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REPORT
OF THE
DIRECTOR OF THE CENSUS.



Washington, November 1, 1908.

SIR: I have the honor to submit the following report upon the operations of the Bureau of the Census during the fiscal year ended June 30, 1908, and upon the work now in progress and shortly to be undertaken. The report covers the fifth year of my incumbency of the directorship, the sixth year of the existence of the permanent Office under the act of March 6, 1902, and the ninth year since its establishment as a temporary Office under the act of March 3, 1899. The present fiscal year is the last intercensal year, under the permanent census act, prior to the temporary reorganization of the Office, under legislation now pending in Congress, for the taking of the thirteenth decennial census.

This is, therefore, an appropriate occasion to express the conviction that results have demonstrated the wisdom of the legislation which determined that hereafter the Census Office is to be a permanent continuing bureau of the Federal Government, and no longer an intermittent bureau, to be assembled with the beginning and scattered at the end of each decennial enumeration. The work of the intercensal period has fully equaled in importance and value that accomplished during the decennial period proper. It has been done with a care, a completeness, and an accuracy that were impossible when these investigations were carried on simultaneously with the enumeration of population, agriculture, and manufactures. It has been demonstrated also that the existence of a permanent statistical office, organized upon a scale sufficiently broad to permit the effective handling of any statistical inquiry that may be required by Congress or by any department, is an imperative adjunct for the orderly conduct and administration of a great and expanding government like our own. No great nation of a degree of civilization at all equal to ours lacks an office of this character. As time passes and as the functions and facilities of the Census Office come to be more fully understood, it is to be expected that purely statistical compilations of every

description will be more and more concentrated in this Bureau, which will thus become, like similar bureaus abroad, the general statistical clearing house of the Government.

This conclusion may be sustained by a statement of what the permanent Census Office has done over and above the work contemplated for it when the Office was made permanent. This additional work includes the important series of monographs containing supplemental studies and analyses of the returns of the Twelfth Census; the two reports on employees and wages; the compilation and publication of the census of the Philippine Islands (1903); the two bulletins on the executive civil service of the United States; the report on marriage and divorce, covering the forty-year period from 1867 to 1906; the annual statistics of the lumber cut; the annual statistics of cities of 30,000 population and over; the compilation of the biennial official register of the United States; the census of the new state of Oklahoma (1907); the Census exhibits at the Louisiana Purchase Exposition and the Portland Exposition; the annual estimates of population; the annual reports on the world's consumption of cotton; the report on criminal judicial statistics; the compilation and tabulation of the Cuban census of 1907; and the publication of the census of 1790, besides the work now in progress undertaken at the request of Congress and the department, to which reference is made in this report.

In addition to the work accomplished, there remains as evidence of the value of the permanent Office the fact that we have in existence to-day a complete organization ready to enter upon the thirteenth decennial enumeration, with the plans for that great work fully matured, with the records in perfect order, and with much of the preliminary work already done with a care and accuracy never before possible. Still again, there remains the great movement for coordination, cooperation, and unification in the compilation of Federal statistics of every description, a movement which naturally has its center in the Census Office, and through which it will be possible not only to avoid much of the duplication, inconsistency, and contradiction which have heretofore characterized official statistics, but also to develop more fully systematic, uniform, and scientific methods of statistical compilation.

FINANCIAL STATEMENT.

Attached to this report as Appendix A is the financial statement of Mr. Thomas S. Merrill, disbursing clerk of the Bureau, showing the appropriations for the conduct of the Bureau during the fiscal year 1907-8, and the expenditures thereunder. The statement covers ex-

penditures from appropriations made for three fiscal years, because certain unexpended balances for the fiscal year 1907 were made available for the fiscal year 1908, while certain appropriations for the fiscal year 1909 were made immediately available. The expenditures during the fiscal year (including \$147,215.04 for printing) were \$1,407,013.42 and the unexpended balances aggregated \$48,662.05. A statement of the entire cost of maintaining the Bureau from its organization in 1899 to date, apportioned between the temporary and the permanent Office, appears elsewhere in this report in connection with an estimate of the cost of the Thirteenth Census.

WORK COMPLETED DURING THE YEAR.

The work of the Bureau during the year is represented by bulletins and reports published, reports completed and awaiting publication, and reports, the fieldwork and compilation of which are in progress. The following is a list of Census publications since the last annual report:

VOLUMES.

	Page.
Mortality Statistics, 1906.....	486
Manufactures, 1905, Part III (Selected Industries).....	968
Manufactures, 1905, Part IV (Selected Industries).....	832
Register of Employees of the Department of Commerce and Labor.....	294
Transportation by Water: 1906.....	224
Statistics of Cities over 30,000: 1906.....	348
Statistics of Marriage and Divorce in the United States, 1867-1906, Part II.....	850
The Official Register of the United States: 1907:	
Volume I.....	742
Volume II.....	763
Heads of Families, First Census: 1790, Connecticut.....	228
Heads of Families, First Census: 1790, Maine.....	106
Heads of Families, First Census: 1790, Massachusetts.....	364
Heads of Families, First Census: 1790, New York.....	308
Heads of Families, First Census: 1790, North Carolina.....	292
Heads of Families, First Census: 1790, Pennsylvania.....	426
Heads of Families, First Census: 1790, Rhode Island.....	72
Heads of Families, First Census: 1790, South Carolina.....	150
Heads of families, Virginia State Enumerations made in 1782-1785.....	190

BULLETINS.

	Number.
Census of Manufactures, 1905:	
Chemicals and Allied Products.....	92
Earnings of Wage-Earners.....	93
Supply and Distribution of Cotton for the year ending August 31, 1907.....	90
Transportation by Water: 1906—United States.....	92
Statistics of Employees, Executive Civil Service of the United States: 1907.....	94
Cotton Production: 1907.....	95

These publications represent about 8,220 printed quarto pages, largely tabular matter. They include the final volumes of the census of manufactures, 1905, the report on marriage and divorce, the official register of the United States, the republication of the census of 1790, and the decennial report upon transportation by water. The bulletin summarizing this latter report was published March 16, 1908. The report also contains monographs for five subdivisions of the waters of the United States, viz: The Atlantic coast and Gulf of Mexico; the Pacific coast; the Great Lakes and St. Lawrence river; the Mississippi river and its tributaries; and canals and other inland waters.

DISTRIBUTION OF REPORTS.

The number of copies of Census publications distributed during the year was 622,305, not including bulletins of the Twelfth Census, of which no record was kept. Of the number distributed, 195,508 were bulletins of the permanent Census, 390,000 were cotton reports, and 32,861 were reports of the Twelfth and permanent censuses, divided as follows: Bound volumes of the Twelfth Census, 6,148; bound special reports of the permanent Census, 17,856; special reports of the permanent Census in paper covers, 8,857. In addition to the above, 724 four-volume sets of the Philippine census report, 827 reports of the Eleventh Census, and 213 reports of the Tenth Census were distributed.

Since the organization of the Bureau in 1899 it has compiled reports which aggregate 28,930 printed quarto pages of tables and text matter. Of these reports, 433,050 bound volumes have been printed, of which 366,655 copies have been distributed. This statement is exclusive of more than half a million bulletins printed and circulated. Unlike most Government publications, the Census reports are not distributed on the basis of a congressional "quota," but are sent out only in response to an indicated need for them.

PRESERVATION OF CENSUS REPORTS.

I have had under consideration for some time the problem arising from the deterioration of the volumes of Census reports by the action of time. Reports of the Census, both decennial and special, form statistical records, secured at great expenditure, which reflect conditions prevailing throughout the Republic in specified lines of activity at given dates. They are, indeed, an account of stock, the preservation of which is essential for the information of future generations. The Census reports from 1790 to the present time are in constant use for reference in the Census Office, and early Census reports, though

presenting very limited statistical information, are among the most valued possessions of the large libraries of the country.

Early Census reports were printed upon paper made almost exclusively of rags, but although this material was reasonably permanent the pages of the older reports already show much discoloration and signs of disintegration. This is due to some extent to the fact that inexpensive grades of rag paper were used by the early printers. Since the introduction of paper made from wood pulp it has been the practice to use such paper purchased under contract and far less durable even than the crude rag papers used in early publications. It is therefore a matter of much concern that the reports of the last three or four censuses, filling many large volumes, will in a few decades become almost valueless because of the deterioration inevitable from the use of paper of poor quality. To permit such a state of affairs in a period when paper making has been carried to perfection is a shortsighted policy on the part of the Federal Government in connection with publications which grow more valuable with the passage of time.

Paper made of wood pulp is used from motives of economy; it is cheaper than any rag paper and much cheaper than the best grades of such paper. In fact, the cost of a paper which would last without deterioration for at least one hundred years is so great that the large editions of Census reports could not be printed upon such material without an expenditure that would be open to serious criticism. So far as the reports of the Census are concerned, I am persuaded that this criticism can be avoided and the main object of permanent preservation secured, by printing a few copies of each report upon the most permanent paper which can be obtained.

The Japanese Government manufactures for its own use a material known as "imperial Japan vellum," of which limited quantities may be obtained for commercial use. After much inquiry upon this subject, I am convinced that this paper possesses lasting qualities as to both color and toughness of fiber, superior to those of any other paper now obtainable. I have therefore directed that of every future report issued by the Census 50 copies shall be printed upon this material, 10 copies to be retained for the use of the Bureau of the Census and the department, 2 copies to be deposited in the Congressional Library, 1 in the Executive Office, and 1 in the library of each executive department, the remaining copies to be deposited in the leading libraries of the large cities so far as the edition permits.

While these special copies will cost considerably more than if printed upon contract wood pulp paper, the actual expenditure will not be large, and a permanence will be secured far greater than that

attained by the early publications of the Census. This will not only insure perfect preservation of these copies of Census reports for many generations to come, but will also remove the obvious criticism that with less facilities for production and smaller resources the early publishers of Census reports in reality performed their duty to the future with greater fidelity than those of more recent years.

CURRENT WORK OF THE BUREAU.

The current work of the Bureau includes the four annual reports, the final work on the reports on criminal judicial statistics and on religious bodies, and the quinquennial report on the electrical industries. All of these reports are well advanced and will be published during this fiscal year.

The report on electrical industries covers all street and electric railways; central electric light and power stations; commercial telephone companies; mutual telephone companies, and rural or farmer telephone lines; commercial telegraph companies and telegraph lines operated for the exclusive use of steam roads; and electric police-patrol and fire-alarm systems. The last census of the electrical industries (1902) covered different periods of time, and separate canvasses were made for each branch, thus adding greatly to the expense. All branches of the industry have now been canvassed simultaneously, thus reducing the cost of the fieldwork and laying the basis for more satisfactory comparisons in the future. The report will show an enormous increase in the number of plants using electricity; but the improvement in office and field methods has permitted the canvass to be completed at a very slight increase over the cost of the previous canvass of 1902. The census will include Porto Rico, Alaska, and the Hawaiian Islands.

EXPRESS BUSINESS.

The permanent census act requires the Director of the Census to collect statistics concerning the "express business." The Interstate Commerce Commission is devising methods for the collection of statistics from the express companies and for the preparation of a uniform system of accounting to be applied to all companies engaged in interstate transportation. Therefore it was essential that arrangements be made for the two offices to work in concert. To accomplish this, one of the special examiners of the Interstate Commerce Commission was appointed a special agent of the Bureau of the Census to serve without compensation. This agent has collected reports

from practically all of the commercial express companies, and has recently completed the census report.

In view of the fact that the Interstate Commerce Commission is hereafter to make annual reports on the express business, I recommend that the census law be so amended as to relieve the Census Bureau of the duty of making a decennial report on this subject. This decennial report if retained must hereafter be only a duplication of the annual report of the Interstate Commerce Commission.

VITAL STATISTICS.

The seventh annual report on mortality statistics, 1906, was issued early in the year, and covered 658,105 deaths in the registration states and cities, which form an area including nearly one-half (48.8 per cent) of the total population of continental United States. The report for the year 1907 is now in course of compilation and will be completed at an earlier date than any previous annual report. It is important that these reports be issued as soon as possible after the reception of the complete data. They have become a welcomed source of reference to sanitary authorities and to the public generally, and are proving of much greater practical use than the mortality statistics formerly collected under the decennial system. The total number of deaths compiled for the year 1907 is 687,034.

The most important event of the year affecting vital statistics was the adoption by the state of Ohio of a registration law, modeled upon the present effective Pennsylvania law and according to the recommendations of the Bureau of the Census. A state registrar has been appointed, and preparations are being made for the thorough enforcement of the law, which should mean the early addition of Ohio to the registration states. Similar bills failed in the legislatures of Kentucky and Virginia. In the latter the failure of the bill is said to have been due to the opposition of the undertakers of the state to the provision requiring burial permits.

The aid of the American Medical Association, the Conference of Commissioners on Uniform State Laws, and the American Public Health Association has been enlisted in the movement for the extension of the registration area, and a model bill, identical with the legislation recommended by the Bureau of the Census, will be urged by these organizations at the state legislative sessions of 1909.

Several states are desirous of admission to the registration area as a result of laws recently passed, and I am pleased to announce that I have been able to authorize the admission of Wisconsin for the year 1908. This increases the population represented by transcripts

of deaths annually returned to this Bureau to over one-half (51.2 per cent) of the total estimated population of continental United States. The entire South, however, is still awaiting the coming of the first registration state, and the passage and enforcement of adequate laws for the collection of vital statistics in this part of the country is the most serious problem to be solved before we can hope to have vital statistics for the entire United States.

The foundation of mortality statistics, so far as the study of the causes of death is concerned, rests upon the accuracy of the information afforded by individual physicians in regard to the diseases or the forms of violence causing death. To secure precision it is necessary that there shall be a standard nomenclature of diseases—something which has never existed in this country. It is gratifying to report, however, that a general committee on the nomenclature and classification of diseases, whose chairman is Dr. Frank P. Foster, of New York, was appointed in 1907 by President Joseph D. Bryant, of the American Medical Association, and had its powers confirmed and extended by unanimous vote of the house of delegates at Chicago in June, 1908. This committee has associated with it auxiliary committees representing the leading national medical societies and the Government medical service (Army, Navy, and the Public Health and Marine-Hospital Service), and it is cooperating with the Bureau of the Census, which is especially concerned with proper nomenclature and classification, as it has to compile nearly seven hundred thousand statements of causes of death each year.

The first object of this committee is to assist in the decennial revision of the International Classification of Causes of Death, a classification which the Bureau of the Census adopted in 1900, placing the United States among the first countries to use it. In order that the results of the revision of this classification may be available for use in compiling the mortality statistics of the United States for the year of taking the Thirteenth Census, this Bureau has requested that the date of revision be changed from 1910 to 1909. As a result Dr. Jacques Bertillon, at the request of the Minister of Foreign Affairs of France, has issued preliminary notice that the revision will be made in 1909. A formal invitation to participate will be extended to the United States by the French Government through the Department of State, and legislation is recommended permitting the United States to be adequately represented at this meeting of the International Commission of Revision.

The organization of the section on vital statistics under the auspices of the American Public Health Association, to which I referred in my last report, has been successfully accomplished.

The Bureau of the Census supplied an interesting and effective exhibit for the International Congress on Tuberculosis, held in Washington last September. A special pamphlet, including the most important statistical data regarding the prevalence of tuberculosis in the United States, and urging the need for the extension of adequate registration methods in this country, was prepared and widely distributed.

COTTON STATISTICS.

The season of 1907-8 was the sixth consecutive year of the periodical Census reports on cotton production, based upon the quantity of cotton ginned to specified dates as reported by special agents. The results continue to receive the unqualified approval of all concerned in the growth, distribution, and sale of this important product. The plan outlined in the last annual report for promulgating these reports at 10 a. m. instead of 2 p. m., as heretofore, was successfully carried into effect, and has proved highly satisfactory both in this country and abroad. All of the anticipated advantages to follow this change in the hour of publication have been realized, and the practice will be continued without modification. During the last season the scope of the cotton reports has been somewhat extended, and it is believed that the work is now organized on a basis that will make this scope world wide. The Bureau will be able to compile complete annual reports on the world's supply of cotton, and on the distribution of the same, showing both the consumption and the remaining stocks. Nowhere else has so successful a plan been perfected or more complete data compiled. For the collection of the statistics of cotton ginned, 730 local agents are now employed, an increase from 724 at the last season. In obtaining the statistics of foreign production and consumption the Bureau has the cooperation and active support of the International Federation of Master Cotton Spinners' and Manufacturers' Associations, with headquarters at Manchester, England, and many private organizations throughout the world.

STATISTICS OF CITIES.

The Bureau has compiled and published its fifth annual report (that for 1906) upon the statistics of cities. This report deals with 158 cities, each having a population of 30,000 and over. Substantial and gratifying progress is made with each year's report in the movement toward uniform methods of bookkeeping in municipal accounting, a movement which has come to be regarded as one of the most valuable practical reforms now under headway in this country; and

the Census Office is its recognized center. Since the last reference to the subject in these reports, the state of Massachusetts has passed a law requiring that annual financial returns from each city and town in that commonwealth shall be made upon uniform blanks prepared by the Chief of the Bureau of Labor Statistics. That official, in his first report under this statute, acknowledges his indebtedness to the Census Office; and he has adopted, without substantial change, the terminology, classification of accounts, and arrangement of schedule, as perfected in this Bureau. Evidences of the tendency toward the standardization of municipal accounting are constantly developing in the cities of other states; but much remains to be done in this field.¹ Fieldwork for the next report on cities is now in progress and will be completed in January. This report will include full social statistics of the municipalities, figures for which the Bureau compiles biennially.

PUBLICATION OF THE NAMES OF HEADS OF FAMILIES AT THE FIRST CENSUS.

Under authority granted in the urgent deficiency appropriation act of 1908-9, I have continued the publication of the pamphlets containing the names of the heads of families at the First Census of the United States. The pamphlets issued prior to the close of the last fiscal year concerned the states of New Hampshire, Vermont, and Maryland. As stated in the report submitted to Congress by the Director of the Census on December 2, 1907, the total cost of printing 2,000 copies of each of these pamphlets and binding half of the edition was \$6,566.24, while the receipts to and including December 1, 1907, amounted to \$1,306.

The publication of the remaining parts is now completed. This series includes the following states: Maine, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Virginia, North Carolina, and South Carolina. I estimated originally that these pamphlets would cost approximately \$30,000. The cost of publication will, however, exceed this figure, owing to changes in the method of

¹ Comparative municipal statistics have been compiled in Europe for many years. Financial statistics for the English local poor-law authorities have been compiled since 1834, and following the establishment of the local government board, in 1871, reports from all local authorities have been published annually. France and Italy publish annual statements of receipts and expenditures of communes. M. Neeff, director of the statistical office of Breslau, has compiled annually since 1890 the statistics of German cities of 50,000 population and over in the *Statistisches Jahrbuch deutscher Städte*. A similar series is issued by the Austrian statistical central commission, the *Oesterreichisches Städtebuch*. The Bureau of Industries of the Department of Agriculture compiles an annual report on the municipal statistics of Ontario.

computing charges by the Government Printing Office instituted after the estimate was made.

Upon the publication of the parts for New Hampshire, Vermont, and Maryland, in accordance with the law requiring sale, I established a price of \$1 per part, which represented the average cost per copy. The variation in the charges made by the Government Printing Office and the great variation in the size of the succeeding parts would have resulted in a decided difference in price for each of these parts under the original policy of charging the cost. It seemed best, therefore, to maintain the uniform price of \$1 per part, a figure which will at least result in a return to the Government of a large proportion of the total expenditure for publication. The total receipts to date are approximately \$7,000.

The publication of these interesting documents seemed an appropriate occasion for the preparation of a bulletin concerning the First Census. The returns of that census were printed exactly as sent in by the marshals, in a little book of scarcely more than 50 pages. For some of the states the returns were presented by towns under counties, but for a number of the states the returns were published by counties only. Consequently the volumes now being issued furnish information never before available concerning the population in 1790 by minor civil divisions.

Certain limited statistical classifications were employed at the First Census, such as sex, size of family, one age detail, and number of slaves, and these permit some statistical comparisons which are proving of value. The bulletin will present a discussion of the general conditions prevailing at the First Census; the facts connected with the origin of the census; some discussion of the areas included in towns, counties, and states, in comparison with the areas included at the present time; number and distribution of slaves by families owning specified numbers; a comparison between 1790 and 1900 in respect to the population, and to the agricultural, manufacturing, and general material resources of the states and minor areas enumerated at the First Census; and a discussion of the rise and growth of other areas either not inhabited in 1790 or not then the property of the United States. It will also include some analyses of family names.

THE OFFICIAL REGISTER.

The Official Register of the United States for 1907, the first issue produced by the Census Bureau, was published in accordance with the plan outlined in my last annual report. In deference to the wishes of the Post Office Department, instead of the proposed single

volume, two small volumes were published, the second containing a separate presentation of the many thousands of post office employees. The first contained 742 pages, and was delivered to Senators and Representatives at the opening session of the Sixtieth Congress; the second volume contained 764 pages, and was issued four weeks later. The total cost of printing and binding both of these volumes was \$25,656.62.

The radical changes introduced in the Register caused much comment—most of it highly commendatory. Even those who preferred the form previously in use were unable to offer a defense for the continuance of a form of production which resulted in a production of such bulk that the two volumes weighed 30 pounds and the cost of printing and binding exceeded \$70,000. The only criticism which I have considered worthy of serious attention has been the occasional assertion that failure to find the employees of a given department under the name of that department has caused inconvenience. Nearly all the Executive Departments, however, now publish registers of their employees. These registers are issued at frequent intervals. The Bureau of the Census, by your direction, has prepared for the Department of Commerce and Labor a special register of this character, which contains a complete list of all the employees of the department. It is entirely possible and convenient to prepare registers for each department and to publish the same as supplemental to the general, or Official Register, of the United States, and still effect a great saving over the expenditure required by the previous form of issue. This, however, is a matter which might with propriety be referred to Congress.

It is significant that the popular demand for the Register in its revised form has greatly increased, suggesting that as a book of reference it is proving more serviceable than the former expensive and unwieldy publication. The Register is issued under the printing law of 1895, by which the edition is limited to 3,000 copies, of which a specified number are available for Senators and Representatives and for the use of the various departments and bureaus, while the remainder of the edition is deposited with the Superintendent of Documents for distribution to libraries and for sale. The only copies, approximately 100, available for popular use are those in the hands of the Superintendent of Documents. Previous Registers have cost between \$5 and \$6; the present Register costs \$1 per volume. The supply in the hands of the Superintendent of Documents was soon exhausted, and it is not now possible to procure copies. Since the publication has become thus popularized, it seems important

that the law should be amended so as to make the Register subject to distribution by the Director of the Census, at a fixed price.

The preparation of the next issue of the Register will begin July 1, 1909, and the work will be much simplified, because the general form and scope of the publication are now clearly defined and will vary little from the issue of 1907.

MISCELLANEOUS WORK.

The above description covers the main work of the Bureau during the year past; a large amount of subsidiary and incidental work has also been carried on. Much of this work has been concentrated in the division of manufactures, under the general supervision of Mr. William M. Steuart, chief statistician. At the request of the select committee of the House of Representatives, this division tabulated the voluminous reports secured by that committee from newspaper publishers and wood pulp manufacturers, covering statistics in regard to the prices of news paper, methods of sale, capital invested in the wood pulp industry, persons employed, value of product, etc.

The division has also continued, in cooperation with the Forest Service of the Department of Agriculture, the annual investigation to ascertain the quantity of lumber, veneer stock, cooperage stock, cross-ties, poles, etc., manufactured during the year. This canvass is almost entirely made by correspondence, and is becoming more effective year by year. For the year 1906 reports were received from 22,398 lumber, lath, and shingle mills, while for the year 1907 the number was increased to 28,850 mills. These reports are of great value in connection with the study of the conservation of our natural resources.

At the last session of Congress a bill was introduced and strongly advocated by the Forest Service as well as by representative lumber interests of the country, directing the Bureau of the Census to conduct an investigation of the amount of standing timber remaining in the United States. The pressing need for a thorough investigation of this subject is generally conceded.

WATERPOWERS OF THE UNITED STATES.

In further aid to the work undertaken by the National Commission on the Conservation of Natural Resources, the Census Bureau has been engaged during the last six months, by direction of the President, in the preparation of a report upon the developed waterpowers of the United States, mainly utilizing data drawn from the Census

schedules of manufactures and the electrical industries. Mr. Henry Gannett, of the Geological Survey, was designated as a special agent in immediate supervision of this work, and the report is nearly ready for submission to the Commission.

The latest authentic statistical information regarding the undeveloped waterpowers of the United States is that contained in the report of Prof. George F. Swain, of the Massachusetts Institute of Technology, compiled for the Tenth Census, 1880. The edition of this report was long since exhausted, but the Census Office is in daily receipt of requests for copies. The Swain report is recognized as the standard authority on the subject. Admirable as it is, it embodies knowledge of our waterpower resources that is now 28 years old, and is wholly inadequate to the requirements of the present situation. In response to the demand of engineers and experts, a bill was introduced at the last session of Congress directing the Census Office to compile a new report on the subject of waterpower that shall bring the data down to date.

It is probable that no work as yet undertaken by the permanent Office has greater economic importance than that contemplated by this bill (S. 5749). If it should be enacted at the coming session of Congress it will be possible to complete the report prior to the compilation of the Thirteenth Census.

POPULATION AND INDUSTRIAL CENTERS.

Another work upon which the division of manufactures is engaged, with the cooperation of the geographer, is a study of the population and industrial centers of the United States. It has been the practice of the Bureau, in presenting the statistics of cities, to confine the figures to the population, manufactures, etc., located within the corporate limits. Considerable dissatisfaction has existed in consequence, many municipalities complaining, and justly, that no true conception of their relative size and industrial importance can be obtained unless cognizance is taken of contiguous and suburban population and industries. For practical purposes these contiguous places are just as much a part of the municipal center as though they were embraced within the actual corporate limits. Their existence is due to the facilities of the great city around which they flourish and to whose business and prosperity they contribute. A number of American cities have widely extended their corporate limits so as to include many of these contributing places; others, which have not done so, insist that the Census statistics do not truly represent the actual and relative conditions in comparison with cities

which have. To meet this criticism, and to establish the actual economic conditions of the leading American municipalities, the Census will shortly publish a bulletin presenting the statistics of what may be called the population and industrial centers. It is not expected that the first essay in this direction will be complete or wholly satisfactory to the localities involved, but the criticism and suggestion which will follow should enable the Bureau to perfect the plan for use at the Thirteenth Census.

RETIREMENT OF CIVIL SERVICE EMPLOYEES.

At the request of the Senate Committee on Civil Service and Retrenchment and the House Committee on Reform in the Civil Service, the Secretary of Commerce and Labor directed the Bureau of the Census to prepare an estimate of the amount it will cost if the plan for the retirement of aged employees in the civil service devised by Mr. Herbert D. Brown and approved by the Keop Commission shall be adopted. As a result of its work in compiling the Official Register for 1907, the Census has in its possession cards giving the age, length of service, and compensation of practically every person in the classified service on July 1, 1907. These data, which are being tabulated under the supervision of Mr. Brown, who has been appointed a special agent for this purpose, will furnish the basis for the desired estimate.

The results will be embodied in a bulletin to contain the tabulation, and a complete exposition of the proposed retirement plan by which—at the mere cost of administering a large savings bank—the Federal Government will avoid the great expense of maintaining superannuated clerks. The features of especial interest to be covered by the bulletin are, the amount of the annuities payable at the age of retirement, the deductions to be made from salaries to purchase these annuities, the provisions for withdrawal of the accumulated savings in cases of separation from the service, and the choice of the mortality table to be used in computing the amount of deductions from salaries and in estimating the cost of annuities for past services to clerks already employed. Some discussion will be included concerning adequate provision for the investment of the large fund which will accumulate.

The bulletin will also contain information concerning the methods adopted by various foreign countries for the retirement of superannuated civil employees. Through the courtesy of the Department of State, this information is being collected by the Diplomatic and Consular Service by means of a schedule of interrogatories prepared by the Bureau of the Census.

The bulletin will also describe the plans of retirement adopted in this country by various city governments, railroads, and industrial concerns.

MUNICIPAL BONDS.

At the request of the Secretary of the Treasury the Census Office has been directed to compile certain information with reference to the character and value of state, county, and municipal securities which may be accepted by the Treasurer of the United States as the basis for the additional circulation authorized by the act of Congress approved May 30, 1908, entitled "An act to amend the national banking laws." A large part of this information was already on record in the Bureau, having been collected in connection with the decennial report on wealth, debt, and taxation, and the annual reports on the financial statistics of cities having 30,000 population and over. The utilization of these data for the purposes of the Treasury Department has avoided much duplication of work. This and the other instances cited indicate the practical directions in which the facilities of the Census may be utilized by all departments of the Federal Government to aid and expedite those branches of their work which rest upon a statistical foundation. The Bureau welcomes all such opportunities to cooperate in the unification of official statistics.

WORK OF THE COMING YEAR.

All of the "special reports" assigned by law to the Census Office during the intercensal period have now been made except two—the census of fisheries, in cooperation with the Bureau of Fisheries, and the report on savings banks and other savings institutions.

