1867 First chapter of National Grange organized, followed by Farmers Union in 1902 and American Farm Bureau Federation in 1920

1875 First State agricultural experiment station established at Wesleyan University at Middletown, Connecticut

1878 Dodge resigned to take charge of agricultural statistics for the Tenth Census (1880). Charles Worthington appointed Chief Statistician

1882 Part-time State statistical agents appointed under the direction of the Division of Statistics. These officers were required to develop and maintain an independent corps of voluntary crop reporters, who would report to the State agent

Office established in London to report on European crop prospects and other information pertinent to USDA work

1883 Pendleton Civil Service Act approved January 16

1885 International Institute of Statistics established

1887 Hatch Experiment Stations Act approved March 2; provided for Federal Grants to States for agricultural experimentation

1893 Jacob R. Dodge retired after 30 years of service. Henry Robinson appointed Chief Statistician

1896 Voluntary crop reporter list expanded. The new list was known as the "township list" because the objective was to get at least one reporter for each agricultural township. The reports were mailed directly to Washington

Rural free delivery of mail started

1897 John Hyde appointed Chief Statistician

1898 Industrial Commission appointed to recommend legislation to meet problems of agriculture, labor, and capital

Additional State statistical agents appointed and the beginning of the buildup of traveling Statistical Assistants to cover a group of States, observe agricultural conditions, and provide some coordination of the State statistical agents

1899 Publication of USDA "Crop Reporter" began

1902 Division of Statistics, in cooperation with the Minnesota Experiment Station, began collection of cost of production statistics on selected farms to assist with farm management studies

1903 Organization of the Bureau of Statistics. The Chief Statistician became Chief of the Bureau, which consisted of the Division of Domestic Crop Reports, Division of Foreign Markets, and a Miscellaneous Division

1905 Chief Statistician Hyde resigned. Willet M. Hays, Assistant Secretary of Agriculture, designated to take charge of the Bureau of Statistics; Victor Olmsted designated as Associate Chief of the Bureau
Crop Reporting Board created

1906 Victor Olmsted named as Chief of the Bureau and Chairman of the Crop Reporting Board

1907 Business depression

1908 Beginning of monthly collection of prices received by farmers for agricultural commodities

International Institute of Agriculture completed organization

1909 Laws applicable to Government workers passed (1) making premature disclosure of crop estimates, issuance of false reports, and speculation in products of the soil a crime; (2) setting forth contents of monthly crop reports, time of issuance, and requiring formal approval of the Secretary before issuance

Beginning of continuous series of wages paid hired farm labor

1910 Collection of annual data on prices paid by farmers for 74 commodities bought was begun. Publication of first monthly index of prices received by farmers for 10 crops

1911 Beginning of collection of individual farm reports for estimating acreage
Beginning of quantitative production forecasts during the growing season for major crops except cotton

1913 Office of Markets established May 16. The Appropriation Act, approved by the President on March 4, making appropriations for fiscal year 1914, included $50,000 to acquire and diffuse among people of the United States useful information on subjects connected with the marketing distribution of farm products, with $10,000 made available immediately

1914 Bureau of Statistics reorganized and renamed Bureau of Crop Estimates. The Part-time State Statistical Agents and special regional field agents abolished. State Statistical Agents were established as full-time jobs under the Federal civil service

Leon M. Estabrook appointed Chief of the Bureau and Chairman of the Crop Reporting Board

Commercial vegetable estimates started with reports on cabbage and onions. Cold storage reports on apples were begun on December 1. Smith-Lever Act, which provided Federal funds for cooperation with the States on a program of agricultural extension work, was passed. World War I started in Europe August 1. Urgent demand developed for more statistics on a wide range of subjects

1915 Beginning of cotton production forecasts during the growing season

First U.S. Department of Agriculture market news report was issued (on strawberries) at Hammond, La.

1917 Market news reports on livestock and meat started

U.S. entered World War I, April 6
August 10—United States Food Administration established

August 30—Wheat price set at $2.20 per bushel; June 21, 1918, raised to $2.30

September 1—Grain Corporation of Food Administration began operations

November 13—Food Administration announced hog price support based on corn price

Bureau of Crop Estimates entered into first formal agreement with Wisconsin for operation of the cooperative Federal-State Crop Reporting Service

1918 World War I armistice signed November 11

1919 Commercial potato estimates provided for monthly stock reports

Field counts made in South Carolina by the State Statistician to develop a more objective basis for determining acreage changes of crops. Data collected on poultry numbers

1920 Sharp decline in prices of agricultural commodities

1921 Bureau of Markets merged with Bureau of Crop Estimates to become Bureau of Markets and Crop Estimates. Henry C. Taylor appointed Chief. Leon Estabrook made associate chief and continued to act as Chairman of the Crop Reporting Board. Nat C. Murray named Chief of Division of Crop Estimates

1922 Bureau of Markets and Crop Estimates merged with Office of Farm Management to form the Bureau of Agricultural Economics with H. C. Taylor, Chief

Division of Crop Estimates and the Crop Reporting Board became the Division of Crop and Livestock Estimates of the Bureau of Agricultural Economics

The Division of Records and Research became a part of the Division of Statistical and Historical Research of the Bureau of Agricultural Economics

Bureau of Agricultural Economics continued a number of the commodity divisions transferred from the Bureau of Markets

Division of Crop and Livestock Estimates in cooperation with the Post Office Department secured assistance of rural mail carriers in making first Pig Crop survey

1923 Nat C. Murray resigned and William F. Callander named Chief of Division of Crop and Livestock Estimates. William A Schoenfield, Assistant Chief of the Bureau of Agricultural Economics, was designated Chairman of the Crop Reporting Board and served in that capacity until September, 1924, when Callander was designated Chairman

Livestock reporting work reorganized and expanded

Farmers' intention-to-plant reports started in April

The "crop meter," a device attached to an automobile, was invented by the State statistician in Mississippi as a device to measure the frontage of crops along representative highways from which independent indications of acreage change could be derived

First annual Outlook Conference held in April

1924 Rural carrier collection of questionnaires on acreage started

1925 First quinquennial agricultural census taken. Division of Crop and Livestock Estimates made responsible for field operations

1926 Quarterly estimates of farm stocks of grain started

1927 Decentralization of data collection started with discontinuance of dual inquiries from Washington and transfer of all mailing lists to the States

Beginning of systematic in-service training of statisticians with intensive 6-week statistical course in Washington for a group of young statisticians. This plan was expanded in 1928, 1929 for State Statisticians in Charge and in 1930 for Assistant State Statisticians

