PRACTICAL STATISTICS:

A HANDBOOK

FOR THE USE OF THE

STATISTICIAN AT WORK,

STUDENTS IN COLLEGES AND ACADEMIES, AGENTS,
CENSUS ENUMERATORS, ETC.

BY

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TO

Hon. CARROLL D. WRIGHT,

CHIEF OF THE MASSACHUSETTS BUREAU OF STATISTICS OF LABOR,
AND COMMISSIONER OF LABOR OF THE UNITED STATES,

This Book

IS RESPECTFULLY DEDICATED;

FOR IT IS TO HIS ENCOURAGEMENT AND ADVICE, DURING FIFTEEN YEARS OF OFFICIAL WORK TOGETHER, THAT THE AUTHOR IS GREATLY INDEBTED FOR WHATEVER SUCCESS HE MAY HAVE ATTAINED AS A PRACTICAL STATISTICIAN.

PREFACE.

Many works have been written relating to statistics but, to the author's knowledge, none have been devoted exclusively to the explanation of the practical part of statistical work.

The first work written in relation to a new branch of a science or art is apt to be doubly unsatisfactory—to the author who is unable to refer to other writers and profit by the criticisms of their work, and to the reader who often fails to find the particular subject in which he is interested given the prominence he thinks it should receive.

The writer of this work had the advantage of ten years' service as an accountant before beginning statistical work. Since June, 1873, or for nearly fifteen years, his duties have been statistical in their nature. Being naturally inventive, he has not been bound by old methods but has endeavored to introduce improvements in the manner of doing statistical work. He has been advised to put into book form the principal features of his system of practical statistical work, and the results of his experience in the past fifteen years, including his connection with three censuses—two State and one National.

He is aware that his work is tentative; that in a few years there will be much more to write, and much that is

now recommended may be superseded by better forms and improved methods. His aim is to continue to be a student as long as he is a statistician, and he hopes that he may, himself, contribute to future editions of this work, if they should ever be issued, and in other ways, more valuable information than he is now able to supply.

The science of statistics is destined to achieve a great development, and the practical statistician is the one to whom the world looks for honest and assiduous endeavor to broaden the application and elevate the character of the work done in his chosen field of scientific service. The practical statistician must be expert in the use of figures, but such aptitude is only the mere alphabet of his work; he must know the tendencies of the times and select such topics for investigation as will answer the public demand; he must frame inquiries, draft schedules, write instructions for those filling in or answering inquiries, examine the returns, at the same time correcting errors and supplying omissions, adopt and supervise the application of the most improved methods of tabulation, prepare the material for expressive and concise presentation in print, and give therewith such careful explanations and exhaustive analyses that all parties will agree that the truth was his object, that he has found it, and that progressive action may be safely based upon the results presented.

Boston, April 19, 1888.

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PRACTICAL STATISTICS.

CHAPTER I.

THE PREPARATION OF SCHEDULES.

Whether statistics are obtained by mail, agents, or enumerators, in nearly all cases it is necessary to prepare forms, blanks, or schedules, upon which to write down the information obtained. Several different forms of work enter into the preparation of schedules.

1. The proper wording of the inquiries.
2. The writing of the general instructions.
3. The writing of the special instructions for each inquiry.
4. Quotations from the law authorizing the collection of the information.
5. The typographical arrangement of the schedule.

The Proper Wording of the Inquiries. It seems easy to ask questions, and it seems strange that persons receiving schedules by mail do not fill them out properly and promptly and return them when requested. When applied practically it becomes hard to ask even the simplest question and secure uniform and correct answers. Persons show absolute genius in misunderstanding questions. Some are in a state of honest perplexity and betray it in their attempts to answer and in the letters they often send with their returns. Of course, we are speaking now of schedules to be filled and returned by mail. A striking instance of statistical mystification was shown by the clothing manufacturer who returned

a manufactures schedule unfilled, with a note saying he was not in want of any goods at that time but when he wished some he would write. Some parties quibble and make as much trouble as possible before answering.

In the preparation of single inquiries, which when combined form the schedule, the intention is to ask a question which will draw out the information desired. In writing, tautology is not a fault if thereby a gain is made in perspicuity. Compound inquiries, or two or more questions in one, should be avoided, for they necessitate compound answers which must be separated by the tabulating clerk. In routine schedules, or those used from year to year, usually by public offices, the best form of inquiry is arrived at after years of experience, and if the officials who answer have long tenures of office the returns are usually correct.

When a person prepares a schedule he should be able to see, in his mind's eye, *the results in print.* The river can never rise any higher than its source, and the most that any statistical work can contain must be comprehended in the schedule. At the same time the experienced statistician will extract, from an apparently simple schedule by combinations, an array of facts that the casual observer of a schedule would never imagine it contained.

The Writing of the General Instructions. General instructions must be prepared to aid the enumerators or agents who collect the statistics, and also those persons who are called upon to fill schedules and return them by mail.

The general instructions to enumerators or agents should cover such points as—correspondence with the main office; directions as to how to send in returns; description of outfit supplied and its use explained; summary of the work to be done; personal service to be given; a proper day's work; regard for boundaries of districts; the examination and correction of returns before they are sent in; disposition to be made of materials not used; courtesy to be observed in dealing with the people; precautions to be taken against false statements by parties supplying information; the proper course to follow in case of refusal to answer; concerning the confidential nature of returns; in relation to daily reports of work done; the keeping of accounts of services and expenses and their return to the office with the necessary certification and vouchers.

The general instructions sent to persons who are to fill schedules and return them by mail should relate to—the definition of the actual time covered by the schedule, or parts thereof, whether the day, month, or year; how to write money values; description of mercantile values, book values, and combustible values; the use of "symbols" or signs in filling up schedules; and directions to apply, when necessary, for further instructions by mail.

The Writing of the Special Instructions for each Inquiry. Beyond the filling in of the state, county, town or city, and date, there is seldom an inquiry in a schedule that does not need some special explanation to aid in answering the question. Even when the general and special instructions are supplied, in many cases parties will not take the time or trouble to read them, and a long and expensive correspondence will often be required to gain a few facts which the person could and would have included in the original schedule if he had read and understood his instructions. It is, no doubt, often the case that both inquiries and instructions are lacking in plainness and distinctness, but that is seldom the case with the expert statistician who can *see* a perfectly filled schedule in his mind, and who knows what to say to secure the answer desired.

Quotations from the Law authorizing the Collection of Information. In the United States the law, like the atmosphere, encircles the citizen, but does not press upon him uncomfortably unless in extreme cases. The American citizen is jealous of his individual rights and opposed, on principle, to inquisitorial inquiries by the government. He is not so much opposed to giving information of a private nature, but he is very solicitous as regards the use to be made of the information. He will give a statistical office individual facts but he wishes, naturally, to be "covered up" in the print. He does not wish his competitors or, it may be, enemies to learn his private affairs and use the information to his detriment. For these reasons, and also to show the individual that "the people" demand the information, a schedule should contain such extracts from the law as will show its general scope and individual application. In many cases the whole law should be printed in the schedule.

The Typographical Arrangement of the Schedule. The typographical arrangement is largely dependent upon the *size*. The practice in the past has been to use large and unhandy schedules; the

present tendency is to small or medium-sized ones that are easily portable and comfortably handled. The population schedule of the United States in 1880 was 21 inches long and 15 5/8 inches wide, having spaces for 50 names and particulars.

The Massachusetts state census population schedules in 1875 were on the "family basis"—that is, one family to a schedule. They measured 8 ½ by 14 inches and had spaces for 12 names and particulars. In case of very large families two or more schedules were fastened together to preserve the family unity.

The Massachusetts population schedules for the Census of 1885 were 11 inches long and 4 inches wide, printed on heavy paper, each card forming a personal or individual schedule. Its advantages are many. The enumerator's load is decreased, he is deprived of the look of a book agent, he can write with greater comfort and rapidity, mistakes are more easily corrected, additions or subtractions more easily made, and a party may be allowed to see his own schedule without disclosing facts relating to other people. Besides these advantages a marked sex distinction is made by printing the schedules for males in *blue* and those for females in *red* ink. But the greatest advantage of all is found in the tabulation, as is fully explained hereinafter in the Chapter devoted to that subject.

The space left for the answer should be as large as possible. Few people write a small hand distinctly and room should be given to write in a complete reply in a "good round hand." Instructions should be given as to what course to pursue when the answer is likely to require more space than that allowed in the schedule.

The subject of the preparation of schedules has been treated in a general way only in this Chapter. In order to avoid duplications in print of the same material it has been deemed best to postpone the detail consideration of the inquiries to Chapter V., which is devoted to the "Examination of Returns." There, the inquiries, the special instructions, and suggestions as to the proper manner of framing inquiries are brought together so the student can study them contemporaneously. While this plan detracts from the fullness of the present chapter it enables us to show practically what answers are obtained to certain inquiries, and to indicate the best course to follow to avoid errors and omissions in future work.

CHAPTER II.

THE COLLECTION OF INFORMATION.

The blanks, forms, or schedules having been prepared, the next work in order is the collection of the information. This may be done in various ways. The schedule may be one calling for information that can be supplied by city or town officials, or court officers, from their records. The schedules are accordingly mailed, as circulars (postage one cent for each two ounces), to the city or town clerks, assessors, clerks of courts, etc., as the case may be, and a return envelope, addressed and post-paid (letter postage at two cents per ounce, as the circular will be filled in), enclosed.

A plan that will save half the cost of envelopes is the following: Have a return label printed on gummed paper, addressed and properly stamped (postage). Enclose this with the blank; when

After **answering** the Inquiries in the *Annual Statistics Schedule*, please put it in the **same envelope** in which it **was sent** to you, **seal** the same, **affix this** stamped addressed label to the outside of the envelope, and **mail** at once.	**A—3** STAMP

Bureau of Statistics of Labor,
20 Beacon St.,
1886 Boston, Mass.

a schedule is filled, the party seals the only envelope sent, sticks the label on the outside, and it is ready for the mail.

The schedules may also be sent to well-informed parties in any profession or kind of business, to employers (in manufactures, trade, etc.), or to their employés. They may also be placed in the hands of special agents, although agents or experts often work with the aid of note books only, having no regular form of blank on which to record the information obtained.

Schedules may also be handled by census enumerators; in fact more information is collected by them than by all other means.

Statistical information is often drawn from printed reports or manuscript records without the aid of agents or enumerators. Many valuable statistical tables are evolved from a comparison and correlation of material already in print. This manner of obtaining or arranging statistical matter in new forms is done principally by writers for newspapers, magazines, reviews, and authors of monographs on certain subjects, who use material already collected, but do not undertake, as a rule, original investigations.

Censuses always require the services of the census enumerator. Government statistical reports are almost always made up from the reports of consuls, other officials, and often from well-informed persons having semi-official relations with the government. Correspondence is relied upon largely by what may be called private statisticians, and is used by all statisticians for the correction of errors and the supplying of omitted information. The United States Census officers can send and receive all communications free of postage which renders it a valuable and inexpensive (as regards the Census) means of collecting information. Of course the transportation of this great mass of material must be paid for in the end, and reduces the earnings of the post office department just so much. The various labor bureaus in the United States rely upon correspondence, printed and manuscript material, and special agents. The United States Bureau of Labor relies almost wholly upon special agents, the Commissioner having seen the superior value of their work in the Massachusetts Bureau of Statistics of Labor of which he is also the chief officer. Perhaps no better presentation can be given of the comparative use of the various ways of securing statistical information than by showing the sources of statistical information used in the Massachusetts reports on statistics of labor from 1873 to 1887—fourteen years.

Out of 62 subjects considered by the bureau since 1874, containing statistical material, in the case of only 10 investigations was a resort made to the use of blanks; in 21 cases the information was obtained by special agents, in 12 cases the information was drawn from the Massachusetts Census of 1875, in 3 from the United States Census of 1880, in 2 from the Massachusetts Census of 1885, in 8 from manuscript and printed material, and by means of correspondence, and in the remaining 6 from material supplied by outside parties, or on record in other state offices.

The subjects, concerning which information was obtained by the use of blanks sent by mail, were as follows:

1874. Education and employment of young persons and children.
Relative to professional men.
Savings banks.
1879. Drunkenness and liquor selling.
Testimony of workingmen.
Convict labor.
Unemployed in Massachusetts. June and November, 1878.
1880. Social life of workingmen.
Convict labor in the United States.
1886. Art in industry.

The blank used to obtain information concerning the education of young persons and children was sent simply to town officers. That relative to professional men was sent to clergymen. The savings bank blank was so arranged as to find the occupations of depositors for a period of three months only. The blank for statistics of drunkenness and liquor selling was sent to town and city clerks. Some 6000 blanks were sent to secure the testimony of workingmen in 1879, but the plan was an acknowledged failure, as there were so few returns. A small blank was used for the statistics of convict labor in 1879 and 1880, but the principal information was only obtained after some 300 letters were written in the office. The statistics, as regards the unemployed in Massachusetts, were obtained from city and town officers. Those as regards the social life of workingmen were obtained from officers of organizations, city and town clerks, etc. In the case

of "Art in Industry," blanks were sent to a number of firms engaged in the manufacture of what are known as "art goods."

For the purposes of statistical work, the bureau relied but very little upon the use of mail blanks, and the returns were not as a rule satisfactory in results.

The other sources from which material was secured are shown in the following statements, the arrangement being chronologically under the respective methods:

AGENTS.

1874. Sanitary condition of working people in their homes and employment.
Condition of textile fabric manufactories in Massachusetts.
Comparative table, showing cost of groceries, provisions, articles of clothing and dry goods, 1861 and 1873.
1875. Condition of workingmen's families.
Factory legislation.
Special effects of certain forms of employment upon female health.
1877. Co-operation in Massachusetts.
1878. Comparative condition of manufactures and labor, 1875 and 1877.
1879. Wages and prices—1860, 1872, and 1878.
1880. Divorces in Massachusetts—1860 to 1878.
Strikes in Massachusetts.
1881. Influence of intemperance upon crime.
Uniform hours of labor.
1882. Wages, prices and profits—1860, 1872, 1878 and 1881.
Fall River, Lowell, and Lawrence.
Canadian French in New England.
1884. Comparative wages—1883—Massachusetts and Great Britain.
Working girls of Boston.
1885. Sunday labor.
1886. Profit sharing.
Food consumption—quantities, costs, and nutrients of food materials.

MASSACHUSETTS STATE CENSUS OF 1875.