During the year that remains the clerical force of the Bureau can be largely employed upon preliminary work for the Thirteenth Census. Three branches of this work are already under way. The geographer's division is engaged in collecting the data required for platting the enumeration districts, a work which includes correspondence to ascertain every change in the boundaries of the minor civil divisions which has occurred since the Twelfth Census. The division of manufactures is preparing index cards, giving the names and addresses of manufacturers and of mines and quarries, preliminary to the census of these industries. The division of population has begun the preparation of a complete index of the titles under which 53,650 enumerators of the Twelfth Census returned the occupations of persons gainfully employed. The object of this work is to ascertain the exact terms or designations, and to determine their numerical impor-

tance. Based upon it, exact definitions will be formulated of all the significant terms and designations, with particular reference to local usage in different sections of the country. In all countries the subject of "occupations" is the most complicated and obscure with which the census has to deal. The International Statistical Institute appointed a special commission at its last session to coordinate the occupation terminology employed in the censuses of the several countries, and the Census Office will be able to furnish material aid to this commission. The United States has not hitherto been able to contribute aid of scientific value in this study, because there has been no opportunity, in the absence of a permanent office, to subject the enumerators' returns to critical analysis. This opportunity has now arisen; and I look for results, as the outcome of the present work, which will constitute one of the most valuable contributions the United States has yet made to the science of statistics.

THE CUBAN CENSUS.

On January 30 last the President issued an order directing the Director of the Census to compile, tabulate, and publish the Census of the Republic of Cuba, taken as of the year 1907, by the provisional governor of Cuba, under the experienced supervision of Mr. Victor H. Olmsted, Chief of the Bureau of Statistics, Department of Agriculture, detailed to act as Director of the Cuban census. The order was issued upon representation that no facilities for the rapid tabulation of the census existed in the island, and with the proviso that all expenses incurred were to be paid from the Cuban treasury. The schedules arrived at the Census Office about May 1. Fifteen clerks were transferred from the Census rolls to supervise the work in its several branches and stages, and 136 temporary clerks were appointed to edit the schedules, to punch, sort, and tabulate the cards, and to compile the tables. The work of tabulation and compilation was completed October 1, to the entire satisfaction of the authorities in charge. The cost to the Cuban Government was \$42,655, or about \$0.02 per capita, based upon an ascertained population of 2,048,980 persons. The per capita cost of tabulating the last Cuban census (1899), taken under the direction of the United States War Department, was \$0.035 by private contract.

The compilation of the Cuban census has been a useful experience in two ways. It has permitted the Census Office to test the plan for piece-price payment for mechanical work, which is incorporated in the pending bill for the Thirteenth and subsequent censuses. The results have been eminently satisfactory. The test has demonstrated that in the punching of cards and the operation of the tabulating

machines, differing degrees of aptitude and industry may be so compensated that each operator can be paid according to product, none receiving less than a fair day's pay, while the especially apt may receive a much larger compensation than would otherwise be possible, the total cost of the work being at the same time materially reduced.

The Cuban census has also permitted a thorough testing of several of the new designs of tabulating apparatus invented in the Office for the Thirteenth Census. The results have exceeded my most sanguine expectations. Notwithstanding the fact that the machines had to be hurriedly constructed to meet a contingency unforeseen, and that at the start many mechanical difficulties, impossible to foresee, had to be overcome, the machines did their work perfectly, and indicated beyond question that they are adapted to handle the great work of a decennial enumeration more quickly, more economically, and more satisfactorily than any mechanisms heretofore employed for this purpose.

AN INDEPENDENT TABULATING SYSTEM.

In this connection I desire to summarize the work thus far done in the development of an independent tabulating system for use in the Thirteenth and subsequent censuses, and in the current work of the Bureau. On July 1, 1905, the apparatus owned and operated by the Tabulating Machine Company was withdrawn from the Office, owing to failure to reach agreement as to the rental to be paid for the use of these mechanisms. It was the contention of the Director that the royalties demanded were excessive and that the Government could not properly be longer committed to these payments. The withdrawal of the machines compelled the Director to ask Congress for an appropriation for experimental work in developing new mechanisms to be owned, controlled, and operated by the Government. He was hopeful of practical results, in view of the fact that the original patents on the hand machines by which both the Eleventh and Twelfth censuses were tabulated expired on January 8, 1906, and they became public property from that date. To avoid the possible criticism that the purpose existed to infringe in any way upon the patent rights of any private individual or corporation, the first step was the transfer from the Patent Office of an expert skilled in the patent law and especially conversant with electrical patents. Mr. H. H. Allen was recommended for this post, and subsequent events have fully demonstrated his notable fitness for this difficult duty. His instructions were that the Census Office would undertake no mechanical work which it was not lawfully free to

manufacture and use in every part and feature. None of the mechanisms since invented and perfected infringe, in any degree, at any point, upon any live patent of any individual or corporation. To accomplish this, in developing the automatic machines, it has been necessary to devise many new and ingenious mechanisms. In connection with his patent studies, Mr. Allen developed such rare knowledge and skill that he was shortly designated as chief expert, in charge of the whole work, and I hope he may be induced to remain in the post until the completion of the Thirteenth Census. He is assisted by Mr. Charles W. Spicer, foreman of the machine shop, Mr. Eugene Le Boiteaux, assistant foreman, and eight mechanics, electricians, and apprentices.

The experimental work began in July, 1905, in a small room in the mechanical laboratory of the Bureau of Standards, by the courtesy of Director Stratton. This room was not equipped with the apparatus required, and in the spring of 1907 it became necessary to construct and equip a machine shop in the Census building. This shop has been enlarged during the past year so as to include the necessary stock and storage rooms. The construction and equipment of the machine shop cost \$17,483; it is one of the most complete shops of its kind in the country and admirably adapted not only for experimental work, but for the construction, testing, and repairing of the tabulating machines.

That the work has already passed beyond the experimental stage is proved by the successful utilization of the so-called "semi-automatic machine" in the Cuban census. This machine carries an improvement upon the hand machine used at the Eleventh and Twelfth censuses by the substitution of an electrical button for the old-fashioned hand lever. Its operation is therefore no strain upon the clerk, and its capacity is nearly 50 per cent greater than that of its prototype. Its capacity is further increased by the use of automatic printing counters, a most ingenious device, and the first successful attempt to adjust a large number of counters so that they can all be set back to zero by one simple motion of the operator. The printing attachment does away with the necessity for transcribing each reading of the counters, and thus eliminates a troublesome source of error.

An automatic machine, of marvelous rapidity and constructed on an absolutely novel principle, has also been invented; and two model machines, still subject, however, to certain minor improvements, have rewarded the efforts of the Census experts. The principles involved in the construction of an automatic sorting machine have also been worked out, and a working model is now under construction.

In December, 1907, Mr. James Powers, one of the experts, was detailed to work out an automatic card-punching machine, the design for which he had invented. His first experimental machine was set up in June and was a great improvement over the hand punches previously used. The test developed certain further improvements possible, and these were worked out by Mr. Powers in a new machine, which is now in successful operation in the Census Office. It reduces the physical labor of punching the cards to an absolute minimum, substituting electrical power for that of the human hand.

So far as concerns the machinery required to tabulate the next population census, the plans of the Bureau are now practically complete. The new mechanisms invented are novel in plan and design, are of greater speed and efficiency than those they supersede, and can be built and operated at a large saving in money, as compared with previous expenditures for this purpose. They are now in daily use in the current work of the Office.

The appropriations made for the experimental work to June 30, 1908, aggregate \$70,000, of which amount \$68,068.87 have been expended and the balance, \$1,931.13, turned back into the Treasury. It is not possible to estimate accurately the cost of the machinery necessary to tabulate the Thirteenth Census until bids have been called for and contracts made, but it is already clear that by reason of the saving in clerk hire alone, due to the greater efficiency of the new machines, the work can be done for less money than was expended for this purpose at the Eleventh and Twelfth censuses. The cost of tabulating apparatus was \$204,046.33 in the former and \$462,799.24 in the last census. Hereafter the Census will own its own tabulating apparatus instead of renting it, and the initial cost will be the only cost.

462,799.24
204,046.33

THE THIRTEENTH CENSUS.

\$666,845.57

At the commencement of the next fiscal year the Census Office must pass from the permanent organization of the intercensal period to the temporary organization of the three-year decennial period, preliminary to the great work of the thirteenth enumeration of the population required by Article I, section 2, of the Constitution. The actual work of the enumeration will be completed before the end of the next fiscal year. The plan and method of this transformation, and of the automatic operation of two distinct codes of census laws, periodically superseding each other, were described in the last annual report of the Director. While the legislation under which the Twelfth Census was taken provides also for subsequent censuses, just

as the Eighth and Ninth censuses were taken under the law for the Seventh, the experience of the Bureau has developed many points at which the law should be radically modified; and these changes will greatly reduce the cost and increase the accuracy of the Thirteenth Census. Accordingly a bill for the taking of the Thirteenth Census was introduced in the House of Representatives in December last by the Hon. E. D. Crumpacker, chairman of the Committee on the Census, and shortly thereafter hearings were held on the bill by that committee, extending over several weeks. On February 11 an amended bill was unanimously reported by the committee. This bill was considered in Committee of the Whole House on two subsequent days, and thereafter did not again come up for consideration during the session. Being a bill to carry into effect a constitutional provision, it now occupies the position of highest privilege on the calendar of the House. The census bill can be further considered immediately upon the reassembling of Congress in December, and should pass the House before the holidays, so that full consideration can be given it by the Senate, and legislation secured as early as possible, prior to the final adjournment on March 4. Every day the enactment can be expedited will correspondingly reduce the cost of the Thirteenth Census.

The technical sections of this bill have been carefully studied by the men who have devoted their lives to census work, and embody the matured conclusions of their combined experience. The bill contemplates many new methods to increase accuracy and to decrease the per capita cost of the enumeration.

Perhaps the most radical change is that the date of the enumeration has been advanced from June 1 to April 15, 1910. The first four censuses of the United States, to and including that of 1820, were taken as of August 1; all subsequent censuses have been taken as of June 1. The reasons underlying the change now proposed appeal to all students of census problems, and I have nowhere observed any criticism. The habits of the American people have so changed that it is no longer possible to enumerate the residents of our large cities on a date as late as June 1 with any accuracy. Considerably more than one-half of our population is now living under urban or semi-urban conditions. The difficulties attending the count of the summer absentees from urban homes can no longer be overcome by ordinary expedients, such as the "prior schedule" and resort to the mails. The necessity for advancing the date of the enumeration will increase from decade to decade; and the sooner

the change is made the better. The bill contains a provision for adjusting the date of actual enumeration to climatic and other conditions, in sections of the country where this may be necessary.

The ideal date for a census of population and agriculture would be October 1, thus permitting an enumeration of the crops just harvested, instead of those of the previous year, as has always been the case. But every other decade the census comes in the year of a presidential election; and the organization of a force of 65,000 enumerators on the eve of a national election, might easily be converted into a vast political machine; whether or not this particular danger were ever realized, the chance for misapprehension and suspicion would be greatly increased, and might seriously endanger the success of the work. The complete divorce of the decennial census from partisan politics is a vital prerequisite of its success.

The pending bill effects a material modification in the four great inquiries of previous censuses, by omitting vital statistics. This schedule has been carried by the enumerators since the census of 1850. The annual report on mortality statistics now compiled under the provisions of the permanent Census act does away with any need for a mortality schedule in the registration states and cities, which now comprise over one-half of the population of continental United States. As for the remainder, experience has established the fact that the statistics of births and deaths obtained by enumerators at the end of the year are untrustworthy and inaccurate—generally so inaccurate as to be grossly misleading. They are therefore better omitted altogether. The omission of this schedule from the Thirteenth Census is likely to sharply direct public attention to the fact that 30 of the 46 states have still made no provision for accurate mortality reports; if it has this result, it will stimulate the movement for effective registration laws in these derelict commonwealths.

The bill permits the enumeration of the manufacturing industries wholly by special agents. This is made possible and economical by the definite abandonment of the attempt to canvass the neighborhood, hand, and household industries, so called—following the precedent established by the manufacturing census of 1905, a precedent which has commended itself to statisticians and the public.

It will thus happen that the enumerator in 1910 will carry but two schedules—population and agriculture—in the country districts, and only one in the cities. In the Twelfth Census he was required to carry five schedules, and at the Eleventh Census no less than twelve. It is not possible to overestimate the gain that will arise, in accuracy, expedition, and economy, from this radical simplification of the work of the enumerator. He can concentrate his whole attention upon the

mastery of instructions relating to but two subjects, and his mind will not be confused by the technical difficulties of the special schedules.

The bill provides that the mining census shall be taken simultaneously with that of manufactures. The most serious defect in the Twelfth Census law was the requirement that the mining census should not be undertaken until after the completion of the other inquiries. Mining processes have been so changed and developed with the advance of technological science that it is no longer possible to draw a hard and fast line between mining and manufacturing—the two have become so interwoven that in the case of many of the metals they are simultaneously conducted, as parts of one operation. The difficulties which necessarily attend the separate enumeration of these industries will be greatly reduced by the simultaneous canvass.

Among the minor modifications of the Twelfth Census act is the provision permitting payment for mechanical work on the piece-price basis, already referred to, which involves a saving of several hundred thousand dollars in the cost of the tabulation; the graduated adjustment of the compensation of the supervisors, so that these officials may be paid in accordance with the measure of their responsibilities; the readjustment of the method of paying enumerators, on a somewhat similar basis; the revision of the penal provisions of the law, so that they bear a due relationship to each other and to the offenses penalized; the correction of the curious error in previous census laws, whereby persons refusing to make reports were penalized for failing to perform acts which the law did not make it their duty to perform; the requirement that all apartment, lodging, and tenement houses shall be freely accessible to duly accredited representatives of the Census Office; and the proper safeguarding of all industrial reports made to the Bureau under the pledge of confidential treatment.

The bill contains a provision for a five-year census of agriculture, along limited lines, in accordance with the earnest recommendation of the Secretary of Agriculture. As originally reported it also contained a provision, substantially copied from the census law of 1880, to encourage the several states to take quinquennial censuses of population, by the repayment to the states from the Federal Treasury of a generous proportion of the cost of enumeration,¹ as determined by the cost of the last prior Federal enumeration of the state. This provision recognizes the need for more frequent enumerations of the

¹ A sum equal to fifty per centum of the amount which was paid to all supervisors and actual enumerators within such state or territory of the United States census, next preceding, increased by one-half the percentage of gain in population in such state or territory between the two United States censuses next preceding. Statutes at Large, vol. 20, page 480.

population than once in ten years, but proposes that the several states, which are equally benefited by these enumerations, shall pay a fair proportion of the cost.

Five-year censuses of a rapidly shifting population like our own are regarded by statisticians, sociologists, and economists as essential to an intelligent understanding of the progress of a nation, and to the legislation demanded by that progress. They are already taken by France and Germany, and the movement for a five-year census in Great Britain is increasingly insistent. President Grant, in his fourth annual message to Congress, earnestly advocated a national census in 1875, and this recommendation he renewed in the following year. Gen. Francis A. Walker, superintendent of the Ninth and Tenth censuses, and regarded as the greatest authority on the census the world has yet produced, recognized the need as long ago as 1880, and was himself the author of this plan for encouraging the several states to bear their proper share of the additional expense involved. Several states took advantage of it in 1880, but the provision was omitted from the census acts of 1890 and 1900, chiefly because at those dates there was no permanent Census Office, and therefore no machinery for the tabulation of these intermediate state censuses. That fatal objection having been removed, it is greatly to be desired that the provision of the law of 1880 shall be reenacted, in the modified form proposed in the census bill as originally reported.

THE CIVIL SERVICE AND THE CENSUS.

X One other feature of the census bill calls for comment in this report, that relating to the method of making temporary clerical appointments during the decennial census period. The President in his special message of December 31, 1907, earnestly urged Congress to include these appointments within the rules of the civil service act. The bill as it stands effects something in the nature of a compromise between the President's recommendation and the wide open door that has distinguished previous censuses. It provides for a noncompetitive examination, to be held by the Civil Service Commission. This is an improvement over previous laws, because it insures that no appointments will be made of persons not capable of securing the lowest ranking which establishes eligibility under civil service regulations. It also relieves the Director of the wholly extraneous duty of conducting examinations. But it does not relieve him from the overwhelming pressure to obtain clerkships, which has heretofore proved the most vexatious and difficult task connected with the decennial work, occupying during the first year and a half the time

and thought of the Director that ought to be wholly given to the enormously difficult work for which he is responsible. A "noncompetitive" examination means that every one of the many thousands who may pass the examination will have an equal right to appointment, and that personal and political pressure must in the end, as always before, become the determining factor with reference to the great body of these temporary employments. I can not too earnestly urge that the Director of the Census be relieved from this unfortunate situation.

If these clerks can be appointed as needed, in the order certified from a competitive examination, a better service will be secured than will otherwise be possible, the efficiency of the force will be greatly increased, and the cost of the census correspondingly reduced.

Two other features of this section of the bill commend themselves. One waives the geographical apportionment and the other permits the employment, without examination, of former Census clerks whose records in the Office establish their efficiency. The first provision permits the employment of clerks resident in the District of Columbia, the quota of which is overfilled, and residents of which would otherwise be excluded. It does not seem wise, where a service is temporary in character, averaging less than two years, to draw so large a body of clerks from distant parts of the country, whither most of them will have to return. The District contains several hundred men and women who have been employed in one or two censuses, and who would be glad to take up the work again. They are trained in it, and their service will be more effective than that of inexperienced people.

A mistaken impression prevails in some quarters that the supervisors and enumerators ought also to be appointed as the result of civil service examinations. In the case of the 330 supervisors this would be unwise, for a supervisor, to render the most effective service, must be a man of standing in his community, well known, and experienced in affairs—in the class of men who do not take civil service examinations, and whose acceptance of the position may involve some personal and business sacrifice. Of course this is the ideal supervisor, not always secured—perhaps not often—but he can not be obtained by the methods adopted for the selection of ordinary clerks. Moreover, it is impracticable for the Civil Service Commission to hold simultaneous examinations in 330 districts of which these supervisors must be severally resident.

In like manner, it would be physically impossible to hold civil service examinations to determine the selection of 65,000 local enu-

merators by the competitive method. These examinations would of necessity have to be held in every city and township in the United States at practically the same date, and the civil service machinery would break down of its own weight.

Yet it is obvious that the accuracy and the value of a decennial census depend primarily upon the fitness and the qualifications of the supervisor and the enumerator. In the case of the former no appointments should be made except upon demonstrated capacity to discharge important duties properly. The training of the supervisor, after his appointment, should take place in the Census Office itself.

The enumerator is, however, the most troublesome problem connected with a decennial census. The pay is small, the duties strenuous, the conditions exacting, the service quickly over. The theory has generally prevailed that any person who happens to be out of a job can do the work as well as any other. In fact, the enumerator should be above the average in intelligence, should possess a good education, should know his district thoroughly, and should command the respect of his neighbors. It is only possible to get the right persons for enumerators by securing a practical test of qualification in each individual case—a plan inaugurated and partially carried out at the Twelfth Census. A pass examination, substantially competitive in character, should precede the appointment of every enumerator, and every person desiring to take it should be permitted to do so, and be furnished with the necessary papers. These would consist of a sample schedule, accompanied by the instructions, to be filled out by the applicant, who should also be required to answer certain questions framed to test his comprehension of the instructions, the whole to be certified under oath as his own unaided work. The bill should be so amended as to require this examination whenever practicable, and to make a false certification a penal offense, with proper penalty.

In the choice of enumerators preference should be given to students in institutions, both men and women, wherever their services can be obtained. The enumerator at the prior census, if he did satisfactory work, should always be selected when his services are available. The existence of the permanent Census Office, permitting much earlier preparation for the enumeration than heretofore, will make it possible to secure the most competent and trustworthy body of enumerators ever brought together. It is clear that the accuracy of the census, no matter with what perfection the returns may be tabulated at Washington, depends absolutely upon the intelligence, character, training, and fidelity of the enumerators. The opportunity now exists to materially improve the service, over any that has heretofore existed, at this crucial point.

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to the Secretary of Commerce and Labor

THE COST OF THE THIRTEENTH CENSUS.

I estimate that the cost of the Thirteenth Census, including the cost of conducting the four annual investigations and the two biennial reports that the Census Office is required to make simultaneously with the taking of that census, will be \$14,117,000. The lump sum appropriation to be provided in the appropriation act for the next fiscal year should be not less than \$14,000,000. The larger part of this sum will be expended in the fiscal year ending June 30, 1910. In this year will fall all the expenses of the supervisors and enumerators, together with the maximum employment of temporary clerks. These items, together with the preliminary printing, the purchase of cards, and the construction of tabulating machinery, will involve an expenditure of approximately \$9,000,000.

I submit below a statement of the cost of the Twelfth Census and the estimated cost of the Thirteenth Census, originally prepared for the House Census Committee, and since somewhat modified:

ESTIMATED COST OF THE THIRTEENTH CENSUS AS COMPARED WITH THE APPROXIMATE COST OF THE TWELFTH CENSUS.

Decennial census.

	Estimated cost of the Thirteenth Census.	Approximate cost of the Twelfth Census.
Office force (compensation)-----	\$4, 800, 000	\$5, 655, 000
Enumerators (compensation)-----	4, 500, 000	3, 540, 000
Supervisors (compensation, clerk hire, travel, and other expenses)-----	910, 000	670, 000
Special agents (compensation, travel, and other expenses)-----	700, 000	645, 000
Administrative (travel, telegraph, furniture, machines, etc.)-----	300, 000	250, 000
Stationery-----	200, 000	150, 000
Rent-----	125, 000	100, 000
Tabulating machinery-----	250, 000	395, 000
Cards for tabulating machines-----	100, 000	95, 000
Alaska-----	85, 000	70, 000
Porto Rico-----	160, 000	¹ 130, 000
Printing-----	800, 000	820, 000
Total-----	12, 930, 000	12, 520, 000

¹ Cost of census taken by War Department in 1899.

Report of the Director of the Census

Annual and biennial reports during the three years, 1909-1912.

Cotton production and consumption, costing		
\$227,000 a year-----	\$681,000	
Financial statistics of cities, costing \$70,000		
a year-----	210,000	
Mortality statistics, costing \$70,000 a year---	210,000	
Forest statistics, costing \$12,000 a year-----	36,000	
Official Register, 2 issues, costing \$25,000		
each-----	50,000	
		\$1,187,000
 Total-----	 14,117,000	 \$12,520,000

NOTE.—On the basis of an increase in cost proportionate to the estimated increase in population, i. e., 20 per cent, the Thirteenth Census proper will cost approximately \$15,000,000, to which amount should be added the cost of the annual and biennial reports for the decennial census period, \$1,187,000, making a total of \$16,187,000.

There has been much criticism of the rapid increase in the cost of the decennial censuses, and this criticism has led to a careful investigation of the subject.

The total sum appropriated by Congress for the Twelfth Census was \$13,516,210. Of this sum \$11,770,051.78 had been expended by June 30, 1902, when the permanent census act went into effect. The date of effectiveness of that act has generally been accepted as marking the completion of the Twelfth Census, and the expenditures to that date as its actual cost. As a matter of fact, the permanent office was largely engaged for more than a year in finishing the Twelfth Census work. The four expensive volumes, *Employees and Wages*, the *Supplementary Analysis*, the *Statistical Atlas*, and *Occupations*, together with the revised edition of the *Abstract*, were all compiled and published subsequent to the reorganization of the Bureau as a permanent office. The whole expense of the first year of the permanent Office (\$1,350,271.08) was met from the unexpended balance of the Twelfth Census appropriation, and the remainder of that balance (\$395,887.14) was reappropriated to pay for the tabulation of the Philippine census, and to defray other census expenses. It is therefore impossible to state the exact cost of the Twelfth Census, or, rather, of that portion of the decennial work (the main reports) which was so described in the census act. I regard it a fair adjustment of the accounts, as thus complicated by the reorganization of the Office, to estimate the cost of the Twelfth Census in round numbers at \$12,500,000. This involves an addition of \$729,948.22 to the amount that had been expended at the date of the reorganization.

Such an estimate is conservative, for the main reports of the Twelfth Census doubtlessly cost somewhat more than twelve and a half million.

to the Secretary of Commerce and Labor

The amount expended at the census of 1890 was \$11,547,127.13, but this included not only the cost of the main reports but also the cost of the special reports, as follows:

Mortgages	\$1, 347, 435. 24
Fish and fisheries.....	140, 432. 99
Insurance.....	47, 718. 84
Indians (estimated).....	20, 000. 00
Transportation by land (estimated).....	100, 000. 00
Churches	47, 179. 78
Mines and quarries.....	196, 236. 16
Wealth, debt, and taxation.....	192, 849. 89
Pauperism and crime.....	63, 573. 11
Total	2, 155, 426. 01

Deducting the cost of these special reports from the total expenditures at the Eleventh Census leaves \$9,391,701.12 as the cost of the main reports, as compared with \$12,500,000, the estimated cost of the main reports at the Twelfth Census—an increase at the latter census of \$3,108,298.88, or 33.10 per cent. It seems proper to submit this detailed analysis, as the Eleventh Census has been criticised as unduly expensive.

The total cost, the amount and per cent of increase in cost over the preceding census, and the per capita cost is shown in the following table for each of the censuses from 1790 to 1890, and for the main reports of the censuses of 1890 and 1900:

Total cost of each census, 1790 to 1890, and cost of main reports at censuses of 1890 and 1900.

CENSUS.	TOTAL COST.			Per capita cost.
	Amount.	Increase over preceding census.		
		Amount.	Per cent.	
1790	\$44, 377. 28			\$0. 0112
1800	66, 109. 04	\$21, 731. 76	48. 97	. 0124
1810	178, 444. 67	112, 335. 63	169. 92	. 0246
1820	208, 525. 99	30, 081. 32	16. 86	. 0216
1830	378, 545. 13	170, 019. 14	81. 53	. 0294
1840	333, 370. 95	454, 825. 82	120. 15	. 0488
1850	1, 423, 350. 75	589, 979. 80	70. 79	. 0618
1860	1, 969, 376. 99	546, 026. 24	38. 36	. 0626
1870	3, 421, 198. 33	1, 451, 821. 34	73. 72	. 0887
1880	5, 790, 678. 40	2, 369, 480. 07	69. 26	. 1153
1890	11, 547, 127. 13	5, 756, 448. 73	99. 41	. 1833
1890 (main reports).....	9, 391, 701. 12			. 1491
1900 (main reports).....	12, 500, 000. 00	3, 108, 298. 88	33. 10	. 1688

It will be seen that the average increase in cost from census to census has been considerably more than 50 per cent, and that on this

basis the cost of the main reports at the Thirteenth Census would reach \$18,750,000. The estimated cost of these reports at the Thirteenth Census, however, exclusive of the cost of the four annual and two biennial reports to be made during the same period (\$1,187,000), is only \$12,930,000, an amount slightly in excess of their cost at the Twelfth Census. If the work can be accomplished for this sum, it will be the first time in the history of the nation that a census has been taken and compiled at practically the same cost as the prior enumeration. I am led to believe that this is possible by many considerations, the most important of which is the existence of the permanent Office. Much of the cost of the preliminary work is included in the expenditures annually made for the permanent Office. Furthermore, the fact that the Office is now organized at the highest point of efficiency, that no time will be lost in getting ready, in testing the aptitude of green clerks, and in developing new systems means fully a million dollars' saving in the organization of the Thirteenth Census.

The other considerations are the provisions of the pending census bill which eliminate the vital statistics, reduce the number of schedules, and permit the piece-price method of paying for machine work; the omission of the hand, household, and neighborhood industries from the manufacturing census; and the fact that the Bureau will build and own the necessary tabulating apparatus, instead of renting it as heretofore.

Exclusive of the Twelfth Census appropriations, those specifically made for the maintenance of the permanent Office to July 1 next have been \$7,104,540 (exclusive of printing). This sum is only slightly in excess of the normal increase in the cost of the main reports at the Thirteenth Census over the Twelfth.

In a word, the saving that can be effected in the cost of these reports at the coming census, as compared with their cost at the last, will very nearly equal the entire cost of maintaining the permanent Census Bureau between the two censuses.

To realize the full significance of this statement, account must be taken of the fact that during the interval between censuses the office has completed various branches of statistical work, assigned to it by law or by order of the Secretary, and never before undertaken, which have involved an expenditure of at least \$3,200,000.

Such of these statistical reports as are annual in character, and must continue from year to year during the progress of the Thirteenth Census, involve the expenditure of approximately \$379,000 each year, in addition to which sum \$50,000 will be required for the

compilation of two Official Registers, a total expenditure, during the three-year decennial period, of \$1,187,000. Even with this sum added to the cost of the Thirteenth Census—since it must be simultaneously incurred—the total lump sum appropriation for the Bureau, during the three-year decennial period, estimated above at \$14,000,000, is a large decrease in the per capita cost of the work.