1928 Beginning of systematic attempt to secure objective measures for forecasting yield started with field counts of cotton

1929 Practical application of regression approach to interpretation of condition reports for crop forecasting and beginning of abandonment of the "par method". Use of weather-crop relations for yield forecasting was projected

The Great Depression began with stock market crash on October 29

Federal Farm Board established under the Agricultural Marketing Act approved June 15. Division of Crop and Livestock Estimates called on for much assistance in consultation and preparing special statistics and analysis

1932 Decentralization of reporting lists to State Statisticians' offices practically completed. By this time the Division of Crop and Livestock Estimates had become a fully decentralized organization

1933 Banks closed in March. Gold called in

Agricultural Adjustment Act approved May 12

Division of Crop and Livestock Estimates called on to assist in setting up the organization for handling contracts, records, and providing special statistical basis for allotments for basic crops. Field statisticians and Washington staff called on to review acreage figures submitted through AAA office and make adjustments in total acreages and hog numbers, by counties

Price series were expanded and parity prices computed

1934 Great drought in Corn Belt and Great Plains lasted from 1934 to 1936 necessitating many special services: mid-month crop forecasts, determination of feed needs, allocation of feed, movement of cattle out of drought areas, etc.

1935 Joseph A. Becker appointed Chief of Division and Chairman of the Board when Callander left to take a position with the Agricultural Adjustment Administration. Crop and Livestock Estimates relieved of review and adjustment of individual allotment basis but continued to provide county estimates and staff members served as consultants to AAA and directed special surveys

1936 Agricultural statistics had become such a large part of the Department yearbook, that they were made a separate volume, Agricultural Statistics

1937 Callander returned as Chief of Division of Crop and Livestock Estimates and Chairman of the Crop Reporting Board

1938 Federal Crop Insurance Corporation established February 16. Agricultural Statistics Division provided special crop estimates by counties for the use of insurance districts in establishing rates of insurance on individual crops

1939 Reorganization of Department established the first Agricultural Marketing Service

Division of Crop and Livestock Estimates transferred to the Agricultural Marketing Service and name changed to Division of Agricultural Statistics, and assigned responsibility for: seed statistics of the Hay, Feed, and Seed Division; statistics on hatchery production, manufactured dairy products, and fluid milk statistics of the Dairy and Poultry Division; and reports on cold storage holdings that had been under the office of the Chief of the Bureau

World War II started in Europe September 1

1940 National Defense Advisory Commission established May 28

Division of Agricultural Statistics called upon for statistics and assistance on special studies of (1) inventory of farm products and processing facilities, (2) probable requirements under each of several war defense situations, and (3) anticipated problems of production, processing, and distribution

1941 Agricultural Division of the National Defense Advisory Commission transferred to USDA. Work on production goals assigned to BAE in preparing the analysis and establishing production goals that were announced by Secretary Wickard July 17

Chicago Dairy office established for weekly reports on butter, cheese, and other dairy reports Pearl Harbor, December 7

1942 Division of Agricultural Statistics except Cold Storage section transferred to Bureau of Agricultural Economics

Paul Koenig appointed Chief of the Division and Joseph A. Becker named Chairman of the Crop Reporting Board when Callander transferred to position of Statistician in Charge of Florida

Participation of the U.S. in World War II and extending thru 1945 brought many demands for expanded statistical programs. Many special enumerative surveys were made, special crop reports and much greater emphasis was placed on price reporting work

1943 Quarterly reports on estimates of stocks of grain in all positions were initiated

Chicago dairy office of the Division of Agricultural Statistics became coordination center for all war time reports on the dairy industry

1944 Becker transferred to Foreign Agriculture and Paul Koenig named Chairman of the Crop Reporting Board

1945 Germany surrendered May 7 and Japan August 14

Bureau of Agricultural Economics reorganized December 31

Chief of the Bureau of Agricultural Economics was authorized to appoint four Assistant Chiefs with responsibility for specific subject areas. One Assistant Chief was placed in charge of agricultural statistics work and was designated Chairman of the Crop Reporting Board

Food and Agriculture Organization of the United Nations formally organized Oct. 16

1946 Callander returned from position as Statistician in Charge in Florida and was appointed Assistant Chief of BAE for Agricultural Estimates and Chairman of the Crop Reporting Board

Special Farm Statistics Division organized to make enumerative surveys on farm labor, housing, and other special subjects

Research and Marketing Act of 1946 passed—provided for grants-in-aid to State Department of Agriculture on the basis of equal matching of State and Federal Funds for projects in the field of agricultural marketing

1947 Cooperative projects authorized by the Research and Marketing Act began in a number of States to provide special statistical information covering local needs for county and local market areas. County estimates of production, pig crop reports, cattle-on-feed reports, local area truck crop reports, and many other services were added

1950 Callander retired. Sterling R. Newell appointed Assistant Chief of the Bureau of Agricultural Economics for Agricultural Estimates and Chairman of the Crop Reporting Board

1952 Congressional report of an investigation of agricultural estimates work by a special Subcommittee of the House Agriculture Committee, recommended strengthening of the reporting service, particularly by providing funds for research into methods for developing and improving statistical techniques

First appropriation of $250,000 for methodological research provided in Appropriation Act of 1952 for the fiscal year 1953. Research Staff established

1953 Reorganization of the Department. The Production & Marketing Administration was abolished, and part of its activities transferred to the reestablished Agricultural Marketing Service. At the same time the Bureau of Agricultural Economics was discontinued, but part of its work was organized in several divisions of the Agricultural Marketing Service

The crop and livestock estimating activities became the Division of Agricultural Estimates and S. R. Newell named as Director and Chairman of the Crop Reporting Board

Cold Storage reports transferred from the Production and Marketing Administration to the Agricultural Estimates Division

Subcommittee on Agricultural Appropriations of the House Appropriations Committee requested the Administrator of the Agricultural Marketing Service to prepare and submit a long-range plan for strengthening the crop and livestock reporting service that would meet the needs of the Nation

1954 June Enumerative Survey started on research basis in 10 States, 100 counties and 703 segments

Objective Yield Surveys made on cotton in 10 States, 76 counties and 200 sample units

1955 First offshore statistical office established in the Territory of Hawaii at Honolulu

1956 Farm Expenditure Survey made in 48 States, 300 counties, and 10,720 farms

1957 Report on "A Program for the Development of the Agricultural Estimating Service" was presented to the Subcommittee on Agricultural Appropriations of the House Appropriations Committee by the Director of the Agricultural Estimates Division in February