1876. Salary receivers: 9,554 "individual" returns.
Wage receivers: 71,339 "individual" returns.
1877. The afflicted classes: blind, deaf, dumb, idiotic, and insane.
Motive power of Massachusetts.
Pauperism and crime.
Massachusetts manufactories: persons employed in each story, and means of escape in case of fire.
Growth of Massachusetts manufactories.
1878. Relative importance of private establishments and corporations in manufacturing industries.
Conjugal condition, nativities, and ages of married women and mothers.
Nativities, ages, and illiteracy of farmers, farm laborers, skilled workmen in manufactures and mechanical industries, and unskilled laborers.
1879. Hours of labor.
1882. Citizenship.

UNITED STATES CENSUS OF 1880.

1874. Statistics relating to Massachusetts.
1883. Profits and earnings: 2,440 establishments.
Time and wages: 207,793 employés.

MASSACHUSETTS STATE CENSUS OF 1885.

1887. The unemployed.
1888. Citizenship.

PRINTED MATERIAL, MANUSCRIPT, AND CORRESPONDENCE.

1874. Comparative rates of wages and hours of labor in Massachusetts and foreign countries.
Prices of provisions, clothing, rent, etc., in Massachusetts and Europe; purchase power of money.
1875. Co-operation.

1877. Industrial arbitration and conciliation in England and Massachusetts.
1881. Industrial arbitration and conciliation.
1884. Comparative wages—1862 to 1883—Massachusetts and Great Britain.
Comparative prices and cost of living—1860 to 1883—Massachusetts and Great Britain.
1886. Co-operative distribution in Great Britain.

MATERIAL SUPPLIED.

1874. Increase in wages in cotton, woollen, and worsted mills: 1861 compared with 1873.
Cost of living table: Massachusetts and foreign countries.
1880. Statistics of crime: 1860 to 1879.
1881. Statistics of drunkenness and liquor selling.
1885. Health statistics of female college graduates.
Historical review of wages and prices: 1752 to 1860.

Two fundamental points should be borne in mind in the collection of information.

First, the information gathered must be exhaustive; that is, it must cover the subject and leave but little if any aftermath for the reformer, critic, magazine writer, or newspaper man to supply. Every statistical publication of an important nature, in the United States, is at once dissected by hundreds of keen minds and its armor of truth must be indeed strong to withstand their attacks. Their sharpest arrows are thrown at incompetency, and statistical incompetency is shown in no more marked way than in the inadequate consideration and presentation of some great economic question. This inadequacy may kill the statistician, but the subject considered gets a set-back also in consequence. There must be some patriotism still existing in the breasts of government officials who give the best years of their lives to the public service at salaries which would be refused by those who criticize their work and find it impregnable to their assaults.

Second, it must be honest information. It must be fact and not hearsay. It must not cover one side of a question and ignore the other. It must present the strongest facts for both

sides. The statistician must be judicial in his conclusions. He must be a judge and not an advocate. It is said, to our national honor, that the Justices of the Supreme Court of the United States have risen above partisan bias in their decisions regarding great questions. So, the statistician must put aside pet ideas, personal theories, and private hobbies, which constitute statistical partisanship, and, rising above them, judge facts dispassionately, and give to the public truths honestly arrived at from honest original investigations.

CHAPTER III.

INSTRUCTIONS TO ENUMERATORS AND AGENTS.

THE best-prepared schedule will fail in its purpose, the securing of complete and accurate information, unless the instructions given to the correspondent, official, agent, or enumerator, are so full and helpful as to enable him to fill in the answers as was intended. Of course this is on the supposition that the blank, or schedule, is a perfectly constructed one, but, too often, the errors that vitiate statistics are fundamental, having their origin in the blank itself, and being of such a nature that careful instructions, honest endeavor on the part of persons supplying information, and even copious correspondence will not obtain trustworthy data.

The instructions for mail blanks, or for returns to be made by officials, need to be more explicit than those given upon schedules to be collected by agents or enumerators. The agents and enumerators have their special instructions and are able to easily correct errors in blanks that by mail would require a long and tedious correspondence. It is this lack of *rapport* between the parties sending out blanks and those expected to fill and return them by mail that causes the great expense of collecting information by mail. It is not the cost of the postage, but it requires good salaries to pay for the clerks capable of writing suitable explanatory letters, and for stenographers and type-writers to put the correspondence in proper shape ; again, a voluminous correspondence requires indexing, and careful clerks are needed for such service. Then, again, clerks having the power of brain-consecutivity must bring this information (often contradictory, being given, it may be, by different persons) into proper condition to be transferred to the schedules laid out on account of errors or omissions. Perfect schedules are needed for speedy and accurate tabulation, and all errors and omissions which are not found in blanks until they reach

tabulation cause delay, re-figurings, and consequent additions to the expense of the clerical service.

As instructions vary so much according to the information to be obtained it would be impracticable to give here only those general in their application. In the case of special agents, they are often given orally, but, even with the best agents, this is not a safe plan. Instructions, either for agents or clerks, should always be reduced to writing, type-writing, or print, and then the persons employed can be held to strict accountability.

The best *general* instruction for agents is that each series of recorded facts should be written upon uniform sized sheets of paper, suitably designated, so these slips can be sorted, condensed, or aggregated, without the necessity of re-copying. Copying, unless carefully read back, is the most inexact of all statistical work, and should be avoided as much as possible by utilizing the original records of the agent in tabulation.

From the instructions supplied to the census enumerators of the Massachusetts State Census of 1885, the following condensed statement is prepared :

COMMONWEALTH OF MASSACHUSETTS.

THE ENUMERATOR'S BOOK FOR THE CENSUS AND INDUSTRIAL STATISTICS OF 1885.

Containing comprehensive Definitions, Explanations, and Instructions for properly filling Schedule No. 1, Population and Social Statistics; Schedule No. 1—Special; and the necessary Memorandum Forms for Entering the Names, Kinds of Business, or Occupations; and Post-office Addresses of all Individuals, Firms, Corporations, etc., engaged in Productive Industry in the Commonwealth.

DEALINGS WITH THE CENSUS OFFICE.

1.—Correspondence. All communications relating to the Census should be addressed

BUREAU OF STATISTICS OF LABOR,
CLAFLIN BUILDING, 20 BEACON STREET,
BOSTON, MASS.

2.—Packages by Express. Printed addressed gummed labels are sent you which are to be used on express packages only. All express packages should have the address given on this label.

OUTFIT.

3.—Schedules, Forms, etc., sent you. You have already received from the Census Office your commission as an Enumerator, which you have accepted. We now send you the following Instructions and Outfit to enable you to intelligently and properly perform your duties.

INVENTORY.

Enumerator's Instruction Book.
Schedules. No. 1, Population and Social Statistics, *Male.*
Schedules. No. 1, Population and Social Statistics, *Female.*
Schedules. No. 1, Population and Social Statistics, *Special.*
Schedules. No. 4, Domestic Manufactures, Agricultural Products and Property.
Pencils and rubber.
Wire fasteners.
Schedule Case.
Cards to separate the unfilled Schedules for Males and Females, and the completed Schedules, in the Schedule Case.
Daily Work Report Cards.
Consolidated Daily Work Report.
Time Account.
Bill Form and Oath.
Expense Statement.
Gummed Labels for Express Packages.
Receipt Form for Express Companies.
Postal Card Receipt for above Outfit, upon which you should enter the date of beginning work, and at once mail the same to the Census Office.

GENERAL INSTRUCTIONS.

4.—You are referred to succeeding pages for full instructions as to the manner of entering the names and addresses in the back part of this book, the proper manner for filling or delivering the

various Schedules sent you, for making your daily and consolidated reports of work done and time employed, and for completing and returning to this office your work, reports, and accounts. In case the Instructions herewith furnished you fail to supply you with desired information, your duty is to write the Census Office without delay, stating the case plainly, and the decision of this office will be sent you promptly. We consider, however, that the Instructions are so minute that the Enumerator who reads them carefully will find little, if any, need for correspondence. Do not write unless you are sure the Instructions do not cover the case in point.

5.—Postal Card Receipt for Outfit. Upon receiving your Outfit, immediately *check off* the schedules, forms, and articles mentioned in Inventory (Instruction 3, Enumerator's Book) and as soon as possible after beginning work fill out Form C 85–44, and mail it to the Census Office. If any part of your Outfit is lacking, mention the fact on this form, and the missing articles will be forwarded at once.

6.—Enumerator's Book. If this book is not large enough to contain the names and addresses of the Farmers, Manufacturers, etc., in your district, notify us in time so that another may be sent you, and thus prevent unnecessary delay.

7.—Schedules. We send you what we deem a sufficient quantity of Schedules for use in your district. Be particular in sending orders for extra Schedules to specify the number of the Schedule, and also the office number; for instance, the Male Population Schedule is "Schedule No. 1," the office number, just below the upper punch hole is "C 85–8."

8.—Pencils and Rubber. We wish you to use the pencils sent herewith in filling all Schedules. Ink or any other kind of pencil must not be used. The writing must be legible, the marks made firmly; illegible or faintly written returns will, necessarily, be subjected to revision, and your account will not be approved until the Schedules are in perfect condition for tabulation.

9. The Schedule Case. The aim of the Census Office has been to supply the Enumerator with a small, compact receptacle for his blank and completed Schedules, instead of the large port-

folios used in former Censuses. The case sent you will contain about three hundred of the Card Schedules. A sufficient number of Schedule No. 1—Special and Schedule No. 4, for a day's work, can be carried conveniently in your pocket. We supply you with three cards which will enable you to separate the unfilled Schedules for Males and Females from the completed ones in the Schedule Case.

10.—Your Work. Your work consists in filling, according to instructions hereinafter given, Schedule No. 1, Population and Social Statistics, Male and Female; Schedule No. 1—Special; in entering the names and addresses of Farmers, Manufacturers, etc., in the back part of this book; and in delivering, *at the same time*, a copy of Schedule No. 4 to every person owning, hiring, or carrying on a Farm, Market Garden, etc., in your district. As regards Schedule No. 4 your duty is simply to deliver it. Devote no time to explaining it, and make no attempt to fill it or to have it filled, for this Schedule will not be taken up until after November 15, 1885. See Instructions **41** and **51.**

11.—Personal Service. You are expected to personally fill Schedule No. 1, and Schedule No. 1—Special; to deliver Schedule No. 4, and to make the address lists. You cannot delegate to any other person your authority to make inquiries. You must do the whole work yourself, with the single exception of such specially authorized assistance as may be given you by interpreters.

12.—A Day's Work. You should be able to fill, on an average, from 200 to 250 Schedules a day (Forms C 85–8 and 9), besides the Schedule No. 1—Special (of which you will, as a rule, use but a few each day), enter your names and addresses, and deliver Schedule No. 4. In many thickly settled localities you can fill more than 250 Schedules in ten hours. There is no objection to your working in the early part of the evening if you find that you can prosecute your work to greater advantage. In approving your bill, comparisons will be made with the work done in previous Censuses, and in the case of any marked discrepancy an explanation will be called for before the approval of your account. Enumerators are desired to exercise diligence in their work, as the Census Office is required by law to prepare an abstract of the Census returns, and present it to the Secretary of the Common-

wealth on or before September 1, 1885. The districts are so arranged that in the majority of them the work can easily be completed during the month of May, in many cases requiring much less than the entire month. In only a few districts, and those the necessarily large ones, will the work extend into the month of June.

13.—Distinguish Boundaries. The boundaries of your Enumeration District are clearly defined in your Commission. You should establish these boundaries carefully in your mind, select a point at which to begin work and go through your district systematically.

14.—Examining and Correcting Returns. All Schedules and Lists sent in by you will be carefully examined before tabulation. The more accurate your work the sooner your account will be approved and paid. In the case of correct work, your money will be ready within a few days after the receipt of your work. No payment will be made to any Enumerator until all the errors in his work have been corrected, and all omissions of information have been supplied.

15. Materials Not Used. When your work is completed, all Schedules not used, the Schedule Case, and all other unused material specified in the Inventory in Instruction 3 should be neatly packed and returned in the same package with the completed Schedules and this book. All the articles mentioned in the Inventory are charged to you personally, and must be accounted for before your time account and bill can secure approval. All materials sent, whether used or unused, should be handled carefully and returned in the best possible condition. The wrapping paper on the package sent you, if preserved and turned, will form a suitable cover for your completed work.

DEALINGS WITH THE PEOPLE.

16.—Courtesy. In the exercise of your authority as Enumerator, you should use courtesy, tact, and discrimination. A rude, peremptory, or overbearing demeanor will render persons less disposed to give information, and it may seriously retard your work. Be prompt, rapid, and decisive in making your inquiries, but do not arouse any antagonism or give any offense.

17.—False Statements. Under the law you have a right to a true statement or reply to each and every question borne on the Schedules, and which have been approved by the Governor and Council. If statements which you know to be false are made to you, you must endeavor to obtain true answers by observation or by inquiry of other persons who are trustworthy. You will undoubtedly experience the most difficulty in securing correct answers to Inquiry 25 on Forms C 85–8 and 9, and in filling out the Schedule No. 1—Special, as a whole. You should make particular endeavors, therefore, to secure correct answers to that Inquiry and for that Schedule.

18.—Refusal to Answer. If parties through ignorance or wilfulness refuse to answer it will call for discretionary treatment. You will do well not to unnecessarily obtrude the compulsory feature of the enumeration. If the refusal is persisted in you must call their attention to the law and inform them that you will be obliged to notify this office of their refusal. Do not report such refusals except in extreme cases, nor until you are sure that your efforts to secure the information will be unsuccessful.

19.—Confidential Nature of Returns. Impress upon those who raise any objections to answering the Inquiries that you are obliged by law to keep them entirely confidential and that no one but yourself will see them before they are sent to this office. State positively to them that the names and residences will never be made use of in any printed report. They are required simply as a means of identifying the Schedule. *If necessary you can allow a person who objects to read this Instruction.* Call their attention to that provision of the law (Sect. 11, Chap. 181, Acts of 1884) which makes it obligatory upon you to keep replies confidential, and which subjects you to a fine and to the revocation of your appointment in case you are derelict in duty. You have no right to make copies of the answers on any Schedules for your own private use, or for public or private use by any other person. (See latter part of Sect. 11, Chap. 181, Acts of 1884.) You are particularly instructed not to give information obtained from the Schedules to any party or parties. All requests from newspapers, or from individuals, for the total population of your town or city, or district, *must be referred to this office for answer, together with the*

names and addresses of the parties desiring the information, and it will be sent as soon as the correct figures are ascertained.