In making these statements I realize that the difficulties of census taking in the United States have been enormously increased in recent decades, and that certain costs must inevitably increase correspondingly. The difficulties attending the enumeration of our rapidly increasing foreign born population are vastly greater than ever before. The inclusion of the island of Porto Rico in the decennial census will add \$160,000 to the expenses previously necessary. The extraordinary development of Alaska in the last decade will add even more. Other outlying territory may also be included in the law when finally enacted. Increased cost of living has made it necessary to provide a slightly increased compensation for supervisors and enumerators. All these factors have been taken into account in the estimate submitted, but it may well be that the Director is too sanguine in his expectation of what can be done for a given sum of money. He should be left as unhampered as possible if he is expected to succeed; and it is especially important that the entire appropriation for the Thirteenth Census shall be made at once and not in annual installments, so that he may know from the very beginning just what Congress and the country expect as to the cost of this work.

In referring to the cost of the decennial enumeration Gen. Francis A. Walker once wrote that "the people of the United States can well afford to pay for the very best census they can get." He made this remark in connection with a frank confession of his own shortsightedness in underestimating the cost of the Tenth Census. He should have allowed for all possible contingencies. "Had the Director done this," he wrote, "Congress would without a murmur have voted the sum asked, which would have been in excess of the aggregate amount of the appropriations actually made for the service; all deficiencies would have been avoided, and the Census Office saved much embarrassment and not a little discredit. As it was, the Director actually undertook to conduct a very elaborate census of 50,000,000 people for less money than had been expended in 1870 upon a far simpler enumeration of 38,000,000. Doubtless the additional labors, the annoyance, the embarrassments, the distress which he brought upon himself during the three years following were only a proper punishment for his ambitious folly."

PROPER ACCOMMODATIONS FOR THE THIRTEENTH CENSUS.

If the Thirteenth Census is to be completed for the sum of money indicated, it is imperative that every possible facility shall be afforded to that end. It will be clearly impossible to accomplish it, unless Congress shall promptly take the necessary steps for the proper housing of the large temporary force that must be employed during the three-year decennial period. The imperative requirement for an additional building was dwelt upon in my last annual report and earnestly presented to the Committees on Buildings and Grounds at the last session, but nothing was done. There is still time to meet the emergency, if the matter is given immediate attention upon the reassembling of Congress. I will briefly restate the emergency and the plan by which it can be met.

The privately owned building which the Census now occupies, although especially constructed for the Twelfth Census, was wholly inadequate for its needs, and during the height of the work could accommodate few more than one-half of the clerks employed. At the next census the number of employees will be increased, while the accommodations afforded by the present building have decreased at least one-half. This is due to the fact that all the prior census records, previously stored in the Department of the Interior, have been removed to the Census building, and many additional records have also accumulated. The Census machine shop has been installed in the building and will shortly require much more space than at present. All the publications, not only of the Twelfth, but of all prior censuses, are now stored in the building. It follows that the available floor space is sufficient to accommodate only about one-third of the clerical force required to handle the Thirteenth Census. The great majority of the force must be housed here and there throughout the city wherever rented quarters can be obtained. Nothing can be more detrimental to efficient administration, economical expenditure, and rapid work. This has been demonstrated in three decennial censuses with which I have been officially connected. In my own work at the Twelfth Census—the report on manufactures—one-half the clerical force was located in the present Census building and the other half in the old Globe Building on Pennsylvania avenue, four blocks distant. The confusion, the delay, the embarrassment thus caused added greatly to the cost and enormously to the difficulty of the work.

These difficulties will now be accentuated in all branches of the work, unless steps are immediately taken to remedy them. The only effective remedy that presents itself, that can be carried out within

the limited time remaining, is an adequate addition to the present Census building on the vacant lot which adjoins it on the north. A plain, seven-story, fireproof building can be here erected which, if supplemented by the purchase of the old Business High School building directly east of the vacant lot, will meet all the requirements of the situation.

In my last annual report I presented figures indicating the cost of the purchase of the present site and building, the purchase of the adjoining lot and the construction of the proposed building thereon, and the purchase of the Business High School building, under the existing options. The total expenditure involved, in order to give the Government a permanent home for the permanent Census Office, adequate for the decennial census for at least twenty years to come, is \$674,126. This figure is \$40,000 less than the estimate in my last annual report. While the option price of a portion of the property under consideration has advanced \$10,000 within a year, I have found that through certain economies the cost of the proposed new building can be materially reduced. That the Government should own all the property, and not seek a compromise whereby it shall be partly owned and partly rented, is obvious.

The property in question is the most desirable site for a permanent Census Office now available in the city of Washington, and at the option price it is considerably cheaper than the real estate recently purchased by the Government in this immediate vicinity. The block of which it comprises one-half is included in the plans of the Park Commission looking to the future development of the national capital. It is therefore a property which the Government will ultimately purchase, irrespective of the immediate and pressing needs of the Census. It can never be secured so cheaply as at present, while existing options hold good. As a purely business proposition, it has everything to commend it.

The alternative is an attempt to rent, in different sections of the city, the necessary buildings for the coming emergency. It is calculated that the additional rentals, added to those already paid, will amount to \$125,000 during the decennial census period. It is also calculated that by the time the Fourteenth Census is completed, the Government will have paid out in rentals, for the accommodation of the Census, a total sum of money equal to the entire cost of purchasing this property and constructing the additional building proposed.

There is thus a threefold argument in favor of immediate action by Congress: To meet the imperative requirements of the Census Office; to secure possession of a property which the Government must

ultimately own, at the lowest price; and to pay for it and a suitable building with the rental money that must otherwise be expended. It is proper to add that a failure to make suitable provision for the accommodation of the Thirteenth Census will inevitably increase the cost of that census, as estimated in this report, by more than the cost of acquiring the property and constructing the building herein recommended.

Respectfully submitted.

S. N. D. NORTH, *Director.*

HON. OSCAR S. STRAUS,
Secretary of Commerce and Labor.

to the Secretary of Commerce and Labor

APPENDIX A.

REPORT OF THOMAS S. MERRILL, DISBURSING CLERK, BUREAU OF THE CENSUS.

Expenditures during the fiscal year ended June 30, 1908.

Title of appropriation.	Expenditures. ¹	Remarks.
Salaries, 1908.....	\$695,982.91	The amount appropriated was \$700,860. The unexpended balance (\$10,877.09) and the amount received for transcripts of census records (\$70.50) will be covered into the General Treasury.
Collecting statistics, 1907-8.....	110,278.81	The amount appropriated was \$150,000. Of this, \$39,721.69 was disbursed during the fiscal year ended June 30, 1907.
Collecting statistics, 1908.....	375,000.00	The entire amount appropriated.
Collecting statistics, 1908-9.....	4,457.16	The amount appropriated was \$30,000. The unexpended balance (\$25,542.84) is available for the fiscal year ending June 30, 1909.
Tabulating statistics, 1908.....	80,000.00	Amount appropriated.
Stationery, 1908.....	6,000.00	Amount appropriated.
Library, 1908.....	1,000.00	Amount appropriated.
Rent, 1908.....	22,080.00	Amount appropriated.
Miscellaneous expenses, 1908.....	15,000.00	Amount appropriated.
Printing allotment, 1908.....	147,215.04	Amount appropriated, \$185,000.
Total expenditures during the fiscal year ended June 30, 1908.	1,407,013.42	

¹ Including disbursements and outstanding liabilities.

APPENDIX B.

Office force.

Chief clerk.....	William S. Rossiter.	
Disbursing and appointment clerk.....	Thomas S. Merrill.	
Chief statisticians:		
Population.....	William C. Hunt.	
Manufactures.....	William M. Steuart.	
Agriculture.....	Le Grand Powers.	
Vital statistics.....	Cressy L. Wilbur.	
Geographer.....	Charles S. Sloane.	
Expert chiefs of division:		
Population.....	Edward W. Koch.	
Manufactures.....	Joseph D. Lewis.	
Agriculture.....	Daniel C. Roper.	
Vital statistics.....	Frank L. Sanford.	
Disbursements and appointments.....	Jasper E. Whelchel.	
Publication (acting).....	Hart Momsen.	
Patent expert.....	Richard C. Lappin.	
Foreman, machine shop.....	George W. Crane.	
Total.....	William S. Rossiter.	17
Stenographer.....	Harry Hayward Allen.	
Clerks, class 4.....	Charles W. Spicer.	
Clerks, class 3.....		
Clerks, class 2.....		
Clerks, class 1.....		
Clerks, \$1,000.....		
Clerks, \$900.....		
Mechanical experts.....		
Expert map mounter.....		
Engineer.....		
Electricians.....		
Skilled laborers, \$1,000.....		
Skilled laborers, \$900.....		
Watchmen.....		
Messengers.....		
Firemen.....		
Assistant messengers.....		
Skilled laborers, \$720.....		
Unskilled laborers, \$720.....		
Messenger boys.....		
Machinist's helper.....		
Apprentice boys.....		
Charwomen.....		
		624
Total.....		641

Special agents.

Expert special agents.....	14	
Regular fieldwork.....	9	
Cotton agents.....	728	
		751
Total number of employees.....		1,392

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BUREAU OF THE CENSUS
REPORT OF THE DIRECTOR
TO THE SECRETARY OF
COMMERCE AND LABOR



Concerning the Operations of
the Bureau for the Year 1908-9

WASHINGTON : 1910

1909

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REPORT
OF THE
DIRECTOR OF THE CENSUS.



DECEMBER 1, 1909.

SIR: I have the honor to submit the following report upon the operations of the Bureau of the Census during the fiscal year ending June 30, 1909, and upon the work now in progress, with special reference to the preparations for the taking of the Thirteenth Decennial Census of the United States. As I did not take the oath of office until June 16, 1909, the work of this Bureau during the greater part of the fiscal year 1908-9 was under the charge of my predecessor in office, Director S. N. D. North.

CURRENT WORK OF THE YEAR.

Up to the end of the fiscal year 1909 the work of the Bureau of the Census was conducted under the permanent census act of March 6, 1902. The act remains in force at the present time, but the functions of the Census Bureau are expanded for the purpose of taking the Thirteenth Census, by virtue of the terms of the act of July 2, 1909.

The permanent Census Bureau has since its creation been organized into five principal divisions, namely, Population, Manufactures, Agriculture, Vital Statistics, and Revision and Results. These divisions are established primarily to correspond to the several principal branches of inquiries of the decennial census, but during the period between the decennial censuses each division has been engaged upon special investigations, most of which by their nature appropriately fell under one division or another, but some of which were assigned to a given division more or less arbitrarily, this policy being deemed more advantageous than to create new divisions to take up such special and temporary inquiries. During the fiscal year 1909, in addition to performing work upon these special investigations, the divisions of Population, Manufactures, Agriculture, and Revision and Results have been engaged largely on preparatory work for the Thirteenth Census. Auxiliary to these five principal divisions is the Geographer's Division, headed by the Geographer, and the Division of Publications, until the

end of the fiscal year under the charge of the Chief Clerk, but now under that of an expert chief of division.

During the year ended June 30, 1909, the Bureau of the Census issued 26 publications, of which 10 fall within the class of important reports and the remaining 16 in the class of bulletins and pamphlets. Together they represent a total of 3,970 printed pages. In addition to this the Bureau has performed a large amount of work on the preparation for publication of other reports, some of which have appeared since the close of the year and others are now nearing completion.

DIVISION OF POPULATION.

The Division of Population has been chiefly engaged upon the tabulation of the Cuban census and the completion of the reports on Marriage and Divorce and Religious Bodies. Active work on the Cuban census returns was begun in May, 1908, and was completed by the end of September of the same year—about five months being thus required for this work. The tabulating of the returns was performed by a temporary force paid by the Cuban Government, at a total cost of \$42,655.

The report on Marriage and Divorce, which was made in conformity with a joint resolution of Congress approved February 9, 1905, presents statistics for the years from 1887 to 1906, inclusive, thus extending for twenty years the record of marriage and divorce which was compiled for the years 1867 to 1886 by the Commissioner of Labor. Exceptionally complete information is thus available on this important subject for a consecutive period of forty years. The report has been published in two volumes. The volume which contains the general tables, presenting the statistics in full detail, was issued in October, 1908, and was followed by a bulletin briefly discussing and summarizing the results. The other volume, containing a more extended analytical text, a digest of the laws governing marriage and divorce in the United States, and also a presentation of the laws and statistics relative to this subject in twenty foreign countries, is now completed and has just been published.

The census of religious bodies relates to the close of the year 1906 and compiles data regarding the number of religious organizations, church memberships, seating capacity of church edifices, value of church property, etc. These data were collected by means of correspondence, which is necessarily a slow process. The work of collection was completed prior to the close of the fiscal year 1908, but in order to forward the work on the report on Marriage and Divorce the tabulation of the returns was not begun until the following Octo-

ber. The results were summarized in a bulletin and the final report is now in type.

In addition to the foregoing work upon reports, the Division of Population has been engaged upon the indexing and listing of the occupations returned upon the schedules at the Twelfth Census. The result will be a complete classified list of occupations followed in the United States, so far as returned by the enumerators at that census. A full index of these occupations is being prepared on cards, and this will be of great assistance in organizing and carrying through the tabulation of the returns relative to occupations in the Thirteenth Census. The work of transcription to the cards has been finished and the entire work will be completed in season for the Thirteenth Census work.

DIVISION OF MANUFACTURES.

The Division of Manufactures has had charge during the year of the preparation of a considerable number of reports relative to different subjects. It has completed and sent to the printer reports on Express Business, Electrical Industries in Porto Rico, Telegraph Systems, and Forest Products, all relating to the year 1907; and Cotton Production, Pulp-wood Consumption, Cross-ties Purchased, and Supply and Distribution of Cotton, relating to the year 1908. It has also completed and sent to the printer the manuscript of a Special Report on Industrial Districts.

Cooperative arrangements were made with the Bureau of Fisheries for taking the census of fisheries. Lists of the commercial fisheries, vessels, etc., were prepared from the records of the Bureau of Fisheries. The entire country was laid out in districts and the regular force of the office was assigned to the field work. The canvass was completed and the tabulation well advanced before the close of the fiscal year. Since June 30 preliminary reports have been published for all of the states and for the United States.

Preliminary or summary reports were likewise issued in the form of bulletins or pamphlets on the following subjects: Central Electric Light and Power Stations, Street and Electric Railways, and Telephones, 1907; and Production of Slack Cooperage, Consumption of Tan Bark and Tanning Extracts, Wood Consumed in Veneer Stock, Production of Tight Cooperage Stock, Wood Distillation, Poles Purchased, and Production of Lumber, Lath, and Shingles, 1908. The bulletins relative to Telegraphs, Telephones, Street and Electric Railways, and Central Electric Light and Power Stations constitute parts of the general report on Electric Industries which is made every five years. The first report of this character related to the year 1902.

The report relative to Cotton Production, is an annual publication based on returns from cotton ginners, the first report of this character being for the year 1900. The above-mentioned pamphlets relative to Cross-ties, Wood Distillation, and other forest products, constitute parts of the report on Forest Products which is made annually by the Bureau in cooperation with the Forest Service of the Department of Agriculture. The first annual report of this character was made for the year 1906. The Forest Service had collected and published a similar report for the year 1905. The system by which this information is now gathered and presented by the Bureau of the Census, in cooperation with the Forest Service of the Department of Agriculture, results in economy and avoids duplication of the work that would otherwise result.

In compliance with an executive order, the Division of Manufactures compiled statistics in regard to the developed water powers of the United States, for the use of the National Conservation Commission. These statistics relate to the year 1908 and show the number of water wheels and their total horsepower used in manufacturing, mining, and all other industries, including the generation of electricity.

At the request of the Select Committee on Pulp and Paper Investigation of the House of Representatives the Division of Manufactures collected and compiled statistics relative to the production of paper and wood pulp, the price paid by publishers for print paper, and various other items in relation to this industry, which were transmitted to the committee and are included in its report.

At the request of the Committee on Ways and Means of the House of Representatives the Division of Manufactures compiled statistics of manufactures, taken in 1905, arranged in conformity with the paragraphs of the tariff act and compared with the amount of imports and exports. This compilation was published by the committee as a pamphlet and was used extensively in connection with the discussion of the tariff law recently enacted.

At the request of the National Monetary Commission a tabulation was made by the division of the financial statistics of banks throughout the entire country.

The division, finally, has devoted considerable time to preliminary work for the Thirteenth Census. This consisted largely in securing as complete a list as possible of the names and addresses of manufacturers, to be used in connection with the canvass of manufactures.

DIVISION OF AGRICULTURE.

This division has been chiefly concerned with the collection and preparation for publication of the official statistics of cities containing over 30,000 inhabitants. This is an annual publication, the first of

which related to the year 1905. This series is, in effect, a continuation of the data contained in Bulletins 20 and 50, which give statistics of cities having a population of over 25,000 inhabitants for the years 1902 and 1903 combined, and for the year 1904, respectively. During the fiscal year the report for the calendar year 1906 was completed and printed, and since the close of the year the data for 1907 have been published in abstract form. This work was intrusted to the Division of Agriculture because that division has little work relative to agriculture to be performed during the years intervening between the regular decennial censuses and is, therefore, in a better position to handle this work than the other divisions. The data are collected by special agents who visit the cities to be canvassed. Their work calls for a high degree of ability and technical knowledge of municipal bookkeeping. Every effort is therefore made to train a special force of employees for this work. As the presentation of the complete results now requires a volume of considerable bulk, it has been deemed desirable that the more general and important results of the investigation should be presented in a brief bulletin that may be given a wider circulation than the detailed report.

DIVISION OF VITAL STATISTICS.

This division has been engaged upon its regular work of compiling the vital statistics for what are known as "registration areas"—that is, states and cities which maintain a registration system upon a sufficiently broad and accurate basis to furnish reliable statistics of this class. It is a matter for congratulation to note that these registration areas are being constantly added to, in no small measure as the result of the activity of the Census Bureau in urging the necessary legislation and in raising the standard of work of state and local registration offices. Thus, the states of Washington, Wisconsin, and Ohio have organized registration systems, based upon recently enacted laws which conform to the model bills approved by the Bureau of the Census and by state registration and sanitary officials. As a result, the first two states named were added to the registration area for 1908 and Ohio has been included for 1909. *At the present time the registration areas embrace 55.2 per cent of the total population of continental United States.* During 1909 registration laws drafted by the Census Bureau were passed in Delaware, Missouri, and North Carolina, and it is hoped that returns from these states may soon be included in the census reports.

The fiscal year 1909 is notable from the fact that for the first time the effort was made to transcribe and present statistics of births as well as statistics of deaths. The annual presentation of statistics of

births in registration areas and the analysis of the operation of the laws under which they are collected should lead to a marked extension and improvement of the registration of births in this country. In this connection it is suggested that it may be well for Congress to authorize the collection of annual statistics of marriages and divorces, instead of having statistics of this character obtained as the result of special investigations made from time to time and covering a series of years. If this is done, the annual reports of the Bureau of the Census will cover the whole field of vital statistics.

Up to the present time the reports of the Bureau relative to vital statistics have been issued annually, the first relating to the year 1900. With the establishment of a system of securing monthly reports from all registration areas, it may be possible to begin a monthly bulletin of mortality by which prompt information will be given to the public relative to statistics of death according to more important causes. Preparations for inaugurating this system are now under way.

The practice of securing monthly returns of deaths from state and city offices enables much more accurate returns to be obtained and makes it possible to insure exact correspondence between the annual compilations of the cities and states and those of the Bureau of the Census. The early receipt of the data has also permitted the annual compilation to be closed at an earlier date than heretofore, and advantage was taken of this fact to prepare an advance summary, known as "Census Bulletin 104, Mortality Statistics, 1908," which contains the general death rates and summarizes data relative to causes of death and occupational mortality.

This bulletin also contains the report of the Census Commission upon the Second Decennial Revision of the International Classification of Causes of Death, held at Paris, July 1 to 3, 1909. The participation of the Bureau of the Census in this revision was in accordance with Public Act 1 of the Sixty-first Congress. The representatives appointed were: Dr. Frank P. Foster, chairman of the committee on nomenclature of the American Medical Association; Dr. Wilmer R. Batt, state registrar of Pennsylvania and chairman of the committee on causes of death of the section on vital statistics of the American Public Health Association; and Dr. Cressy L. Wilbur, chief statistician for vital statistics of the Bureau of the Census. The result has been to make the classification of causes of death, which will be adopted by the Bureau of the Census and by the registration states and cities for the decade beginning January 1, 1910, of much greater service to the people of the United States. It also signalizes the fact that the United States has established a national system of vital statis-

tics and is participating in the International Commission charged with the consideration of important details relating to such work.

The organized registration officials of the United States, cooperating with the Bureau of the Census, have wisely adopted certain rules whose general use will do much to bring about harmony in the vital-statistics reports of the country. These rules are published in the annual report on mortality statistics each year. Among them will be found the very important action taken at the recent meeting held at Richmond, Va., October 19 to 22, 1909, relative to the adoption of the revised United States standard certificate of death. The original standard certificate of death has been used by the Census from 1902 to the present time and the new form will go into effect January 1, 1910. It has already been adopted by the leading registration states, and it provides for more specific statement of age, occupation, and cause of death, so that the mortality statistics beginning with the census year will be of enhanced value.

Another cooperative arrangement which will probably result in great benefit is that recently instituted between the Actuarial Society of America and the Bureau of the Census. A member of the Actuarial Society, Mr. Miles M. Dawson, of New York, has been appointed special agent of the Census, and the society has appointed a special committee to consult with the Bureau of the Census in the preparation of life tables. This committee consists of Mr. Emory McClintock, ex-president of the Actuarial Society and vice-president of the Mutual Life Insurance Company; Mr. Henry Moir, vice-president of the Actuarial Society and associate actuary of the Home Life Insurance Company; Mr. Arthur Hunter, secretary of the Actuarial Society and actuary of the New York Life Insurance Company; Mr. Hiram J. Messenger, actuary of the Travelers Insurance Company; and Mr. John K. Gore, president of the Actuarial Society and actuary of the Prudential Insurance Company, the latter being chairman of the committee. The population data for 1910, in connection with those of the preceding census and the annual reports of mortality now received from a large portion of the United States, will afford the material for the preparation of life tables, which are universally considered the only reliable guide to knowledge of the present mortality and future expectation of life.

Notwithstanding the great advance that has been made by the United States in recent years in respect to the organization, by states and cities, of systems for the registration of births and deaths, an advance to which the Bureau of the Census has contributed not a little, the United States is far behind other countries in respect to this matter.

It is believed that no effort should be spared to advance this work, and the Bureau of the Census is doing its utmost to accomplish this end. This means a large amount of work of an educational character and unremitting effort to keep in close touch with state and city officials, the medical profession, and all persons interested in this class of statistics. In this way only can the fundamental basis for accurate vital statistics—that of standardized sources—be laid, and it is a matter for congratulation that marked progress is being made.

DIVISION OF REVISION AND RESULTS.

This division has had as its chief work the critical examination of all reports prepared for publication. During the year it has also assisted in the preparation of the report on Marriage and Divorce, besides doing all the work upon the bulletin by which the more important results of this investigation were given to the public. To this division has been assigned also the collection of statistics relating to the defective, dependent, and delinquent classes in institutions; and it is now engaged in making preliminary arrangements for this work for the census of 1910.

DIVISION OF GEOGRAPHER.

The Geographer's Division during the year has been employed in computing estimates of population of cities and states; preparing illustrations for the special reports and bulletins; and copying and indexing names of heads of families returned at the Census of 1790 for the pamphlets containing these names; the division also prepared the charts and installed the exhibit of the Census Bureau at the Tuberculosis Congress. The most important work of the division during the year was in preparation for the Thirteenth Census; securing maps and detailed information showing the changes that have occurred in the minor civil divisions since the census of 1900; dividing the country into supervisors' districts and enumeration districts; and compiling data upon which to base the rates of compensation of enumerators at the Thirteenth Census.

DIVISION OF PUBLICATION.

The work of the Division of Publication during the past year may be described under two heads: (1) Publication work proper, comprising preparation of copy for the printer, proof reading, job work, indexing, and the keeping of printing records and accounts; (2) productive work not directly related to the regular work of the division, involving the making of tables and other work of a miscellaneous clerical

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nature. Examples of this second class of work are the preparation of tables and statistical work for the report "A Century of Population Growth, 1790-1900," and the compilation of the Official Register, 1909.

The following is a list of publications of the Bureau of the Census issued since the last annual report of the Director:

<i>Reports.</i>		Pages.
Marriage and Divorce, Part I.....		550
Express Business.....		28
Mortality Statistics, 1907.....		538
A Century of Population Growth, 1790-1900.....		312
<i>Special.</i>		
Official Register, 1909, Vol. I.....		822
Official Register, 1909, Vol. II.....		746
<i>Bulletins.</i>		
No. 96. Marriage and Divorce, 1887-1906.....		72
97. Supply and Distribution of Cotton, August 31, 1908.....		40
98. Supervisors' Districts, Thirteenth Census.....		20
99. Electrical Industries of Porto Rico.....		30
100. Cotton Production, 1908.....		52
101. Industrial Districts, 1905.....		32
102. Telegraph Systems, 1907.....		48
103. Religious Bodies.....		92
104. Mortality Statistics, 1908.....		184
<i>Pamphlets.</i>		
Report on Cotton Ginning.....		16
Tuberculosis in the United States.....		68
List of Publications, No. 6, to March 1, 1909.....		14
The Census and Coordination of Statistics—Reply of the Director of the Census to the Inquiries of the Interdepartmental Statistical Committee.....		44
Forest Products, 1907:		
No. 3. Production of Slack Cooperage Stock.....		12
4. Consumption of Tan Bark and Tanning Extracts.....		10
5. Veneer Stock.....		10
6. Production of Tight Cooperage Stock.....		12
7. Wood Distillation.....		8
8. Cross-ties Purchased.....		6
9. Poles Purchased.....		8
10. Forest Products of the United States.....		122
Forest Products, 1908:		
No. 1. Pulp-wood Consumption.....		12
2. Lumber, Lath, and Shingles.....		58
3. Slack Cooperage Stock.....		12
4. Tan Bark and Tanning Extract.....		10
6. Tight Cooperage Stock.....		12
7. Wood Distillation.....		10
8. Cross-ties Purchased.....		8
9. Poles Purchased.....		8

Report of the Director of the Census

Four hundred and twenty requisitions for printing and binding were made on the Public Printer.

The sale of the pamphlets "Heads of Families of the First Census" was conducted in this division, and the amount received during the fiscal year ended June 30, 1909, was \$16,935.71.

Indexes were prepared for the following reports: Manufactures, 1905, Part IV; Statistics of Cities, 1906; Marriage and Divorce, Part I; A Century of Population Growth, 1790-1900; and Mortality Statistics, 1907.

The following statement shows the expenditures from the allotment of appropriation for printing and binding to the credit of the Bureau of the Census with the Public Printer for the fiscal year ended June 30, 1909:

Amount of allotment	\$125,000.00
Expenditures for publications.....	\$79,144.21
Expenditures for blank books, blanks, forms, and miscellaneous printing.....	13,276.10
Total expended	92,420.31
Unexpended balance	32,579.69

PRESERVATION OF CENSUS REPORTS.

In addition to the larger editions of census publications printed on ordinary paper, I have directed that there be printed and bound of every future report and bulletin issued by the Bureau of the Census 35 copies on best quality all white new rag paper, to be deposited in the leading libraries of the large cities, so far as the edition permits; and 15 copies on Japan vellum paper, 5 of which are to be retained for the use of the Bureau of the Census and the Department of Commerce and Labor, 2 copies to be deposited in the Congressional Library, and the remainder to be kept to supply further demands, such as exchanges with foreign countries. The volumes so printed on special paper are to have a distinctive and lasting binding in order to distinguish them from the regular edition, thus preventing their loss.

By so printing and binding these special copies a permanence will be secured far greater than that attained even by the earlier publications of the Census, and the actual expenditure will not be large. More recent publications have been printed on "contract" wood-pulp paper, which is far less durable than the crude rag papers used in the earlier publications. It is cheaper than any rag paper, and is used as a matter of economy. The expense of printing the entire edition of census reports and bulletins on paper which would last without deterioration for at

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least one hundred years would be too great, but by printing and binding a few copies of each report and bulletin upon the most durable paper that can be obtained the main object of permanent preservation will be secured.

OFFICIAL REGISTER.

The Official Register of the United States for 1909, the second issue produced by the Census Bureau, was compiled in the Division of Publication and issued for the first time within the period fixed by law. The same general form was used as in the 1907 edition, the publication being in two volumes—the first containing the legislative, executive, and judicial employees, and the second containing the employees of the postal service. There is an increase of 62 pages over the edition of two years ago. The 1909 publication contains 64,000 more names than did the preceding edition. The aggregate number of names contained in the two volumes for 1909 is 370,065.

SPECIAL REPORT ON POPULATION GROWTH.