1960 Alaska office opened at Palmer, Alaska

1961 Departmental reorganization—Statistical Reporting Service established with a Division of Field Operations, Division of Agricultural Estimates and Division of Standards and Research. Harry C. Trelogan appointed Administrator. S. R. Newell appointed Deputy Administrator and Chairman of the Crop Reporting Board
Congress appropriated $750,000 as "the first increment on the long-range plan to be followed by later increases to meet the needs within 3 or 4 years"

1962 S. R. Newell retired. Glenn D. Simpson appointed Deputy Administrator and Chairman of the Crop Reporting Board

1966 Washington Data Processing Center established in South Building, consolidating units scattered in several D.C. locations

CHAPTER 13. HEADS OF AGRICULTURAL STATISTICS

Division of Statistics—(1863–1903)

Lewis Bollman (1863–65)
Jacob R. Dodge (1866–78)
Charles Worthington (1879–81)
Jacob R. Dodge (1881–93)
Henry A. Robinson (1893–97)

Bureau of Statistics (1903–13)

John Hyde (1897–1905)
Willet M. Hays (also Assistant Secretary) (1905–6)
Victor Olmsted (1906–7)
C. C. Clark (Acting) (1907–9)
Victor Olmsted (1909–13)
Nat C. Murray (Acting) (1913)

Bureau of Crop Estimates (1914–21)
Leon M. Estabrook (1913–21)

Division of Crop Estimates (1921–22)
Of the Bureau of Markets and Crop Estimates

Nat C. Murray (1921–22)

Division of Crop and Livestock Estimates (1922–39)

Bureau of Agricultural Economics

W. F. Callander (1923–35)
Joseph A. Becker (1935–37)
W. F. Callander (1937–39)

Division of Agricultural Statistics (1939–42)
Of the Agricultural Marketing Service

W. F. Callander (1939–42)

Division of Agricultural Statistics (1942–53)
Of the Bureau of Agricultural Economics

Paul L. Koenig (1942–46)
W. F. Callander (1946–50)
S. R. Newell (1950–53)

Agricultural Estimates Division (1953–61)
Of the Agricultural Marketing Service

S. R. Newell (1953–61)

Statistical Reporting Service (1961–)

H. C. Trelogan, Administrator (1961–)
S. R. Newell, Deputy Administrator and Chairman, Crop Reporting Board (1961–62)

Glenn D. Simpson, Deputy Administrator and Chairman, Crop Reporting Board (1962–)

CHAPTER 14. STATUTES ESTABLISHING AND ENLARGING THE DEPARTMENT OF AGRICULTURE

AN ACT to establish a Department of Agriculture [18]

[18] Thirty-Seventh Congress of the United States at the Second Session.

BE IT ENACTED by the Senate and House of Representatives of the United States of Americea in Congress assembled, That there is hereby established at the seat of Government of the United States a Department of Agriculture, the general designs and duties of which shall be to acquire and diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.

SEC. 2. And be it further enacted, That there shall be appointed by the President, by and with the advice and consent of the Senate, a "Commissioner of Agriculture," who shall be the chief executive officer of the Department of Agriculture, who shall hold his office by tenure similar to that of other civil officers appointed by the President, and who shall receive for his compensation a salary of three thousand dollars per annum.

SEC. 3. And be it further enacted, That it shall be the duty of the Commissioner of Agriculture 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, (accurate records of which experiments shall be kept in his office,) 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. He shall annually make a general report in writing of his acts to the President and to Congress, in which he may recommend the publication of papers forming parts of or accompanying his report, which report shall also contain an account of all moneys received and expended by him. He shall also make special reports on particular subjects whenever required to do so by the President or either House of Congress, or when he shall think the subject in his charge requires it. He shall receive and have charge of all the property of the Agricultural Division of the Patent Office in the Department of the Interior, including the fixtures and property of the propagating garden. He shall direct and superintend the expenditure of all money appropriated by Congress to the Department, and render accounts thereof, and also of all money heretofore appropriated for agriculture and remaining unexpended. And said Commissioner may send and receive through the mails, free of charge, all communications and other matter pertaining to the business of his Department, not exceeding in weight thirty-two ounces.

SEC. 4. And be it further enacted, That the Commissioner of Agriculture shall appoint a chief clerk, with a salary of two thousand dollars, who in all cases during the necessary absence of the Commissioner, or when the said principal office shall be vacant, shall perform the duties of the Commissioner, and he shall appoint such other employees as Congress may from time to time provide with salaries corresponding to the salaries of similar officers in other Departments of the Government; and he shall, as Congress may from time to time provide, employ other persons, for such time as their services may be needed, including chemists, botanists, entomologists, and other persons skilled in the natural sciences pertaining to agriculture. And the said commissioner, and every other person to be appointed in the said Department, shall, before he enters upon the duties of his office or appointment, make oath or affirmation truly and faithfully to execute the trust committed to him. And the said Commissioner and the chief clerk shall also, before entering upon their duties, severally give bonds to the Treasurer of the United States, the former in the sum of ten thousand dollars, and the latter in the sum of five thousand dollars, conditional to render a true and faithful account to him or his successor in office, quarter-yearly accounts of all moneys which shall be by them received by virtue of the said office, with sureties to be approved as sufficient by the Solicitor of the Treasury; which bonds shall be filed in the office of the First Comptroller of the Treasury, to be by him put in suit upon any breach of the conditions thereof.

GALUSHA A. GROW
Speaker of the House of Representatives

SOLOMON FOOT
President of the Senate pro tempore

Approved May 15, 1862

ABRAHAM LINCOLN

AN ACT to enlarge the powers and duties of the Department of Agriculture and to create an Executive Department to be known as the Department of Agriculture.[19]

BE IT ENACTED by the Senate and House of Representatives of the United States of America in Congress assembled, That the Department of Agriculture shall be an Executive Department, under the supervision and control of a Secretary of Agriculture, who shall be appointed by the President, by and with the advice and consent of the Senate; and section one hundred and fifty-eight of the Revised Statutes is hereby amended to include such Department, and the provisions of title four of the Revised Statutes, including all amendments, are hereby made applicable to said Department.

SEC. 2. That there shall be in said Department an Assistant Secretary of Agriculture, to be appointed by the President, by and with the advice and consent of the Senate, who shall perform such duties as may be required by law or prescribed by the Secretary.

SEC. 3. That the Secretary of Agriculture shall receive the same salary as is paid to the Secretary of each of the Executive Departments, and the salary of

[19] Fiftieth Congress of the United States at the Second Session.

the Assistant Secretary of Agriculture shall be the same as that now paid to the First Assistant Secretary of the Department of the Interior.

SEC. 4. That all laws or parts of laws relating to the Department of Agriculture now in existence, as far as the same are applicable and not in conflict with this act, and only so far, are continued in full force and effect.