SCHEDULE NO. 1—SPECIAL.

40.—This Schedule calls for particular information concerning those persons who may be entered, under Inquiry **12** on Schedule No. 1, as *Prisoners*, *Convicts*, *Homeless Children* or *Paupers;* and similar imformation for those who may be entered, under Inquiry **25** on Schedule No. 1, as suffering from *Acute Disease*, *Chronic Disease*, or who are *Blind*, *Deaf*, *Dumb*, *Deaf and Dumb*, *Insane*, *Idiotic*, *Maimed*, *Lame*, *Bedridden*, *Paralytic*, or afflicted with any other defective physical condition.

Full instructions are given upon Schedule No. 1—Special, (Form C 85–22) as regards the proper manner of filling same, and there is no necessity for repetition here; but we wish to impress upon the Enumerator the fact that it will require the utmost vigilance on his part to avoid omitting persons whose names should appear upon the Special Schedule.

Prisoners and *Convicts* he will find in penal or reformatory institutions; *Homeless Children* in charitable institutions and very often in private families; *Paupers* he will find in charitable institutions of all kinds, and oftentimes in private families where they are boarded at public expense.

Persons with *Acute* or *Chronic* diseases, and those *Bedridden* or *Paralytic* will usually be found at home, but often in hospitals, asylums, penal, reformatory, and charitable institutions, etc.

The *Blind*, *Dumb*, *Deaf and Dumb*, *Insane*, and *Idiotic* must be sought for in families as well as in institutions. Those *Deaf* only will usually be found at home. The *Maimed* and *Lame* are in families principally, but often in homes, asylums, etc.

The Enumerator should read all the Instructions found on Schedule No. 1—Special with the greatest care. He should be sure that *the numbers* in Space 26 on Schedule No. 1, and on the Special Schedule agree, and should fill out and sign the *Certificate* on Page 1 of each Special Schedule.

SCHEDULE NO. 4.

41.—This Schedule (Form C 85–10) relates to *Domestic Manufactures* and *Agricultural Products* and *Property*. If you read

the first page of same you will at once comprehend *that you are neither to fill Schedule No. 4, nor collect the same.* The Census Year, as regards Schedule No. 4, does not end until November 15, 1885, and *your duty is simply*, **while on your rounds for making the enumeration of the people,** *to deliver a copy of Schedule No. 4 to each person owning, hiring, or carrying on a farm, mark. et garden, orchard, nursery, greenhouse,—owners of hay lands* (often detached pieces of marsh land along the seaboard), *owners of woodland* (often owned by non-residents),—*and any other person engaged in Domestic* (home) *Manufactures*, in raising *Agricultural Products, or who owns productive Agricultural Property.*

Read the names of articles and property in Schedule No. 4; each and every person raising or producing such articles or owning such property should receive and fill out, in due time, a copy of Schedule No. 4. The manner of entering the *Names and Addresses* of persons to whom you deliver Schedule No. 4 is fully explained hereinafter.

Take no time to explain Schedule No. 4, but leave the same, enter the name and address, and proceed in your work of enumerating the people.

RECORDS AND ACCOUNTS.

42.—General Instructions. The Enumerator must keep a complete record of the time actually and necessarily employed in his work, the amount of work done, and must properly make up, certify, or make oath to all such records and accounts, as instructed, before they will be approved, and he be paid. The following instructions, in detail, if carefully read, will enable him to perform these duties satisfactorily.

43.—Separation Cards. The three cards sent you headed respectively "Schedules for Males," "Schedules for Females," and "Completed Schedules," are longer than the Schedules themselves and will enable you to find the desired Schedules in your Schedule Case with ease.

44.—Daily Work Report Cards. Enough of these cards are sent to furnish one as a cover or file-top for the Schedules filed each day, that is, each day's work which is to be tied up separately. They should be placed on top, and the creased edges turned

down. Then pass one end of a wire fastener up from the bottom, meet it with the other end, give the two ends *a double or triple twist* and then press them down upon the card. Do this also with the other end and your day's work is firmly secured in a neat, compact package.

Fill out the blank spaces on the card, giving the state of the *weather*, and state the fact if your territory was *very thickly*, *closely*, *not very closely*, or *sparsely* settled; if *delayed in your work* state the cause.

45.—Consolidated Daily Work Report. This form is not to be filled out until you have completed your entire work. Your *final population number* (See Space 4, on Schedule No. 1, Forms C 85–8 and C 85–9) gives you your first entry. Then the total number of Schedule No. 1—Special (Form C 85–22) filled out by you supplies you with your second entry. From your List of Names and Addresses (See Instruction 62) you derive the necessary figures for filling in the remainder of the blank spaces.

46.—Enumerator's Expense Statement. No allowance will be made for *Travelling Expenses* or for the *Services of Interpreters* unless specially authorized on Form C 85–27 by the Chief of the Bureau of Statistics of Labor. All applications for such authorization must state the circumstances very plainly and be accompanied by an estimate of the probable expenses. All bills for travelling expenses or for services of interpreters must be receipted and forwarded as vouchers with your Bill form.

The Schedules and Outfit will be sent you by Express, C. O. D. This is done to simplify the work of shipping your Schedules and Outfit. The amount will be refunded when your account for services is settled. You must enter date and amount on Form C 85–28, as also all expenses for postage, telegraph, and telephone. Your instructions are so minute that there will be no occasion for much correspondence, and the telegraph or telephone must only be used in urgent cases when the public service would suffer by delay. All charges deemed unnecessary will not be approved. You should pay the *return expressage* on your completed work for reasons given above.

47.—Time Account and Bill Form. Special instructions are given upon these Forms for your guidance in filling and returning.

You carry forward your *minor expences* from the form supplied to the *Bill Form*, and also enter such *special expenses* as may have been authorized by the Census Office.

48.—Gummed Labels for Express Packages Only. When your work is completed you should do it up neatly, compactly, and firmly in the paper in which your Outfit was sent (if suitable) and paste upon it Form C 85–42, having first filled in your Name, District No., Name of Town or City, and Name of Express Company. You should return in the same package your *Enumerator's Book* and *all unused schedules, forms, blanks, and material* sent you as per Inventory in your Enumerator's Book.

49.—Receipt Form for Express Companies. You will be held reponsible for your completed work and all unused material until the same is received by the Census Office. *Do not fail to take receipts in duplicates* from the Express Company. Retain the Original (Form C 85–43).

50.—Accounts by Mail. In your Schedule Case, in an addressed and stamped envelope, you will find the following blank forms:

Consolidated Daily Work Report.
Expense Statement, Time Account.
Bill Form and Oath (on one sheet).
Two Express Receipts. (See Instruction 49.)

When these forms are filled in accordance with Instructions **45, 47,** and **49,** they should be returned by mail in the envelope provided.

NAME AND ADDRESS LISTS.

51.—By the provisions of the Census Law of 1885 the statistics other than those relating to Population and Social Statistics and to Domestic Manufactures and Agricultural Products and Property will be taken *by mail.* The plan, in brief, is to have the Enumerators who take the population statistics *make at the same time* that is, **while on your rounds for making the enumeration of the people,** and turn into the Bureau of Statistics of Labor complete lists of the names, occupation or kind of business, and particular post-office address of the following classes, including, as regards industries, only those persons who are employers or proprietors:—

1. All those persons engaged in *Manufactures.*
2. Those engaged in *Quarrying, Mining,* etc.
3. Those engaged in *Domestic Manufactures* or *in Agriculture.*
4. Those engaged in the *Fisheries.*
5. Those engaged in *Commerce.*
6. *Librarians* or *Superintendents* of *Reading Rooms.*
7. *Proprietors* or *Principals* of *Colleges, Academies,* and *Private Schools.*

Full instructions follow as to whom to include under each List Head, and the manner of properly entering the names, occupations, or kind of business, and post-office addresses in the book provided.

MANUFACTURERS.

52.—Manufacturers. Those who make articles in shops, factories, or mills are called by the general term, *Manufacturers.* They may not make the whole of an article, but if their work contributes to the completion of the article they are *manufacturers.* As you are called upon to enter on Schedule No. 1, *the facts concerning every person carrying on any kind of business in your Enumeration District,* it will not take you long to decide upon those who should be classified as manufacturers. In order to obtain the population you must not miss any part of any square, street, lane, alley, court, or road. You must be particularly careful in the case of a large block fronting on several streets, or with several entrances. Thus covering every building in your work of enumerating the people you have no reason for omitting from your *Name and Address Lists* the facts desired concerning any person, firm, or corporation engaged in the kinds of business above named. No person manufacturing *any description of goods* should be omitted from the *Lists,* and no omissions should be made on account of the small value of the manufactured articles. No manufactory, *however small* should be passed over.

53.—Manufacturers and Dealers. Many persons and firms engaged principally in buying and selling goods have also certain articles that they manufacture. You should visit all *Dealers* likely, in your opinion, to be engaged in manufacturing, and of them the special inquiry should always be made as to whether they are also *Manufacturers.* Manufacturing is often carried on in *houses,*

and a careful lookout, especially in large cities, will be necessary to discover all such manufacturers.

54. Location of Mills, Factories, etc. Very often the office or salesroom is in another building than the mill, factory, or workshop. It will often occur that the office or salesroom is in one Enumerator's District, while the mill, factory, or workshop may be in another Enumerator's District. In some cases the manufactory is in one city and the office in another. One general rule will prevent mistakes: *in all such cases the Enumerator whose District contains the Mill, Factory, or Workshop, or the building where the goods are made, should return the Name and Address on his List.*

55.—What are Manufactures? We have given a definition of *a Manufacturer.* It is impossible to enumerate here the different articles made in the Commonwealth in order to guide you in your work, but you would derive less benefit from such a list, however complete, than from the last three lines of Instruction **52.** *Every manufacturer, whatever the kind of goods made and whatever the value of product annually, is to be entered on your Lists.*

56.—Cards, Price Lists, etc. In order to show the *articles* made by each manufacturer, you should obtain from each person, firm, or corporation a *card, bill-head, circular, price list, catalogue,* or any printed material showing the *names of articles* manufactured by said person, firm, or corporation. These cards, price lists, etc., should be numbered by you, bearing the *List Number* at the *left* of the List, which is on the same line as the Name, etc., of the person, firm, or corporation. If only one kind of goods is made enter *the exact name* in every such case. Use the general term for the industry when a variety of articles are made by one person, firm, or corporation.

57.—Quarries and Mines, etc., Agriculture, the Fisheries, Commerce, Libraries and Reading Rooms, Colleges, Academies, and Private Schools. The manner of entry upon the *Name and Address Lists* of the *Names, Occupation or Kind of Business,* and *Post Office Address* of all persons, firms, or corporations engaged as above is shown more graphically in the *Sample Pages* following than could be done by text description. The following points should be borne in mind:—

I. As all farmers will enter on Schedule No. 4 (see page 10 of same), whether they have *Mines, Quarries, etc.*, you should enter in the *Lists* only those parties owning or working mines, quarries, etc., not on farms. The kinds of *Mines, Quarries, etc.*, are as follows: Clay pits, fish ponds (private property), fish ways (private property), gravel pits, marl and muck beds, asbestos mines, coal mines, iron mines, mines (other metals), peat bogs, granite quarries, limestone quarries, marble quarries, sandstone quarries, slate quarries, soapstone quarries, sand pits, and salt works.

II. The name and address of every person to whom you deliver Schedule No. 4 must be entered on the *Lists*.

III. All persons, firms, etc. (employers), engaged in the *Fisheries*, or in coastwise or ocean *Commerce*, must be entered on the *Lists*.

IV. The names, etc., of all Librarians (whether public, public or private school, Sunday school, college, church, scientific, artistic, law, medical, hospital, association, or proprietors of private circulating libraries) must be entered on the *Lists;* also, the names, etc., of all superintendents of Reading Rooms.

V. The names and addresses of proprietors or principals of all incorporated and unincorporated colleges, academies, and private schools must be entered on the *Lists*.

In the Census of 1890 no Enumerator should be appointed unless he successfully passes a "practical" civil service examination—that is schedule information should be sent him for say ten schedules, five for men and five for women. Being supplied with the instructions he should then fill out the schedules, and send them to the appointing power for examination. If correct, that enumerator *is sure* to do good work. If he makes trivial errors his attention can be called to them and he may become as good as the best of enumerators. Those who show by their filled schedules that they are ignorant, are illegible writers, or who have failed to properly study and apply their instructions, should not be appointed, at least not until they have filled a set of schedules properly. The objections will be urged to this plan that it takes more time, and also that a party who had passed a civil service examination might fail of appointment when this special test was applied. To this it may be answered that *all errors* and *omissions* in statistical work take place in the gathering of facts, or the enumeration. If

agents and enumerators always did their work correctly no time would be wasted on examinations, tabulation could be conducted with mechanical precision and the day's work of a statistical figure factory be as accurately gauged as though it was a boot and shoe factory or a cotton mill. Tabulations being perfect, presentations would also be perfect and notes of explanation would be unnecessary. The clerical work is always well performed when intelligently laid out and supervised. The great reform and advance in statistical and census work is needed and must take place in the *enumeration* of facts and the collection of information. Better to drop slipshod work entirely and enumerate again than have one enumerator's poor work vitiate the good work of a hundred others. The poor enumerator or agent like the bad man in society renders it necessary to keep a constant watch on good and bad alike, with increased cost for preparation of rules and their enforcement. Rather use the time and money to keep the poor agent or enumerator out than to use it to correct his ignorant errors and careless omissions.

The agent on special work or the enumerator on census work is entitled to full and graphic instructions. They should be so arranged that he will first grasp their general provisions, then the detail ones will come easy to him. He should be a gentleman, and treat all he meets, hard as it may sometimes be, as ladies and gentlemen. He should be patient and helpful, and should always remember that to obtain information by pleasant means will make his future path easier and help the office that employs him. One man whose antagonism is aroused by an injudicious enumerator may so influence his own community that enumeration may be seriously retarded, and it may be rendered practically useless by incorrect answers given under the influence exerted by the offended party.