During the year to which this report relates the Bureau issued a report entitled "A Century of Population Growth from the First Census of the United States to the Twelfth, 1790-1900." It constitutes one of the most interesting special publications that have appeared since the organization of the permanent Bureau. It was prepared under the immediate direction of Mr. W. S. Rossiter, late chief clerk of the Census Bureau. The volume contains a comparison and analysis of the population statistics of over a century. In particular, it renders available for the first time interesting information relative to the First Census. The results of the First Census were originally published in summarized form in a small volume, and no attempt had ever been made to present the returns of that census in full detail nor had the Census Office ever previously attempted to analyze the returns or compare them with corresponding figures of later censuses.

PREPARATION FOR THE THIRTEENTH CENSUS.

THE THIRTEENTH CENSUS ACT.

"An act to provide for the Thirteenth and subsequent decennial censuses" (Pub. No. 2) was passed by Congress and approved by the President on July 2, 1909. The bill had been under consideration for nearly two years, and its final passage was much nearer to the date of the actual enumeration than has been the case in most of the preceding census acts. The existence of the permanent Census Bureau, with

the skeleton organization ready to expand for the work of the decennial census, has, however, largely obviated any difficulties which might have arisen by reason of the late passage of the census act. The new act follows in its general outlines the provisions under which the Twelfth Census was taken, but there have been a number of modifications of considerable importance. The principal changes are as follows:

SCOPE OF THE CENSUS.

The present act provides for taking a census covering four distinct fields of inquiry: Population, agriculture, manufactures, and mines and quarries. The census of 1900 did not cover mines and quarries, but the statistics of these industries were taken for the year 1902 by virtue of a provision in the permanent census act of March 6, 1902. There is an obvious advantage in having the census of mines and quarries cover the same period of time as the census of manufactures and agriculture.

On the other hand, the Thirteenth Census act differs from that for the Twelfth Census by making no provision for the special collection of statistics of births and deaths. At the Twelfth and certain preceding censuses each family was asked to report deaths which had occurred during the year. It was found impossible to obtain anything like complete statistics by this method, and the reports as to causes of death and the occupations of those who had died were particularly inaccurate. Under the permanent census act, as already stated, the Census Bureau now assembles each year the statistics of deaths collected by those states and cities which have an efficient system of registration of mortality. During the present year, moreover, the Census Bureau has begun to publish statistics similarly collected regarding births. Although the vital statistics thus published do not cover the entire country—in fact only about one-half of it—they are so much more accurate than those which could be obtained by the enumeration method that they furnish far more valuable information.

DATE OF THE CENSUS.

Under the Thirteenth Census act the enumeration of population is to be taken as of April 15 instead of June 1, as formerly. This change was made largely for the reason that fewer people are absent from their homes in April than in June. Moreover, under the new act the census of manufactures and of mines and quarries is to cover the calendar year 1909. By the Twelfth Census act the inquiry covered the fiscal year of each concern ended next preceding June 1, 1900. Practically, in most cases, the returns covered the calendar year 1899, but the change now made, which was originally suggested at the time of

the publication of the results of the census of 1900, has the advantage of making it possible to begin the collection of manufacturing and mining statistics as early as January, 1910, whereas in 1900 no beginning could be made before June 1. This change will not only facilitate the completion of the report on manufactures within the time fixed by law, but will also tend to greater accuracy, since the returns will be called for at a time when the information is fresh in the minds of the manufacturers and the operators of mines and quarries.

CIVIL-SERVICE EXAMINATION OF CLERICAL FORCE.

The census act provides for the appointment of the additional force necessary in the Washington office of the Census Bureau by means of an examination prescribed by the Director of the Census and conducted and rated by the Civil Service Commission, selections from the eligible register to be in the order of rating. The act also provides that the appointments as a result of this examination are to be apportioned among the several states in accordance with the law of apportionment provided for the classified service. It further provides that not only in the case of examinations for the Census Bureau, but in all other civil-service examinations, the applicant must have had his actual domicile for at least one year in the state where he is examined. Under the Twelfth Census act the clerical appointments were made subject to such examination as the Director of the Census should prescribe but the examination was not required to be competitive—and was not in fact competitive—and no apportionment of appointments was provided.

In order to prevent any delay in the necessarily rapid expansion of the clerical force, the Thirteenth Census act authorizes, in case of emergency, the appointment, for not to exceed sixty days, of any person who has passed the examination, regardless of apportionment or relative rating; and also the appointment, for not to exceed sixty days, without examination, of any person who has had previous experience, satisfactory to the Director of the Census, in the operation of mechanical appliances in census work.

COMPENSATION OF SUPERVISORS AND ENUMERATORS.

The Thirteenth Census act provides for somewhat more liberal compensation of supervisors than was provided by the act of 1900, and also permits the Director in his discretion to fix rates of compensation for the enumerators somewhat in excess of those permitted in 1900. The increase in the population of the various districts, as well as the increase in the cost of living, makes this advance in the compensation of supervisors appropriate, and has proved of material assistance in

securing competent men for these important positions. It is not the intention of the Director to fix rates of compensation for enumerators materially higher than those in the census of 1900 except in districts presenting peculiar difficulties.

PENALTIES FOR DISCLOSURE OF INFORMATION.

The Thirteenth Census act is more specific than that for the Twelfth Census with respect to penalties upon supervisors, enumerators, or other employees who disclose information which they secure, or who make false returns. While there is no evidence that employees of the Census Bureau in the past have been guilty of improper disclosure of information—except, possibly, in a very few cases—these more specific provisions for penalties are highly advantageous. Although the census law requires persons interrogated to furnish the information called for on the duly authorized schedules, reliance for prompt and accurate returns must rest largely upon the good will of those making the returns. Manufacturers, farmers, and others will not freely disclose the needed information unless they feel assured that it will be treated in strict confidence. The Census Bureau exists solely for the collection of general statistics, and is not, and should not be, an instrument for disclosing the affairs of individual persons, firms, or corporations. Returns made by the Census Bureau are, in no case, published in such a way as to identify the business operations of individual persons or concerns; nor are they disclosed to any person aside from employees of the Bureau itself—not even to other Departments of the Government or to other bureaus of the Department of Commerce and Labor.

APPROPRIATION FOR THE THIRTEENTH CENSUS.

On June 29, 1909, an appropriation of \$10,000,000 was made by Congress for the salaries and necessary expenses of the Thirteenth Census. This appropriation is not limited to the fiscal year 1910, but it is probable that the greater part of it will be required during that year, as the pay of supervisors and enumerators and of special agents for the collection of manufactures and mining statistics—in other words, the cost of the field collection of statistics for the census—will nearly all fall within the present fiscal year. Further appropriation will therefore be necessary to cover the cost of tabulation and publication to be incurred during the remainder of the census period.

As stated by my predecessor in his annual report for 1908, the Director of the Census then estimated the cost of taking the Thirteenth Census and at the same time continuing the regular annual work of the Census Bureau for the three-year census period ending June 30, 1912, at \$14,117,000. Of this amount, it was estimated that \$12,930,000

would be the cost of the special decennial census work, the remainder representing the cost of carrying on the other functions of the permanent Census Bureau. It is still hoped that this estimate of the expenses of the census will not be exceeded, notwithstanding the fact that it is substantially the same amount that was spent upon the Twelfth Census, since which there has been an increase of approximately 20 per cent in the population to be enumerated, and a still greater increase in the volume of agricultural, manufacturing, and mining operations. There is no doubt that material economies can be effected in the cost of tabulation and publication which will largely if not wholly offset the necessary increase in the cost of the collection of the statistics in the field. It is not possible at the present time to give any more precise estimate of the cost of the Thirteenth Census than that made in the annual report for 1908.

QUARTERS FOR THE CENSUS FORCE.

In the annual report for 1908, and previously, the Director of the Census recommended to Congress an appropriation for the purchase of the building now occupied by the Census Bureau, the purchase of the adjoining building formerly occupied by the Business High School and more recently by the Southern Railway Company, and the purchase of the vacant ground also adjoining, and the erection thereon of a modern office building. A provision for this purpose was incorporated in a bill which called for an appropriation of \$680,000. This provision, however, failed to meet the approval of Congress, and no authority whatever was given for the purchase or construction of quarters for the Census Bureau.

Under these conditions, the Bureau has made arrangements to continue the lease of the building now occupied and to lease two additional buildings. This increase in quarters will be imperatively necessary to accommodate the great addition to the clerical force which will be needed during 1910. The permanent census force at Washington consists of less than 700 persons, whereas during the period of maximum activity in the census work upward of 3,500 will be employed. The present building of the Census Bureau will not accommodate more than half of this force. One of the additional buildings which has been leased is the old Business High School building, adjoining the Census building, to which reference has been made; this has been secured at an annual rental of \$6,000 from January 15, 1910. This building contains about 32,000 square feet of floor space. The other building is one originally constructed for an armory on L street NW., between Fourth and Fifth streets, and contains about 60,000 square feet. The rental of this building is \$13,000 per annum, beginning January 1, 1910. These two buildings together have about

the same floor space as the present Census building. Under this arrangement the greater part of the force will be practically in one place and all the remainder in one other building. While this separation will be somewhat less convenient than the plan of having the entire force assembled in three adjoining buildings, it will be much more convenient than the arrangement at the Twelfth Census, when several different buildings, scattered throughout Washington, had to be rented. The total annual rental of the three buildings to be used by the Bureau is \$40,000, and the expenditure for that purpose during the three-year period from July 1, 1909, to June 30, 1912, will be about \$112,000. A slight additional expenditure is also required for storage and other quarters pending the occupation of the two additional buildings above mentioned.

TABULATING MACHINES.

Under special authority and appropriation of Congress, the Census Bureau has continued during the fiscal year its experiments in designing tabulating machines. Designs for a punching machine and a tabulating machine, to be used in handling the population statistics of 1910, were perfected, and in August, 1909, contracts were let for the construction of 300 of the punching machines and 100 of the tabulating machines. The contract price of the punching machines is \$250 each and that of the tabulating machines \$478 each. The actual cost of the tabulating machines is, however, greater, as the Government furnishes to the contractors the material, much of which had been previously manufactured either in the machine shop of the Census Bureau or by outside concerns, and as the Bureau itself is manufacturing the counters which are to be used in connection with the tabulating machines. The total cost of each tabulating machine, with counters, may be estimated at approximately \$800, and the total cost of the machines for tabulating and those for punching will thus be approximately \$155,000.

Tabulating machinery is essential to the economical compilation of the statistics of population. A card is punched for each man, woman, and child in the country, showing by appropriate holes all the facts with regard to the individual which are disclosed by the schedules secured by the enumerators. There will thus be in the neighborhood of 90,000,000 of these population cards, and in addition nearly 20,000,000 cards will be required to present the facts with regard to families. The cards thus punched are run through the tabulating machines, which by means of electrical connections not merely count the population, but combine the facts with regard to color, sex, age, nativity, and the like.

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The punching machine to be used at the present census differs materially from that used at the last census. The former punching machine had only one key, which had to be moved about and pushed through the proper holes. The new machine has more than 250 keys corresponding to the various possible facts and operated somewhat in the manner of a typewriter or an adding machine. All the necessary keys for punching a given card are set before any of the holes are actually punched. An error in setting a single key can thus be readily corrected, whereas formerly if an error was made the card had to be destroyed, although many holes might have been already punched in it. This change, together with the greater clearness of the designations of the various facts upon the keyboard, will, it is believed, materially increase the accuracy of the punching work and also increase the speed with which it is done.

The tabulating machines for which the contract has been let differ from those formerly employed chiefly in having a device for automatically printing the results of the count of the various facts for each division of the country, whereas formerly the results were recorded on dials from which they had to be transcribed in manuscript. This change, and others, will result in the saving of much time on the part of the operator, as well as in greater accuracy.

The Bureau is still experimenting with another form of tabulating machine which, if perfected, will be capable of much greater rapidity. In the machine described in the preceding paragraph, each card has to be fed in for tabulation by the hand of the operator. The machine under development has an automatic feeding device by which the cards are handled much more rapidly than can be done by hand.

In addition to the punching and tabulating machines, the handling of the population cards requires the use of sorting machines which separate them into certain groups. The Bureau is conducting experiments with respect to these machines, and expects to be able to secure machines of high efficiency.

At the Twelfth Census the statistics of agriculture, as well as those of population, were tabulated by means of punched cards and electrical tabulating machines. Because of the large number of items on the agricultural schedule an average of about 20 separate cards was required for each farm. The very marked economies which the card system brings about in handling population statistics can not therefore be secured in handling the agricultural statistics. For this reason the Census Bureau contemplates the abandonment of the card system in the agricultural census of 1910. Instead, the figures in the schedules will be taken off either by typewriter-adding machines or more likely, by ordinary adding machines provided with several col-

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umns. Either of these methods will have the advantage of presenting the figures for the various farms in plain numerals and in due order, so that they can be readily scrutinized. At the census of 1900 a very large expenditure was incurred in editing the individual schedules—correcting obvious errors and inserting omitted figures. It is believed that much of this editorial work did not add enough to the accuracy of the returns to justify its cost.

ORGANIZATION OF THE FIELD WORK OF THE THIRTEENTH CENSUS.

The work of taking the census naturally divides itself into two parts—the collection of the statistics in the field and their tabulation and publication.

The field work will be divided into two main parts. The first has to do with the collection of the statistics of population and agriculture, and the second with the collection of the statistics of manufactures and mines and quarries. For the most part these two branches will be committed to distinct groups of employees. The population and agricultural statistics will be collected by enumerators under the direction of the supervisors. In localities where there is very little manufacturing or mining, the statistics for these subjects will also be collected by the enumerators. For the most part, however, the statistics of manufactures and mines and quarries will be withdrawn from the supervisors and enumerators and intrusted to special agents, as authorized by law.

SUPERVISORS AND ENUMERATORS.

The census act provides for 330 supervisors of the census. All but one or two of these have been appointed by the President and have entered upon their duties. In most cases each supervisor has charge of a district corresponding to a congressional district. Each of the large cities of the country, however, is made a single supervisor's district, and the same is true of the states of Massachusetts, Connecticut, New Hampshire, Rhode Island, and Vermont, while in a few other cases the convenience of the work has necessitated a departure from the lines of the congressional districts.

Under the law each supervisor's district has to be divided into convenient enumeration districts, in each of which one or more enumerators are to be appointed. Except under unusual conditions, there will be only one enumerator to each district. The total number of enumerators required in order to finish the work within the time limited by law will be about 68,000. Under the law the enumeration is to begin on April 15, 1910, and be completed within thirty days in the

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country districts and within two weeks in cities and towns of more than 5,000 inhabitants according to the preceding census.

Examination of enumerators.—The census act provides that it is the duty of the supervisors to “designate to the Director suitable persons and, with his consent, to employ such persons as enumerators.” It is self-evident that, if the consent of the Director to these appointments is to have any significance whatever, there must be some form of examination or test by which the qualifications of the candidates designated by the supervisors may be judged. It would be quite impossible for the Director otherwise to obtain any information whatever as to the capacity of the great majority of the 68,000 enumerators.

At the last census, the provisions of law regarding the appointment of enumerators being precisely the same as under the Thirteenth Census act, the Director required each person designated as enumerator by the supervisors to submit to a test consisting of the preparation of a sample schedule of population from data regarding typical families, presented to the candidate in narrative form. The test itself was adequate, but the methods of conducting the examination were such as in no way to prevent the candidate from receiving assistance in the preparation of the schedule. The examination paper was sent to each candidate by mail, and, although he was required to certify that he had received no assistance, there is reason to believe that assistance was not infrequently secured, and in any case the people generally did not have full confidence in the effectiveness of the examination.

It is the intention of the Director at the present census to prescribe the same kind of test for enumerators as was required in 1900, but to have the examination conducted under due precautions. The difficulties to be overcome in properly conducting the examination are very considerable. Because of the short term of employment of the enumerators and the comparatively small amount of their compensation it would not be just or practicable to require the candidates to travel any material distance to the place of examination. The test must, therefore, be held at a very large number of places distributed through every part of the country, and a large number of persons must be secured to preside at the various examination places. It will probably prove necessary to make use of three different agencies for conducting the examination. The supervisors can preside in person at examinations in their home towns, 330 in all. In about 1,500 other places the Civil Service Commission has examining boards whose services the commission has agreed to place at the disposal of the supervisors. The greater number of candidates can be examined before one or the other of these two agencies. In other cases it

will be necessary to have postmasters conduct the examination, and the Postmaster-General has authorized them to do so.

Every applicant for the position of enumerator, unless disqualified under definite rules, will be permitted to take the test. The papers of all the candidates in each supervisor's district will then be forwarded to the supervisor, who will be instructed to examine them carefully, select one person for each enumeration district (or possibly two in certain districts where it is desirable to have two enumerators), at the same time forwarding the papers of all of the candidates to the Bureau of the Census. It will not be possible for the Bureau of the Census to examine all the papers without undue expense, as there may readily be two or three hundred thousand candidates. The papers of those recommended by the supervisor, however, will be examined, and in the event that such a candidate fails to pass the test successfully the papers of the other candidates for the same district, if any, will be graded, and the supervisor required to designate one of the successful candidates.

It would not be desirable, even if possible, to require the supervisor in every case to select the candidate who passes the best test, as determined by the examination of the papers. There are important qualifications for an enumerator which can not be determined by a written test. Supervisors will, however, be required to give due regard to the relative excellence of the test papers in making their selections, in order that they may conform to the requirement of law that the persons whom they designate shall be "suitable." It is believed that this method of examination will result in excluding those who are clearly incompetent and that the supervisors will take advantage of the information secured through the examination to select not only competent but the most competent available persons.

SPECIAL AGENTS FOR MANUFACTURES AND MINES AND QUARRIES.

The census act authorizes the appointment of special agents for the collection of statistics of manufactures and mines and quarries, and for other purposes. Their compensation is limited to \$6 per day. It will be the policy of the Bureau to appoint two classes of special agents, namely, chief special agents, each of whom will be put in charge of a district—such as a large city or a section of a state or an entire state—and sub-agents, who will in most cases work under the direction of these chief special agents. The chief special agents will be paid \$4.50 to \$6 per day, and the subagents from \$3 to \$4 per day. It is expected that from 1,600 to 1,800 special agents will be required for the field work on manufactures and mines and quarries, the great bulk of which should be completed during the first three or four months of 1910.

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For the purpose of facilitating the selection of competent special agents, the Director of the Census prescribed an open competitive examination, which was held on November 3, 1909, throughout the country. Through the courtesy of the Civil Service Commission, the various local examining boards of the commission presided at the holding of this examination, but the papers were graded in the Census Bureau. This examination was of a character designed to give a practical test of the fitness of the candidate for the actual work of collecting the required statistics. Each candidate was required to present an application stating in detail his education and previous experience, supported by proper evidence and nonpartisan recommendations. One-half of the rating of each candidate was based on education and experience as indicated by this application. The remainder of his rating was based on a test consisting of the filling out of a sample manufactures schedule from data regarding a hypothetical establishment. This test was of two grades corresponding to the two classes of special agents above mentioned. Persons who have had previous successful experience in collecting manufactures or mining statistics for the census, or who have passed civil-service examinations for the position of special agent in the Bureau of Labor or the Bureau of Corporations, were made eligible without further examination.

As the result of this examination, which was widely advertised and which was taken by over 2,500 people, the Bureau has secured an eligible list of persons who are believed to be exceptionally well fitted for the work of collecting manufactures and mining statistics. In making selections from this eligible list it will be necessary to take the residence of the candidates into consideration as well as their relative ratings, since the interests of economy make it essential that, so far as possible, special agents should be assigned to work in the localities where they reside.

It is the intention in the present census to adopt the policy of specialization in the work of the field agents on manufactures and mines and quarries, so far as it can be done without unduly increasing the expense. That is to say, certain special agents will be designated to canvass certain classes of establishments with which they are already familiar, or with which they will become familiar by such specialization. This arrangement can be carried out economically only in large industrial centers where there are numerous establishments of a given class. It would involve undue expense, through duplication of travel and of the time of agents, were it applied throughout the entire country.

ORGANIZATION OF THE OFFICE FORCE.

The existence of a permanent Census Bureau renders the task of organizing the office work in connection with the Thirteenth Census much more simple than was the case when an organization had to be created *de novo* for each census. In fact, comparatively few additions are required in the higher grades of service in the Bureau. Most of the chief statisticians and chiefs of division and the geographer were already provided for and actually in service on the permanent roll, so that for the most part all that is necessary is to multiply the force of clerks of lower grade to provide for the great increase in the amount of work to be done.

During the Twelfth Census there existed five principal divisions in the Census Bureau, each headed by a chief statistician, namely, the divisions of Population, Manufactures, Agriculture, Vital Statistics, and Methods and Results. All of these divisions were continued as part of the permanent census organization after the completion of the Twelfth Census, the name of the last being changed to Revision and Results. Under the permanent census act, however, only four chief statisticians were provided for, and the fifth division, which had been under the charge of a chief statistician during the Twelfth Census, was consequently placed in charge of an expert chief of division. The Thirteenth Census act again provides for five chief statisticians, and the Division of Revision and Results has therefore been placed under the charge of a chief statistician. Four of the five chief statisticians at present employed were engaged in similar work during the Twelfth Census, and the chief statisticians of Agriculture and Population held the same positions during the Twelfth Census.

The addition of the subject of mines and quarries to the scope of the decennial census would seem logically to call for a chief statistician of Mines and Quarries. For the time being the subject has been added to the field of the chief statistician of manufactures. In order, however, to relieve him as much as possible of the burden of this additional work, a separate division of mines and quarries has been established under the general supervision of the chief statistician of manufactures. A chief of division has been assigned to this new division and also an expert special agent.

Under the Twelfth Census act there were five expert chiefs of division in addition to the chief statisticians. By the permanent census act the number of chiefs of division was reduced to four, but under appropriation acts from time to time others have been provided for, so that in the fiscal year 1909 eight were in service. The Thirteenth Census act provides for twelve of these chiefs of division, and the additional places have now all been filled. Most of these chiefs of

division act as assistants to the chief statisticians, having in charge subdivisions of the work of the five principal divisions.

The provisions of law authorizing the appointment of an Assistant Director, a fifth chief statistician, and an appointment clerk, all of which positions have been filled, have greatly facilitated both the administrative and the scientific work of the Bureau.

Under the provisions of the census act a special civil-service examination for the additional clerical force of the Thirteenth Census was held by the Civil Service Commission on October 23. About 5,700 candidates took the examination. It is anticipated that about 3,000 appointments will have to be made from the eligible register thus established and at the time this report is written it is not possible to say whether or not the eligible register will be adequate. The same examination was taken by all candidates, but an additional test in typewriting was provided with a view especially to the selection of clerks to operate the typewriter-adding machines or ordinary adding machines in the tabulation of agricultural statistics, already referred to.

MEANS OF SECURING ACCURACY AND COMPLETENESS IN THE CENSUS.

The expenditure of the many millions which each decennial census requires can be justified only if the data secured present a substantially correct picture of the population and industries of the country. The difficulties involved in securing complete and accurate statistics are not fully appreciated by the public. Even the enumeration of the population, with the essential details regarding age, conjugal condition, nativity, occupation, and literacy or illiteracy, involves many difficulties. For example, the greatest judgment is required on the part of the enumerator merely to determine what persons are properly to be enumerated in his district, since the law requires that everyone shall be enumerated at his "usual place of abode" rather than at the place where he happens to be at the time of the enumeration. Moreover, it is quite impossible for the enumerator, in the length of time and for the compensation which is allowed him, to interview personally every individual, and he sometimes has to secure the "personal description" from boarding-house keepers, hotel keepers, or neighbors instead of from the person himself, although such methods are permitted only when absolutely necessary. In the agricultural census difficulty is encountered from the fact that most farmers do not keep accounts, or even records of the quantities of their crops, so that their reports to the enumerator are subject to the defects of memory. The great complexity of modern business and the diverse ways in which business accounts are kept render it exceedingly difficult also to obtain strictly comparable returns from manufacturers and mine

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operators. Absolute accuracy in the census can not therefore be hoped for. The problem is to reduce the margin of error to a minimum, to eliminate estimates as far as possible, and to secure the greatest care in making such estimates as must be made.

THE SHARE OF THE PUBLIC IN CENSUS WORK.

The completeness and accuracy of the census depend in no small measure upon the interest and the intelligent cooperation of the people themselves. Comparatively little difficulty has been encountered in the past from unwillingness to make the census returns. The people very generally appreciate the great importance to their own interests of knowing accurately not only the number of the population, but its elements and characteristics, and of possessing accurate information regarding the resources and the products of the country and of its several states and divisions. Correct census statistics are essential to a proper understanding of the great economic and social problems of the day, to a proper conduct of business, and to proper legislation and administration of government. The provisions of law regarding the confidential treatment of the statistics, as well as the uniform policy of the Census authorities at all times in that respect, assure the citizen that no possible injury can come to him from making such returns.

The Census Bureau is taking active measures to increase the interest of the people in the census and to prepare them to make accurate returns by informing them in advance regarding the interrogatories which will be addressed to them. By means of the press, by means of agricultural colleges, farmers' institutes, and other farmers' organizations, by means of associations of manufacturers, and in other ways, information regarding the census is being widely disseminated. Much credit is due to these various agencies for the assistance which they are rendering.

RESPONSIBILITY OF ENUMERATORS AND SPECIAL AGENTS.

Next to a proper interest and cooperation on the part of the public, the most important means to secure accuracy and completeness in census returns is the employment of competent persons to collect the statistics. No degree of accuracy in the tabulation of the statistics in the Census Bureau can in any way give value to figures which have been erroneously collected by careless men in the field. The methods which have been adopted or which are proposed for securing competent enumerators and special agents have already been described. The Census Bureau must rely on every supervisor to cooperate loyally in the common purpose by exercising the greatest possible care

in the selection and the direction of the enumerators, and must rely on every enumerator and every special agent to strive earnestly for complete and accurate returns.

SIMPLIFICATION OF THE CENSUS SCHEDULES.

Another essential to securing accurate returns is to make the work of the census enumerator or special agent as simple and easy as possible. The amount of work required of the employees in the field should be reduced to the lowest limit consistent with securing the information called for by law. Consequently the Census Bureau has given much study to the schedules on which information is collected, seeking to lessen the number of inquiries as much as possible and to present them in the clearest manner.

The inquiries on the population schedule are practically all specifically prescribed by law, and the schedule for the present census is broadly similar to that used ten years ago. A few significant changes have, however, been introduced, and the instructions to the enumerators regarding the filling of the schedule have been revised with great care.

The schedule of agriculture necessarily comprises a very large number of interrogatories in order to cover all the different classes of farm animals and of crops and other products. The arrangement of the schedule, however, has been simplified and the difficulty of filling it is by no means commensurate with its length. The instructions have also been shortened and made clearer.

The general schedule of manufactures has been very materially simplified as compared with that used in 1900 and at the quinquennial census of 1905, and still greater simplification has been made in the special schedules for individual industries. These changes have been partly designed to meet the objections raised by certain manufacturers against the alleged inquisitorial character [of the inquiries, but the principal object has been to reduce the amount of work required of the special agent, or of the manufacturer who himself fills out the schedule. The policy has been to eliminate questions calling for details which experience has shown can not be obtained with accuracy or which, if obtained, are not of sufficient importance to warrant the extra cost, labor, and space required for their presentation. Most manufacturers keep records from which all the information essential to the census can be secured with accuracy. The schedule has been devised with a view to eliminating estimates as far as possible, and special agents will be instructed to lay particular stress on securing bookkeeping figures. Leading manufacturers and officers of associations of manufacturers have been consulted regarding the form of

the general and special schedules of manufactures, with a view to making them practical and to securing information of the greatest possible value.

It is believed that the amount of time required to fill out the general manufactures schedule for the present census from actual bookkeeping records is not more than a fraction as great as the amount which would have been required to fill it correctly from such records in 1900. This great reduction has been brought about chiefly by eliminating the question regarding classified wages, and by calling only for the total number of employees—regardless of sex or age—for a given day of each month, instead of calling for the average number, distinguishing sex and age, for each month. The calculation of this average number from bookkeeping records was highly intricate, and, as a matter of fact, estimates were very generally resorted to. The true average number for the year can be computed with a very close approximation to accuracy from the number for one day of each month. The distribution by sex and age is asked for a single date only, but the conditions on that date may be considered typical of the entire year.

Another change in the manufactures schedule which tends to eliminate estimates is the abandonment, in the inquiry regarding materials used, of the distinction between strictly raw materials and partly manufactured materials. This distinction, if accurately made, furnished information of some value for eliminating duplication in the value of products, due to the use of the product of one manufacturing establishment as the material of another. But, as pointed out in the reports of the censuses of 1900 and 1905, the duplications can be eliminated only in the total for the United States, and not in the figures of individual states or cities or individual industries, and in view of the fact that the books of manufacturers are not ordinarily kept in such a way as to distinguish these two classes of materials, it was deemed unwise to call for the separation, thereby encouraging the practice of making estimates. What is probably the fairest measure of the relative importance of the different states, cities, and industries in manufacturing can be accurately determined without this distinction by simply subtracting the total value of all the materials from the value of the finished product, the difference representing the contribution of the manufacturing process to the wealth of the country.