JOHN G. CARLISLE
Speaker of the House of Representatives

JOHN J. INGALLS
President of the Senate pro tempore

Approved February 9, 1889

GROVER CLEVELAND

CHAPTER 15. LAWS GOVERNING CROP REPORTS

(All references are to United States Code)

General

Title 5, Section 511

Establishment of Department.—There shall be at the seat of government a Department of Agriculture, the general design and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture, in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants. (R.S. § 520) (5 U.S.C. 511)

Title 5, Section 514

General duties of Secretary.—The Secretary of Agriculture shall procure and preserve all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments, accurate records of which experiments shall be kept in his office, by the collection of statistics, and by any other appropriate means within his power; he shall collect new and valuable seeds and plants; shall test, by cultivation, the value of such of them as may require such tests; shall propagate such as may be worthy of propagation; and shall distribute them among agriculturists. (R.S. § 526) (5 U.S.C. 514).

Title 7, Section 411a

Monthly crop report; contents; issuance; approval by Secretary of Agriculture.—The monthly crop report, which shall be gathered as far as practicable from practical farmers, shall be printed and distributed on or before the twelfth day of each month, and shall embrace statements of the conditions of crops by States, in the United States, with such explanations, comparisons, and information as may be useful for illustrating the above matter, and it shall be submitted to and officially approved by the Secretary of Agriculture, before being issued or published. Mar. 4, 1909, c. 301, 35 Stat. 1053; Mar. 4, 1917, c. 179, 39 Stat. 1157 (7 U.S.C. 411a).

Title 18, Section 1902

Disclosure of crop information and speculation thereon.—Whoever, being an officer, employee or person acting for or on behalf of the United States or any department or agency thereof, and having by virtue of his office, employment or position, become possessed of information which might influence or affect the market value of any product of the soil grown within the United States, which information is by law or by the rules of such department or agency required to be withheld from publication until a fixed time, willfully imparts, directly or indirectly, such information, or any part thereof, to any person not entitled under the law or the rules of the department or agency to receive the same; or, before such information is made public through regular official channels, directly or indirectly speculates in any such product by buying or selling the same in any quantity, shall be fined not more than $10,000 or imprisoned not more than ten years, or both.

No person shall be deemed guilty of a violation of any such rules, unless prior to such alleged violation he shall have had actual knowledge thereof. June 25, 1948, c. 645, § 1, 62 Stat. 790. (18 U.S.C. 1902.)

Title 18, Section 2072

False crop reports.—Whoever, being an officer or employee of the United States or any of its agencies, whose duties require the compilation or report of statistics or information relating to the products of the soil, knowingly compiles for issuance, or issues, any false statistics or information as a report of the United States or any of its agencies, shall be fined not more than $5,000 or imprisoned not more than five years, or both. June 25, 1948, c. 645, § 1, 62 Stat. 795. (18 U.S.C. 2072).

Cotton

Title 7, Section 471

Statistics and estimates of grades and staple length of cotton; collection and publication.—The Secretary of Agriculture is authorized and directed to collect and publish annually, on dates to be announced by him, statistics or estimates concerning the grades and staple length of stocks of cotton, known as the carry-over, on hand on the 1st of August of each year in warehouses and other establishments of every character in the continental United States; and following such publication each year, to publish, at intervals in his discretion, his estimate of the grades and staple length of cotton of the then current crop: Provided, That not less than three such estimates shall be published with respect to each crop. In any such statistics or estimates published, the cotton which on the date for which such statistics are published may be recognized as tenderable on contracts of sale of cotton for future delivery under the

United States Cotton Futures Act, shall be stated separately from that which may be untenderable under said act. (Mar. 3, 1927, c. 337, § 1, 44 Stat. 1372.)

Title 7, Section 475

Cotton crop reports.—The Secretary of Agriculture shall cause to be issued as of the first of each month during the cotton growing and harvesting season from August to December inclusive, reports describing the condition and progress of the crop and stating the probable number of bales which will be ginned, these reports to be issued simultaneously with the cotton-ginning reports of the Bureau of the Census relating to the same dates, the two reports to be issued from the same place at 11 o'clock antemeridian of the eighth day following that to which the respective reports relate. When such date of release falls on Sunday, a legal holiday, or other day, which pursuant to statute or Executive order is a nonworkday in the Department of Agriculture at Washington generally, the report shall be issued at 11 o'clock antemeridian of the next succeeding workday. No such report shall be approved and released by the Secretary of Agriculture until it shall have been passed upon by a cotton-crop reporting committee or board consisting of five members or more to be designated by him, not less than three of which shall be supervisory field statisticians of the Department of Agriculture located in different sections of the cotton-growing States, experienced in estimating cotton production and who shall have first hand knowledge of the condition of the cotton crop based upon recent field observations, and the majority of which committee or board shall be familiar with the methods and practices of producing cotton. May 3, 1924, c. 149, Sec. 1, 43 Stat. 115; Mar. 3, 1927, c. 337, Sec. 5, 44 Stat. 1373; Aug. 8, 1946, c. 909, 60 Stat. 940; May 29, 1958, Sec. 2, 72 Stat. 149. (7 U.S.C. 475).

Title 7, Section 476

Acreage reports.—The Secretary of Agriculture shall cause to be issued a report on or before the 10th day of July of each year showing by States and in toto the estimated acreage of cotton planted, to be followed on August 1 with an estimate of the acreage for harvest and December 1 with an estimate of the harvested acreage. May 27, 1912, c. 135, Sec. 1, 37 Stat. 118; Mar. 3, 1927, c. 337, Sec. 6, 44 Stat. 1374; May 29, 1958, Sec. 1, 72 Stat. 149. (7 U.S.C. 476).

Title 12, Section 1141j(d)

Governmental publication; predictions as to cotton prices prohibited.—The inclusion in any governmental report, bulletin, or other such publication hereafter issued or published of any prediction with respect to cotton prices is prohibited. Any officer or employee of the United States who authorizes or is responsible for the inclusion in any such report, bulletin, or other publication of any such prediction, or who knowingly causes the issuance or publication of any such report, bulletin, or other publication containing any such prediction, shall, upon conviction thereof, be fined not less than $500 or more than $5,000, or imprisoned for not more than five years, or both: Provided, That this subdivision shall not apply to the Governor of the Farm Credit Administration when engaged in the performance of his duties herein provided. June 15, 1929, c. 24, Sec. 15, 46 Stat. 18 (12 U.S.C. 1141j(d)).