The schedules supplied to agents and enumerators should be of medium size so as to be easily reached for writing. Large schedules render writing difficult, are unhandy to carry, make an enumerator look like a book-agent and thus interfere with the speedy prosecution of his work, for he has to remove the wrong impression and then explain his real business. Again, in tabulating, large schedules are unhandy, take more desk room, and are conducive to disease as they oblige the clerks to assume strained and

unnatural positions, besides affecting the eyesight prejudicially. One great advantage of the mechanical systems of tabulation hereinafter explained is that they dispense with the straining to see remote lines, avoid the bending of the back with its attendant evils, and its usual sequel—shortsightedness. The machine tabulator sits upright at her work, within easy seeing distance of her working material, and the work so combines physical with the necessary mental exercise as to remove many of the objections to constant sedentary employment.

For the same reasons that a small schedule is of advantage to the agent or enumerator, his outfit (paper, pencils, instructions, blank schedules, etc.) should be put up in a compact manner, and made as little noteworthy to the passer-by as possible.

CHAPTER IV.

THE EXAMINATION OF RETURNS.

As has been stated previously if a perfect schedule could be framed, and agents or enumerators obtain perfect returns, it would be unnecessary to write this Chapter. But the fact remains that it is almost impossible to frame an inquiry that somebody will not misunderstand. The double or even triple meaning in some inquiries is discovered as soon as the agents or enumerators begin their work, and then it becomes necessary to prepare and issue supplemental instructions. When the party who fills a schedule gives an answer that may be understood in two or even three ways, then correspondence is resorted to to find out what he actually did mean. When it is found that imperfect inquiries have been printed in a schedule, more than usual care is needed in examination, for certain parties will answer according to one interpretation of the inquiry, while other parties will answer on a different understanding. Again, a party filling a schedule may supply a meaning, that is, suppose one that the inquiry does not have, and he answers according to his supposition. This class of errors requires correspondence for justification. Every inquiry is liable to some sort of a misunderstanding, or the answer may be omitted. In some cases the inquiry is not applicable and an answer is properly omitted. Thus, there is but one safe plan to follow, which is to examine the answers to all the inquiries on each schedule. Beside the incomplete or erroneous schedules are those which appear, at first glance, to be properly filled, but which, on examination, are found to contain incompatible answers —that is, the relation of the answers is such as to show that some of them are wrong. While the work of examination is being carried on, the first sorting and arranging of schedules can be done; by cities and towns, if the work is of that nature, by industries in

the case of industrial statistics, or by any other system of classification that may be adopted.

No work in practical statistics is so exacting as competent and valuable examination. The necessity for examination comes when the clerks, as a rule, are not sufficiently acquainted with the schedules to be of much practical use. That knowledge does not come until they have had particular instruction, which takes time and competent teachers. This shows the necessity of having clerks in training, or trained clerks ready, for each Census. The plan hereinbefore suggested of having census enumerators fill out schedules preliminary to their appointment would supply an opportunity for clerks to become experienced in examinations from the practice gained by examining the schedules sent in by the would-be enumerators. Then, these clerks would be ready to examine the regular schedules when sent in by the enumerators.

In order to show the character of original, special, and supplemental instructions which it is found necessary to send to enumerators as regards the actual work of enumeration, even when every possible care has been taken to have the inquiries as nearly self-explanatory as possible, the inquiries and instructions from the eight schedules used in the Massachusetts State Census of 1885 are subjoined, the explanatory matter sent afterward to aid the enumerator, together with illustrations of errors and omissions, and suggestions as to the best plan of avoiding them in statistical work.

The Schedules used were as follows:

No. 1.—Population and Social Statistics.

No. 1.—Special.—Prisoners and Convicts; Homeless Children and Paupers; Physical Condition.

No. 2.—Manufactures.

No. 2.—Specials.—Gas Companies; Printing and Publishing; Print Works, Dye Works, and Bleacheries; Shipbuilding.

No. 3.—Mines, Quarries, Pits, Bogs, Muck Beds, Marl Deposits, and Salt Works.

No. 4.—Domestic Manufactures; Agricultural Products and Property; (Farms, Market Gardens, Orchards, Nurseries, Seed Gardens, etc.)

No. 5.—The Fisheries.

No. 6.—Commerce; Coastwise and Ocean.
No. 7.—Libraries; Reading Rooms.
No. 8.—*(a)* Schools and School Property; Public Schools.
(b) Schools and School Property; Colleges, Academies, and other Private Schools.

Our purpose is to present the principal inquiries in each of these schedules, give the general and special instructions as supplied to enumerators or parties filling the schedules, show the errors or omissions made by enumerators and other parties, and, as far as possible, show how such errors and omissions may be avoided in future enumerations.

SCHEDULE No. I.

POPULATION AND SOCIAL STATISTICS.

SPECIAL INSTRUCTIONS FOR FORMS C85–8 AND C85–9.

20.—

1885—CENSUS OF MASSACHUSETTS.—1885

SCHEDULE No. 1—Population and Social Statistics.
APPROVED MARCH 18, 1885, BY THE GOVERNOR AND COUNCIL. (Chap. 181, Acts of 1884.)

The enumeration of the population, as required by the Constitution and the Law is, in this Census, made upon two Schedules, each of which is headed as above. Formerly large blanks were used in census taking, each page containing 50 or more names. These have been found cumbersome and unwieldy. An Individual Schedule—a small, separate blank for each person in the whole population of the State—has been adopted for the Census of 1885. One of the Schedules, printed in *blue* ink, is used for *male persons only*, whether children or adults. The Schedule printed in *red* ink is used for *female persons only*, whether children or adults. These colors are adopted because they aid us in the tabulation of the Schedules, and they must not be interchanged; that is, information obtained about male persons *must not* be entered upon the Schedules for Females, and information concerning female persons *must not* be entered upon the Schedules for Males. If you are likely to run short of Schedules for Males or Females you should write this office and state the number of each kind desired. *It will be worse than useless* to enter information upon

the wrong sex Schedule, for it will be necessary to rewrite all cards upon which such errors are made, and your account will not be approved until all such corrections are completed.

For many reasons this personal or Individual Population Schedule has advantages over the large page upon which many families could be entered, and also over the family schedule upon which one family only was entered as in the Massachusetts State Census of 1875. Whatever loss of time there may be, if any, in the enumeration is more than compensated for by the superior facility with which the Schedules can be tabulated. The numbered border on the Schedules for Males and Schedules for Females is to be used only in this office in the work of tabulation; it has no significance whatever as regards the Enumerator's work, and this single reference to it is all that will be made.

21.—Symbols. In all cases where an Inquiry can be answered directly write in the reply in the proper space. Sometimes the printed Inquiry is not applicable to the person of whom it is made, and no answer can be obtained. In such cases use the following symbol: (X).

When, from any reason, it is impossible to obtain answers to Inquiries which are yet applicable, fill in the space with the following symbol: (=).

There are other cases where the Enumerator may secure certain replies to the Inquiries, but which, for good reasons, he may consider doubtful or even false; if he is unable to secure more trustworthy information he should underscore, or draw a straight line (_____) under the information that he considers doubtful or incorrect.

The use of these symbols or signs will enable the Enumerator to fill every space in the Schedules with a written reply or a distinctive sign. This office will insist upon the use of these signs, and if omitted by the Enumerator they will have to be supplied before his account will be approved. The particular applicability of these symbols will be illustrated in the special consideration of each Inquiry upon Schedule No. 1.

These symbols should also be used wherever they may be needed in Schedule No. 1—Special, and if necessary in the List of Names and Addresses.

We shall take the Inquiries, one by one, explaining the proper manner of writing and the answer to each inquiry, then the printed example of correct replies for each inquiry.

22.—Inquiry No. 1.

(1) House No.
386 B

Inquiry **1** calls for the "House No." This means the houses numbered in the order of visitation, and has no connection with the street number of the house. That point of information is called for by Inquiry **7.** (See Instruction 27.) That is, in the example given, the Enumerator is supposed to have numbered the first house that he visited as "1" and to have continued to have numbered them consecutively in order until he has reached No. "386." The next house he would number "387," and so continue until his work was completed. The "**B,**" is added as an indication of the materials of which the the dwelling house is constructed. For brick houses use "**B,**" for wooden houses "**W,**" for stone houses "**S,**" for those built of brick and covered with cement, "**C.**" Combinations of material can be indicated by "**B W**" for brick and wood, "**S B**" for stone and brick, etc. These combinations should not however be used where the foundation of a wooden house is brick or stone, or the foundation of a brick house is stone or brick covered with cement. Such houses are properly either wooden or brick. It is when the front or the front and one or both sides are of one material and the remainder of another that these combinations should be used.

A dwelling house, for Census purposes, means any building or place of abode in which any person is living at the time the Census is taken or which is so arranged as to be suitable for human habitation, although unoccupied when visited by the Enumerator. A large tenement house containing forty families should be considered, for Census purposes, as only one house. A small tenement house say with two, three, or four families should also be considered as one house. A building under one roof suited for two or more families, but with a dividing partition wall and a separate front door for each part of the building should be considered as two houses. A block of houses under one roof, say with ten front doors, no matter how many families there may be in each separate house of the block, should be considered as ten houses and so numbered in order.

The house number should be entered only on one Schedule for each family and that Schedule the one devoted to the head of the family (see Inquiry 12) whether such head of the family may be male or female; as will be seen under Inquiries **2** and **3** the "Family Number" and the "No. in this Family" should also be entered only on the Schedule devoted to the head of the family.

In the case of Unoccupied Houses the Enumerator should proceed as follows: he should enter the proper house number in its proper order under Inquiry 1 and then write the word "unoccupied" diagonally across the top of the Schedule beginning at the word "County" in Inquiry 11 and ending at the word "Christian" in Inquiry 6. No other mark or entry should be made upon this Schedule. Use a *Schedule for Males* in all cases for unoccupied houses.

Houses in course of construction, but not yet ready for occupancy, should not be enumerated in any way.

This inquiry was generally well understood, and the answers were uniformly correct; one point of error was, however, made by a great many Enumerators. When more than one family were in one house each head of family Schedule was numbered with a new number; this, of course, increased the number of houses beyond what it should have been, and it became necessary to examine the Schedules by the house numbers and drop enough houses to overcome the effect of this duplication. If in the instructions it should be stated that only one house number should be used for each house, no matter how many families lived in the house, this error would probably be avoided in the future by all intelligent Enumerators. Of course that class of Enumerators who think that they understand the work without the necessity of reading the instructions will continue to make errors, no matter how explicit the instructions may be. The plan suggested of having Enumerators fill out preliminary Schedules before appointment would disclose a class of Enumerators who did not read instructions, but trusted to their own uncommon sense.

3.—Inquiry 2.

(2) Family No.

1298

3

In the space marked **2** is to be entered the number, in the order of visitation, of each family residing in your district. It is plain that if but one family resided in each house that the "House No." and the "Family No." would be the same; but as more than one family is likely to be found in many of the houses visited, the Family Number, necessarily, is greater than the House Number. In the 386th house visited you might find the 1298th family visited. A *family* comprehends a man or woman living alone, or a number living together. Hotels, hospitals, prisons, asylums, boarding-houses, colleges, boarding-schools, etc., for Census purposes, form but one family if having a common roof and table. Further instructions in relation to such large aggregations of people in one family will be found under Inquiry **12.**

In the case of tenement houses and of "flats" in cities each separate family should have its own family number, as such families do not take their meals at a common table.

A person's home is where he sleeps. There are many people who lodge in one place and board in another; all such persons should be returned as members of that family with which they lodge.

This inquiry was understood and few errors were made.

24.—Inquiry 3.

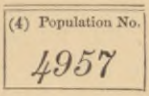
(3) No. in this Family.
10

This is a simple question but the reply to it at once indicates the number of Population Schedules that you must fill out for each family. In the space above we have used the number 10. This might include a man and his wife, two sons, three daughters, an uncle, a lodger, and a domestic servant. You must be sure that the person giving you the replies thoroughly understands your question and does not omit any members of the family. As was stated under Inquiry 1 the three spaces in the Schedule so far referred to (House No., Family No., and Number in this Family) should be filled out upon one Schedule only for each family and that Schedule should be the one belonging to the head of the family, whether a man or a woman. It is self-evident that in a

family containing but one person the Schedule for that person should contain the three entries above specified.

Very few errors were made by the enumerators in filling in the answers to this inquiry.

25.—Inquiry 4.



This is the most important inquiry upon the Schedule. The object of the census is to count the people. The more Schedules the more people, for we can only return as the population of the State the figure that indicates the whole number of Schedules filled and sent to the Census Office.

Every person in the State, on the first day of May, 1885, must be returned upon one of the Population Schedules so that he or she may be counted or enumerated as part of the total population. When the total population of the State is secured by the counting of the Population Schedules, then we shall be able to ascertain the increase or decrease in the population of the State, and in each of its cities and towns.

No child born after the first day of May, 1885, should be entered upon a Schedule. On the other hand every person who was a resident of your district upon May 1, 1885, but who has died between that date and the day of your visit, should be entered on a Schedule as if still living; you thus see plainly that the object of the census is to obtain a list of living inhabitants *on the first day of May*, 1885.

Those persons whose usual place of abode was in a family in your district, but who, on May 1, 1885, were traveling or visiting *out of* the State, or who were absent in the Army, Navy, on business, or at sea in any capacity, should be included. Those temporarily absent from their usual place of abode, travelling, visiting, or on business *in* the State, on May 1, 1885, should be included. Residents of other States or foreign countries, who may be found temporarily present in any family in your district on May 1, 1885, *should not* be included.

All soldiers in the United States Army, and civilian employés

and all residents in Forts or on Military Reservations should be enumerated.

It is by law made the duty of each Enumerator to make all the Inquiries on the Population Schedule of the head of each family or of any other member of the family deemed credible and worthy of trust, and each and every member of the family is obliged by law to supply what information they can in reply to the Inquiries made by the Enumerator. If an Enumerator should fail to secure certain points of information from the members of any family, he should obtain the required information from other families or persons who may be able to correctly answer the Inquiries.

The number entered in the space numbered **4**, when your enumeration is completed, will indicate the population of your district. This population total, we have before informed you, is confidential and must not be disclosed by you.

The Schedules must be kept in the exact order as indicated by the numbers written in space **4**. The blue and red cards should follow each other in the order in which they were filled *and they must remain in that order* until they reach this office. If the population numbers do not follow each other in an exact consecutive order, Enumerators will be required to put them in the proper order, and no accounts will be approved until this duty is properly performed.

Particular care should be taken by the Enumerator to find and enumerate all individuals "living out of families." Under instructions given, these people when found constitute families, but the difficulty consists in finding them, for they do not live in what are known as dwelling houses.