In the special schedules for individual manufacturing industries much simplification has been secured, chiefly by eliminating inquiries regarding quantity and value of individual articles used as raw materials, except the most important, and by eliminating inquiries regarding the number and character of minor machines used, while calling for

3 leading classes of machines. It was found that there had been in evious censuses much lack of uniformity in the amount of detail lled for in different industries. In some cases information was ight which could be of very little general public utility. It has en deemed wise to some extent to sacrifice even information which ight be of appreciable value in order, by lessening the work required special agents or manufacturers, to make sure that they will do ore thoroughly and conscientiously the work essential to securing rrect information regarding the fundamental facts of the industry.

IMPORTANCE OF EXPERT SERVICE IN THE CENSUS.

The decennial census as now required by law is vastly more complex an the simple enumeration of the inhabitants which was undertaken the earlier censuses. Inquiries regarding the population itself ave been greatly expanded with a view to ascertaining the elements ad characteristics of the population. Great public interest attaches o such questions as the family, the foreign born and their descend- ats, and the negro race. A proper analysis and interpretation of the atistics of the population thus requires highly expert service. More- ver, the census has now been expanded to cover the basic industries of e country, agriculture, mining and quarrying, and manufactures. ach of these three great branches of industry, and particularly mining nd manufacturing, is by no means a simple and uniform whole, but s made up of a large number of separate industries differing radically n their methods. A proper compliance with the requirements of law hich call for the quantity and value of the raw material of manufac- ure, the quantity and value of the products of both manufacture and nining, and the number and character of machines, necessitates the use of special schedules for each of the principal mining and manu- acturing industries in addition to the general schedule. A proper resentation and analysis of the statistics of the many individual min- ng and manufacturing industries thus collected requires again a very arge amount of highly expert service.

The chief statisticians can not possibly, in the limited time allowed oy law, themselves perform all of the expert service thus required. Much of their time is necessarily given to administrative work, and what remains no more than suffices for the preparation of the general eports dealing with the population or the industries of the country as a whole, leaving them not sufficient time to take up special subjects or individual industries. The expert chiefs of division provided by law find their time almost wholly employed in directing the great force of clerks and in other primarily administrative work. It is, there- fore, necessary to secure a large part of the expert service needed for

a proper presentation of the statistics and preparation of the reports from expert special agents. The law permits the employment of an indefinite number of special agents for the collection of statistics and for the expert analysis of them, but prior to the passage of the urgent deficiency act of August 5, 1909, the compensation of such special agents was limited to \$6 per day. While this rate is adequate for the great majority of field agents and for many of those special agents who are employed for office work, it is entirely inadequate to secure the highly expert service which is needed on the part of those who are to accept practically the final responsibility for the preparation of the reports on special subjects and industries. Men of capacity sufficient to do this work properly are in nearly all cases already commanding a higher rate of compensation than \$6 per day, and it is particularly difficult to secure the services of such men for temporary work, such as the Census offers.

With a view to providing for such expert service the Director of the Census requested from Congress the authority to pay to not more than 20 of the special agents a greater compensation, not in excess of \$10 per day. By the urgent deficiency act of August 5, 1909, a maximum rate of \$8 per day was authorized for not over 20 of such agents. This provision, has already been of great advantage in enabling the Census Bureau to secure expert service, and will be of still greater advantage later on when the work of analyzing the statistics and preparing the final reports is taken up. It is believed, however, that still better results can be obtained if the maximum rate is fixed at \$10 per day as originally suggested, and the importance of a careful and scientific presentation of the statistics seems fully to justify this increase in the rate.

It is not the intention of the Director to employ the full number of 20 expert special agents—whether at the rate of \$8 per day or at a higher rate, in case such higher rate is authorized—during the entire census period. At the present time only 9 special agents are paid at a rate in excess of \$6 per day. In many cases the services of an expert special agent, who is especially familiar with some particular subject or industry, will be required for a few months only. It is believed that such additional compensation to special agents for expert service will not at all increase the total expense of the census, since their service will beyond question result in economy in clerical work and in the cost of publication.

Much assistance has been secured in drafting the new census schedules of interrogatories through the temporary employment of expert special agents. A number of trained statisticians and economists were called to Washington during the summer of 1909 for

his purpose. Experts connected with various manufacturing and mining industries have also been called on for assistance, either coming to Washington for that purpose or working at their own homes.

The law providing for the increased rate of pay for twenty expert special agents contains the proviso that such special agents shall be persons of known and tried experience in statistical work. It is the intention of the Director to conform strictly to this proviso. The expert special agents will be either men who have had thorough economic and statistical training in universities or in public positions, or men who have had special experience in connection with the leading industries of the country.

Respectfully submitted.

E. DANA DURAND, *Director.*

Hon. CHARLES NAGEL,

Secretary of Commerce and Labor.

APPENDIX A.

STATEMENT OF APPROPRIATIONS AND DISBURSEMENTS DURING THE FISCAL YEAR ENDED JUNE 30, 1909, ON ACCOUNT OF THE BUREAU OF THE CENSUS.

Appropriations.	Amounts appropriated.	Disbursements prior to July 1, 1908.	Disbursements by disbursing clerk, Bureau of Census, during fiscal year ended June 30, 1909.	Claims settled by the Auditor for the State and other Departments during fiscal year ended June 30, 1909.	Balances June 30, 1909.
Collecting statistics:					
1907-8.....	\$150,000.00	\$145,403.29	\$2,265.96	\$642.72	\$1,688.03
1908.....	875,000.00	370,113.20	4,526.58	156.49	203.73
Salaries, 1908.....	706,860.00	638,839.87	57,030.88	41.66	10,947.59
Stationery, 1908.....	6,000.00	5,751.89	19.47	218.16	10.48
Library, 1908.....	1,000.00	725.97	267.58	.25	6.20
Rent, 1908.....	22,080.00	20,240.00	1,840.00	.....	.....
Tabulating statistics, 1908.....	30,000.00	22,951.07	6,521.34	377.48	150.11
Miscellaneous expenses, 1908.....	15,000.00	13,695.98	1,188.00	109.67	6.85
Collecting statistics:					
1908-9.....	30,000.00	4,457.16	24,892.32	444.90	205.62
1909.....	325,000.00	.....	305,206.74	208.35	19,584.91
Salaries, 1909.....	704,860.00	.....	604,188.17	.....	100,703.93
Stationery, 1909.....	8,000.00	.....	3,634.65	1,836.97	2,528.38
Library, 1909.....	1,000.00	.....	763.59	.....	236.41
Rent, 1909.....	22,080.00	.....	20,240.00	.....	1,840.00
Tabulating statistics, 1909.....	40,000.00	.....	29,593.52	16.61	10,889.87
Miscellaneous expenses, 1909.....	20,000.00	.....	14,975.91	2,998.75	2,025.34
Preliminary expense of the Thirteenth Census, 1909-10.....	150,000.00	.....	1,947.12	.....	148,052.88
Total.....	2,606,880.00	1,222,178.48	1,079,101.83	7,052.01	298,579.83

* Includes \$32.10 received for transcripts of census records.

APPENDIX B.

OFFICE FORCE AS OF DECEMBER 1, 1909.

Assistant Director.....	William F. Willoughby.
Chief Clerk.....	Albertus H. Baldwin.
Appointment Clerk.....	Robert M. Pindell, jr.
Disbursing Clerk.....	George Johannes.
<i>Chief Statisticians:</i>	
Population.....	William C. Hunt.
Manufactures.....	William M. Steuart.
Agriculture.....	Le Grand Powers.
Vital Statistics.....	Cressy L. Wilbur.
Revision and Results.....	Joseph A. Hill.
Geographer.....	Charles S. Sloane.
Secretary to the Director.....	Hugh A. Brown.
<i>Expert Chiefs of Division:</i>	
Population.....	Edward W. Koch.
	William H. Jarvis.

to the Secretary of Commerce and Labor

Expert Chiefs of Division—Continued.

Manufactures	Joseph D. Lewis. Frank L. Sanford. Jasper E. Wheelchel. William A. Hathaway.	
Agriculture	Hickman P. Childers. Ernest H. Maling.	
Vital Statistics	Richard C. Lappin.	
Disbursing Office	George W. Crane.	
Publication	Voler V. Viles.	
Supervisors' Correspondence	Arthur E. Seymour.	
Expert on tabulating machinery	Harry Hayward Allen.	
Chief Mechanician	Charles W. Spicer.	
Total administrative staff		25
Stenographers, \$1,800		2
Clerks, class 4		7
Clerks, class 3		18
Clerks, class 2		47
Clerks, class 1		322
Clerks, \$1,000		121
Clerks, \$900		32
Clerks, \$720		36
Mechanical experts, \$1,800		2
Mechanical expert, \$1,600		1
Electrical expert, \$1,400		1
Electrical experts, \$1,200		2
Mechanicians, \$1,200		2
Machinist, \$1,200		1
Toolmaker, \$1,200		1
Machinist's helper, \$720		1
Apprentice boy, \$720		1
Apprentice boys, \$420		5
Skilled laborers, \$1,000		6
Skilled laborers, \$900		3
Skilled laborers, \$840		2
Skilled laborers, \$720		17
Unskilled laborers, \$720		17
Messengers, \$840		5
Assistant messengers, \$720		10
Messenger boys, \$480		4
Watchmen, \$720		11
Charwomen, \$240		24
		701
Total		726
SPECIAL AGENTS AS OF DECEMBER 1, 1909.		
Special agents, "persons of known and tried experience in statistical work"		9
Special agents, including experts, agents for general field work, etc		56
Special agents, cotton		736
		801
Total number of employees		1,527

Report of the Director of the Census

The figures given above include the following temporary employees selected from civil-service registers pending the result of the census examination which was held on October 23:

Clerks, \$1,000.....	3
Clerks, \$720.....	33
Skilled laborer, \$1,000.....	1
Unskilled laborers, \$720.....	7
Assistant messengers, \$720.....	2
Total.....	<u>46</u>

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BUREAU OF THE CENSUS
REPORT OF THE DIRECTOR
TO THE SECRETARY OF
COMMERCE AND LABOR



Concerning the Operations of
the Bureau for the Year 1909-10

WASHINGTON : 1911

1910

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REPORT
OF THE
DIRECTOR OF THE CENSUS.



DECEMBER 31, 1910.

SIR: The fiscal year ending June 30, 1910, was the first of the three years which constitute the decennial census period, as defined by law. Within this period of three years the Thirteenth Decennial Census must be taken and the results thereof compiled and published; and during this time the organization and operations of the Census Bureau are governed in the main by the act providing for that census, passed July 2, 1909.

During the fiscal year 1910 the work of taking the census was organized and substantially completed, but naturally the work of compiling the results was hardly more than begun.

The present annual report will therefore deal mainly with the work of collecting the census statistics, although a brief outline of the methods of tabulating and publishing the results is also presented.

The passage of the census act only nine months before the date of the enumeration of population and agriculture, which was fixed at April 15, 1910, allowed very little time for the heavy task of organizing the field force and preparing the schedules. Had it not been for the fact that the Census Bureau was a permanent organization, having in its employ many officials and clerks experienced in the work of prior censuses, it would have been practically impossible to arrange properly for the taking of the census. At each of the three preceding censuses the census act was passed at least 15 months before the date of the enumeration, and it had been the desire of the Census Bureau that in the present case an even longer time should be allowed. It can not be too earnestly urged that any new legislation which may be required for taking the census of 1920 should be passed much more promptly than was done at the present census.

The Thirteenth Decennial Census embraces three principal fields: Population; agriculture; manufactures, mines and quarries. The statistics of deaths, which were called for by the Twelfth Census,

were not covered by the Thirteenth, as much more accurate statistics on this subject are now annually compiled by the Census Bureau from the returns of those states and cities which have an efficient system of registration. Minor topics covered by the decennial census are dependent, defective, and delinquent classes, and irrigation enterprises.

From the standpoint of the organization of the field work the census of population and the census of agriculture belong together, while the census of manufactures stands by itself. Statistics of population and agriculture were collected by enumerators, under the direction of supervisors, while, with comparatively few exceptions, the statistics of manufactures were collected by special agents not under the direction of the supervisors.

FIELD WORK OF THE CENSUS OF POPULATION AND AGRICULTURE.

SCHEDULES AND INSTRUCTIONS TO ENUMERATORS.

While the census act specifies the scope of the interrogatories concerning each subject, the "form and subdivision" of the interrogatories is, necessarily, left to the Director of the Census. A great deal of time and thought was devoted by the Census Bureau to careful consideration of the form and phraseology of the schedules of population and agriculture and of the instructions to enumerators regarding the conduct of their work and the interpretation of the schedules. Aside from the regular officers and employees of the Bureau, a number of statistical experts and agricultural experts were called to Washington temporarily for consultation. The aim was to simplify the schedules and instructions as much as possible, consistent with securing the information required by law in the degree of detail considered essential.

The schedule of population adopted was a large sheet, providing spaces, on the two sides taken together, for the return of 100 persons. Aside from columns showing the location and the order of visitation of dwellings and families, the schedule provided 30 columns of interrogatories with regard to individuals. Three of these columns, as applied to foreign-born persons or foreign-born parents of persons born in this country, required a double entry, namely, mother tongue, as well as country of birth. The interrogatories asking for mother tongue; for industry (as distinguished from occupation) in which employed; whether employer, employee, or working on own account; whether unemployed on the census date; and whether a survivor of the Union or Confederate Army or Navy, are new interrogatories which did not appear on the schedule for 1900.

In the case of the census of agriculture a separate schedule was provided for each individual farm. This schedule also was a large sheet, printed on both sides. It contained several hundred spaces for possible answers, comprised under two main sections, the first covering an inventory of farm property as of April 15, 1910, and the second the operations of the farm during the calendar year 1909. The schedule was necessarily extensive because of the wide variety of agricultural conditions in the different parts of the country. Ordinarily, however, only from 20 to 50 of the interrogatories would apply to any one farm.

Aside from these general schedules of population and agriculture, several minor schedules were necessary for particular purposes. For example, there were for population returns an advance schedule of population hereafter more fully described, a special schedule for Indians, and an absent family schedule. The supplemental schedules for agriculture related to domestic animals not on farms or ranges, irrigation enterprises, plantations in the South, and to florists' and nursery establishments; advance agricultural schedules were also provided.

Some of the more fundamental instructions for the enumerators with respect to these schedules of population and agriculture appeared on the schedules themselves; but others, by reason of their extent, had necessarily to be presented in a separate book of instructions which contained 64 pages. The greatest care was used to express the instructions clearly and to arrange them so that the instructions on any given point could readily be found when that point came up in the course of the work.

The number of general population schedules printed was 1,900,000, and the number of general farm schedules, 9,950,000. Besides these, the advance schedules, special schedules, instructions, and other documents printed in connection with the collection of the statistics numbered in the aggregate more than 15,000,000 copies.

APPOINTMENT OF SUPERVISORS.

The statistics of population and agriculture were collected by enumerators, under the direction of supervisors of census. The census act authorized not to exceed 330 supervisors, to be appointed by the President, with the advice and consent of the Senate. The number actually appointed was 329 in continental United States and 1 in Porto Rico.

The supervisors were residents of the districts from which appointed. This is of course desirable, not only because of the need of knowledge of local conditions on the part of the supervisors, but also because of the feeling among the people of each district that no per-

son from outside would be quite so zealous in securing a complete enumeration of the population. On the other hand, the selection of residents of the districts as supervisors necessarily meant that in nearly all cases they were entirely lacking in previous experience in census work, and had to be carefully instructed in their duties. Very full written and printed instructions were issued and, moreover, several conventions of supervisors were held in convenient cities in different parts of the country. At these conventions the Director or the Assistant Director, accompanied by the chief statistician for population or the chief statistician for agriculture, gave oral instructions to the supervisors and answered their numerous inquiries. But notwithstanding the pains taken to instruct the supervisors, and notwithstanding the fact that nearly all of them were men of high ability and character who devoted themselves with great energy to the work, the experience of this census shows the need of having the work of preparing for and taking the census conducted under the more constant and direct supervision of experienced employees of the Bureau detailed from Washington for that purpose.

The supervisors' districts were prescribed by the Director, under the limitation of the census act that, so far as possible, they should correspond with congressional districts. In general, the policy followed was to make each supervisor's district correspond with a congressional district, except in the case of large cities comprising more than one congressional district, each of which cities was constituted a single supervisor's district. Each of the New England states, moreover, was constituted a single supervisor's district, except that in Maine there were two supervisors districts.

The average population of the supervisors' districts was about 280,000, but the population of most of the districts was between 175,000 and 250,000, the average for all being increased by the large population of a few districts, such as Massachusetts, Manhattan and Bronx Boroughs of New York, Brooklyn Borough and adjoining territory, Chicago, and Philadelphia. Each of the five supervisors' districts last mentioned had a population exceeding 1,500,000.

The supervisors' districts were determined upon almost immediately after the passage of the census act, and a considerable number of supervisors were appointed by the President as early as August, 1909, and most of the remainder in September. Even though the appointments were made thus promptly, the supervisors had scarcely enough time to prepare satisfactorily for the enumeration of their respective districts.

APPOINTMENT OF ENUMERATORS.

In order to prevent the overlapping of territory on the one hand or the omission of territory on the other, it is necessary that, before the enumeration begins, every supervisor's district shall be divided into accurately bounded enumeration districts. These districts must be small enough to permit the enumerator to complete the canvass within the prescribed limits of time, but, on the other hand, not so small as to reduce unduly the amount of work and the consequent compensation for each enumerator. On account of the rapid increase of population in many cities and in some entire sections of the country, it was found very difficult to establish enumeration districts all of which satisfied these requirements. The enumeration districts were laid out, in the first instance, by the geographer of the Census Bureau, and the tentative plans were submitted to the supervisors for consideration and modification. The supervisors, particularly in the country districts, found a large amount of correspondence and considerable travel necessary to secure the required information for the perfection of the plans of division, and the time in some cases was too short for the completion of this work in a thoroughly satisfactory manner.

The number of enumeration districts finally established in continental United States was 69,025. The districts had on an average, therefore, about 1,300 inhabitants. The average population of the enumeration districts in the rural sections, however, was less than this number, while in towns and cities it was larger, notwithstanding the fact that the time allowed for enumeration was only half as long. This difference was due not merely to the fact that country enumerators have a larger area to cover in order to enumerate a given population, but still more to the fact that they have to collect statistics of agriculture as well as of population. The average population per district in cities of over 5,000 inhabitants was about 1,485 and in smaller towns and rural districts about 1,245. In general, there was of course one enumerator for each enumeration district, but in a considerable number of districts in the South a white enumerator was appointed to canvass the white population and a colored enumerator to canvass the negro population, so that the total number of enumerators employed in continental United States was about 71,100.

Under the census act, the enumerators were designated by the supervisors of the census, subject to the approval of the Director. As a means of aiding the supervisors in selecting competent enumerators and also of enabling the Director intelligently to exercise the power of approval, the Bureau prescribed a method of examination for candidates for the position of enumerator. This examination

was of a strictly practical character. It consisted of a direct test as to the ability of the candidate to fill out the census schedules according to instructions. Each candidate was furnished in advance of the date of the examination with a census schedule of population and a schedule of agriculture precisely similar to those subsequently employed in the actual enumeration, together with instructions as to the method of filling the schedules substantially similar to the instructions used in the actual enumeration. These papers the candidate was instructed to study carefully in advance. On the day of the examination he was furnished with a printed description, in narrative form, of a number of typical families, such as he was likely to encounter in the actual work of enumeration, and a description of a typical farm. He was then required to transfer the information regarding these families and farm to the schedules in proper form, according to the instructions. Not only was the examination thus practical in its testing of the ability of the candidate, but it also served an extremely useful purpose in instructing him in his subsequent duties, if appointed.

The examination papers described were substantially like those used at the census of 1900. In 1900, however, the candidates were allowed to fill out the papers at their homes, and there was thus a possibility of their receiving assistance. At the present census the candidates were assembled on a given date—February 5, 1910—and took the examination in the presence of a supervising officer. In order to avoid imposing hardship upon the candidates, it was necessary to hold these examinations in a very large number of places—about 5,300 in all. As far as possible the examinations were presided over, either by the supervisors themselves, or by expert special agents in their employ, or by the regular civil-service examining boards who conduct ordinary Federal civil-service examinations. In order to provide a sufficient number of places, however, it was necessary to make use also of the services of several thousand postmasters to preside at the examinations. Due precautions were taken to prevent the candidates from securing advance information regarding the examination, and to prevent assistance to or collusion among the candidates.

More than 160,000 candidates appeared at the examinations. The papers from each place of examination were forwarded to the supervisor of the district and were first examined and rated by him in accordance with precise instructions furnished by the Census Bureau. The supervisor was then allowed to designate from among the candidates one person to serve as enumerator for each district, resident of the district being preferred, if possible. It would not have been to the best interests of the service to insist, in all cases,

that the candidate in a given district who made the highest rating in the examination should be appointed. There are important qualifications which no written test can determine. Supervisors were authorized and instructed to give due consideration to the age, sex, character, habits, and standing in the community of the candidates, but were expressly instructed not to allow political considerations to influence their selection. It is doubtless true that a considerable number of supervisors did not strictly adhere to this instruction, but, so far as can be ascertained, the great majority of them either disregarded or subordinated political considerations and conscientiously sought to select the best candidates, as indicated by the examination and by other information regarding their fitness.

After designating the candidate preferred for each district, the supervisors were required to forward the papers for all the candidates to the Census Bureau. The papers of candidates recommended were carefully examined in the Bureau, and where found satisfactory the designations were approved without examination of the papers of competing candidates. It would have been impossible for the Bureau, with any reasonable expenditure of time and money, to examine the papers of all the candidates. Where, however, the candidate's papers were unsatisfactory, the papers of the other candidates in the same or neighboring districts were examined, and the supervisors were required to change their designations.

The great majority of the enumerators ultimately appointed had satisfactorily passed the examination. In a limited number of districts, probably not exceeding 10 per cent of the entire number, it was found that no candidate living in or adjacent to the district had satisfactorily passed the examination. In such cases, inasmuch as the time was too short to permit of additional examinations of a formal character, supervisors were permitted either to appoint candidates who had fallen slightly below the required standard, or to appoint persons who had not taken the examination. In the latter case, in general, the new candidates were required to fill out the test papers at their homes. Broadly speaking, the examination proved highly advantageous, and the great majority of the enumerators were quite as competent and trustworthy as could be expected, in view of the short time of service and the limited pay. The conditions, however, are such that it is exceedingly difficult to obtain thoroughly satisfactory enumerators, and careful consideration should be given to the question of the possibility of radical improvements in methods of enumeration and of selecting enumerators.

SUPERVISORS' CLERKS AND SPECIAL AGENTS.

The census act authorized the Director to make an appropriate allowance to supervisors for clerk hire and also authorized him to designate special agents to assist supervisors. The Director accordingly allowed each supervisor to have at least one clerk. In most cases an additional clerk was allowed during the period of most active work, and in the large cities and other large supervisors' districts a considerable number of clerks had to be employed. The clerks in all cases received their appointments from the Director, but were named on the recommendation of the supervisors and without any special form of examination. The confidential personal relations between the supervisors and their clerks rendered it necessary that the supervisors should be allowed a free hand in these appointments. Supervisors' clerks were mostly paid about \$75 per month, but a few in large districts received considerably more.

The special agents appointed to assist the supervisors were intended to perform other and, in some respects, more responsible functions than those falling to the clerks. It would have been highly desirable, if the appropriations had permitted, that each supervisor should have been allowed at least one special agent to assist in selecting and instructing enumerators and in directing their work. It was not, however, deemed practicable in most cases to employ special agents, except in cities of considerable magnitude. In general, at least one special agent was employed in each city of 50,000 inhabitants or more. In the larger cities the supervisors were usually allowed one special agent for from 30 to 50 enumerators.

Special agents were of two classes, distinguished by the character of their duties and the compensation and duration of their employment. In the larger cities a limited number of special agents were employed for a considerable period of time. They aided the supervisors in the conduct of the examinations of the enumerators, in the subsequent selection of enumerators, and in preparation for the work generally. In addition to these more permanent agents, there were employed for a shorter period special agents, called inspectors, whose duty it was to watch and assist the enumerators during the actual enumeration and to check over the results after its completion.

Special agents of both classes were appointed by the Director on the recommendation of the supervisors. No method of examination was prescribed. The rates of pay ranged from \$3 to \$6 per day.

CONDUCT OF THE ENUMERATION.

Publicity campaign.—Considerable difficulty is experienced at every census in securing a complete enumeration and full answers to the interrogatories, by reason of indifference on the part of many people

and distrust or fear on the part of a considerable number. People who do not understand the purpose of the census not infrequently fear that some injury may come to them from furnishing information, and consequently try to evade the enumerator, or refuse to answer his questions, or answer them incorrectly. This attitude is of course especially likely to appear among recent immigrants. Others, even of the native born, dislike to take the trouble to furnish the information properly. Difficulty is encountered in connection with the agricultural census, partly because farmers are often unwilling to take the trouble to answer the rather numerous inquiries, but more especially because during the short time of the visit of the enumerator they are unable to recall all the facts required with regard to their business during the preceding year. With a view to reducing these difficulties to a minimum, the Census Bureau undertook an extensive campaign of publicity, designed to inform the people with regard to the scope and purpose of the census, to remove prejudice, and to induce people, especially farmers, to prepare in advance for the visit of the enumerator. The most important feature of this campaign was a proclamation by the President of the United States, calling upon all persons to furnish information freely and promptly, assuring them that no possible harm could come to any individual by doing so, and that the information required had no other than a statistical purpose. This proclamation was published in the press generally, and was posted in all post offices and many other places. It was translated into 24 foreign languages for posting in the communities in which the respective classes of foreigners were most numerous.

In addition to this proclamation, numerous articles regarding the census were furnished to the newspapers and other periodicals. To the agricultural papers, in particular, full information was furnished as to the scope of the inquiries regarding agriculture, and also articles urging farmers to prepare memoranda in anticipation of the visit of the enumerator. The press of the country very generally cooperated most thoroughly in disseminating this information. Circulars were also addressed to persons who come in contact with large numbers of the people—such as school teachers, preachers, employers of labor, and the like—urging them to inform those with whom they came in contact regarding the census. These circulars were furnished to the supervisors for such distribution as they should find desirable. An even more important method of preparing for the census was by the use of advance schedules, which are described more fully later.

Instruction and supervision of enumerators.—Aside from the regular printed instructions appearing on the schedules and in the pamphlet of instructions, arrangements were made to give oral instructions to

a large proportion of the enumerators. It would have been desirable to provide for such oral instructions in all cases, but in the more sparsely settled rural districts this was impossible, as it would have involved either a great deal of time and travel on the part of the supervisors in visiting numerous places throughout their districts, or a corresponding burden upon the enumerators in going long distances to meet the supervisors at a smaller number of places. Supervisors were, however, authorized and instructed to visit the principal places in their districts, and to assemble for instruction as many enumerators as possible. In the larger cities practically all of the enumerators were thus assembled and given oral instructions either by the supervisor himself or by his special agents.

These preliminary instructions were given to the enumerators in most cases a few days or, at the most, a few weeks prior to the beginning of the enumeration. In addition, arrangements were made in the cities for a continuous personal supervision and instruction of the enumerators during the progress of their work. In rural districts this was impossible, for obvious reasons, but as a substitute enumerators were instructed to send a copy of part or all of their first day's work to the supervisor by mail. The supervisors and their clerks examined these schedules and returned them to the enumerators with corrections and instructions. In the cities the enumerators were divided into groups and placed under the supervision of special agents, known as inspectors. Each enumerator was expected to report to the inspector in charge of his district within a day or two after beginning work, and the inspector then examined his schedules and gave such instructions as were found necessary. The inspectors also kept in constant contact with the enumerators during the further progress of their work, answering such questions as arose from time to time, checking the work of the enumerators at random, and otherwise assisting and directing them.

Advance schedules.—At this census, for the first time, use was made of advance schedules distributed to heads of families before the regular visit of the enumerator. The principal object of these advance schedules was to prepare the way for the enumerator by announcing his approaching visit and informing the people precisely of the questions to be answered. A secondary object was to save time for the enumerators and to secure more accurate returns by having the advance schedules filled out by the families themselves so far as they were willing and able to do so.

As the advance schedules were in the nature of an experiment, they were not used universally. Advance schedules of population were used in practically all cities of 100,000 inhabitants or more,

but not elsewhere. Advance schedules of agriculture were used in the rural districts throughout a large part of the country. The advance schedules of population were distributed by the enumerators themselves, usually a day or two prior to April 15, the day on which the actual enumeration began. It would have been impracticable to require the enumerators in rural districts to traverse their entire territory to distribute the advance schedules of agriculture, and the method was consequently adopted of sending an adequate number of the schedules to postmasters, who, through the courtesy of the Post Office Department, were instructed to distribute them as completely as possible to the farmers obtaining mail from their respective post offices.

The enumerators were not allowed to accept the advance schedules, even when fully filled out by the families, as the final record of the enumeration, but were required to transfer the information, after duly inquiring as to its completeness and accuracy, to their regular official schedules.