Annual appropriation acts contain a similar prohibition in this form, "No part of the funds appropriated by this Act shall be used for the payment of any officer or employee of the Department who, as such officer or employee, or on behalf of the Department of any division, commission, or bureau thereof, issues, or causes to be issued, any prediction, oral or written, or forecast, except as to damage threatened or caused by insects and pests, with respect to future prices of cotton or the trend of same." Pub. L. 87-879, Oct. 24, 1962.

Title 13, Section 42

Contents of reports; number of bales of linter; distribution; publication by Department of Agriculture.—(a) The statistics of the quantity of cotton ginned shall show the quantity ginned from each crop prior to August 1, August 16, September 1, September 16, October 1, October 18, November 1, November 14, December 1, December 13, January 16, and March 1; but the Secretary may limit the canvasses of August 1 and August 16 to those sections of the cotton-growing States in which cotton has been ginned.

(b) The quantity of cotton consumed in manufacturing establishments, the quantity of baled cotton on hand, the number of active consuming cotton spindles, the number of active spindle-hours, and the statistics of cotton imported and exported shall relate to each month, and shall be published as soon as possible after the close of the month.

(c) In collecting and publishing statistics of cotton on hand in warehouses and other storage establishments, and of cotton known as the "carry-over" in the United States, the Secretary shall ascertain and publish as a separate item in the report of cotton statistics the number of bales of linters as distinguished from the number of bales of cotton.

(d) The Secretary shall furnish to the Department of Agriculture, immediately prior to the publication of each report of that Department regarding the cotton crop, the latest available statistics hereinbefore mentioned, and the Department of Agriculture shall publish the same in connection with each of its reports concerning cotton. Aug. 31, 1954, c. 1158, 1, 68 Stat. 1016. (13 U.S.C. 42).

Title 13, Section 43

Records and reports of cotton ginners.—Every cotton ginner shall keep a record of the county or parish in which each bale of cotton ginned by him is grown and report at the March canvass of each year a segregation of the total number of bales ginned by counties or parishes in which grown. Aug. 31, 1954, c. 1158, 1, 68 Stat. 1016. (13 U.S.C. 43)

Title 13, Section 44

Foreign cotton statistics.—In addition to the information regarding cotton in the United States provided

for in this subchapter, the Secretary shall compile, by correspondence or the use of published reports and documents, any available information concerning the production, consumption, and stocks of cotton in foreign countries, and the number of cotton-consuming spindles in such countries. Each report published by the Department of Commerce or agency or bureau thereof regarding cotton shall contain an abstract of the latest available information obtained under the provisions of this section, and the Secretary shall furnish the same to the Department of Agriculture for publication in connection with the reports of that department concerning cotton in the same manner as in the case of statistics relating to the United States. Aug. 31, 1954, c. 1158, 1, 68 Stat. 1016. (13 U.S.C. 44).

Title 13, Section 45

Simultaneous publication of cotton reports.—The reports of cotton ginned to the dates as of which the Department of Agriculture is also required to issue cotton crop reports shall be issued simultaneously with the cotton crop reports of that department, the two reports to be issued from the same place at 11 o'clock antemeridian on the eighth day following that on which the respective reports relate. When such date of release falls on Sunday, a legal holiday, or other day which pursuant to statute or Executive order is a nonworkday in the Department of Commerce at Washington generally, the reports shall be issued at 11 o'clock antemeridian of the next succeeding workday. August 31, 1954, c. 1158, 1, 68 Stat. 1017. (13 U.S.C. 45).

Apples

Title 7, Section 411b

Estimates of apple production.—Estimates of apple production shall be confined to the commercial crop. June 30, 1939, c. 253, Title I, 53 Stat. 968; and all subsequent annual appropriation acts.

Naval Stores

Title 5, Section 556b

Statistics relating to turpentine and rosin.—The Secretary of Agriculture is authorized and directed to collect and/or compile and publish annually, and at such other times, and in such form and on such date or dates as he shall prescribe, statistics and essential information relating to spirits of turpentine and rosin produced, held, and used in the domestic and foreign commerce of the United States. (Aug. 15, 1935, c. 548, 49 Stat. 653.) (5 U.S.C. 556b).

Peanuts

Title 7, Section 951

Collection and publication; facts required; submission of report.—The Secretary of Agriculture is authorized and directed to collect and publish statistics of raw peanuts, shelled, unshelled, and crushed, and peanut oil, in the United States, received, processed, shipped, and owned by or in the possession of warehousemen, brokers, cleaners, shellers, dealers, growers' cooperative associations, crushers, salters, manufacturers of peanut products, and owners other than the original producers of peanuts: Provided, That the Secretary may, in his discretion, omit for any period of time to collect such statistics from any or all salters of peanuts or manufacturers of peanut products who used, during the calendar year preceding that for which statistics are being collected, less than thirty thousand pounds of shelled and unshelled peanuts. Such statistics shall show the quality of peanuts in such details as to kinds —Virginia, Runners, Spanish, and imported varieties—as the Secretary shall deem necessary for the purposes of this chapter. All reports except those required from persons owning or operating peanut picking or threshing machines shall be submitted monthly in each year, except as otherwise prescribed by the Secretary. June 24, 1936, c. 745, Sec. 1, 49 Stat. 1898; May 12, 1938, c. 199, Sec. 1, 52 Stat. 348; July 17, 1957, Sec. 1, 71 Stat. 306. (7 U.S.C. 951).

Tobacco

Title 7, Section 501

Collection and publication; facts required; deteriorated tobacco.—The Secretary of Agriculture is authorized and directed to collect and publish statistics of the quantity of leaf tobacco in all forms in the United States and Puerto Rico, owned by or in the possession of dealers, manufacturers, quasi-manufacturers, growers' cooperative associations, warehousemen, brokers, holders, or owners, other than the original growers of tobacco. The statistics shall show the quantity of tobacco in such detail as to types, groups of grades, and such other subdivisions as to quality, color, and/or grade for particular types, as the Secretary of Agriculture shall deem to be practical and necessary for the purposes of this section and sections 502 to 508 of this title, shall be summarized as of January 1, April 1, July 1, and October 1 of each year, and an annual report on tobacco statistics shall be issued: Provided, That the Secretary of Agriculture shall not be required to collect statistics of leaf tobacco from any manufacturer of tobacco who, in the first three quarters of the preceding calendar year, according to the returns of the Commissioner of Internal Revenue or the record of the Treasurer of Puerto Rico, manufactured less than thirty-five thousand pounds of tobacco, or from any manufacturer of cigars who, during the first three quarters of the preceding calendar year, manufactured less than one hundred and eighty-five thousand cigars, or from any manufacturer of cigarettes who, during the first three quarters of the preceding year, manufactured less than seven hundred and fifty thousand cigarettes: And provided further, That the Secretary of Agriculture may omit the collection of statistics from any dealer, manufacturer, growers' cooperative association, warehouseman, broker, holder, or owner who does not own and/or have in stock, in the aggregate, fifty thousand pounds or more of leaf tobac-

co on the date as of which the reports are made. For the purposes of this section and sections 502 to 508 of this title, any tobacco which has deteriorated on account of age or other causes to the extent that it is not merchantable or is unsuitable for use in manufacturing tobacco products shall be classified with other nondescript tobacco and reported in the "N" group of the type to which it belongs. Jan. 14, 1929, c. 69, § 1, 45 Stat. 1079; July 14, 1932, c. 480, § 1, 47 Stat. 662; Aug. 27, 1935, c. 749, § 1, 49 Stat. 893. (7 U.S.C. 501).