By individuals "living out of families" is meant all persons occupying lofts in public buildings, above stores, warehouses, factories, and stables, having no other usual place of abode; persons living solitary in cabins, huts, or tents; persons sleeping on river boats, canal boats, barges, etc., having no other usual place of abode; and persons in police stations having no homes. Of the classes just mentioned, the most important, numerically, is the first, viz: those persons, chiefly in cities, who occupy rooms in public buildings, or above stores, warehouses, factories, and stables. In order to reach such persons, the Enumerator will need not only to keep his eyes open to all indications of such casual residence in his enu-

meration district, but to make inquiry of the parties occupying the business portion of such buildings, of those living in the immediate vicinity, and also of the police.

Much must be left to the judgment of the Enumerator to obviate the danger that constantly exists that some persons will be enumerated in two places and others not counted at all. In each particular case he must satisfy himself as to the propriety of including or not including doubtful cases in his enumeration of any given family. It is better to risk double enumeration, if you think there is danger of the person not being enumerated at all.

Students at boarding schools or colleges should be enumerated there; if a student is at home ill or on a visit he will undoubtedly be enumerated at home. Seafaring men are to be enumerated at their land homes, no matter how long they may have been absent at sea, if they are supposed to be still alive. Persons engaged in transportation who return to their homes at stated intervals should be included in their own family return, made by wife, mother, etc. It is desirable that the wife or nearest relative of the head of each family should be enumerated second and that the children should follow according to their ages, beginning with the eldest.

Considering that the instructions were so explicit, there would seem that there should have been no necessity for errors as regards this inquiry, but it was misunderstood by many Enumerators; quite a number of the Enumerators failed to arrange their Schedules in the proper order by population number, but, as they were obliged to give the necessary time to so arrange them, they gained nothing by this disregard of instructions.

26.—Inquiries 5 and 6.

(5) Surname.	(6) Christian Name and Initial.
Wade	*Sidney*

(5) Surname.	(6) Christian Name and Initial.
Prentice	*Julia M.*

(5) Surname.	(6) Christian Name and Initial.
Judson	*William H. H.*

The preceding illustrations give sufficient indication of the way in which it is desired that the names of persons should be entered in spaces **5** and **6**.

Very few, if any, errors were made.

27.—Inquiries 7, 8, 9, 10, and 11.

(7) Residence. *Maple St.*	
(8) Town (or City) of— *Stockbridge*	
(9) Ward. X	(10) Precinct. X
(11) County of— *Berkshire*	

This will be the usual form of entry for the above Inquiries in the case of towns. If there is a street number it should be entered, as, for instance, 89 Maple Street. If the population of any particular section of a town or village is desired by the local authorities and the boundary lines are so well defined as to render such a method of enumeration of value, then the Enumerator can enter the name of such district or village in space **7**. It will be noticed that the **X** is used in spaces **9** and **10**. Towns are not divided, as a rule, into wards and precincts, and in such cases the inquiry is inapplicable.

In the case of cities the entries, as a rule, will be as follows:—

(7) Residence. *37 Holden St.*	
(8) Town (or City) of— *Boston*	
(9) Ward *20*	(10) Precinct. *3*
(11) County of— *Suffolk*	

In the case of institutions, hotels, colleges, prisons, jails, etc., the name of the institution, etc., should be entered in space 7; for illustration :—

(7) Residence.	
Cosmopolitan Hotel	
(8) Town (or City) of—	
Boston	
(9) Ward.	(10) Precinct.
9	*2*
(11) County of—	
Suffolk	

Although the filling in of these inquiries was the most tedious part of the Schedule, calling for many repetitions, yet the work was well done; the plan was adopted by many Enumerators of filling in Schedules ahead, during the evening in many cases, so that they were not delayed during the prosecution of their enumeration in the day time; only one Enumerator, of some 530, failed to write in the name of the town upon his Schedules.

28.—Inquiry 12

(12) Relation to Head of Family.
Head of Family

In the case of the head of a family whether a husband and father, a widow, or an unmarried person of either sex, you should write the words "Head of Family" as above; for other members of the family, you should write properly distinctive words as, "Wife," "Mother," "Father," "Son," "Daughter," "Son-in-law," "Mother-in-law," "Boarder," "Lodger," "Niece," "Nephew," "Uncle," "Aunt," "Domestic Servant," etc. In the case of colleges use the word "Student;" in case of hotels the word "Guest;" in case of boarding schools the word "Pupil;" in case of hospitals use the word "Patient;" in case of asylums use the word "In-

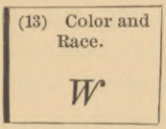
mate;" in the case of penal institutions the word "Prisoner" or "Convict" (see Schedule No. 1—Special, for proper definition of the words "Prisoner" and "Convict"); in the case of charitable institutions use the words "Homeless Child" or "Pauper"; it should be borne in mind that homeless children and paupers are found in families where their support is wholly or partially paid for by public charity. Enumerators are specially instructed and required to use all possible efforts to secure full and correct returns of homeless children and paupers, whether in institutions or families. All "Prisoners," "Convicts," "Homeless Children," and "Paupers" should each be entered on an Individual Population Schedule. They form part of the population, and *must be enumerated.* The *Schedule No. 1—Special* is intended to supply further information about them, but does not take the place of Schedule No. 1, *for enumeration purposes.*

In all cases where the words Prisoner, Convict, Homeless Child, or Pauper are used in Space **12** a Special Schedule Number should be entered in Space **26** in order to show the reference to and connection with the proper Schedule No. 1—Special.

This inquiry was an entirely new feature in Census work; it was finely answered, and the results shown in Part 1, Volume I., of the State Census of 1885 disclosed features in regard to the social life of the State that had never before been obtained for any community; the only error that was made was caused by the confounding of lodgers and boarders. There should have been added to the instructions the specific explanation that lodgers are those who occupy rooms in a house but obtain their meals in some other house, while boarders include those who both room and take their meals in the same house, and also those who room in one house and board or take their meals in another house. In other words lodging refers to the room alone, while boarding includes meals, and also room and meals; there is no specific term in the language for those who board at a house and room at some other house; of course the term table boarders would indicate that class, but as the parties are enumerated where they lodge or live that term cannot become a Census designation; if it were absolutely necessary to learn the number of those who lodge in one place and take table board in another, some such term as "lodger-table boarder" would have to be ingrafted into the Census; if

parties keeping boarding houses should return the people who take their meals at their houses, this, of course, would lead to duplications in the Census.

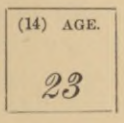
29.—Inquiry 13.

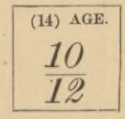


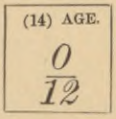
Use the capital letter "W" for *White*, "B" for *Black*, "M" for *Mulatto*, "I" for *Indian*, "C" for *Chinese*, "JAP." for Japanese; the extra letters are used in "JAP." so the written "I" for Indian and "J" for Japanese may not be confounded: Be particularly careful in reporting mulattos, which include quadroons, octoroons, and all persons having any perceptible trace of African blood.

This inquiry was generally well answered although it seemed superfluous to some Enumerators to put a "W" in to indicate that the persons were white; as they did not comprehend the system of tabulation it did not occur to them that for every omission in space **13** that the tabulation clerk was obliged to refer to the rest of the Schedule before continuing her work; as a matter of fact the two million Schedules were examined before tabulation.

30.—Inquiry 14.



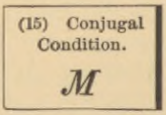




Write in the age, at nearest birthday, in figures, for each adult or child aged one year or over. The ages of children under one year should be expressed fractionally in twelfths of a year: as three months, $\frac{3}{12}$, ten months, $\frac{10}{12}$. The ages of children under one month should be expressed as follows: $\frac{0}{12}$. The various forms of entry for ages are shown above in spaces numbered **14.** Endeavor to obtain *exact ages*, and avoid the concentration on 25, 30, 35, 40, etc. If the answer is "about 40," find out if possible whether the age is 39, 40, or 41.

Ages were well returned, and the concentration on the quinquennial and decennial periods always noticed in age statistics was not so marked as in previous Censuses; of course this concentration comes from the answers of parties who, in the absence of exact information, say that the person is "about 25," "about 50," etc. In case of doubt the Enumerators were very conscientious and instead of filling in a doubtful answer used "do not know" instead; the number of those for whom the age was reported as unknown was very small indeed.

31.—Inquiry 15.



Write the capital letter "S" for *single*, "M" for *married*, "W" for *widowed*, or "D" for *divorced* (either sex), as the case may be.

These inquiries calling for what may have been considered private information, especially as regards divorces, were undoubtedly not fully answered; the number of married couples living apart, though not divorced, of course cannot be arrived at, nor can those who are legally separated, but yet in a legal sense are not divorced. As bearing upon the question of divorces, it might be well in future Censuses to expand the inquiries so as to include those legally separated, and those living apart by mutual consent, but of course there would be great difficulties in the way of securing an exact enumeration. Although Enumerators were instructed to fill in space **15** for each and every person, yet some of them considered it superfluous in the case of children under 10 years of age; to the inquiry, "Why do you omit the S?" the reply was often made that "any fool would know that the children were single." When the necessity of having the letter "S" in its proper place was explained to them, that it was in order that the tabulation might proceed speedily, and also when they were called upon to fill in the missing letter, they realized more fully the importance of a close adherence to printed instructions.

32.—Inquiries 16, 17, and 18.

The place of birth of the person whose name the Schedule bears should be written in Space **16**, the place of birth of his or her

father in Space **17,** the place of birth of his or her mother in Space **18.** In writing in the answers in the spaces **16, 17,** and **18,** if born in Massachusetts write the name of the town and also that of the State. If born in the United States, but not in Massachusetts, write the name of the State only. The universally recognized abbreviations of the names of the different States may be used, instead of the name at length. The above points are made plain by the following illustration :—

(16) Place of Birth. *Millbury, Mass.*
(17) Place of Birth of FATHER. *Conn.*
(18) Place of Birth of MOTHER. *N. H.*

If of foreign birth the country should be named as specifically as possible. Instead of writing "Great Britain," or "Great Britain and Ireland," give the particular division, as England, Scotland, Ireland, Wales. Instead of "Germany," specify the particular state as Prussia, Bavaria, Saxony, etc. For illustration :—

(16) Place of Birth. *Boston, Mass.*
(17) Place of Birth of FATHER. *Ireland*
(18) Place of Birth of MOTHER. *Bavaria*

If born in a foreign country, of American parents, write the name of the country, and immediately under it the words "American Citizen." If born at sea write the words "At Sea"; in the case of father or mother if the words "at sea" are used, add the nationality of the father or mother's father; that is, the nationality of the grandfather of the person for whom the Schedule is filled. As, for instance:—

(16) Place of Birth. *D. C.* (District of Columbia.)
(17) Place of Birth of FATHER. *China* *American Citizen*
(18) Place of Birth of MOTHER. *At Sea* *English*

In the case of Canada write after the word "Canada" the words "English" or "French," so as to distinguish between the English speaking and French speaking Canadians. To illustrate:—

(16) Place of Birth. *Canada* *English*
(17) Place of Birth of FATHER. *Canada* *English*
(18) Place of Birth of MOTHER. *Canada* *French*

Although in Massachusetts Censuses inquiry had always been made in regard to the place of birth of each person, parent nativity or the place of birth of the father and the mother, had never been called for until the Census of 1885; these inquiries were

finely answered, the only exceptions to the general rule being in the case of a few careless enumerators who mentioned the city or town without specifying the state or country; as in the case of other inquiries, when they were called upon to fill in the missing information they saw that they had no excuse for disregarding plain instructions.

33.—Inquiry 19.

To acertain the Occupations of the people is next in importance to enumerating them. (See Inquiry 4, Instruction 25.) The Occupation desired is the profession, trade, or branch of business upon which the person chiefly depends for his support; that is, it is his particular occupation that is gainful or most remunerative in its nature. The population, as regards Occupation, resolves itself into six classes: *first*, the children who are too young to be in school; *second*, those children or young persons (or even adults) who may be "at school"— which act of getting an education is considered an "occupation" for Census purposes; *third*, the great productive class engaged in the various occupations; *fourth*, those young persons and adults, not under or beyond the working age, who, for some reason, have no occupation; *fifth*, those adults who have retired from business, with means for their own support, after a life of activity; *sixth*, those who may have worked all their lives but are now unable to support themselves, and being non-productive are dependent to a more or less degree upon their children or relatives.

These classes may be summarized as follows, their general occupation designation being given at the right in large type:—

First Class,	(Children wholly)	**At Home.**
Second Class,	(Children, young persons, or adults)	**At School.** (See Instructions.)
Third Class,	(Children over 10, young persons, and adults)	**Give occupation in accordance with instructions herewith.**
Fourth Class,	(Young persons and adults)	**Not given.** (See Instructions.)
Fifth Class,	(Adults)	**Retired.** (See Instructions.)
Sixth Class,	(Adults)	**Dependent.** (See Instructions.)

All the instructions hereinafter given, as regards Occupations, relate to women and children as well as to men.

For the children in the *First Class* the words **At Home** will be sufficient to write in space **19.** For the *Second Class*, in addition to the words **At School,** should be added the designations, *Public, Private, College, Law School, Medical School, By Tutor, By Governess*, etc., as the case may be. For the *Third Class* the most particular instructions are necessary and are given hereinafter. For the *Fourth Class* the words **Not Given** are always to be written in; in addition, if the person is studying music, painting bookkeeping, etc., write *Studying music*, or, as the case may be. For the *Fifth Class* the word **Retired** must always be written, and, *in addition*, the name of the occupation in which the person gained his competence. For the *Sixth Class* always write **Dependent** and, *in addition*, the name of the occupation last followed. Distinguish carefully between *Retired* and *Dependent;* the surroundings, your observation, and questions asked with tact and discretion, will supply this distinction.

THIRD CLASS.—GENERAL INSTRUCTIONS.

The discrepancy in all past censuses as regards statistics of Occupations has arisen from the lack of full description. Indefinite terms have been used which the Census office has been unable to properly classify, owing to the absence of full particulars. As each occupation must have a fully descriptive designation, **it is the Enumerators's fault** if that designation is not found out and written at length upon the schedule.

You cannot be too explicit in stating Occupations. As a general rule, in each case you can give

The General Name of the Occupation.
The Particular Branch followed.
The Material worked upon.
Whether an Employer, or a Person employed.