It is impossible at this time to state just to what extent or how accurately the advance schedules of population and agriculture were filled out by the heads of families and farmers. The number of advance schedules returned to the Census Bureau was sufficient to permit a subsequent compilation of reasonably precise information on this subject. It may be stated at the present time, however, that in the opinion of most of the supervisors who used it the advance schedule of population served a very useful purpose. While, as was expected, a large proportion of the schedules were not filled out at all, and others only imperfectly, they were found advantageous in preparing the way for the enumerator; and in those sections of the cities where the people are the most intelligent a large proportion of the schedules were actually filled out, thus both increasing the accuracy of the returns and saving time to the enumerator. The conclusion as to the results accomplished by the advance agricultural schedule is less certain. A much smaller proportion of these were actually filled out than in the case of the advance schedule of population, and it appears that, in some cases where they were filled out, the information was decidedly inaccurate. Nevertheless, it appears probable that, on the whole, these schedules tended to improve the quality of the agricultural census and to reduce the work of the enumerators.

Revision of schedules.—By the terms of the census act the enumerators for city districts were allowed two weeks in which to complete their work, and in rural districts and places of less than 5,000 inhabitants 30 days. In most cases enumerators completed their work in somewhat less time than was allowed by law, but in a con-

siderable number of districts, owing to disproportionate size, or to climatic or other special conditions, it was necessary to extend the time a few days, and in rare instances the enumeration was not completed for several weeks after the prescribed period.

The schedules, as soon as completed by the enumerators, were forwarded to the respective supervisors, who were required to examine them as to *their completeness and accuracy, and to return them to the enumerators for correction, where necessary.* In the cities the special agents and inspectors aided in this work. This checking of the results of the enumeration is one of the most important features of the census. In some cases a considerable percentage was added to the names originally returned, as the result of investigations by the supervisors and special agents. Various means were used in different districts to make sure of the completeness of the enumeration. In some cases comparisons were made with city directories and with insurance maps, which show individual buildings. Houses reported by the enumerators as closed at the time of their visit were, so far as possible, revisited, and in the case of families absent from the city or locality schedules were sent by mail. Very generally throughout the country the newspapers published notices urging all persons who had not been enumerated to send their names to the supervisors, who were instructed to investigate such cases, and to add the names if entitled to enumeration.

This work of revising the census returns in the field was finished by some of the supervisors within two or three weeks after the close of the period of enumeration, but in some of the larger and more difficult districts it required from two to four months. The first schedules of population were received at the Census Bureau at Washington from the supervisors on May 3, and during the month of May the returns from a total of 15,260 districts out of approximately 70,000 were received. By the end of June the returns had been received from 55,311 enumeration districts, and by the end of July from 68,137. With a few exceptions the returns from all districts were in the hands of the Census Bureau by the 1st of September. The figures just given relate to the population returns, but the agricultural schedules were received in substantially the same relative number from month to month.

COST OF THE ENUMERATION OF POPULATION AND AGRICULTURE IN CONTINENTAL UNITED STATES.

By the census act each supervisor of the census was paid a lump sum of \$1,500 for his services, plus \$1 for each thousand of the population enumerated. The lump-sum payment to the 329 supervisors in

continental United States, therefore, aggregated \$493,500, and the additional payments based on population amounted to about \$92,000, making a total of \$585,500. The expenditures of the supervisors for rent, supplies, travel, clerical assistance, and special agents, totaled about \$360,000, making the aggregate cost of the supervision of the census in continental United States about \$945,500.

The enumerators were paid according to three different methods. Some were paid strictly on a piece-price basis—a given amount for each person, farm, inclosure containing live stock, or industrial establishment reported. The rates ranged from 2 to 4 cents per capita, and from 20 to 30 cents per farm and were fixed at 10 cents for each inclosure containing live stock and 30 cents for each industrial establishment. Other enumerators were paid a fixed rate per diem, ranging from \$3 to \$6; still others were paid at mixed rates—a fixed amount per diem plus a piece-price payment for each person, farm, or establishment enumerated.

Much the larger proportion of the enumerators were paid the strictly piece-price rates. The per diem rates were largely confined to the Western states where the population is so sparse that an enumerator could not earn adequate compensation on a piece-price basis. Only where conditions were peculiar were enumerators paid at the mixed rates, and the districts in which such payments were made were quite widely scattered over the country.

The following table shows the various classes of piece-price and mixed rates which were paid, and the number of enumeration districts in continental United States in which each rate was paid. Appendix III shows the same items for each state. In preparing this statement the piece-price rates paid to enumerators for inclosures containing live stock not on farms and ranges and for establishments of productive industry are omitted, as these rates did not vary in different classes. The uniform rate for inclosures containing live stock was 10 cents each in the case of enumerators receiving piece-price rates. Enumerators on straight piece-price rates received 30 cents for each establishment of productive industry reported in connection with the census of manufactures and those on mixed rates received 20 cents; but only a few of the enumerators were called upon to report such establishments, since, as already explained, the taking of the census of manufactures was mainly assigned to special agents.

RATES OF PAY OF ENUMERATORS IN CONTINENTAL UNITED STATES: 1910.

DESIGNATION.	DESCRIPTION.			Number of enumeration districts.	Per cent of total number of districts.
	Per diem.	Per capita.	Per farm.		
Piece-price rates:					
A.....		<i>Cents.</i> 2	<i>Cents.</i> 20	9,864	14.3
B.....		2½	22½	20,123	37.8
C.....		3	25	16,868	24.4
D.....		3½	27½	6,227	9.0
E.....		4	30	1,321	1.9
Total.....				60,403	87.5
Mixed rates:					
F.....	\$1.00	2	15	169	0.2
G.....	1.25	2½	17½	71	0.1
H.....	1.50	2½	17½	225	0.3
I.....	1.75	2½	20	184	0.3
J.....	2.00	3	20	332	0.5
Total.....				981	1.4
Per diem rates:					
\$3.00.....	3.00			36	0.1
\$3.50.....	3.50			36	0.1
\$4.00.....	4.00			546	0.8
\$4.50.....	4.50			885	1.3
\$5.00.....	5.00			3,454	5.0
\$5.50.....	5.50			949	1.4
\$6.00.....	6.00			1,735	2.5
Total.....				7,641	11.1
Grand total.....				69,025	100.0

It will be seen from this table that straight piece-price rates were paid in 87½ per cent of the districts, mixed rates in 1½ per cent, and per diem rates in 11 per cent. More than three-fifths of the enumerators received the piece-price rates designated as B and C. Rate B (2½ cents per name) was the usual rate in medium-size and large cities throughout the country, while C (3 cents per name, 25 cents per farm) was the most common rate in the agricultural districts. Rate A, the lowest, was usually confined to small towns or thickly settled agricultural districts. The most common per diem rate was \$5, but in the Mountain and Pacific Coast states it was usually necessary to pay \$6.

The rates paid enumerators at the census of 1910 were somewhat higher than at the census of 1900. The increase was in part provided for expressly in the census act. Whereas according to the act covering the census of 1900 the minimum rate for collecting agricultural statistics was 15 cents per farm and the maximum rate 20 cents, the corresponding minimum and maximum by the Thirteenth Census act were 20 cents and 30 cents, respectively. Moreover, the maximum fixed by law for enumerating individuals was 3 cents at the census of 1900 and 4 cents at the census of 1910. A part of the increase in the

rates, however, was due to the action of the Director under the discretion given him by law. The Director is authorized to prescribe the rates within the specified limits, and a somewhat larger number of enumerators were given the higher rates at this census than 10 years ago. This increase was found absolutely necessary in order to secure competent enumerators at all, in view of the quite general increase in the cost of living and in rates of wages.

The following statement shows the various classes of rates prescribed at the census of 1900 and the number of enumeration districts in which rates of each class were paid:

RATES OF PAY OF ENUMERATORS IN CONTINENTAL UNITED STATES: 1900.

DESIGNATION.	DESCRIPTION.		Number of enumeration districts.	Per cent of total number of districts.
	Per capita.	Per farm.		
Piece-price rates:				
A.....	<i>Cents.</i> 2	15	7,718	14.6
B.....	2½	17½	29,085	55.0
C.....	3	20	10,892	20.6
Total.....			47,695	90.2
Per diem rates:				
\$3.....			144	0.3
\$4.....			2,971	5.6
\$5.....			1,501	2.8
\$6.....			572	1.1
Total.....			5,188	9.8
Grand total.....			52,883	100.0

In very few enumeration districts was an allowance made for travel expenses, the total of such allowances in 1910 being only about \$2,000.

The total payment to enumerators in continental United States as compensation for their services and travel expenses at the Thirteenth Census aggregated about \$4,870,000. The corresponding expenditure at the census of 1900 was about \$3,540,000. The increase was thus 37 per cent, as compared with an increase in the population of 21 per cent. While a considerable part of the cost of enumeration, estimated at about one-third, is attributable to the agricultural statistics, nevertheless a broadly significant comparison may be made by dividing the cost of the enumeration at each census by the number of inhabitants. This division shows the compensation of the enumerators as equal to 4.7 cents per capita in 1900 and 5.3 cents in 1910, an increase of about 13 per cent.

The average earnings per enumeration district at the census of 1910 amounted to about \$70.50. Inasmuch as there were somewhat more enumerators than enumeration districts, the average earnings per

enumerator were a trifle less. The corresponding average earnings per enumeration district in 1900 were \$66.94.

The entire cost of the field work of collecting the statistics of population and agriculture in continental United States at the census of 1910 was about \$5,840,000. The main items are presented below, in comparison with the 1900 census:

	1910.	1900.
Compensation of supervisors.....	\$585,500	\$385,650
Expenses and assistance to supervisors.....	300,000	301,585
Compensation and expenses of enumerators.....	4,870,000	3,540,095
Interpreters.....	40,000	40,064
Total.....	5,855,500	4,267,394

The cost of the field work in 1910 was thus about 37½ per cent more than in 1900.

CENSUS OF PORTO RICO, HAWAII, AND ALASKA.

All the statistics with regard to the number of districts and cost of the census of population and agriculture above presented relate only to continental United States. In addition, a census of population, agriculture, and manufactures was, under authority of the census act, taken for Porto Rico, Hawaii, and Alaska. Although in continental United States the census of manufactures was usually taken by special agents altogether independent of the supervisors, the work of collecting the statistics of manufactures in the outlying possessions and territories was handled by the persons who collected the statistics of population and agriculture, and it is impossible to distinguish the expenses of the respective branches of the work.

For Porto Rico a supervisor of the census was appointed, and the work of collecting the statistics was done by enumerators who were practically all paid at a per diem rate of \$4. In Alaska and Hawaii the direction of the census was placed in the hands of chief special agents, and the detailed work was also done by persons designated as special agents. An expert special agent was sent from Washington to take charge of the census of Hawaii, and another was sent to take charge of one of the four districts into which the Territory of Alaska was divided. The other three districts in Alaska were placed in charge of three superintendents of schools, employed by the Bureau of Education, who were long residents of Alaska and thoroughly familiar with conditions there.

It was found that in order to make a complete census in Alaska under the extremely difficult conditions it would be necessary to take

it in the winter, as travel in many sections is impossible at other times. The work was therefore performed during the winter of 1909-10, preceding the enumeration in continental United States. In view of the fact that a considerable number of people who have Alaska as their usual place of abode leave there during the winter and return in the spring, the plan was adopted of meeting the steamers at their arrival at the Alaskan ports during the spring of 1910. The names of persons arriving on the steamers and claiming to reside in Alaska were taken, and if, on examination of the schedules secured in the regular canvass, it was found that they had not been already enumerated they were added to the population.

The following statement shows the approximate cost of the enumeration in these three outlying possessions:

Alaska.....	\$74, 000
Porto Rico.....	74, 000
Hawaii.....	32, 000
Total.....	180, 000

OVERCOUNTS THROUGH ERRORS AND FRAUDS.

After the returns of the enumeration of population had been received in the Census Bureau, it was found necessary to recheck or reenumerate in a number of cases, either because of undercounting, due to carelessness of enumerators, or because of overcounting, due to unduly liberal interpretation of the instructions or to deliberate fraud. It is not believed that the errors and frauds in the present census in any way exceeded those in previous censuses; on the contrary, it is very likely that they were less extensive. Greater attention, however, was given at the present census than at any preceding to the investigation of the correctness of the returns, and consequently errors and frauds were discovered in a larger number of cases than at any preceding census.

Scrutiny of returns in Census Bureau.—With a view to detecting internal evidence of overcounting in the schedules themselves, a number of experienced clerks were employed to critically examine the schedules received from the cities. There is so much less likelihood of overcounting in rural districts that it was not considered necessary or practicable similarly to scrutinize the returns from such districts. Where enumerators “pad” their returns at all extensively, it is usually possible by careful analysis of the schedules to detect the fact. Examining clerks were instructed to watch for enumeration districts in which unusually large numbers of persons were enumerated, or in which exceptionally large numbers of boarders and

lodgers were reported, or in which there were exceptionally large numbers of families of unusual size. Detailed memoranda of the results of this examination were made for each district which looked at all open to suspicion. In no case, however, was any correction made in the returns without careful investigation in the city itself.

Investigations in the field.—In some cases these investigations were intrusted to the supervisors of the census, but in general they were conducted by expert employees sent from Washington. In some instances, as might be expected, it was found that, although the schedules indicated a somewhat peculiar composition of the population, nevertheless they were correct or substantially correct. But in other instances it was found that the population had been materially exaggerated, either through deliberate fraud or through improper interpretation of the instructions as to what persons were entitled to enumeration.

Notwithstanding the criticism which, as might be expected, arose from cities whose population was reduced, it can be asserted positively that these field investigations were made in a manner so careful as to quite preclude the danger that the names of persons actually entitled to enumeration would be rejected from the schedules. A preliminary house-to-house canvass was made in each instance. Where this canvass showed that the original returns were entirely incapable of direct correction, a complete new enumeration was taken. In other cases the names improperly enumerated were eliminated by a process of checking, each individual house in the district being visited and careful inquiry being made to discover which persons there enumerated were entitled to enumeration and which were not. The employees who made the investigation were instructed in all cases to be as liberal as possible and not to eliminate any persons who by the broadest construction of the census rules could be considered as resident in the district.

General character and methods of overcounting.—It would require too much space to present in detail a description of the census frauds and errors of overcounting in each of the individual cities in which they were found. A general statement of the principal forms of fraud or error must suffice. It is also impossible in many cases to distinguish clearly between deliberate fraud and misjudgment. It is undoubtedly very difficult in many individual instances for an enumerator to decide whether a given person is or is not entitled to enumeration in his district. The difficulty arises chiefly in connection with the floating population. How complicated the problems are which confront the enumerator in this regard, may be judged from the fact that the Bureau considered it necessary to devote four

printed pages of instructions to the one point of who should be enumerated, and even thus was forced to state in the instructions that much must be left to the judgment of the enumerator. In considering, therefore, the list of cities in which overcounts were discovered and the number of enumeration districts in which they were found, it must be understood that the charge is not made that in all of these cities or districts the overcounting amounted to deliberate fraud. On the other hand, it is scarcely possible to definitely exonerate of fraudulent intent any one of the enumerators concerned, although the probability is that in a considerable number of cases there was no such intent.

The names improperly enumerated in the various cities and districts concerned may be roughly grouped under the following classes:

- (a) Purely fictitious names, probably comparatively few.
- (b) Persons who were residents of the city, but who did not reside in the enumeration district in which fictitiously reported and who were already enumerated at their true residence.
- (c) Persons formerly residents of the city, but who had permanently left it, or who, in some cases, had died; names in such cases having been at times taken from old directories or from pay rolls of employers.
- (d) Persons who had never had a permanent residence in the city and were not there at the time of the enumeration, but who previously, at one time or another, had been temporarily present in the city.
- (e) Persons temporarily present in the city on the census day (April 15), but whose usual place of abode was elsewhere.
- (f) Persons perhaps having no usual place of abode and who were not present in the city on the census day, but only at some subsequent time—in some cases several weeks after the census day.

In order to understand the significance of the errors and frauds of the last three classes above mentioned, it should be borne in mind that the census act provides that the enumeration shall be taken as of date April 15, and that each person shall be enumerated at his "usual place of abode." For example, a person who has a home and family in Michigan or some other state and who is temporarily present in New York City, for business or pleasure, on the census day, is not entitled to be enumerated in New York City, but is supposed to have been enumerated at his usual place of abode, the information regarding him being secured from other members of the family, or, if necessary, from neighbors.

It is true, however, that there are large numbers of persons who can not in any true sense be said to have any usual place of abode, and

who must, therefore, if the census is to be complete, be enumerated at the place where they happen to be on the census day, however temporary their stay there. In some cases even a person of this character, who was not present on the census day but who arrived shortly thereafter, may be properly enumerated, because he has not been enumerated anywhere else. It is evident, however, that persons who in no true sense can be said to have ever had a usual place of abode in a given city, but who have merely been there temporarily at some previous time and who were not present on the census day or thereafter, can not properly be enumerated in that city. Such persons, if they have no usual place of abode, are, under the law and the instructions of the Census Bureau, to be enumerated where they are found, and to enumerate them in a city where they were not present would, under these conditions, clearly result in duplication. It is also evident that, while it is perfectly legitimate to enumerate in a given city the floating population—that is, those who can not be said to have a usual place of abode—present on the census day, or even in some cases such persons arriving after the census day, it is not at all proper to enumerate all those of this class who arrive from time to time over a period of many days or weeks. Still less is it proper to enumerate in a given city those who are only temporarily present, either on the census day or afterwards, and who clearly have a usual place of abode elsewhere. In either of these cases duplications are bound to occur. If all transients arriving in a city, even though they have no usual place of abode, are counted over a long period of time, there are bound to be many who have already been enumerated elsewhere, especially if the enumerator deliberately refrains from inquiring whether they have been enumerated or are likely to be enumerated elsewhere, and still more if the enumerator counts them despite knowledge of the fact that they have already been enumerated elsewhere.

To take the simplest illustration: A considerable number of enumerators made repeated visits to ordinary transient hotels day by day throughout the period of enumeration, and sometimes many days after the end of that period, and placed on their lists everyone who was registered at the hotel at each visit, excepting in some cases, but not always, those whom they had already previously enumerated at the same place. Persons who were present in the hotel only a single day were often enumerated with no attempt to ascertain whether they had usual places of abode elsewhere or whether they had been enumerated elsewhere. It is clear that, in view of the large numbers of persons who pass into and out of hotels in a period of two or more weeks, this practice results in an improper overcounting of the population.

As already stated, in some cases the action of the enumerators in listing persons belonging to the three classes designated above as (d), (e), and (f) was doubtless in good faith, through a misunderstanding of the instructions and of the theory of a census based on usual place of abode; but in other cases enumerators knew perfectly well that they were violating instructions. In fact, a number of enumerators, in order to deceive, assigned to vacant lots or other fictitious addresses names of persons whom they had actually found as transients at hotels and lodging houses, and who were clearly not entitled to enumeration.

Unauthorized interference of private individuals.—In a considerable proportion of cities in which overcounting took place, it was due largely to the unauthorized activity of private individuals in collecting names and turning them over to the enumerators. In other words, many enumerators permitted information obtained by private individuals and judgment exercised by private individuals as to the claim of persons to enumeration to be substituted for information secured and judgment exercised by themselves. These private individuals, subject to no responsibility, usually entirely ignorant of the census rules as to persons entitled to enumeration, and often actuated by the illegitimate desire to pad the returns, could not of course properly do the work of enumeration.

In a number of cities committees were constituted by boards of trade or other commercial organizations, or were otherwise formed, to assist in the census. The nominal purpose in all cases was merely to make sure that the enumeration was complete, and in some instances the activities of these committees were actually helpful to the census. In other instances, however, even where the purpose and the methods of these committees were legitimate, the result was an overcount of the population, and in still other cases the purpose and methods of at least individual members of committees and those employed by them were conspicuously illegitimate and fraudulent.

In several cities these private organizations caused slips to be printed containing the census questions and employed a large number of persons to collect names on these slips. A very large proportion of names collected on these slips, in nearly every city where they were employed, were names of persons not entitled to enumeration for one or another of the reasons above specified. In some cities these private organizations established booths in the streets, and every person who passed by was invited to fill out a census slip. Canvassers went to stores, offices, and factories to secure names of persons present or appearing on the pay rolls, often indicating such store, office, or factory as the place of residence, or

at least failing to secure the true place of residence. Hotels, lodging houses, restaurants, and saloons were visited. Naturally in this process the names of many, who, although not otherwise enumerated in the city, were not entitled to enumeration, were secured. Naturally also not a few persons desiring to inflate the population allowed themselves to be repeatedly listed on these slips under the same or different names and addresses, or gave in the names of their neighbors and acquaintances, without any knowledge as to whether they had actually been enumerated or not. The reckless manner in which names were collected on the slips is illustrated by the fact that one enumerator, to whom a large number of slips were turned over as representing persons in his district who had not been enumerated, found his own name appearing on five different slips; there is no reason to suppose that this was a joke, but rather that one or more persons, not knowing that he was an enumerator, but knowing him to be a resident of the district, turned in his name in the hope that it might be added to the lists.

Had the slips collected by private individuals all been turned over in the proper manner to the supervisors of the census and their special agents; had proper investigation been made by them and by the enumerators to ascertain whether the names had already been enumerated in the city; and, finally, had proper investigation been made to ascertain whether those not enumerated were entitled to enumeration, no padding of the census would have resulted from this use of privately printed slips, however carelessly or fraudulently they had been originally collected. As a matter of fact, however, there were a number of enumerators who failed to make any proper investigation of the names turned over to them on these private slips, but out of hand entered the names and answers to the various interrogatories on their schedules, sometimes in exceedingly large numbers. In most cases the supervisors certainly did not connive in this practice or have knowledge of it, and in no case has definite evidence been secured which implicates any supervisor in fraud. In fact, with perhaps one exception, the supervisors appear to have done their best to prevent padding. But even in cases where slips passed through the hands of supervisors, they had to turn many or all over to the enumerators for investigation, and in some cases the enumerators took slips which had not passed through the hands of supervisors or special agents.

It is a strong temptation to an enumerator to add such names to his schedules, both for financial reasons and in order to make the population of his city appear as large as possible. By entering a name without investigation, he can in the work of a single minute secure

the compensation provided, usually $2\frac{1}{2}$ or 3 cents per name; while it might require many minutes or even an hour or more to investigate the claim of a person to enumeration, with the possible result of finding that he should not be counted. In a few cases special agents connived with enumerators in fraud, or even instructed them to commit it.

It appears clearly desirable at the next census that the law should explicitly prohibit the printing and circulation by private persons of slips containing the census questions. This would not prevent private individuals from furnishing, for the purpose of investigation, names and addresses of persons who claim to be entitled to enumeration, but if the enumerator had only the name and not the answers to the interrogatories, he would be compelled to make an actual visit to the residence in order to secure the required information, if the person was found entitled to enumeration.

In several cities there seems to have been a deliberate conspiracy between private individuals and some of the special agents or enumerators, or both, to fraudulently inflate the census returns. It would be inadvisable to present the evidence of such conspiracies in any individual case at the present time, as only after investigation by the Department of Justice and the possible ensuing prosecutions will the facts be fully known.

Prosecutions.—By direction of the President, the Bureau has already laid the facts thus far ascertained with regard to several cases of census padding before the Department of Justice, and other cases will shortly be brought to the attention of that department. Up to the present time indictments have been brought and convictions secured in the case of three enumerators in Great Falls, Mont., and indictments have been secured, which are now pending trial, in the case of one enumerator in Seattle, Wash., and of three enumerators and one special agent in Fort Smith, Ark.

Results of investigation of cases of overcounting.—Below are listed the several cities in which, as a result of reenumeration or rechecking, the population, as finally determined by the Census Bureau, was less than that originally returned by the enumerators. This table shows for each city the number of the original and of the corrected enumeration, and the difference; also the number of enumeration districts in which changes were made, as compared with the total number of enumeration districts in the city. As before stated, it is impossible to assert as to every one of these cities whether the excess in the original enumeration was due to deliberate fraud on the part of the enumerators or others, or to misjudgment only. It may be stated, however, that there is less evidence of conscious fraud in the case of the districts in

San Francisco, Duluth, Minneapolis, Boise, Rawlins, Laramie, Havre, Ogden, and Everett than in the case of most of the other cities. In certain cities in which some of the enumerators were undoubtedly guilty of fraud, others who overcounted the population apparently did so without fraudulent intent.

CITIES IN WHICH POPULATION AS FINALLY DETERMINED WAS LESS THAN THAT
ORIGINALLY RETURNED BY ENUMERATORS.

CITY.	As origi- nally enu- merated.	As corrected.	Difference.	Number of enu- meration districts changed.	Total number of districts in city.
Arkansas:					
Fort Smith.....	30,430	23,975	6,455	6	21
California:					
San Francisco.....	420,234	416,912	3,322	6	315
Idaho:					
Boise.....	19,782	17,358	2,424	3	16
Minnesota:					
Duluth.....	82,022	78,466	3,556	14	55
Minneapolis ¹	305,076	301,408	4,668	6	196
Montana:					
Billings.....	12,428	10,031	2,397	5	8
Great Falls.....	22,324	13,948	8,376	3	12
Missoula.....	14,688	12,869	1,819	2	8
Havre.....	5,044	3,624	1,420	2	2
Oregon:					
Portland.....	222,959	207,214	15,745	50	132
Utah:					
Ogden.....	26,145	25,580	565	14	15
Washington:					
Aberdeen.....	15,598	13,660	1,938	5	7
Bellingham.....	27,194	24,298	2,896	7	17
Centralia.....	8,065	7,311	754	3	3
Everett.....	25,702	24,814	948	11	15
Hoquiam.....	9,154	8,171	983	5	6
Montesano.....	2,984	2,488	496	1	2
Seattle.....	248,382	237,194	11,188	15	170
Spokane.....	109,695	104,402	5,293	15	62
Tacoma.....	116,270	83,743	32,527	(²)	(²)
Walla Walla.....	20,273	19,364	909	2	11
Wisconsin:					
Superior.....	51,395	40,384	11,011	17	17
Wyoming:					
Rawlins.....	4,461	4,250	205	1	2

¹ Supervisor rechecked and eliminated 2,668 names in six districts; Census Office found 2,000 duplicates in other districts.

² The population of Tacoma as originally enumerated (116,270) was reduced to 82,972 by the rechecking work done in September, covering only 38 districts out of the 73 districts in the city, representing the elimination of 33,298 names. The recount in November, covering the entire city, showed a population of 83,743, or a net difference of 771 from the population as first announced, namely, 82,972.

The enumeration in Tacoma.—The case of Tacoma, Wash., calls for special mention. The frauds in the original enumeration there were peculiarly flagrant and extensive. During August an expert special agent was sent to Tacoma to investigate, and later another was sent to join him. With locally chosen assistants they entirely reenumerated 10 enumeration districts and rechecked 28 others (the total number of districts in the city being 73), in 24 of which the process resulted in the elimination of names. It was found that enumerators in all of these 24 districts had added to their lists large numbers of

names of persons taken from privately collected slips, making no investigation whatever to ascertain whether they were residents of their districts.

The original returns of the enumerators had amounted to 116,270. This investigation in August and September gave a corrected total of 82,972. A delegation representing the commercial organizations of the city shortly thereafter visited Washington and protested against the revised figures. While admitting that there had been frauds and errors in the original count, they claimed that the population was at least 100,000. They insisted that among the names which had been improperly added to the lists in certain districts and had subsequently been eliminated, there were the names of many who, although not entitled to enumeration in those particular districts, were entitled to enumeration elsewhere in the city, having been omitted in the districts where they resided. They also claimed that in the districts reenumerated in August and September there was then actually a smaller population than had been present in April.

In view of these representations, the Bureau sent to Tacoma Mr. William C. Hunt, the chief statistician for population, who made an entire reenumeration of the city to ascertain the population actually there in April. This reenumeration took place in November and early December. It was performed most carefully. The chief statistician assembled at Tacoma several expert employees of the Census Bureau who had been working in the various Western states; and the chief statistician personally and these employees were charged with the responsibility of finally deciding all disputed cases. The local trade organizations were given an opportunity to examine the returns of this reenumeration and to produce evidence of additional names which should be included. As the result of this most thorough reenumeration, the population was finally determined to be 83,743 or only 771 in excess of the number found by the previous rechecking and reenumeration, a difference practically negligible. While some names were found to have been omitted in the September count, these were nearly offset by names which it was found necessary to eliminate in districts which had not been recanvassed in September.

CASES OF UNDERCOUNT OF POPULATION.