CHAPTER 16. CROP REPORTING REGULATIONS

The official regulations of the Department of Agriculture concerning the preparation of the agricultural data estimates of the Service follow:

Title 1—General Authorities and Functions

Chapter 6—Other Authorities and Functions

SECTION 1—CROP REPORTING BOARD

325. AUTHORITIES AND FUNCTIONS. (S)—There shall be in the Statistical Reporting Service a Crop Reporting Board, the primary function of which shall be to prepare and issue, as provided in paragraph 328 and elsewhere in this regulation, the official State and National estimates and reports of the Department relating to crop production, livestock and livestock products, numbers of livestock on farms, stocks of agricultural commodities, local market prices, value of farm products, and such other subjects as the Administrator of the Statistical Reporting Service may direct. Among these reports shall be a Monthly Crop Report, which shall be issued on or before the 12th of each month pursuant to 7 U.S.C. 411a, a Cotton Acreage Report to be issued on or before the 10th of July, and the Cotton Crop Report to be issued on the 8th day of each month from August to December, or, if the 8th day is a nonwork day, on the next succeeding workday, pursuant to 7 U.S.C. 475 and 476.

326. DEFINITIONS.—As used in these regulations, "Department" means the United States Department of Agriculture, "Service" means the Statistical Reporting Service staff engaged in statistical reporting work, and "Board" means the Crop Reporting Board.

327. ORGANIZATION OF BOARD. a. *Chairman.*—The Deputy Administrator of the Statistical Reporting Service is the Chairman of the Board. He shall call and preside over all meetings of the Board. As Deputy Administrator of the Statistical Reporting Service, he shall issue the necessary instructions for gathering, compiling, and summarizing data for reports specified in paragraph 328, and shall approve the statistical techniques and procedures to be followed by the Service and by the Board in analyzing, interpreting, and reviewing the pertinent data and in preparing the official estimates for each report.

b. *Members.*—The Chairman shall select the members of the Board for each report from the Service. For the Monthly Crop Report the Board shall have not less than five members in addition to the Chairman, not less than two of whom shall be selected from the Service field offices. For the Cotton Report the Board shall have not less than five members, of whom not less than three members shall be supervisory field statisticians located in different sections of the cotton growing States, experienced in estimating cotton production and who have first-hand knowledge of the condition of the cotton crop based on recent field observations, and a majority of the Board shall be familiar with the methods and practices of producing cotton, as provided in the Act of May 3, 1924, as amended (7 U.S.C. 475). For the Annual Cotton Crop Summary in May, the Annual Crop Production Summary in December, the Winter Wheat and Rye Report as of December 1, the Prospective Plantings Report as of March 1, the Annual Livestock Summary as of January 1, and the Pig Crop Reports as of June 1 and December 1, the Board shall consist of not less than five members, of whom not less than two shall be selected from the Service field offices.

c. *Secretary of the Board.*—The Board shall have a permanent Secretary, who shall be a professional member of the Service in Washington. He shall assist in preparing instructions and forms for collecting, compiling, summarizing, and analyzing statistical information for the use of the Board, shall arrange for suitable means for transmission of instructions, records, and reports to and from the field offices, shall maintain records of the information assembled, including a record of the official estimates prepared by the Board, and shall maintain a file of the signed copies of Board reports. For each report the Secretary shall assemble and collate information for the use of the Board, issue proper notices of Board meetings, and make necessary arrangements for the preparation, signing, and release of reports in such manner and at such times as are herein described.

328. REPORTS. a. *Reports to be approved by the Secretary of Agriculture.*—The following Board reports shall be signed by the Chairman, Secretary, and members of the Board, and shall be approved by the Secretary of Agriculture before being issued or published:

Monthly Crop Reports, except for February, March, and December (see paragraph 325).
Cotton Reports (see paragraph 325).
Annual Cotton Crop Summary in May.
Annual Crop Production Summary in December.
Winter Wheat and Rye Report as of December 1.
Prospective Plantings Report as of March 1.
Annual Livestock Summary as of January 1.
Pig Crop Reports as of June 1 and December 1.

b. *Other Board reports.*—Such other reports as are designated by the Chairman shall be prepared and issued as Board reports. For each such report, the Chairman shall select Board members from the Service in such manner and in such numbers as may be deemed necessary. Such reports shall be approved by the Chairman or his designee before being issued.

c. *Annual release schedule.*—On or before the first day of December of each year there shall be prepared a schedule for the ensuing year setting forth dates and hours of release of all regular statistical reports listed in subparagraph "a" above for which the approval of

the Secretary of Agriculture is required. The schedule of reports shall be effective when approved by the Secretary of Agriculture and may be amended at any time with his approval. Subsequently, there shall also be prepared and issued, to the extent possible, an advance listing of the reports referred to in subparagraph "b" above, together with dates of publication or issuance.

329. COLLECTION OF INFORMATION.—For use in preparing the official estimates of the Department, information relating to agriculture shall be gathered through the Washington and field offices of the Service, as far as practicable, from practical farmers, as provided in 7 U.S.C. 411a; from peanut processors, as provided in 7 U.S.C. 951 et seq.; from processors, dealers, cooperating State and local officials, agencies in the Department; and from other sources. This information shall be collected by mailed questionnaire, by sample enumeration, by interviews, or by other appropriate means (7 U.S.C. 411a, 951).