Fifty years ago *a shoemaker* made a whole shoe, and a *tailor* made a whole suit of clothes; at the present time, owing to the division and sub-division of labor, few workmen begin and complete any article of manufacture. In every branch of work the *specialist* has succeeded the *general worker*, and statistics of Occupation

at the present day must possess the most specific detail or they will not satisfy the demands of the inquirer. To secure that *specific detail* we supply, for your information and guidance, the following :—

THIRD CLASS.—SPECIAL INSTRUCTIONS.

Accountant.—Too indefinite. State kind of business, as—*Bank Accountant; Insurance Accountant;* etc.

Actor (or Showman).—State whether *legitimate, variety, musical,* etc. ; whether *in stock company at theatre, with traveling company, in circus, museum, rink,* etc.

Agent.—Too indefinite. State kind of business, as—*Book agent; Commercial agent; Cotton mill agent; Fire* (or Life) *insurance agent;* etc.

Animals, care of.—Distinguish carefully between those *driving, horses,* and those doing work in *barns, stables,* etc. Also between *Employers* (as, for instance, a person owning teams) and a *teamster,* or person who drives for him. Add the word *Employer* to *Teamster* in order to avoid misunderstanding.

Apprentice.—Too indefinite. State kind of business, as—*Carpenter's apprentice; Painter's apprentice; Machinist's apprentice;* etc.

Artist.—Too indefinite. State branch of artistic work, as—*Artist—painter in oils; Artist—water colors; Artist—engraver; Artist—sculptor;* etc.

Author.—Too indefinite. State whether *Editors, Reporters, Journalists* (*correspondents*), *Magazine writers, Novelists, Historians,* etc. This occupation requires special consideration and careful classification.

Bank officers.—Too indefinite. State particular position filled, as—*Bank President; Bank Cashier; Bank Teller; Bank Clerk;* etc.

Boarding and Lodging.—Distinguish carefully between *Proprietors* and *Employés* of *Boarding Houses, Lodging Houses, Saloons, Restaurants,* and *Hotels.* State particular position held, as—*Hotel clerk; Hotel porter; Cook—boarding house; Table girl—restaurant;* etc.

Bookkeeper.—State kind of business, as—*Bookkeeper—*

Wholesale Dry Goods; Bookkeeper—Grocery Store; Bookkeeper—Cotton Mfg. Co.; etc.

Broker.—State kind of goods bought and sold, as—*Stock and Money broker; Wool broker; Real Estate broker; Insurance broker; Pawnbroker;* etc.

Builder.—Too indefinite. State whether *House builders, Bridge builders,* etc., as the case may be.

Butcher.—Distinguish between *butchers* who kill cattle, swine, etc., at an abattoir or slaughter house, and *Provision Dealers* who sell meats and vegetables.

Clergyman.—Give denomination, as—*Clergyman—Baptist,* etc., as the case may be.

Clerk.—Too indefinite. State kind of business, as—*Clerk in Grocery Store; Clerk—gas company; Clerk—Post Office; Clerk—woolen mill;* etc. Distinguish carefully between *Clerks, Bookkeepers* and *Salesmen.*

Collector.—Indefinite. State business, as—*Bill Collector.*

Commissioner.—Indefinite. Use a more explicit word to denote occupation.

Compositor.—Distinguish between *Compositors* who set type, *Pressmen* who run printing-presses, and *Job Printers* who usually set type and run presses. Use *Printer* for those who are not confined to one branch of the business, as above described.

Conductor.—Indefinite. State whether *Steam R. R. Conductor; Horse R. R. Conductor;* etc.

Contractor.—Indefinite. Use a more explicit designation.

Convict.—State occupation followed in prison. If unemployed, give occupation, if any, before imprisonment.

Court Officer.—State particular position filled, as—*Clerk; Constable; Marshal;* etc.

Dealer.—By *Dealers* are meant *Merchants, Storekeepers, Traders,* etc.; those who buy and sell goods as a business. These terms are all too indefinite. The kind of business must be given in every case, and whether *Wholesale, Retail, Jobbing,* or *Commission;* as—*Retail Dealer—Books and Stationery; Wholesale Dealer—Carpets; Retail Dealer—Groceries; Wholesale Dealer—Coal; Retail Dealer—Tinware;* etc. The terms *Milkman* and *Marketman* are sufficiently explicit.

Driver.—See, "Animals, care of."

Engineer.—Too indefinite. State whether a *Locomotive* or *Railroad Engineer; Stationary Engineer; Steamboat Engineer; Civil Engineer;* etc., as the case may be.

Employer.—A term that can be used in any kind of business to distinguish the proprietor, or person who carries on a business, from his clerks, workmen, etc., as—*Stone Mason—Employer; Carpenter—Employer;* etc.

Employé or Employee.—This term is too indefinite and should not be used. There is no business in which a more explicit word cannot be found; besides either of the above words is likely to be confounded with *Employer* which will be used so often to indicate the *proprietor* of a business.

Factory Hand (or Operative).—This term should not be used. Even if the kind of business is given, as—*Cotton Mill—Factory Operative*, that is not sufficiently definite. The actual occupation or kind of labor done, as—*Cotton Mill—Spinner*, is what we desire.

Farmer.—This should be used *only* for farm proprietors—those who own, hire, or carry on farms. Distinguish between *Farmer; Market Gardener; Seed Gardeners; Orchardmen; Nurserymen; Florists;* etc.

Farm Laborer.—A person employed by a farmer. See *Laborers* for further instructions concerning them.

Finisher.—Indefinite. Always state the "article finished."

Fireman.—State whether *Railroad fireman; Steamboat fireman; Stationary Engine fireman;* etc., or *member of Fire Department.*

Foreman.—State kind of business in every case, as—*Machine shop—Foreman;* etc.

Government.—State *first* whether in United States, State, City or Town service; *second*, in what branch of that service; and, *third*, the particular position filled as,—*U. S. Army—Captain; State Treasury Department—Cashier; Town Constable;* etc. When a person has a regular business upon which he *chiefly* depends for support rather than his position under Government, you should give his regular business as his occupation and not his office.

Housekeeper.—Use this term only for such persons as receive *wages* or *salary* for their services.

Housewife.—Use this only for the female head of a family, whether a wife or a woman keeping house for herself, who has no other gainful occupation, and who receives no stated salary or wage for her services.

Housework.—Use this for daughters, sisters, or other relatives or friends, who assist in the family without a stated salary or wage for their services, and who have no other remunerative employment. See *Servants.*

Huckster.—State kind of articles sold.

Inspector.—Indefinite. State "what is inspected," as—*Gas inspector; Milk inspector;* etc.

Jobber.—See *Dealer* and *Merchant.*

Judge.—State whether United States or State Judge (or Justice) and particular position filled, as—*State Judge—Municipal Court; State Judge—Probate Court.*

Laborer.—State kind of labor, as—*Farm laborer; Market garden laborer; Railroad laborer; Brick Mason's laborer;* etc., as case may be.

Maker.—Be careful not to confound *makers* and *manufacturers.* A *maker* of any article is the person who begins, continues, and completes its fabrication. Thus, a person who makes a boot in every part himself is a *bootmaker.* Owing to the division of labor, previously explained, there are now comparatively few *persons* in any branch of industry who make an entire article, but, instead, they *make* parts of the article, as—*Piano leg maker.* Instead of *Furniture maker* write *Chair maker, Sofa maker,* etc., as the case may be. Of course *Chocolate maker, Bonnet maker, Lace maker,* and such terms where the article made is plainly defined, and where the labor is not divided, can be properly used.

Manager.—State "what is managed," as—*Telephone Company—Manager; Express Company—General Manager,* etc.

Manufacturer.—Use this term for those who carry on the business of manufacturing. They are always *Employers,* and this latter word is comprehended by *Manufacturers.* State the article or kind of goods manufactured, as *Cotton goods manufacturer; Chocolate manufacturer; Woollen goods manufacturer; Bonnet manufacturer; Furniture manufacturer;* etc., as much in detail as the case will allow.

Mason.—Indefinite. State whether *Brick* or *Stone mason.*

Mechanic.—A term that is indefinite and of no statistical value. Do not use it, but give the name of the occupation, as—*Carpenter; Painter; Glazier; Plumber;* etc.

Merchant.—See *Dealer.* A *merchant* may be a wholesale, jobbing, retail, or commission *dealer*, or an agent. State always kind of goods bought and sold.

Messenger.—State "what kind of a messenger," as—*Telegraph messenger; Express Co. messenger;* etc.

Musician.—Indefinite. State whether a professional *vocalist* or *instrumentalist*, and if the latter, what musical instrument, as —*Pianist; Violinist;* etc.

Officer.—Indefinite. State always the particular position held, as—*Cotton M'f'g Co.—President; Railroad Co.—Treasurer;* etc., as the case may be.

Official.—See *Government.*

Overseer.—State "what the person oversees," as—*Cotton spinner—Overseer; Street laborers—Overseer;* etc.

Operative.—Indefinite. See *Factory Hand.* Do not use the term, but a more explicit one giving the general name of the business, the material worked upon, and the particular nature of the work done, as, *Woollen goods—dyehouse finisher;* etc.

Packer.—State "what they pack," as—*Paper packer; Wholesale crockery—packer;* etc.

Pauper.—Belong in *Sixth Class.* Write, as before instructed, *Dependent*, and give occupation, if any, before becoming a pauper.

Paymaster.—State business, as—*Railroad paymaster; Cotton mill paymaster;* etc.

Peddler.—State kind of goods sold, as—*Tinware peddler; Notion peddler;* etc.

Personal Service.—State plainly the kind of work done, as—*Barber; Bootblack; Companion; Janitor; Nurse; Watchman;* etc. When possible, state where the work is performed, as—*Schoolhouse janitor.*

Physicians and Surgeons.—State, in the case of *Physicians*, whether regular practitioners, and the school of medicine, as—*Physician—Allopathic.* Designate particularly those who are *Physicians* only; *Surgeons* only; or *Physicians and Surgeons;* distin-

guish specialists as *aurists; oculists; dentists; clairvoyants; mesmeric treatment; massage treatment; veterinary surgeons;* etc.

Porter.—State kind of business, as—*Wholesale Dry Goods—porter;* etc.

Printer and Pressman.—See *Compositor.* State kind of business, whether *newspaper; book; music; lithographic; chromo-lithographic; heliotype; artotype;* etc.

Publisher.—State "what he publishes," as—*newspapers; books; maps; engravings;* etc.

Sailor.—Distinguish between *Sailors* or *Mariners*, and *Fishermen;* state whether on steam or sailing vessels.

Salesman.—State kind of goods sold, as—*Hardware—salesman; Dry goods—salesman;* etc. Do not confound with *Clerks*, which see. Follow above rule in case of travelling salesmen, as—*Clothing—travelling salesman;* etc.

Scientific Person.—Distinguish by the most explicit names, as —*Architects; Botanists; Naturalists; Geologists; Astronomers; Surveyors; Civil Engineers; Stenographers;* etc.

Secretary.—Indefinite. State kind of business, as—*Insurance Co.—Secretary;* etc.

Servant, Domestic.—Many families employ but one servant whose duties are of a general nature; in such cases say—*General servant.* Where possible give name indicating particular service and place where service is performed, as—*Cook—family; Chambermaid—hotel; Table girl—family;* etc.

Shipper.—State kind of goods, as—*Wholesale Boots and Shoes —shipper.*

Speculator.—Indefinite. State articles or goods dealt in, as—*Speculator—mining stocks.*

Storekeeper.—See *Dealer* and *Merchant.*

Superintendent.—State "what he superintends," as—*Horse Railroad—Superintendent;* or the kind of manufacturing business.

Tailor.—Distinguish *custom made* and *ready made*, and state particular part of work done, as—*Ready made, tailor—cutter;* etc.

Teacher.—Distinguish *Professors; Tutors; Governesses;* and *Teachers.* State whether in *College; Latin, High, Normal, Grammar*, or *Primary Schools; Academy; Seminary;* etc. State whether *Public* or *Private Schools* or *Private Family.* Specify branches taught as *Languages, Music, Painting, Dancing*, etc.

Teamster.—See *Animals, care of.*

Trader.—See *Dealer* and *Merchant.*

Treasurer.—State kind of business, as—*Cotton Mill—Treasurer;* etc.

The enumerators who did not give special attention to their instructions and read them carefully were led into a peculiar error. In filling out occupations, seeing the full-faced type, they took it for granted that these were terms which the Office wished the enumerators to use, instead of being prohibited terms. This, of course, caused the work of certain enumerators to be sadly deficient in detail, but they were called upon to make a special enumeration and supply the missing information.

In the case of some enumerators, it seems as though the printing would need to be upon the plan of the circus poster in order to attract their attention.

The principal error made was in using the term "at home" for adults, if these persons were at home and not employed at the time. According to the instructions, this designation should have been used only for children; this was an error that was easily disclosed and corrected when reference was made to Inquiry **14**, which gave the age. It was contemplated that the term "not given" should be used only when the person considered had no occupation, but some enumerators interpreted it to include those from whom an answer could not be obtained; there were so few of these, comparatively, however, that the returns were not vitiated thereby. An error made by some enumerators was to neglect to write in the term "employer" to distinguish the person from an employé; of course without this specification it was difficult, and in some cases impossible, for the Office to determine whether the party was an employer or an employé.

This part of the census work was the best done of any, and the grand total of details of different branches of occupations for the State, aggregating nearly 22,000 separate designations, shows that the great majority of the enumerators understood their instructions and gave most careful and conscientious attention to their duties; in no state or country have the occupations of the people been obtained with such completeness and definiteness of detail.

34.—Inquiries 20 and 21.