It would be impossible for the Census Bureau by any investigation at Washington of the schedules of the enumerators to ascertain cases of undercounting of the population through the carelessness or inefficiency of the enumerators. As already stated, the supervisors of the census and their assistants were instructed to make such investigation as was possible before sending in the schedules, and to adopt all avail-

ble means for perfecting the returns. It is impossible, however, for the most efficient supervisor to guarantee the correctness of the enumeration throughout his entire district. The only way in which the office at Washington can be informed of the probable incompleteness of the returns in any case is by evidence submitted from the city or other locality concerned. Prior to the time of the announcement of the total population of the United States, whenever a complaint that the census of any place was incomplete was presented and supported by any evidence worthy of consideration, due investigation was made. It is evidently impossible for the Census Bureau to consider any complaint based on mere dissatisfaction with the rate of growth, or supported only by arguments based upon the number of names in city directories, the increase in post-office receipts, the number of registered voters, or other similar facts. Experience shows that absolutely no conclusion of value regarding the number of inhabitants or the increase thereof can be drawn from such indirectly related facts. Complainants were therefore required to submit some tangible evidence, usually in the form of lists of persons claimed to have been omitted or in the form of the results of private reenumerations. In most instances where complaints were made, such tangible evidence could not be produced. In several cases where lists of supposedly omitted names were submitted, the schedules showed that all or most of them had been duly enumerated. Expert employees of the Census Bureau were sent to investigate wherever it seemed likely that material error had occurred. In several cases a rechecking or reenumeration of all or parts of a city was deemed necessary, and in eight of these cases the result was to show that there had actually been an undercount, and the figures were accordingly corrected. These cases were as follows:

CITIES IN WHICH THE POPULATION WAS INCREASED AS A RESULT OF RECHECKING OR REENUMERATION.

CITY.	As originally enumerated.	As corrected.	Difference.	Number of enumeration districts changed.	Total number of districts in city.
Alabama:					
Montgomery.....	37,978	38,136	158	14	19
Talladega.....	5,767	5,854	87	4	4
Georgia:					
Augusta.....	37,826	41,040	3,214	24	24
New Jersey:					
Atlantic City.....	44,458	46,150	1,692	25	26
New York:					
Newburgh.....	25,473	27,805	2,332	11	21
Port Jervis.....	9,314	9,564	250	5	8
Oklahoma:					
Woodward City.....	2,171	2,696	525	1	1
Tennessee:					
Memphis.....	130,422	131,105	683	23	200

In only four of these cities—Augusta, Atlantic City, Newburgh, and Woodward—did the addition to the original figures exceed 3 per cent. In each of these four cases the investigation indicated that there were special conditions, not to be found in most cities, tending to make the original enumeration imperfect. It was found that one or more enumerators had seriously failed in their duties, or that there had been entirely inadequate supervision on the part of the supervisors or their special agents. There is absolutely no reason to believe that the margin of error shown in these four cases would be in any degree approximated in the great majority of cities and towns throughout the United States.

This is indicated, for example, by the fact that, although vigorous complaints were made from Montgomery, Ala., and Memphis, Tenn., the Census Bureau, after rigid local investigation, reached the conclusion that the original enumeration was substantially as nearly correct as it is possible for a census in a large city to be made.

Numerous complaints were received by the Census Bureau after the announcement of the population of the United States, which were not investigated because it would have been impossible in any case to correct the figures. While the great majority of these complaints were almost certainly without foundation, it is quite possible that in some few cases undercounts occurred.

It is not to be expected that a census covering such a vast territory and enormous population as the United States possesses can be taken everywhere with absolute accuracy. However carefully supervisors may seek to select competent enumerators, there are bound to be among the more than 70,000 some who are incompetent or untrustworthy. There is every reason to believe that greater care was exercised at the present census than at any preceding, and that the margin of error is less.

GENERAL MARGIN OF ERROR AND ITS PRINCIPAL CAUSES.

It would be futile to attempt to make any general estimate as to how near the census of population for the country as a whole arrives at the correct number of inhabitants, and still more with respect to individual states, cities, or localities. Conspicuous cases of overcounting or undercounting which are investigated form no basis for conclusions as to the work of the great body of the enumerators. That in no locality of any size is the census absolutely accurate is certain. Those who have had the most experience in census work realize this the most thoroughly, but anyone on considering the nature and difficulties of the task will appreciate the utter impossibility of a mathematically exact enumeration. No enumerator, no matter

how conscientious, can be expected to spend an unlimited amount of time in going over and over his district to find the last possible person. An exceedingly close approach to accuracy could, however, be secured by conscientious enumerators were it not for the fact that the requirement that the people be enumerated at their usual place of abode involves in hundreds of thousands of cases questions of judgment which can not possibly always be determined with absolute correctness.

Doubtless most of the enumerators are disposed, when there is a question of judgment as to whether a person should or should not be enumerated, to lean slightly in favor of enumerating him, and this tendency is perfectly legitimate. Nevertheless, it is probable that, in most cities and in many entire states, the duplications due to counting those who strictly ought not to have been counted are not sufficient to offset the omissions. This statement, of course, would not hold true for those cities where the enumerators extensively padded the returns. It is probable that, taking the country as a whole, the population is slightly understated by the Census Bureau, but whether the margin of error is a fraction of 1 per cent, or amounts to as much as 2 per cent, no one can possibly know. That it should exceed 2 per cent is certainly extremely improbable.

Aside from errors in the counting of the actual numbers of the inhabitants, there are additional errors in answers to the interrogatories on the population schedules. Errors of this class, however, tend to offset one another in large measure, at least with respect to most of the interrogatories. For example, if the age of one person is overstated, this is likely to be balanced by an understatement of the age of some one else. It is probable that the results of most of the interrogatories are sufficiently accurate for all practical purposes, but this is not true of two or three of the interrogatories which are peculiarly difficult for the people themselves to answer correctly.

What has just been said with regard to the results of the interrogatories on the population schedule holds true in a somewhat less measure of those on the agricultural schedule. A prime source of difficulty with the agricultural schedule is the fact that the great majority of the farmers do not themselves know accurately the facts called for. Most of their statements regarding the value of their farm property and regarding the products of their farms are only estimates, and in many cases very rough estimates. By virtue of the large numbers concerned the errors of these estimates tend very largely to offset one another, overstatements being balanced by understatements. As to most of the questions on the agricultural schedule, therefore, the results are sufficiently accurate for practical purposes;

this is, in fact, true of substantially all the important items. However, some of the interrogatories contained in this schedule at the present census and at preceding censuses are such that the errors in the answers are not likely to counterbalance one another, and the results are, consequently, far from reliable. Careful consideration should be given to the propriety of eliminating such interrogatories from the schedule at future censuses.

It would be unprofitable at the present time to discuss in detail the causes of error in the population and agricultural censuses. The value of a discussion of these causes would be in connection with the consideration of possible means of removing them. It is the intention of the Director of the Census, by careful study of the methods of census taking abroad and by other investigations, to attempt to discover whether means can be devised for materially improving the work of census taking in the United States; and in a future report the results of such inquiry will be presented, together with a further analysis of the sources of error under present methods. It may be that the present methods of taking the census secure results as nearly perfect as is possible, but the practicability of improvements in methods is clearly deserving of most thorough investigation and consideration. Meantime a brief preliminary statement of the principal causes of error may be presented.

The most fundamental sources of error in census work are the absolute inability of the enumerators to personally reach every individual concerning whom information is required, and the ignorance of many persons themselves concerning the correct answers to the questions propounded to them. The presence of a very large number of persons who can not speak English is bound to cause serious difficulty. Information concerning persons living in hotels and lodging houses must often be secured from the proprietor, and in some cases information concerning entire families must be secured from neighbors.

Aside from these fundamental sources of error which can never be wholly removed, the following are the principal causes of difficulty in obtaining a correct census, and these causes may possibly, to some extent at least, be removed by changes in methods:

(1) *The large number of questions on the schedules.*—Every addition to the number of interrogatories places additional labor upon the enumerator, and also tends to cause annoyance to those furnishing the information. The addition of a question on any given point tends to some extent to reduce the accuracy of the returns on all other points. It will probably be desirable at future censuses at least slightly to reduce the number of questions on the population schedule, and materially to reduce the number on the agricultural schedule.

(2) *The inclusion in the schedules of inquiries which many people can not answer correctly and which others can answer correctly only after prolonged consideration.*—The presence of such difficult inquiries not only results in inaccurate statistics on the particular points covered by them, but also, by the annoyance which they cause and the time which they consume on the part of the enumerators and persons furnishing information, tends to reduce the accuracy of the returns to all the other inquiries.

(3) *Lack of experience on the part of nearly all enumerators.*—The census being taken only once in 10 years, it is natural that the great majority of the enumerators under present methods of selecting them should be absolutely without previous experience. Whatever change in methods might be made, this would still be true of a considerable proportion of the enumerators, but the proportion might conceivably be materially reduced.

(4) *Lack of experience on the part of those supervising the actual work of collecting the statistics, namely, the supervisors of the census and their clerks and special agents.*—Only an insignificant proportion of these supervisory employees at the present census had ever had previous experience in census work. A possible partial remedy might be found in substituting for a part of the supervisors expert employees detailed from Washington or in sending such employees to instruct and assist the supervisors.

(5) *Inadequate means for securing personal contact between the supervisory officers and the enumerators.*—This difficulty appears in connection with the selection of enumerators, the instruction of them in their duties, and the supervision of their actual work during its progress. As already described, in the cities fairly satisfactory provisions were made at the present census for personal contact with enumerators by the supervisors and their special agents; but in most country districts and smaller towns such personal contact was impossible. It seems desirable, therefore, that there should be either a larger number of supervisors or a larger number of special agents to assist them.

(6) *The enumeration of the population on the basis of "usual place of abode."*—Several, at least, of the leading foreign countries do not use this basis, but enumerate in each place the persons who are actually present there on the census day, no matter how temporary their stay. The attempt to enumerate on the basis of the usual place of abode—which is commonly designated as a *de jure* census—necessitates the exercise of a very high degree of judgment on the part of the enumerators in the case of large numbers of persons, and it can not be expected that even the most intelligent enumerator

will always decide these questions in such a way as to avoid either duplications or omissions. The difficulties of this sort have been more fully discussed in connection with the above statement as to census errors and frauds.

(7) *The prolongation of the enumeration over a considerable period of time.*—At the present census enumerators in cities were allowed two weeks, and in smaller places and country districts 30 days. The population of country districts is so stable that no serious difficulty arises there, but in cities, on account of the large numbers of floating population, the prolongation of the census period tends to cause omissions on the one hand and duplications on the other. In several leading foreign countries the enumeration of the population is made either in a single day or in a much shorter period of time than in the United States. Whether it would be possible to reduce the time of the enumeration materially without an impracticable increase in the number of enumerators is a matter for careful investigation and consideration. In the European countries referred to a much larger part of the work of filling the schedules is done by the families themselves than will for a long time to come be possible in this country.

(8) *The unwarranted interference of private individuals and organizations with the taking of the census.*—There may be an entirely legitimate service rendered by private individuals and organizations in securing complete returns, but the methods actually pursued in some cases have been most injurious to the accuracy of the census. Legislation tending to prevent these abuses should be considered.

(9) *The amount and form of the payments to enumerators.*—The short period of time during which enumerators are employed, and the comparatively low rates of payment, result in a very small aggregate compensation for each enumerator. The compensation is not enough to prove attractive to many very competent persons, though the desire to render a public service in many cases enables the Census Bureau to secure the services of those to whom the pay offers little inducement. Should the time of enumeration be reduced, as suggested above, the pay of each enumerator would of course be still further lessened, unless a very material increase in rates was made.

Aside from the amount of pay, the method of paying most enumerators, at so much per capita or per farm, obviously tends to cause errors. On the one hand the dishonest enumerator is tempted to pad the returns for the sake of the additional compensation, and on the other hand many enumerators who can scarcely be called dishonest are yet tempted to neglect the enumeration of those whom it is most difficult to reach because the pay is incommensurate with the

time necessary to reach them. An enumerator who has gone over his district once thoroughly naturally dislikes the slow task of revisiting families or individuals whom he was unable to reach on his first round. There is little doubt that more accurate returns could be secured by per diem payments for all enumerators, but it has been the experience of the Census Bureau that a large proportion of enumerators paid on a per diem basis can not be trusted to work with the maximum of energy and rapidity. A per diem basis for all enumerators would undoubtedly increase the cost of the enumeration greatly. It is possible that the general use of a system of mixed payments—a small per diem plus an allowance based on the number of names, farms, etc.—which was used to a limited extent at the present census, might tend to increase the accuracy of the returns without materially adding to the expense.

(10) *The date of the census as related to the agricultural returns.*—While the date of the census, April 15, is perhaps as satisfactory as any which could be selected for the purpose of the population census, it is far from satisfactory for the agricultural census. The lapse of time makes it very difficult for farmers to recall accurately the acreage, yield, and value of the crops and other products of the farm for the preceding year. Special difficulties are encountered by reason of the fact that many persons occupying farms in April as owners, or more particularly as tenants, were not on those farms during the preceding year, and yet it is absolutely necessary to rely on them for information concerning the products of the preceding year, as it would be quite impossible to reach the original occupiers. Approximately 20 per cent of the tenant farmers canvassed in April, 1910, did not farm the same land in 1909. Naturally their replies to interrogatories concerning the business of 1909 are frequently very inaccurate. From the standpoint of the agricultural returns, it would be highly desirable that the census should be taken during the year to which it relates, say, in November or December, after the crops have been harvested. The only objection that has ever been raised to taking the census in the fall is the fact that elections occur early in November and that consequently there would be more danger of political influence in the selection of the enumerators than when the census is taken long before election. Whether this objection is insuperable is a matter that deserves careful consideration.

A further discussion of these difficulties in census taking and of possible remedies will be presented in a future report of the Director of the Census.

FIELD WORK OF THE CENSUS OF MANUFACTURES, MINES
AND QUARRIES.

The census of manufactures, mines and quarries, taken during the year 1910, related to the business of the calendar year 1909. As provided by law, the census covered all mining and quarrying establishments, and all manufacturing establishments "conducted under what is known as the factory system, exclusive of so-called neighborhood, household, and hand industries." There is no precise and generally recognized definition of establishments conducted under the factory system, and a number of rules and distinctions were adopted with a view to conforming as nearly as possible to the intent of the act. The rules adopted differed slightly from those followed in 1900 and 1905, tending to increase somewhat the number of establishments to be canvassed, particularly by including local sawmills and gristmills doing a custom business. Under the definitions at the two previous censuses of manufactures, such mills which did not produce for sale but only sawed lumber or ground grain for toll were not considered as falling under the factory system. In the Thirteenth Census steam laundries were also for the first time brought within the canvass of manufacturing establishments. This was done on account of the present great importance of this industry, and the fact that they fall fairly within the description of manufacturing establishments on the factory system. Aside from various other rules as to what establishments should or should not be canvassed, all manufacturing establishments were excluded which produced less than \$500 worth of products during the year.

By an amendment to the census act, passed February 25, 1910, the Bureau was required to enumerate the number of animals slaughtered for food purposes and the number of hides produced during the year. This necessitated a canvass of all butchering establishments, many of which would not have been canvassed under the general rules defining the factory system.

The schedules used for collecting the statistics of manufactures consisted of one general schedule applicable to all industries, and of special schedules, each relating to a single industry. The latter were used only in connection with the more important industries. The total number of special manufactures schedules was 60. The general schedule was materially simpler than that employed at the census of 1900 and of 1905, and the same was even more true of most of the special schedules. In the census of mines and quarries the same policy of the use of general and special schedules was pursued.

In respect to the collection of statistics of mines and quarries, a scheme of cooperation between the Bureau of the Census and the Geological Survey was worked out and put into practice. The Geological Survey collects and publishes annual statistics of mines and quarries. It was deemed to be in the highest degree desirable that the duplication of work that would result, if the two services prosecuted their inquiries independently, should be avoided. Although some difficulties were encountered in carrying out this scheme on account of the different character of data desired by the two services, nevertheless the program adopted operated with general satisfaction. Apart from all questions of economy, it was advantageous that the operators of mines and quarries should be called upon by the Federal Government to fill out or furnish information for only one schedule, instead of two emanating from different bureaus. A further advantage arises from the fact that the results published by the two services will correspond much more closely than would have been possible if independent canvasses had been made.

ORGANIZATION OF FIELD FORCE.

In most parts of the country the work of collecting the schedules of manufactures and mines and quarries was performed by an entirely different organization from that which collected the statistics of population and of agriculture. In some of the less populous sections, particularly in the South and West, in order to save expense of travel, enumerators of the population were required to collect the schedules of manufactures, mines and quarries, but the aggregate number of schedules collected by them was but a small fraction of the total. Moreover, most of the establishments canvassed by them were small. The great majority of the schedules were collected either by special agents appointed particularly for that purpose, or by regular clerks of the Census Bureau detailed from Washington. The total number of special agents employed in this work was 1,227, and the number of clerks detailed to the field work 76.

Under the law the special agents were appointed by the Director. No examination was required by the act. It was deemed best, however, to hold an examination. The test papers were prepared by the Bureau of the Census, and were of a practical character, in part following the same general principle as in the examination of enumerators, but of course more difficult. Through the courtesy of the Civil Service Commission, the examinations were presided over by the civil-service examining boards, but the papers were rated by the Census

Bureau. The examination proved in general very successful, and a large proportion of the special agents appointed were chosen from the eligible list so established. It was essential in the interest of economy, however, that, so far as possible, the special agents intended to work in any given district should be appointed from among the residents of that district; and therefore in a considerable number of cases, owing to the absence of local residents who had passed the examination, it was necessary to select others.

The special agents were of two grades: Chief special agents and ordinary agents. The chief special agents, together with clerks from the Census Bureau, had charge of the work of other agents; in some cases they also themselves canvassed districts during part of their time, or canvassed the larger and more important establishments. In each large city there was one person in charge, generally a regular clerk from the Census Bureau, and one or more other chief special agents. Outside of the large cities, the country was divided off into general districts and subdistricts, varying in size according to the number and importance of the establishments to be canvassed.

The chief special agents were paid at the rate of \$4.50 to \$6 per day. Most of the other special agents were paid at a mixed per diem and piece-price rate, under the authority of the amendment to the census act, passed February 15, 1910. By this plan they were paid a fixed rate of \$3 per day, and were then allowed \$1 for each schedule secured in excess of an average of three schedules per day. The maximum payment, however, was not allowed to exceed \$4.50 per day on the average during the entire period of employment. The object of this arrangement was to put some pressure upon the special agents to expedite their work, but to avoid making that pressure so strong as to tempt them to do their work carelessly and superficially. It was not considered wise to pay special agents on a strictly piece-price basis, as might have been done under the authority of the law.

The system on the whole worked quite satisfactorily. It was impossible, however, to adjust the rates per schedule, or the required number of schedules per day below which no extra pay should be allowed, in such a way as to conform to the differences in conditions in different parts of the country. In some sections a good special agent would be able without difficulty to average more than three schedules per day, and thus increase his compensation above the minimum of \$3; but in other sections an equally capable special agent, owing to differences in conditions, could not possibly average more than three schedules per day. It is to be hoped that at another census it will be possible, as a result of the experience of the present

census, to adjust the rates per schedule in a more uniformly equitable manner, although the difficulties involved are very serious.

The following statement shows the number of chief and other special agents employed in the census of manufactures, mines and quarries, at each rate of compensation; distinguishing the number of those paid on a mixed basis who earned more than the minimum of \$3 per day, together with the proportion of their pay which was derived from the minimum and from the excess payments, respectively.

SPECIAL AGENTS FOR MANUFACTURES, MINES AND QUARRIES, BY RATE OF COMPENSATION, ACCORDING TO LAST RATE PAID.

Total number.....	1,227
At \$6.00 per diem.....	10
At \$5.00 per diem.....	32
At \$4.50 per diem.....	38
At \$4.00 per diem.....	15
At \$3.50 per diem.....	1
At \$3.35 per diem.....	2
At \$3.00 per diem.....	36
At \$2.00 per diem.....	2
On mixed basis, \$3 per diem and piece price.....	1,091
Agents on mixed basis earning in excess of minimum pay..... number..	375
Proportion of salary of these derived from minimum rate..... per cent..	83
Proportion of salary derived from excess piece price..... do....	17
Clerks detailed for field duty..... number..	76
Clerks detailed for office work in the principal cities..... do....	31

The special agents were each assigned a headquarters town, usually but not always the principal town in their district. At this town they received no per diem in lieu of subsistence, but when away from the town over night traveling through the district they were allowed, in addition to actual traveling expenses, a per diem to cover subsistence. This per diem was fixed at \$3 in most parts of the country, but at \$2.50 in some districts where the cost of hotel accommodations is especially low. Special agents who left their headquarters town during the day but returned at night were allowed 50 cents for the noonday meal.

It is probable that somewhat better results could be secured by paying higher rates of salary than were considered possible at the present census, in view of the limit of the appropriation. The time of service is short, averaging only about three months. The work requires men of good address and very considerable intelligence, and if possible those who have had experience in accounting. It is difficult to secure men possessing these qualifications for such a short period at the rates allowed.

COST OF FIELD WORK.

The following statement shows the cost of the field work of the census of manufactures, mines and quarries, divided into its principal items, but not including the small sum paid to the population enumerators who collected schedules of manufactures:

COST OF FIELD WORK, CENSUS OF MANUFACTURES, MINES AND QUARRIES.

CLASS.	Aggregate.	COMPENSATION.			Subsistence.	Expenses.
		Total.	Salaries.	Excess on piece price.		
Total.....	\$742,873.70	\$478,373.90	\$457,238.70	\$21,135.20	\$177,032.50	\$87,467.30
Special agents.....	622,859.45	416,643.82	395,508.62	21,135.20	134,286.50	71,929.13
Detailed clerks (field work)	99,515.53	47,940.71	47,940.71	.....	40,229.00	11,345.82
Detailed clerks (office work)	16,749.07	13,789.37	13,789.37	.....	2,517.00	442.70
Expense of offices in principal cities.....	3,749.65	.....	.....	.....	.....	3,749.65

If to the above itemized figures be added the estimated cost of the services of the enumerators who collected schedules of manufactures, mines and quarries, the total would be about \$751,000. If this total be divided by the number of establishments for which schedules were secured—371,444 (including slaughterhouses)—the average cost per establishment would be \$2.02. This is substantially the same as the average cost at the census of 1905, when 216,262 establishments were reported at a total cost of about \$445,000.

The census of 1905 covered only manufacturing establishments, and did not include mines and quarries, nor did it include the special enumeration of slaughterhouses or laundries. The number of manufacturing establishments proper for which returns were secured at the census of 1910 was substantially 315,000, as compared with 216,262 in 1905. The additional number does not represent so much increase in the number of establishments doing business in the country as the extension of the definition of manufacturing establishments.

DURATION OF WORK.

The work of collecting the statistics of manufactures, mines and quarries, was begun in a few cities as early as February, 1910, but in some places and sections it was not begun until April or even May. The work was finished or substantially finished in some districts as early as May, but in others was prolonged even until the fall. The great majority of the schedules, however, were received in the Bureau by July 1st, the number of establishments for which they had been

received up to that time being 283,000 out of an ultimate total of 345,020. Of these 345,020, about 30,000 were mines and quarries.

The statement just given does not include the butchering establishments not conducted on the factory system, schedules for which were collected under the amendment of the act above referred to. These numbered 26,424, making the grand total of establishments reported 371,444.

MINOR DECENNIAL CENSUS INVESTIGATIONS.

DEPENDENT, DEFECTIVE, AND DELINQUENT CLASSES.

In addition to the general statistics of population, agriculture, and manufactures, mines and quarries, the decennial census includes special investigations of the dependent, defective, and delinquent classes. These special investigations fall into three main divisions: (1) Enumeration of inmates of institutions for criminals, paupers, insane, and feeble-minded; (2) enumeration of benevolent institutions; and (3) special investigation of the deaf and dumb and the blind, whether in institutions or not.

The object of the first-mentioned branch of the investigation is to ascertain the number and characteristics of the inmates of almshouses, prisons, insane asylums, and similar institutions, including (1) those present in such institutions at the beginning of the census year, 1910; (2) those admitted during that year; and (3) those discharged during the year. For this work one special agent was appointed in each institution throughout the country, usually an official of the institution, and monthly reports were called for. The work has progressed very satisfactorily, but the tabulation of the results can not begin until after the close of the calendar year 1910.

The object of the investigation of benevolent institutions is to present an accurate directory of such institutions and to ascertain the number of persons in them at a given date in 1910, and a summary of the receipts and expenditures of the institution for that year. The actual collection of these statistics can not, therefore, be begun until after the end of the calendar year 1910, but plans for the work are under way.

The special statistics on the deaf and dumb and the blind are to be secured by means of special schedules of inquiries sent by mail to all families in which persons of this class were reported by the general population enumerators. With the advice of experts such special schedules have been formulated and will shortly be distributed.

These three inquiries, being more or less distinct from the main work of the Thirteenth Census, have been assigned to the division of revision and results.

IRRIGATION ENTERPRISES.

By an amendment to the census act, passed February 25, 1910, the Census Bureau was directed to conduct an investigation of irrigation enterprises. The general schedules of agriculture already included inquiries to be made from each farmer as to the number of acres of irrigated land on his farm, and the acreage, yield, and value of each class of crops raised on such land. The investigation contemplated by the amendment, however, related to the irrigation works and enterprises themselves, their location, characteristics, cost, charges for service, etc. For the conduct of this work it was necessary to organize a special force of field agents, made up partly of clerks detailed from the office at Washington, partly of special agents previously employed in the census of manufactures, mines and quarries, and partly of persons locally appointed because of their familiarity with irrigation enterprises. Cooperation was also secured from the division of irrigation investigations of the Department of Agriculture. A variety of schedules adapted to different classes of enterprises was devised, and they are now in process of collection. The field work will be completed early in the spring of 1911. It is estimated that this investigation, including the tabulation and publication of the results, will cost between \$100,000 and \$200,000. This large item of expense was not included in the original estimates of the cost of the decennial census.

OFFICE WORK OF THE THIRTEENTH CENSUS.

APPOINTMENT OF ADDITIONAL EMPLOYEES.

Preparation for the taking of the Thirteenth Census required a large amount of office work in the office at Washington, but the regular force of the Census Bureau proved nearly adequate for this preliminary work up to about January 1, 1910. From that time until May the force was increased gradually by appointments from the Thirteenth Census eligible register, and to meet emergencies some 60-day appointments were made by virtue of a provision of the census act. Beginning early in May, the force was rapidly increased, in order to begin the work of tabulating the returns of the census. Whereas at the beginning of the fiscal year 1910 the Bureau had on its rolls in Washington about 650 persons, the force had increased to about 3,075 at the end of the fiscal year. After that time further appointments were made until a maximum of about 3,820 was reached in September, after which the force began gradually to decrease.

While much the larger proportion of clerks added to the rolls were chosen from the eligible register in accordance with the order of rating and the rule of apportionment, the provision for emergency appointments was resorted to in limited measure, this being found absolutely necessary in order to prevent delay in the development of the various branches of work. Under the census act the Bureau is permitted in emergencies to appoint, for not to exceed 60 days, persons who have had previous experience on census machines, or persons who have passed the special census examination and who by reason of residence or otherwise are immediately available, but who have not been reached in the regular order of rating and apportionment. The largest number of emergency appointees on the roll at any one time was about 342, in the month of July, 1910. All emergency appointees were dropped in December, and it is not likely that further emergencies will arise. x

OFFICE WORK OF THE POPULATION CENSUS.

General description.—The office work of the population census consists, in brief, of the following steps: (1) A count of the population direct from the schedules for the purpose of determining the pay of the enumerators and—after subsequent careful examination of the schedules to determine their accuracy—for the purpose of announcing the population of the various localities and states, and ultimately the United States as a whole; (2) such editing of the schedules as is necessary to prepare them for the punching clerks, particularly with reference to the returns of mother tongue and occupation; (3) punching of a card for each individual making up the population, showing all the facts appearing on the schedule concerning him, this being done by means of punching machines; (4) the comparing of the punched cards with the original schedules so far as is found necessary; (5) the verification of the cards by means of electrical machines which automatically reject cards in which any of the required holes have not been punched or in which the holes are inconsistent with each other, and the correction of such rejected cards; (6) the sorting of the cards by means of electrical sorting machines into main groups, as determined, for example, by sex, color, or nativity, several different sortings being required at the different stages of the work; (7) tabulation of the facts with regard to the characteristics of the population from the cards by means of electrical tabulating machines, it being necessary to run the cards through the machines several times in order to take off all of the facts; (8) assembling and publication of the results of the tabulation.

The first four of the above-mentioned processes of office work on the population census were well under way by the end of the fiscal year 1910, and since that time all four of these processes have been completed. The count of the population was completed for all the states and outlying possessions on December 10, and the punching of the cards for the population of continental United States was completed at about the same time.

Card punching.—The 300 new keyboard punching machines referred to in the previous report, which were built by the Sloan & Chace Manufacturing Co., of Newark, N. J., under designs prepared by the Census Bureau, were completed and delivered during May and June, 1910. On account of the delay in the delivery of part of the machines, and on account of the difficulties at first encountered in the operation of some of the machines, it was deemed desirable to put in operation also some of the old-style pantograph punching machines owned by the Bureau, and used at the census of 1900. The defects in the keyboard punching machines were partly in design and partly in materials and workmanship. They were only such as might be anticipated in a machine based on entirely new principles and never before manufactured. These defects were gradually remedied by the machine shop of the Bureau, and ultimately most of the new punching machines were able to work very satisfactorily. Operators on them proved able to turn out fully 50 per cent more cards per day than those on the old-style machines.