330. INFORMATION NOT TO BE RELEASED; SPECULATION; FALSE STATISTICS. a. *Withholding information.*—The contents and every part of the contents of each and every report specified in paragraph 328a, and the information and every part of the information utilized in the preparation of such reports, shall be withheld from publication until the day and hour provided for the issuance of the reports in the schedule approved by the Secretary of Agriculture and amendments thereto.

b. *Access to information.*—No member of the Board or other persons engaged in the preparation of information for reports, shall, before the release of any Board report provided for herein, willfully impart or permit access to any information contained therein or any part thereof, directly or indirectly, to any person not entitled under the law and rules of the Department to receive the same. The Chairman may under this regulation notify officers in charge of field offices, in advance of publication, of changes made by the Board from recommendations submitted by such officers for nonspeculative items as defined in paragraph 331a(2).

c. *Statutory provisions.*

(1) "Whoever, being an officer, employee or person acting for or on behalf of the United States or any department or agency thereof, and having by virtue of his office, employment or position, become possessed of information which might influence or affect the market value of any product of the soil grown within the United States, which information is by law or by the rules of such department or agency required to be withheld from publication until a fixed time, willfully imparts, directly or indirectly, such information, or any part thereof, to any person not entitled under the law or the rules of the department or agency to receive the same; or, before such information is made public through regular official channels, directly or indirectly speculates in any such product by buying or selling the same in any quantity, shall be fined not more than $10,000 or imprisoned not more than ten years, or both.

"No person shall be deemed guilty of a violation of any such rules, unless prior to such alleged violation he shall have had actual knowledge thereof." (June 25, 1948, ch. 645, sec. 1, 62 Stat. 790, 18 U.S.C. 1902.).

(2) "Whoever, being an officer or employee of the United States or any of its agencies, whose duties require the compilation or report of statistics or information relating to the products of the soil, knowingly compiles for issuance, or issues, any false statistics or information as a report of the United States or any of its agencies, shall be fined not more than $5,000 or imprisoned not more than 5 years, or both." (June 25, 1948, ch .645, sec 1, 62 Stat. 795, 18 U.S.C. 2072.)

331. SPECULATIVE AND NONSPECULATIVE DATA. a. *Definition.*—Data used by the Board in the preparation of the Monthly Crop Report and the Cotton Report shall be classified as follows:

(1) *Speculative data.*—Speculative data are defined to be data relating to corn, wheat, oats, cotton, or soybeans, the assembling and collating of which would make it possible for any member, members, or assistants of the Board approximately to anticipate the Board's forthcoming report for the United States on the condition, yield, probable production, or farm stocks of designated commodities, or the acreage or ginnings of cotton. These data shall be deemed to be speculative for:

(a) *Corn* in Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin.

(b) *Winter wheat* in Illinois, Indiana, Kansas, Missouri, Montana, Nebraska, Ohio, Oklahoma, Texas, and Washington.

(c) *Spring wheat* in Idaho, Minnesota, Montana, North Dakota, South Dakota, and Washington.

(d) *Oats* in Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

(e) *Cotton* in Arkansas, Louisiana, Mississippi, Oklahoma, and Texas.

(f) *Soybeans* in Illinois, Indiana, Iowa, Missouri, Minnesota, and Ohio.

(2) *Nonspeculative data.*—Nonspeculative data are defined to be any statistical data other than the speculative data defined in paragraph (1) above.

b. *Transmission.*

(1) *Field procedure.*—Summaries of speculative data collected in the field offices, together with recommendations of the officer in charge of each such office, shall be transmitted by mail or telegraph to the Secretary of Agriculture. When transmitted by mail, the summaries and recommendations shall be forwarded in a sealed envelope marked "Special A." When transmitted by telegraph, the summary and recommendations shall be forwarded in a secret code provided by the Secretary of the Board. Nonspeculative data may at all times be forwarded directly to the Secretary of the Board by the officers in charge of the field offices.

(2) *Departmental procedure.*—Immediately upon its receipt in the Department Telegraph Office, each telegram containing speculative crop report data shall be placed in a sealed envelope marked "Special A" in the Department Telegraph Office and delivered by special messenger to the Office of the Secretary of Agriculture.

c. *Custody of "Special A" envelopes.*—All "Special A" envelopes containing speculative crop report data received in the Office of the Secretary of Agriculture shall, immediately upon receipt and without breaking the seals thereof, be placed in the locked box provided for that purpose in the Office of the Secretary of Agriculture.

d. *Opening of "Special A" envelopes.*—Immediately preceding the convening of the Board on the day a report is to be published, the locked box in the Office of the Secretary of Agriculture containing the "Special A" envelopes shall be opened and the envelopes removed in the presence of a designated representative of the Secretary of Agriculture, the Chairman, Secretary, and one other member of the Board, and a special guard provided by the General Services Administration. The Chairman, Secretary, and other member of the Board, accompanied by the guard, shall then proceed directly to the Board rooms.

332. BOARD ROOMS. a. *Definition.*—The Board rooms shall consist of the Board room proper and all other rooms occupied during the locked-in session of the Board by clerks, stenographers, and others engaged in assisting the Board in the preparation of the report.

b. *Safeguards against communication of information.*—Previous to the arrival of the Board representatives and guard with the sealed "Special A" envelopes, the Secretary of the Board shall have caused all windows in the Board rooms to be sealed in such manner as to prevent communication between persons within the Board rooms and persons outside. Also, previous to the arrival, all telephones in the Board rooms and connected with the central Department telephone switchboard shall be disconnected at the central switchboard, and any other means of communication from the Board rooms shall be similarly disconnected. Immediately after the entrance of the Board representatives into the Board rooms, with the sealed "Special A" envelopes, the guard shall lock all doors leading from the Board rooms, and remain on watch until the report is released. While on watch, the guard shall not permit any communication between persons within the Board rooms and persons outside except as provided below. The guard shall unlock the door only to permit:

(1) The entrance of:

(a) The Secretary of Agriculture.

(b) The Administrator of the Service.

(c) Officials of the Bureau of the Census who cooperate in issuing the Joint Cotton Ginning and Production Report.

(d) Employees of the Service and other persons whose presence is required in the preparation of the report and who have written permission from the Chairman.

(e) Other officials and employees of the Department having written authority from the Secretary of Agriculture, or from the Administrator of the Statistical Reporting Service.

(2) The delivery to the Board rooms of mail, telegrams, written communications, or supplies for use of the Board.

(3) Notification by the Chairman to the guard of delay in completion of a Board report (see subparagraph 333d) or by the Chairman or the Secretary of the Board to convey emergency instructions essential to completion of a report.

(4) The departure of:

(a) The Secretary of Agriculture, the Chairman, and such other persons as may be designated at the time by the Chairman, for the purpose of proceeding, under guard, to the room provided for the release of the report.

(b) Any person in the case of extreme emergency, in which event a member of the guard shall accompany and remain with such person until the release of the report.