The object of Inquiry **20** is to ascertain the number of months

during the Census Year in which each person was *unemployed* in the occupation upon which he chiefly depended for a livelihood. The proper form of answer is to write in Space **20** the figures indicating the number of months *unemployed.* In some cases, a person may lack employment in his principal occupation for a number of months and yet find work in some other branch of business for the whole or part of the time that he is not employed in his principal occupation. The proper way to answer Inquiry **21** is to write in the figures indicating the total number of months employed both in his principal occupation and in his "second" occupation. For illustration—

(19) Occupation.	
Cotton Mill Mule Spinner	
(20) Months Unemployed in above Occupation.	(21) Months Employed in all kinds of Work.
2	*10*

(19) Occupation.	
Carpenter	
(20) Months Unemployed in above Occupation.	(21) Months Employed in all kinds of Work.
0	*12*

(19) Occupation.	
Stucco Worker (8) Painter (2)	
(20) Months Unemployed in above Occupation.	(21) Months Employed in all kinds of Work.
4	*10*

The first illustration shows that a Mule Spinner in a Cotton Mill was unemployed 2 months during the Census Year and worked 10 months, he having no other work. The second instance is that of a Carpenter who worked the whole year at his trade. The third case is that of a Stucco Worker who worked 8 months at his trade and 2 months as a Painter, or 10 months in all. The figures put after each Occupation show the number of months employed in each. In Inquiry **20**, the words "above Occupation" refer to the principal occupation which should *always* be written first.

Where Inquiries **20** and **21** are inapplicable, as in the case of those persons *At Home, At School, Not Given, Retired, or Dependent*, use the proper sign, **X**, in Spaces **20** and **21**. This Inquiry is a very important one, for if answered correctly in every case it will show the effects of business depression and indicate clearly those branches of industry in which such depression has been felt the most.

Perhaps a better designation for Inquiry **20** would have been "months idle" instead of "months unemployed in above occupation." Some enumerators returned the months *employed* in principal occupation in Space **20**, and then answered Inquiry **21** correctly as regards all kinds of work; the tendency was to make the sum of Inquiries **20** and **21** equal 12 months, or a year, but this, of course, could not be a general rule.

35.—Inquiries 22 and 23.

These Inquiries relate to Illiteracy, and are to be made **only** of or concerning persons **ten years of age and over.** As an example; if such a person can both read and write English, and is ten years of age or over, write the replies as follows:

(22) READ.	(23) WRITE.
English	*English*

Another example; if such person can read or write in French, or in any other foreign language, *but not in English*, write in the name of the foreign language. For instance:—

(22) READ.	(23) WRITE.
French	*French*

(22) READ.	(23) WRITE.
Spanish	*Spanish*

When such person *can* read and write in English you need make no further inquiry as regards a foreign language. It is only in the case of those persons who *cannot* read and write in English, but *can* in some foreign language, that we wish the foreign language mentioned.

If the person can *read* in English, or a foreign language, but cannot *write* that language, write the replies as follows:

(22) READ.	(23) WRITE.
English	*No*

If the person can *write* in English, or a foreign language, but cannot *read* that language, write the replies as follows:

(22) READ.	(23) WRITE.
No	*French*

If a person, ten years of age or over, can neither read nor write in English or any foreign language, such state of total illiteracy should be indicated as follows:

(22) READ.	(23) WRITE.
No	*No*

In the case of a child *under* ten years of age, the Inquiry is inapplicable, and the spaces should be filled as below:

(22) READ.	(23) WRITE.
X	X

Despite the specific instructions many enumerators filled in Spaces **22** and **23** with "yes" and "no" without giving any specification as to language; this, of course, required time and money to correct in order to fit for tabulation.

36.—Inquiry 24.

This Inquiry is a special one and relates **only** tc the School Attendance of children **between the ages of ten and fourteen.** If any child, between ten and fourteen years of age, *has* or *has not* attended a public or private *day* school twenty weeks between May 1, 1884, and May 1, 1885, write in the reply, as the case may be, as follows:

(24) Attended School 20 weeks during Census Year.
Yes

(24) Attended School 20 weeks during Census Year.
No

In all other cases make the symbol indicating that the Inquiry is not applicable, as—

(24) Attended School 20 weeks during Census Year.
X

Do not confound this Inquiry with Inquiry No. **19.** In that, *going to school* is considered, for Census purposes, as an *occupation*, and has no connection with the present Inquiry, No. **24.**

This Inquiry meant more than the simple language composing it. By provisions of the school laws no child between 10 and 14 can be employed in manufacturing or mercantile establishments unless he or she has attended school for twenty weeks. It is plain that children who were entered at their nearest birthday would cause a considerable variation from the correct answers to this Inquiry; for instance, a child 9 years and 7 months of age would be called 10 years of age in answer to Inquiry **14,** and for that reason Inquiry **24** would have been considered applicable (when in fact it was not so) by the enumerator. For a similar reason a child 13 years and 7 months of age would be called 14, and for that reason the enumerator would consider Inquiry **24** inapplicable; in this way, undoubtedly, quite a number of chil-

dren failed to be reported under Inquiry **24** who should have been given there. Perhaps these two errors counterbalanced each other so as not to cause a great variation from the absolute fact.

37.—Inquiries 25 and 26.

If the person has an *Acute or Chronic* disease, is *Blind, Deaf, Dumb, Deaf and Dumb, Insane, Idiotic, Maimed, Lame, Bedridden, Paralytic,* or *otherwise physically defective,* write the word or words necessary to describe such condition in Space **25** and the *Number* of SCHEDULE NO. 1—SPECIAL, upon which you enter full particulars concerning such physical condition, in Space **26.** The following illustrations will supply all necessary instructions:—

(25) Physical Condition.	(26) Special Schedule No.
Acute	*29*

(25) Physical Condition.	(26) Special Schedule No.
Chronic *Bedridden*	*36*

(25) Physical Condition.	(26) Special Schedule No.
Insane	*71*

(25) Physical Condition.	(26) Special Schedule No.
Blind *Deaf*	*102*

Bear in mind that two Schedules, No. 1, and also No. 1—Special, must both be filled out for persons comprehended by Inquiries **25** and **26.**

Space **26** was filled in simply to connect the Population Schedule with the Special Schedule which contained the detailed information in relation to the defective, dependent, and delinquent classes. We postpone the consideration of these points until we take up the Special Schedule.

POLITICAL CONDITION.

38.—Inquiries 27, 28, 29, and 30.

[These Inquiries are found upon the *Schedules for Males* only.]

Ratable Poll.—In the case of every male person, whether of native or foreign birth, 20 years of age or over, not a pauper, write the word *Yes* in Space **27.** In all other cases make the sign, **X**, indicating that the Inquiry is inapplicable.

Legal Voter.—In the case of every native male person 21 years of age or over, and in the case of every foreign born male person 21 years of age or over, who has been naturalized, not an idiot, pauper, nor convict, or who has resided *one year* in the State, and *six months* in the town or city, write the word *Yes.* Both *native* and *naturalized* legal voters should be indicated by *Yes* in Space **28**; all other male persons by the sign **X**.

Naturalized Voter.—In the case of every foreign born male person, 21 years of age or over, who has complied with the naturalization laws of the United States (either by his own act or that of his father), write the word *Yes* in Space **29.** In all other cases make the sign **X** in Space **29.**

Alien.—In the case of all male persons, of foreign birth, 21 years of age or over, *who have not complied* with the naturalization laws of the United States, write the word *Yes* in Space **30.** In all other cases make the sign **X** in Space **30.** The following illustrations show all the possible combinations as regards *Political Condition.*

Age 19.

(27) Ratable Poll.	(28) Legal Voter.
X	X
(29) Naturalized Voter.	(30) Alien.
X	X

Age 20
Years or over.

(27) Ratable Poll.	(28) Legal Voter.
Yes	X
(29) Naturalized Voter.	(30) Alien.
X	X

Age 21.
Native Born.

(27) Ratable Poll.	(28) Legal Voter.
Yes	*Yes*
(29) Naturalized Voter.	(30) Alien.
X	X

Age 21.
Foreign Born.
Naturalized.

(27) Ratable Poll.	(28) Legal Voter.
Yes	*Yes*
(29) Naturalized Voter.	(30) Alien.
Yes	X

Age 21.
Foreign Born.
Not Naturalized.

(27) Ratable Poll.	(28) Legal Voter.
Yes	X
(29) Naturalized Voter.	(30) Alien.
X	*Yes*

By the instructions, "ratable polls" include those male persons 20 years of age and over. Where in Space **14,** the age had been given as 20 because the person was 19 years and 6 months or more of age, it appeared to be an error because they were not also marked as ratable polls; the only way in which this could be avoided would be to have the exact years and months entered as the age for each person, but this would entail so much extra labor, and cost so much, that would seem hardly practicable to require it in a Census. When it is not done, however, there must always be a margin of variation as regards the number of ratable polls; it might have been better to have used the term "no" instead of the "**X**" in filling out Spaces **27** to **30.**

39.—Inquiries 31 and 32.

[These Inquiries are found upon the *Schedule for Females* only.]

These Inquiries are to be made only of or concerning women who are or who have been married, and should include married, widowed, and divorced women, whatever their relation to the head of the family. In other words they should be asked of or con-

cerning every woman, whose name appears upon Schedule No. 1, who is or who has been married. If a woman who is or has been married has had no children, or if none are living, use the "0" (zero) in Spaces **31** or **32,** as the case may be. In all other cases make the sign **X**. Three illustrations will suffice for explanation :—

Married, Widowed, or Divorced.

(31) Mother of how many Children.	(32) Number of these Children now living.
5	4

Married, Widowed, or Divorced,

(31) Mother of how many Children.	(32) Number of these Children now living.
2	0

Single

(31) Mother of how many Children.	(32) Number of these Children now living.
X	X

The four Inquiries relative to political condition contained on the Schedules for males were dropped on the Schedules for females, and two Inquiries, Nos. **31** and **32,** were put in their places relative to the number of children born to each mother, and the number of those children living at the time the Census was taken ; this was a new feature in sociology, but the returns were finely filled out, and the results to be shown in Part 2 of Volume I., of the Census of Massachusetts for 1885, will set at rest the doubts of both pessimists and optimists as regards the decadence or non-decadence of the native born portion of the body politic.

SCHEDULE NO. 1—SPECIAL.

To the Enumerator.—The object of this Special Population Schedule is to secure certain social statistics relative to the criminal, pauper, or afflicted classes of the Commonwealth which could not be written, owing to their nature and length, upon the Population Schedule itself. The Population Schedule supplies the *enumeration* of the classes mentioned the same as though they did not belong to such classes, while this Special Population Schedule supplies an account of the *condition* in detail of the delinquent, dependent, and defective classes.

The union between the Population Schedule and this Special Population Schedule is complete, for you have, in accordance with instructions, entered the classes under consideration as follows:

Under Inquiry 12, Population Schedule, showing relation to head of family, and also under Inquiry **26,** giving the number of this Special Population Schedule.

- Prisoners,
- Convicts,
- Homeless Children,
- Paupers.

Under Inquiry **25,** Population Schedule, showing physical condition, and also under Inquiry **26,** giving the number of this Special Population Schedule.

- Acute Diseases,
- Chronic Diseases,
- Blind,
- Deaf,
- Dumb,
- Deaf and Dumb,
- Insane,
- Idiotic,
- Maimed,
- Lame,
- Bedridden and Paralytic,
- Other Defective Physical Conditions.

It is important that every inquiry in this Special Population Schedule relating to Prisoners and Convicts, Homeless Children and Paupers, Persons suffering from Acute or Chronic Diseases, or those defective in any way as regards their Physical Condition, should be answered as fully as possible, whether the persons are living in institutions or private families.

All the provisions of the Census Law apply to this Special Population Schedule as well as to the Population Schedule itself. The information called for regarding physical condition is, however, of a private nature and you must use the utmost discretion in making inquiries, and assure your informants that their replies will be considered entirely confidential and that no names will be published. The object is a scientific one in the interest of all the afflicted classes, and each one who supplies correct information is doing a patriotic and humane service for the community.

Prisoners and Convicts.

1.—Name of penal institution.
2.—If *Prisoner*, state alleged offence.
3.—If *Convict*, give nature of crime.
4.—If *Convict*, give length of sentence.
5.—Residence when at home.
6.—If *Convict*, state whether *serving time* in this Institution, *awaiting removal* to some other prison, *awaiting sentence*, or awaiting *death penalty*.
7.—If *Prisoner*, state whether *awaiting trial*, *held as a witness*, *serving out a fine*, imprisoned for *insanity*, *debt*, etc.

GENERAL NOTICE.

Prisoners and Convicts will be found only in institutions; they may not, however, be residents of the town or city in which they are confined. Homeless Children and Paupers will be found both in institutions and private families, but supported wholly or partially by the town or city to which they belong. The object of Inquiries **5, 9,** and **18** is to enable this office to credit each town or city with its proper share of prisoners or convicts, homeless children, or paupers. If not *able-bodied* their physical condition must be given on pages **3** and **4.**

PRISONERS AND CONVICTS.

Definition.—By *Prisoners* are meant those who are awaiting trial for an alleged offence, held as witnesses, serving out fines, or detained for insanity (because dangerous), debt, etc. By *Convicts* are meant those who have been tried, convicted, and sentenced to imprisonment for a specified term or to suffer the death penalty. Prisoners are usually found in lock-ups and jails, while convicts are in the State penal institutions or in county prisons and houses of correction, or awaiting removal thereto.

The text of the inquiries is to a great degree indicative of the nature of the information obtained. It will be plainly seen that from the answers can be obtained a showing of all the offences for which prisoners were held, all the crimes of convicts, of length of sentences, and by a proper tabulation the average sentence for each specified crime, and the means were also supplied of crediting the convicts and prisoners to their homes, and not, as generally done to the city or town in which the jail or prison happened to be located.

A peculiarity of the Special Schedule was that it brought into one schedule all the defective, dependent, or delinquent conditions for *one* individual. On the old blank a person may have been counted as a convict, counted again as being blind, and counted for the third time as being deaf, this giving three persons apparently, instead of one actually; in the United States Census for 1880 a similar form of blank was adopted, but the results of the tabulation have not as yet appeared. The presentations of the various inquiries used in the Special Schedule, and the accompanying special instructions, are given for the guidance of those who are obliged to prepare blanks or schedules for obtaining similar information; it is not contended that the inquiries are perfect, or that the instructions are as complete and explicit as they might be made; they, however, form a basis upon which practical statisticians can work, and incorporate therewith such improvements in inquiries or instructions as may occur to them as being advisable. As, however, the schedules were remarkably well filled for the State, it is undoubtedly the fact that they were reasonably well fitted for the work intended, and at the present time any material changes in inquiries or instructions have not been suggested by the tabulation of the returns actually made. The errors that occurred related principally to the proper definition of acute and chronic diseases, to the proper distinguishing of those maimed from those lame, and to the classification of those deaf, dumb, and deaf and dumb. The errors made, however, were due largely to not thoroughly reading and understanding the instructions, and also to the fact that the defective, dependent, and delinquent classes are often unable to answer for themselves, and those having them in charge are not sufficiently acquainted with them to be able to supply the information.