The number punched per day increased gradually with the skill of the operators, and toward the close of the period of punching averaged over 1,800 on the keyboard machines and very nearly 1,200 on the old-style machines. The operators on the new machines were paid at the rate of 20 cents per hundred cards, and those on the old machines at the rate of 30 cents per hundred cards. While the saving thus effected by the use of the new machines was not sufficient at the present census alone to pay for the cost of constructing the new machines, which amounted to \$75,000, the machines can undoubtedly, with moderate expense for repairs and improvements, be advantageously used at another census, and possibly even for two future censuses, so that in the long run the investment in these machines will probably prove decidedly advantageous to the Government. The total number of cards punched on the new machines was in round numbers 63,500,000, and on the old machines 30,000,000, somewhat over two-thirds of the work thus being done on the new machines. In order to expedite the punching of the cards, two shifts were operated during most of the time, although for a considerable period during the later part of the punching work the night shift on the panto-

graph machines was discontinued. A final statement with regard to the cost of the work of punching cards, and the cost of comparing back the cards to the schedules will appear in the next annual report of the Bureau.

Tabulating machines.—The 100 so-called semiautomatic electric tabulating machines for tabulating the punched cards, which also were built by the Sloan & Chace Manufacturing Co. from designs prepared by the Bureau, were all received prior to the end of the fiscal year and in ample time for the census work. In fact, the use of these machines was begun only to a very small extent during the fiscal year 1910, but since that time practically all the machines have been put in operation. These machines have proved most satisfactory. Partly because of the introduction of printing mechanism for recording the results of the count, and partly because of the substitution of electric power for hand power in actuating the machines, the operators are able to turn out a much larger number of cards than they could on the hand machines used in 1900. Operators on these machines are paid at piece rates, adjusted according to the character of the work. It is too early at the present time to give a precise statement of the results accomplished by these machines and of the cost of the tabulation work.

Since the close of the fiscal year the Bureau has completed in its own shop a new tabulating machine in which the cards are fed in automatically instead of by hand, with a consequent great increase in speed. This machine is the device of experts employed by the Bureau. As is usually the case with a machine of an entirely new type, some difficulties are still being encountered, but there is every reason to anticipate that they will be entirely eliminated, and several other machines are accordingly being constructed. It is believed that by these machines a large saving in cost can be accomplished, even at the present census, and a much larger saving at future censuses.

Sorting machines.—The sorting machines which are used by the Bureau in the population work are machines which were bought at the census of 1900 from the Tabulating Machine Co., from which company also the tabulating machines then used on both the population and agricultural work were rented. These sorting machines were used at the census of 1900 only on agricultural cards. They have been widened in the machine shop of the Census Bureau to accommodate the population cards, and have also been improved in certain other details, so that their speed is very much greater than before. The Tabulating Machine Co. has filed a petition for an injunction against the Director of the Census with respect to these

machines, claiming that the alterations made were practically equivalent to the construction of new machines in infringement of the patents of that company. On trial, the preliminary restraining order which was issued was dissolved, and the motion for a preliminary injunction denied. The trial of the petition for a permanent injunction is still in process. The Director of the Census has at all times had expert legal advice with respect to patent rights, and is confident that there has been no infringement of patents in this case.

Although the work of sorting and tabulating cards is only in its beginning at the present time, it is already possible to state with considerable confidence that even at the present census the Bureau will save money as the result of the construction of its own tabulating machines in preference to the system of leasing machines from a private concern. In the long run there is every reason to anticipate still greater advantages from the establishment of the independent tabulating system.

Methods of presenting population statistics.—Great care has been given by the Bureau of the Census to a consideration of methods of presenting the results of the population census, and it is believed that they will be rendered much more valuable to the public than hitherto. An important innovation will be the presentation of the statistics for each county, city, or state in a place by itself. In the volumes of the census of 1900 the facts in regard to any particular locality were scattered in a large number of different places through several volumes. In addition to this presentation by locality, there will be a presentation according to subjects in which the comparative statistics for states and for all cities of 25,000 inhabitants and over will be published. In other words, there will be a duplication of the principal figures in such a way as to facilitate the convenience, on the one hand, of the persons interested in a particular county, city, or state, and, on the other hand, of those interested in any particular subject.

Another innovation will be the presentation of percentages showing the relationship of the figures in practically all cases where such percentages are of any significance. This will greatly facilitate the interpretation and comparison of the statistics.

It is also proposed at the present census to work out from the returns on the schedules statistics with regard to fecundity as indicated by the number of children born and the number living, for women of different classes; in comparison with their age and the duration of marriage. A separate set of cards, in addition to those for the population returns proper, is required for this tabulation. A considerable amount of preliminary work on this subject was under-

taken at the census of 1900, but the results were never tabulated or published. It is respectfully suggested that the Secretary recommend to Congress that the Director of the Census be authorized to tabulate the more important information on this subject for the 1900 census as well as that for 1910. In due time an estimate of the necessary expenditure will be presented. This subject is one of profound importance, and the census schedules furnish data by which conclusions of the utmost value can be readily drawn. A plan has been devised by which the expense of punching cards and tabulating the results on this subject for the census of 1910 will be much less than would have been necessary to complete the work on the lines begun in 1900.

OFFICE WORK OF THE AGRICULTURAL CENSUS.

The present census of agriculture is being tabulated by radically different methods from those used in 1900. At that time a system of punched cards and electric tabulating machines, somewhat similar to that employed in the population census, was used for handling the agricultural returns. Because of the large number of facts on the agricultural schedules, an average of no less than 20 different cards was required for each farm under the card system. Were it necessary, as in the case of population, to combine the statistics of agriculture in numerous different ways, this system of punched cards would be essential to economy. It is only, however, in connection with such combinations and cross-presentations of facts that the card system is advantageous. After careful consideration the conclusion was reached that practically all the value of the agricultural census could be secured by classifying the statistics on three bases only: First, according to the color or race of the farmer; second, according to tenure; and third, according to the size of farms; and by no means all of the statistics require presentation according to each of these classifications. It is found possible to secure the compilation of the facts according to these classifications, separately and in conjunction with one another, by the simple device of sorting the schedules themselves before the tabulation begins. Having sorted the schedules, the data for any given class or subclass of schedules are taken off directly on listing adding machines, or, in some cases, on typewriter-adding machines. It involves practically no more labor thus to transcribe the results by adding machines than was required for the process of punching cards, and when the results have been transcribed the totals are already secured without the further process of sorting cards and running them through tabulating machines. The work has already progressed sufficiently to make it clear that the cost of tabulating

the agricultural census of 1910 by this method will be materially less than the cost at the Twelfth Census.

A further advantage of the use of listing adding machines and typewriter-adding machines is that it materially facilitates the editing and correction of the returns of individual farms. Although it is not the policy of the Census Bureau arbitrarily or extensively to edit figures, it is absolutely necessary to make some insertions or corrections. For example, if the acreage of a crop is given for a farm, but the yield, by accident, omitted, no appreciable error arises from estimating the yield for that particular farm as equal to the average yield of other farms in the district. When the card system was employed it was necessary to make such revisions upon the original schedules. With the present system of tabulation the editorial work can be done largely on the slips taken from the listing adding machines and done much more rapidly and accurately.

In order to facilitate this editing work and for other reasons, unusually wide adding machines, having 17 banks of figures, are used for some of the tabulations, particularly those for crops. By using these wide machines the three items of acreage, quantity, and value of each crop can be entered side by side, and the eye can readily pass down the columns of figures and note the omissions and obviously excessive or deficient items.

Part of the adding machines used in the agricultural division have been rented, the others purchased outright. The following statement shows the number of machines of each type:

TYPE OF MACHINE.	Number ordered.
17-bank Burroughs.....	156
13-bank Burroughs.....	1 47
9-bank Burroughs.....	1 25
16-bank Comptograph.....	5
9-bank Dalton.....	2 30
Remington-Wahl typewriter-adding.....	17
Elliot-Fisher typewriting-adding.....	5
Underwood-Wright typewriting-adding.....	1
Total.....	286

¹ Rented. ² Twenty-five on rental basis, with privilege of purchase at end of rental period.

To assist in determining the number of each type of machine to be employed, the Bureau conducted careful preliminary experiments for the purpose of testing each machine to ascertain its adaptability for use in the various branches of the work to be performed. The number of each type of machine purchased was based upon these experiments. The conclusion reached by the preliminary use of the machines has been confirmed by the results of the practical experience of the office in its later tabulation.

The work of tabulating the agricultural census had only just been begun at the close of the fiscal year 1910, but since that time has been actively conducted, the maximum number of machines and employees being in operation as early as September. All the schedules will first be tabulated with respect to the more important data, namely, number, acreage, tenure, and value of farms and buildings; the race, nativity, and age of farm operators; the farm expenses; the number and value of domestic animals, poultry, and bees; and the acreage, yield, and value of the principal crops. The several distinct tabulations necessary to secure this information proceed substantially side by side, so that all will be completed at about the same time. The data have already been taken off for approximately one-half of the farms of the country, and it is expected to complete these principal branches of the tabulation early in the spring of 1911, after which time the less important statistics will be tabulated. The figures for these more significant subjects for a considerable number of states have already been given to the public in the form of summary press statements.

Very extensive changes are being planned in the methods of arranging and publishing the figures of the agricultural census, with a view to making the results more useful to the general public. The changes in this respect in the agricultural census will be broadly similar to those mentioned with respect to the population census. One of the most important features will be the assembling of all the information concerning any given county in a single place.

OFFICE WORK OF MANUFACTURES CENSUS.

The office work of tabulating the statistics of manufactures, mines and quarries was begun in a small way during the fiscal year 1910 and is now in full progress. The returns are taken up one state at a time, and figures for two or three states have already been issued. The methods of tabulation followed in the division of manufactures at the present census are substantially those followed at the census of 1905. The items for each establishment are first taken off on wide-carriage typewriters, and the figures for each column are then subsequently added by means of ordinary adding machines. Typewriter-adding machines are used to a limited extent. As the classification of the returns is simple, there is no need of a complicated method of tabulation.

No very material changes are contemplated in the method of publishing the returns of this branch of the census. The principal statistics are presented in two forms, by states, subdivided according to industries, and by industries, subdivided according to states.

WORK OF THE BUREAU ASIDE FROM THE DECENNIAL CENSUS.

Aside from the work of the decennial census, the Bureau during the past year carried on work in connection with the four subjects concerning which it is required annually to prepare statistics, namely: (1) Finances and municipal activities of cities having over 30,000 inhabitants; (2) ginning, consumption, and stocks of cotton; (3) births and deaths in states and cities which maintain a system of registration; and (4) forest products. Aside from the annual statistical work and the statistical work of the decennial census, the Census Bureau is authorized by law to collect at intervals, usually of five or ten years, statistics on various other subjects. No new investigations of this character were begun during the fiscal year 1910, but considerable work was done in completing the tabulation and publishing the results of investigations previously made. During the year the Bureau issued twenty-eight publications, eight being reports of some magnitude, and twenty being bulletins and pamphlets.

DIVISION OF VITAL STATISTICS.

During the fiscal year 1910 the annual report on mortality statistics covering the calendar year 1908 was published and distributed. The more important results were shown in a preliminary bulletin. The returns of deaths for the calendar year 1909 were mostly compiled prior to the end of the fiscal year. The publication of the results in the form of a bulletin was deferred some what in order that the estimate of the population for 1909, used in the computation of death rates for that year might be revised on the basis of the census of 1910. A bulletin containing the more important statistics of mortality for 1909, with a new computation of death rates, has been issued since the end of the fiscal year.

Largely through the activity of this Bureau in urging upon the public the importance of vital statistics, there has been a steady extension of the area in which deaths are registered with sufficient accuracy to justify the Bureau in publishing them. Whereas in 1900 only about 40 per cent of the population of the country was included in the registration area, for the calendar year 1909 over 55 per cent was included. The rapidity of progress is seen from the fact that the proportion for 1908 was 51.8 per cent, while in 1909 it rose to 55.3 per cent.

The first collection of statistics of births ever made by the Federal Government was authorized in April, 1909, and included all returns available for the entire country. This compilation has been

completed, and the report will very soon be published. As in the case of the statistics of deaths, the Census Bureau does not itself directly collect the information, but obtains transcripts of the original certificates recorded by those states and cities which have a system of registration. The area in which adequate registration of births is maintained is much less than in the case of deaths. The Bureau has already authorized the transcription of the returns for 1909 and 1910 in this limited area, and as soon as possible a report will be issued giving these statistics. It is of the utmost importance that there should be a rapid extension of the system of careful registration of births. Aside from other purposes, accurate statistics of births would be of incalculable value in enabling a proper statement to be made of infant mortality, the proper comparison in the case of infant deaths being with the number of births.

During the fiscal year 1910 the chief statistician for vital statistics was sent to Paris as a delegate to the meeting for the Decennial Revision of the International Classification of Causes of Sickness and Death. The classification adopted at this meeting has been translated and published by the Census Bureau for the use of registration officials and others, and a Physicians' Pocket Reference thereto has been distributed to all physicians in the United States, to medical students, and to state and city registration officials.

Plans are under consideration for special decennial reports on mortality, comparing the experience of the past 10 years in the registration of deaths, with the mean population and presenting life tables derived therefrom, and also data relating to the mortality in various occupations.

In its work in vital statistics the Bureau has had the hearty cooperation of the sanitary and registration officials and of the American Medical Association, the American Public Health Association, the American Statistical Association, and the American Federation of Labor.

DIVISION OF MANUFACTURES.

Aside from the decennial census of manufactures, mines and quarries, the manufactures division has charge of the annual investigation on forest products. The reports on the several branches of the forestry industries covering the calendar year 1908 were all published during the fiscal year 1910, and the reports for the calendar year 1909 were in process of preparation during the fiscal year, and since that time have all been issued.

Every five years the division of manufactures conducts an investigation of the electrical industries, namely, street railways, central electric light and power stations, and telegraphs and telephones.

The last investigation covered the business of the calendar year 1907, the statistics being collected during the calendar year 1908 and compiled during the latter part of the fiscal year 1909 and the fiscal year 1910. Bulletins covering the different branches of these industries were issued during the fiscal year 1910, and since that time the final reports have all been issued.

The division of manufactures has also had charge of the census of fisheries. The field work of this investigation was conducted during the calendar year 1909, and the work of compiling the statistics and preparing the necessary text and analyses was in progress during 1909 and up to the fiscal year 1910. Since the end of the fiscal year 1910 the report has been put in shape for printing and will shortly appear.

The division of manufactures has also charge of the statistics of cotton production, which involve annually ten preliminary statements of cotton ginned to specified dates, summarized at the end of the season in an annual production report; also statistics of the supply and distribution of cotton, which involve four statements, summarized as of September 1, November 1, January 1, and March 1, respectively. This branch of the work has been carried on satisfactorily and promptly, and receives the very general approval of those interested in the cotton industry.

REPORT ON RELIGIOUS BODIES.

The special report of the Census Bureau on religious bodies relating to the year 1906 was completed during the last fiscal year. The principal results were issued in the form of a bulletin early in the fiscal year and the final volumes, two in number, were published later. The first volume presents the statistics arranged according to states and cities, while the second volume presents them according to a denominational arrangement, embracing a history and description of the organization of the several denominations and sects.

STATISTICS OF CITIES HAVING A POPULATION OF OVER 30,000.

The Bureau of the Census collects and publishes annual statistics of cities having a population of over 30,000. During the fiscal year the report for the year 1907 was published and the report for 1908 was practically completed, being published in December, 1910. The report for 1908 was restricted exclusively to financial statistics. As a result, the volume of the report was reduced from 548 pages, required for the 1907 report, to 353 pages. This is in accordance with the new plan which has been adopted by the Bureau of distinguishing between the financial statistics of cities and what is termed physical statistics; that is, statistics relative to personnel, equipment,

activities, and work performed. It is very necessary that the financial statistics should be collected and published annually. The same necessity, however, does not exist in respect to the physical statistics of cities. It is believed that it is sufficient if each department of municipal activities is covered once in five years. The present intention is to take up the different departments of municipal work one or two at a time in such a way as to cover all fields in about five years. In this way it will be possible to give details that would not be possible were the attempt made to cover all branches of municipal work at one time. The results of these investigations will be published in separate volumes. The first investigation of this character relates to sewers, refuse disposal, and highways, and covers the year 1909; the field work on this investigation was prosecuted during 1910.

In prosecuting its work relative to the collection of municipal statistics, the Bureau has used its best efforts to bring about uniformity on the part of municipalities in their methods of keeping accounts and publishing financial reports. Steady progress is being made in this direction with the result that not only is the work of the Bureau in collecting statistics correspondingly reduced, but the figures that are published permit of more accurate comparisons being made. In this work the Bureau has had the cooperation of the National Municipal League, various associations of accountants, and city officials. Conferences have been held at different times under the auspices of the Bureau for the purpose of securing outside criticism of the proposed plans of the Bureau and of bringing about a general agreement regarding objects and methods.

APPROPRIATIONS.

As stated in the annual report of this Bureau for 1909, the estimate originally made of the cost of taking the Thirteenth Census, and at the same time continuing the regular annual statistical work of the Bureau of the Census for the three-year census period ending June 30, 1912, was \$14,117,000, of which \$12,930,000 was the estimated cost of the census proper. It now appears certain that this estimate was too low and that the expenditure during the three-year period will reach about \$14,500,000.

This increased expenditure is chiefly in connection with the field work of collecting statistics. It was found absolutely necessary, in order to secure enumerators in some sections of the country, to pay somewhat higher rates than were originally contemplated. Further unforeseen expense was involved by reason of amendments to the census act, passed in 1910, and calling for additional statistics, notably statistics of irrigation enterprises and statistics of the number of domestic

animals slaughtered for food and the number of hides removed from such animals. The amendment also passed in 1910, adding the question of mother tongue to the census schedules, involves additional expense in editing schedules and tabulation, probably amounting to at least \$100,000.

On June 29, 1909, an appropriation of \$10,000,000 was made by Congress for the salaries and necessary expenses of the Thirteenth Census. This appropriation was not limited to the fiscal year 1910, but the greater part of it was required for actual expenditures or obligations incurred during that year for the field work. On June 17, 1910, the legislative, executive, and judicial appropriation bill carried an additional appropriation of \$2,000,000, which is to continue available until the end of the census period. The greater part, if not all, of the \$12,000,000 thus far appropriated will be expended before the end of the fiscal year 1911. Another appropriation of \$2,500,000 has therefore been asked for to cover the cost of tabulation during the fiscal year 1912 and the heavy cost of publishing the results of the census.

QUARTERS.

In order to provide for the large force necessary to compile the statistics of the Thirteenth Census, additional quarters had to be secured. About the beginning of the calendar year 1910, therefore, two additional buildings were leased. One of these buildings, designated as Census Annex No. 1, is a four-story brick building, located on First Street, immediately adjoining the main Census Building. The annual rental is \$6,000. This building is occupied chiefly by the manufactures division. The other additional building, designated as Census Annex No. 2, is a four-story brick building, located on L Street near Fifth NW., originally constructed for an armory. The annual rental is \$13,000. This building is almost wholly devoted to the agricultural division, but the smaller division of vital statistics is also located there.

The following statement shows the floor space and rentals of the three buildings now leased by the Census Bureau:

	Gross square feet.	Annual rental.	Gross rental per square foot (cents).
Main building.....	95,000	\$21,000	22.2
Annex No. 1.....	32,000	6,000	18.7
Annex No. 2.....	62,000	13,000	21.0
Total.....	189,000	40,000	21.2

In view of the large rental expense, but still more by reason of the inconvenience of the buildings themselves, their lack of fireproof construction, and the separation of the force, serious consideration should be given at the proper time to the question of constructing a special fireproof building for the temporary work of the succeeding decennial censuses. Provision has been made in the plans for the proposed building of the Department of Commerce and Labor for space to accommodate the normal force of the Bureau of the Census during intercensal periods. It is, however, for obvious reasons, inexpedient to make provision in a monumental building of this character for the great space necessary to accommodate the large temporary force employed by this Bureau during the decennial census period only. The force of the Bureau during the census period is four or five times larger than between the censuses, and if space is to be owned by the Government to accommodate this large increased force, it should be in a building situated on less expensive land and less expensively constructed than the department building. It is probable that some profitable use could be made during the intercensal period of a special building designed primarily for the decennial census work. So long as the Government has not available space of its own capable of accommodating the census work, there is serious risk that at any given census it will be either impossible to secure any quarters whatever by rental from private parties, or that it will be necessary to scatter the force in several different buildings and to put up with very inferior accommodations. In view of the great expense of collecting the census schedules, it is of the highest importance that the quarters in which they are stored and in which they are handled during the process of tabulation should be absolutely fireproof.

Respectfully submitted.

E. DANA DURAND,
Director.

HON. CHARLES NAGEL,
Secretary of Commerce and Labor.

APPENDIX I.

STATEMENT OF APPROPRIATIONS AND DISBURSEMENTS DURING THE FISCAL YEAR ENDED JUNE 30, 1910, ON ACCOUNT OF THE BUREAU OF THE CENSUS.

APPROPRIATION.	Amount appropriated.	Disbursements prior to July 1, 1909.	Disbursements by disbursing clerk, Bureau of the Census.	Claims settled by Auditor for the State and other Departments.	Balance.
Collecting statistics, 1907-8.....	\$150,000.00	\$148,311.87		\$8.68	\$1,679.35
Tabulating statistics, 1908.....	30,000.00	29,849.89		0.61	¹ 149.60
Miscellaneous expenses, 1908.....	15,000.00	14,953.65		12.06	34.29
Collecting statistics, 1909.....	325,000.00	305,415.09	\$16,709.48	235.06	² 2,640.42
Salaries, 1909.....	704,800.00	604,183.17	86,578.27	10.67	³ 14,131.66
Stationery, 1909.....	5,000.00	5,471.62	616.57	1,831.10	89.71
Library, 1909.....	1,000.00	783.69	184.75	5.40	46.26
Tabulating statistics, 1909.....	40,000.00	29,610.13	4,383.13	5,150.34	856.40
Miscellaneous expenses, 1909.....	20,000.00	17,974.60	1,045.46	310.80	⁴ 147.47
Preliminary expenses of the Thirteenth Census, 1909-10.....	150,000.00	1,947.12	109,588.67	3,560.79	⁵ 35,373.42
Expenses of the Thirteenth Census, 1910-1912.....	10,000,000.00		4,230,176.74 ⁶ 31,339.05 ⁸ 17,071.50	83,861.55	⁷ 5,638,091.14
Total.....	11,443,800.00	1,158,485.89	4,498,293.62	94,937.06	5,693,230.72

¹ Includes recovery of 10 cents.

² Includes 5 cents recovered.

³ Includes \$52.10 for transcripts of records and \$16.67 recovery.

⁴ Includes \$12 receipts and \$66.39 recoveries.

⁵ Includes \$470 recoveries.

⁶ Disbursements by William A. McKenzie, special disbursing agent of the Bureau of the Census, in charge of the census of Alaska.

⁷ Includes \$60 for transcripts of records, \$479.83 recoveries, and 15 cents in credit allowed by auditor.

⁸ Disbursements by Walter C. Shields, special disbursing agent of the Bureau of the Census, in connection with the census of Alaska.

APPENDIX II.

OFFICE FORCE AS OF NOVEMBER 30, 1910.

[Includes both the permanent and the additional Thirteenth Census force.]

Assistant Director.....	William F. Willoughby.
Chief Clerk.....	Voler V. Viles.
Appointment Clerk.....	Clifford Hastings.
Disbursing Clerk.....	George Johannes.
Chief Statisticians:	
Population.....	William C. Hunt.
Manufactures.....	William M. Steuart.
Agriculture.....	Le Grand Powers.
Vital Statistics.....	Cressy L. Wilbur.
Revision and Results.....	Joseph A. Hill.

Report of the Director of the Census

Geographer.....	Charles S. Sloane.	
Secretary to the Director.....	Hugh A. Brown.	
Expert Chiefs of Division:		
Population.....	Edward W. Koch.	
	William H. Jarvis.	
	William B. Cragg.	
Manufactures.....	Joseph D. Lewis.	
	Frank L. Sanford.	
	Hickman P. Childers.	
Agriculture.....	William A. Hathaway.	
	Arthur J. Hirsch.	
Vital Statistics.....	Richard C. Lappin.	
Disbursing Office.....	Emmons K. Ellsworth.	
Publication.....	Harry H. Pierce.	
Supervisors' Correspondence.....	Arthur E. Seymour.	
Expert on tabulating machinery.....	Harry Hayward Allen.	
Chief Mechanician.....	Charles W. Spicer.	
Total administrative staff.....		25
Stenographers, \$1,800.....		2
Stenographer, \$1,500.....		1
Clerks, class 4.....		20
Clerks, class 3.....		34
Clerks, class 2.....		55
Clerks, class 1.....		350
Clerks, \$1,000.....		342
Clerks, \$900.....		741
Clerks, \$840.....		884
Clerks, \$720.....		705
Clerks, \$600.....		138
Mechanical experts, \$2,000.....		2
Mechanical expert, \$1,600.....		1
Mechanical experts, \$1,400.....		2
Electrical expert, \$1,600.....		1
Electricians, \$1,200.....		2
Electricians, \$1,000.....		3
Mechanicians, \$1,400.....		2
Toolmakers, \$1,200.....		3
Machinists, \$1,200.....		12
Machinists, \$1,000.....		4
Machinists, \$900.....		3
Machinists (second class), \$840.....		2
Machinist's helpers, \$840.....		2
Machinist's helpers, \$720.....		4
Apprentice boys, \$480.....		7
Apprentice boys, \$420.....		6
Skilled laborers, \$1,000.....		9
Skilled laborers, \$900.....		6
Skilled laborers, \$840.....		9
Skilled laborers, \$720.....		13
Unskilled laborers, \$720.....		51
Messengers, \$840.....		8

to the Secretary of Commerce and Labor

Assistant messengers, \$720.....	11
Messenger boys, \$480.....	23
Watchmen, \$720.....	20
Charwomen, \$240.....	35
	— 3,513
Total.....	3,538

SPECIAL AGENTS ON THE ROLL OF THE BUREAU OF THE CENSUS,
NOVEMBER 30, 1910.

Special agents of "known and tried experience in statistical work".....	16
Special agents, including experts and agents for general field work, etc.....	80
Special agents, cotton statistics.....	739
Special agents, census of irrigation.....	43
Special agents, census of manufactures.....	13
	891

For the enumeration of institutions there were also in the service on that date 4,458 agents, whose duties were very temporary and remuneration nominal.

APPENDIX III.

NUMBER OF ENUMERATION DISTRICTS CLASSIFIED BY RATES OF COMPENSATION ESTABLISHED, BY STATES AND TERRITORIES: 1910.

[Note.—For definition of the rates designated by the several letters, see table on page 16.]

STATE OR TERRITORY.	PIECE-PRICE RATES.							MIXED RATES.						PER DIEM RATES.						Grand total.	
	A	B	C	D	E	Total.	F	G	H	I	J	Total.	\$3	\$3.50	\$4	\$4.50	\$5	\$5.50	\$6		Total.
Alabama.....	382	822	260	25	10	1,489		2	1		2	5	3		8						11
Arizona.....	1	36	49			36															102
Arkansas.....	121	431	467	25	4	1,073					1	12		74							81
California.....	21	872	872	11	72	1,139		5			7	1		9	138	26	291				664
Colorado.....	3	293	12	7		315					3	3		9	2	81	90	165			338
Connecticut.....	152	252	204			608							1								1
Delaware.....	4	121	125			125															
District of Columbia.....	8	85	56	12		161	80	1	3	1	29	84									
Florida.....	66	119	72	93	33	353					1	31									34
Georgia.....	279	1,133	235	58	4	1,714					3	10		7	10						20
Idaho.....																					
Illinois.....	701	2,167	928	30	10	66	29	11	52	2	70	1		5		74	116	40			235
Indiana.....	587	2,783	1,075	48		4,078					1	164		10	2	2					112
Iowa.....	332	300	898	22		2,463						10		7							4,234
Kansas.....	241	263	298	311	163	1,276					14	15		2	1	3	264				17
Kentucky.....	182	1,321	317	117		1,831															290
Louisiana.....	151	657	80	13	4	905	1				1	1		25	17						1,831
Maine.....	137	95	223	82		538					1	1									44
Maryland.....	81	387	244	174	1	888					1	10		1	8						36
Massachusetts.....	197	1,265	353	105	13	1,933					2	2		1	11						2
Michigan.....	404	641	477	279	51	1,852					3	180									21
Minnesota.....	284	441	257	408	166	1,506	4			171	3	5		2	49	129	13	2			193
Mississippi.....	456	373	128	19	5	961					4	11		2	12	242	141				400
Missouri.....	313	1,120	1,079	165	4	2,681					3	4		1	5	16					1
Montana.....	1		112			113						7		3							23
Nebraska.....	108	171	50	160	346	835					49	49					16	287			308
Nevada.....																					
New Hampshire.....	78	42	53	70	73	316					11	11									335
New Jersey.....	379	900	76	27	6	1,884						68			5						79
New Mexico.....	5	36	36	1		42					14	14									5
																					2
																					2
																					268