(c) All persons in case of fire or other serious emergency.

333. APPROVAL AND RELEASE OF REPORTS. a. *Approval.*—Upon the completion of any Board reports specified in subparagraph 328a of these regulations, a copy must be signed by the Chairman, Secretary, and each member of the Board, and approved in writing by the Secretary of Agriculture before it is released. The Chairman, accompanied by a member of the guard and not less than two other persons, shall take copies of the approved report from the Board rooms to the release room before the time specified for the publication and release of the report.

b. *Release officer.*—A designated representative of the Secretary of Agriculture shall act as release officer and shall provide in the release room suitable telegraph and telephone facilities for all persons desiring such facilities for the transmission of the report upon its official release.

c. *Procedure.*—Upon the arrival in the Board release room of the Chairman and persons accompanying him, the release officer shall cause all persons other than the Chairman to remain within a prescribed area until the release of the report, the limits of which area shall be not less than 6 feet from the telephones, telegraph instruments, and tables or shelves provided for distribution of copies of the report. The Chairman then shall place copies of the report, face down, beside each instrument, and additional copies, face down, upon the tables or shelves provided for that purpose. At the exact time provided for the official issuance of each report, the release officer shall inform those present that the report is released to the public and permit access to the copies of the report. The release officer then shall notify the guard at the door of the Board rooms that the report has been released and the guard thereupon shall unlock the doors of the Board rooms.

d. *Delay in releasing reports.*—In the event that the report should not be completed and approved for issuance at the designated time, the Chairman, within 10 minutes of the time designated for the release of the report, shall notify the guard of the time when the report will be ready for release. The guard immediately shall notify the release officer, who, in turn, shall notify all persons who are present in the release room for the purpose of receiving the report. In order that telephone communication with the Board rooms may not be reestablished before the crop report is completed and

released, the release officer also shall notify the employee in charge of the central Department telephone switchboard of the delay.

334. ACKNOWLEDGEMENT OF REGULATION.—The Deputy Administrator of the Statistical Reporting Service shall cause to be delivered, or exhibited, a copy of this regulation to each employee of the Service or other person having access to crop report data in advance of publication. The Deputy Administrator or an authorized representative shall obtain from each such person a certification which shall be an acknowledgement that such person has read this regulation and will be governed by it.

CHAPTER 17. COMMISSIONERS AND SECRETARIES OF AGRICULTURE

Commissioners

ISAAC NEWTON, of Pennsylvania (born in New Jersey); Commissioner, July 1, 1862 (when Department was activated)—June 19, 1867 (died in office); appointed by President Lincoln. He had served since the spring of 1861 as Superintendent of the Agricultural Division of the Patent Office (Department of Interior).

JOHH W. STOKES, of Pennsylvania (born in New Jersey); Acting Commissioner, June 20, 1867—December 4, 1867. As Chief Clerk, he was ranking officer of the Department.

HORACE CAPRON, of Illinois (born in Massachusetts); Commissioner, December 4, 1867—July 31, 1871; appointed by President Johnson.

FREDERICK WATTS, of Pennsylvania (born in Pennsylvania); Commissioner, August 1, 1871—June 30, 1877; appointed by President Grant.

WILLIAM GATES LeDUC, of Minnesota (born in Ohio); Commissioner, July 1, 1877—June 30, 1881; appointed by President Hayes.

GEORGE BAILEY LORING, of Massachusetts (born in Massachusetts); Commissioner, July 1, 1881—April 3, 1885; appointed by President Garfield.

NORMAN JAY COLMAN, of Missouri (born in New York); Commissioner, April 3, 1885—February 15, 1889; appointed by President Cleveland.

Secretaries

NORMAN JAY COLMAN, of Missouri (born in New York); Secretary February 15, 1889—March 6, 1889; appointed by President Cleveland.

JEREMIAH MCLAIN RUSK, of Wisconsin (born in Ohio); Secretary, March 6, 1889—March 6, 1893; appointed by President Harrison.

JULIUS STERLING MORTON, of Nebraska (born in New York); Secretary, March 7, 1893—March 5, 1897; appointed by President Cleveland.

JAMES WILSON, of Iowa (born in Scotland); Secretary, March 6, 1897—March 5, 1913; appointed by President McKinley.

DAVID FRANKLIN HOUSTON, of Missouri (born in North Carolina); Secretary, March 6, 1913—February 2, 1920; appointed by President Wilson. Resigned to become Secretary of the Treasury.

EDWIN THOMAS MEREDITH, of Iowa (born in Iowa); Secretary, February 2, 1920—March 4, 1921; appointed by President Wilson.

HENRY CANTWELL WALLACE, of Iowa (born in Illinois); Secretary, March 5, 1921—October 25, 1924 (died in office); appointed by President Harding.

HOWARD MASON GORE, of West Virginia (born in West Virginia); Secretary, November 22, 1924—March 4, 1925; appointed by President Coolidge. Assistant Secretary since 1923, he had served as Acting Secretary following death of Secretary Wallace.

WILLIAM MARION JARDINE, of Kansas (born in Idaho); Secretary, March 5, 1925—March 4, 1929; appointed by President Coolidge.

ARTHUR MASTICK HYDE, of Missouri (born in Missouri); Secretary, March 6, 1929—March 4, 1933; appointed by President Hoover.

HENRY AGARD WALLACE, of Iowa (born in Iowa); Secretary, March 4, 1933—September 4, 1940; appointed by President Roosevelt. Resigned to run for the Vice Presidency; son of former Secretary Henry Cantwell Wallace.

CLAUDE RAYMOND WICKARD, of Indiana (born in Indiana); Secretary, September 5, 1940—June 29, 1945; appointed by President Roosevelt. Was Under Secretary at the time of his appointment; resigned to become head of Rural Electrification Administration.

CLINTON PRESBA ANDERSON, of New Mexico (born in South Dakota); Secretary, June 30, 1945.—May 10, 1948; appointed by President Truman. Resigned to run for the United States Senate.

CHARLES FRANKLIN BRANNAN, of Colorado (born in Colorado); Secretary, June 2, 1948—January 20, 1953; appointed by President Truman. Was Assistant Secretary at the time of his appointment.

EZRA TAFT BENSON, of Idaho (born in Idaho); Secretary, January 21, 1953—January 19, 1961; appointed by President Eisenhower.

ORVILLE LOTHROP FREEMAN, of Minnesota (born in Minnesota); Secretary, January 20, 1961—January 20, 1969; appointed by President Kennedy.

CLIFFORD MORRIS HARDIN, of Indiana (born in Indiana); Secretary, January 21, 1969; appointed by President Nixon.

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