Homeless Children.

8.—Name of institution, or living in a private family.
9.—Residence, before entering this institution or family.
10.—Are this child's parents living.
11.—For what cause committed.
12.—Was this child born in this institution; if not, when committed.
13.—Legitimate, or illegitimate.
14.—Is this child under the legal control of this institution.
15.—If *yes*, by legal authority, or by consent of parents.
16.—Whether *wholly* or *partially* supported *by public charity*.

HOMELESS CHILDREN.

In previous State Censuses *Homeless Children* have been classed with *Paupers*, only the age classification distinguishing them. Paupers are those who by disease, intemperance, misfortune, lack of thrift, or disinclination to labor, become dependent upon public beneficence. Homeless children are dependent upon private or public beneficence from no fault of their own. They have not yet had an opportunity to support themselves and it is misleading and unjust to class them with those who have tried and have failed, or those who have no inclination, to support themselves.

Inquiry **10** may be answered by saying "Father living," "Mother living," or "Both living."

Inquiry **11** applies particularly to children now in reform schools or other reformatory institutions. Such children, although having committed offenses and having been committed to such institutions, are not however *Convicts*, and are properly classified under Homeless Children.

Paupers.

17.—Name of institution, or living in a private family.
18.—Residence when at home.
19.—Has this person ever been in a penal institution.
20.—Is this person habitually intemperate.
21.—Was this person born in this institution; if not, when admitted.
22.—Is this person able-bodied.
23.—What relatives of this person are also in this institution.
24.—Whether *wholly* or *partially* supported *by public charity*.

PAUPERS.

Inquiry **19** distinguishes the "criminal pauper" class, Inquiry **20** the "intemperate," Inquiry **21** the "hereditary," and Inquiry **22** the "tramp or vagrant" class who are committed for being

without means of support, and who are likely to join the criminal classes.

Inquiry **23** should include husband, wife, father, mother, and the number of sons, daughters, brothers, and sisters.

PHYSICAL CONDITION.

Acute and Chronic Diseases.

25.—Whether an *acute* or *chronic* disease.
26.—Name of such disease.
27.—Name and address of family physician.
28.—How long afflicted.
29.—If in a hospital or institution, state its name.
30.—Name of attending physician.
31.—Residence when at home.
32.—Whether *wholly* or *partially* self-supporting, and whether supported *at own expense* or *by public or private charity*.

GENERAL NOTICE.

Residence.—Persons suffering from the defective physical conditions referred to on pages **3** and **4** may not be residents of the town or city in which the institution (hospital, asylum, training-school, poor-house, etc.) in which they now reside is situated; they will usually be found living at home; they may be in charge of a private family, but at public expense. The object of Inquiries **31, 43,** and **52,** on page **3,** and **62, 74, 90,** and **100** on page **4** is to enable this office to credit each town or city with its proper share of acute and chronic disease, maimed and lame, bedridden, paralytic, blind, insane, deaf, dumb, deaf and dumb, idiotic, etc. Those who are prisoners, convicts, homeless children, or paupers, must be so accounted for on page **2.**

Physicians.—The Enumerator will find in nearly every case where, from indisposition or inability to answer, he fails to secure some portion of the required information that he can without trouble secure the name and address of the family or attending physician, and a letter to him, with return postage enclosed, will secure the desired facts. Visits to physicians consuming much time should not be made, as the Census Office can correspond with the physician and thus complete the schedule at slight expense.

The object of these Inquiries is to obtain the Health Statistics of the Commonwealth. Physicians will aid you heartily in

this work, for the results will be particularly valuable to the medical fraternity. No names will be used in the Census reports and these returns will be seen only by yourself and the medical experts who tabulate them. Impress these facts upon all who are disinclined to answer.

Maimed and Lamed.

33.—What *limb* or *organ* has been *lamed* or *lost.*
34.—Cause: *disease*, *accident*, or *in battle.*
35.—Name of disease.
36.—Nature of accident.
37.—Occupation at time of accident.
38.—When, and in what town, did accident occur.
39.—Whether injured in discharge of duty.
40.—How long afflicted.
41.—If in a home or institution, state its name.
42.—Name of attending physician.
43.—Residence when at home.
44.—Whether *wholly* or *partially* self-supporting, and whether supported *at own expense* or *by public or private charity.*

By "Maimed" we mean those who have lost a leg, arm, eye, finger, hand, etc. By "Lame" we mean those who are crippled by deformity or accident but who have not necessarily lost a limb or an organ. We desire that special care may be taken to secure the information concerning those injured in battle, and also the particulars for all persons injured by accidents in mills, mines, workshops, on railroads, etc. Your local knowledge of persons and events will aid you in making these returns complete.

Bedridden, Paralytic, or other Defective Physical Conditions.

45.—Whether *bedridden* or *paralytic.*
46.—Other defective physical condition.
47.—Cause of such conditions. (45 or 46.)
48.—How long afflicted.
49.—Name and address of family physician.
50.—If in an institution, state its name.
51.—Name of attending physician.
52.—Residence when at home.
53.—Whether *wholly* or *partially* self-supporting, and whether supported *at own expense* or *by public or private charity.*

Any other defective physical condition than those specially enumerated can be stated under Inquiry **46.**

Blind.

54.—Totally or semi-blind.
55.—Whether from birth.
56.—Age at which blindness occurred.
57.—No. of years afflicted.
58.—Form of blindness.
59.—Supposed cause.
60.—If in an institution, state its name.
61.—Name and address of superintendent or attending physician.
62.—Residence when at home.
63.—Whether *wholly* or *partially* self-supporting.
64.—Supported *at own expense* or *by public or private charity.*

The *totally blind* cannot distinguish forms or colors. The *semi-blind* can see forms and colors indistinctly, but cannot read except with great difficulty.

Insane.

65.—Form of insanity.
66.—Supposed cause.
67.—Age at *first* attack.
68.—Age at *last* attack.
69.—Number of attacks.
70.—How long insane.
71.—Dangerous *to self, to others*, or, so far, *harmless.*
72.—If in an institution, state its name.
73.—Name and address of superintendent or attending physician.
74.—Residence when at home.
75.—Whether *wholly* or *partially* self-supporting.
76.—Supported *at own expense* or *by public or private charity.*

Give in reply to Inquiry **65** such well-understood terms as *mania, melancholia, dementia*, etc. We will secure fuller information, if needed, from the physician by correspondence. If unable to learn above facts as to form of insanity state the case in your own words in plain English.

Deaf, Dumb,—Deaf and Dumb.

77.—Whether *deaf only, dumb only*, or *deaf and dumb* (deaf-mute).
78.—Supposed cause of *deafness.*
79.—*Totally* deaf, or *semi*-deaf.
80.—Cause of *dumbness.*
81.—Age at which *deafness* or *dumbness* occurred.
82.—No. of years afflicted.
83.—Has dumbness ceased, or is it ceasing through instruction.
84.—Whether deaf from birth.
85.—Age at which *deaf-mutism* occurred.

86.—No. of years afflicted.
87.—Supposed cause.
88.—If in an institution, state its name.
89.—Name and address of superintendent or attending physician.
90.—Residence when at home.
91.—Whether *wholly* or *partially* self-supporting.
92.—Supported *at own expense* or *by public or private charity.*

A *deaf* person may be *totally deaf*, that is unable to hear any sounds, or he may be *semi-deaf*, that is be able to hear very loud sounds, and even to understand some voices, these latter not necessarily very loud ones. Some persons are only "a little hard of hearing" and are not *deaf* to such a degree as to incapacitate them for their ordinary duties. In such cases answer Inquiry **79** by "Hard of hearing."

Some people are *dumb* from idiocy, deformity (tongue-tied), disease, or accident, but can hear. The *deaf only* or *dumb only* must not be confounded with nor included among the *deaf and dumb* or *deaf-mutes*. Inquiry **81** applies both to *deaf only* or *dumb only*. A *deaf-mute* from birth has never heard any one speak, and consequently has never learned to talk. If afflicted at an early age before learning to talk the condition is deaf-mutism, the same as if from birth. Those who could once hear and speak but have lost the power, either wholly or in part, from any cause, are called *semi-mutes*, and Inquiry **85** should be answered as follows: "Deaf-mute, 16," or "Semi-mute, 16," as the case may be.

Idiotic.

93.—*Wholly* or *partially* idiotic.
94.—Whether from birth.
95.—Age at which manifested.
96.—No. of years afflicted.
97.—Supposed cause.
98.—If in an institution, state its name.
99.—Name and address of superintendent or attending physician.
100.—Residence when at home.
101.—Whether *wholly* or *partially* self-supporting.
102.—Supported *at own expense* or *by public or private charity.*

Give the causes of idiocy in simple language, such as,—measles, meningitis, epilepsy, blow on head, fall, fright, etc. An *idiot* is a person whose mental development has been retarded or virtually stopped. The insane lose their faculties and become imbecile,

not idiotic. The true idiot is stupid, rarely evincing comprehensive or reasoning powers beyond those of the lower animals, and oftentimes failing to reach even that standard.

SCHEDULE No. 2.—Manufactures.

*To*_____

_____*Town (or City) of*_____

To comply with the Laws of the Commonwealth, as given for your information below, you are called upon to answer the inquiries made in this Schedule. All instructions necessary for your guidance will be found upon pages facing the questions, and you are requested to read them carefully before filling in any of the answers. Any person authorized by you may write in the particulars.

This Schedule is one of a series of eight used in taking the Decennial Census and Industrial Statistics of the Commonwealth. By Chap. 181, Acts of 1884, this Bureau was vested with authority to take the Industrial Statistics for 1885. The object of Schedule No. 2 is to ascertain the products and condition of Manufactures in the Commonwealth for the year ending June 30, 1885, the values of manufacturing property as they existed on June 30, 1885, and also to show the increase or decrease in production and property as compared with the Statistics of Manufactures for 1875.

By Sect. 6 of the Census law it is provided that Schedule No. 2 shall be sent *by mail* to manufacturers, and returned by them, by mail, to this Bureau. This provision enables manufacturers to make returns without annoyance and at their leisure, and without disclosing information concerning their business to Enumerators or individuals of the locality. In case the Schedules are not filled and returned by mail, the Bureau is empowered to send Enumerators to obtain such Schedules.

It will be the duty of the Bureau as regards Schedules sent in by mail to require the completion of your return if it be defective, and its correction if it be erroneous. Black ink should be used in writing, in all cases where possible. Replies written in pencil will be accepted, if the writing is firm and legible.

It is intended that every Manufacturer, whatever the kind of goods made or productive work done, should receive and fully fill out one of these Schedules, no matter how small the quantity or value of product annually.

It is of importance to every one engaged in developing the manufacturing resources of the Commonwealth that the fullest and most correct return possible should be obtained from each manufacturer, or other recipient of this Schedule; and no manufacturer, or employer engaged in a mechanical trade, should allow himself to perform his duty in a careless or imperfect manner.

To facilitate tabulation in the office, it is desirable that you should keep this Schedule in good condition, and avoid tearing, folding (excepting one fold lengthwise, as mailed), or soiling it.

The facts supplied by you are not to be used as the basis of any system of taxation, or other liability, and the information secured will be presented in the Census Abstract *by figures only, the names of persons in no case being printed.* The Bureau and Enumerator are bound by law to consider your answers in this Schedule as STRICTLY CONFIDENTIAL, and they will be examined only by the clerks in this office who prepare the returns for printing.

Certain of the Inquiries indicate plainly that the answer should give the condition, or the facts, as they existed June 30, 1885. Such Inquiries usually relate to Manufacturing Property, such as Land, Buildings, Machinery, Implements, Capital Invested, Motive Power, etc. In the case of all other Inquiries, the replies should cover the entire CENSUS YEAR which *began* July 1, 1884, and which *ended* June 30, 1885.

Each article made, kind of work done, stock or material used, and each kind of Manufacturing Property, must be enumerated BY ITS OWN NAME. We cannot accept returns with the words "miscellaneous," "sundries," "not otherwise enumerated," or any other unmeaning and *statistically valueless* designation.

This Schedule was mailed to your address.

Twenty Days from above Date will be allowed you in which to make your return and mail same, in accompanying postpaid envelope, to this office.

All parties filling out this Schedule must certify that the answers are correct. This is required by law, and a form for signature will be found at the foot of this page. Your post office address must be given so that we may communicate with you by mail in case any error or omission is found in your Schedule.

EXTRACTS FROM THE CENSUS LAW.—CHAP. 181, ACTS OF 1884.

SECTION 1. The decennial census of the Commonwealth required by articles twenty-one and twenty-two of the amendments to the constitution, and the decennial census of the industries of the Commonwealth, shall be taken in the year eighteen hundred and eighty-five, and in every tenth year thereafter, under the direction of the bureau of statistics of labor, by enumerators to be appointed by said bureau as hereinafter provided.

SECT. 2. The information sought by the census shall be gathered on eight general schedules, as follows:— * * * Schedule number two to manufactures. * * *

SECT. 3. * * * The statistics to be gathered by schedules number two * * * shall relate to the facts called for on the same for the year ending the thirtieth day of June of each census year, and so far as property relating to such facts is concerned as it exists on the said thirtieth day of June.

SECT. 6. In making returns under schedule number one, the enumerators shall make and transmit with such returns a complete list of all establishments engaged in manufacturing * * * ; and upon such list the statistics required by schedules numbered two * * * shall be gathered by said bureau, by mail, and of such parties who fail to make returns by mail by such of the enumerators appointed under section four as said bureau may designate.

SECT. 8. * * * all other schedules must be certified to by the parties making them.

SECT. 11. * * * no use shall be made of the names of individuals, firms, or corporations supplying the information called for by this act, such information being deemed confidential, and not for the purpose of disclosing any person's affairs, and any enumerator or employé of said bureau violating this provision, shall be fined as provided for in the succeeding section for wilful deceit and falsehood.

SECT. 12. * * * if any person shall refuse to give the information required by this act to a person authorized to collect the same, he shall pay a fine not exceeding one hundred dollars for every such refusal.

SECT. 13. All fines charged under this act may be recovered in any court of competent jurisdiction by information or complaint of the attorney-general, and shall accrue wholly to the Commonwealth.

Upon the Manufactures Special Schedules devoted to "Gas Companies," "Printing and Publishing," "Print Works, Dye Works, and Bleacheries," and "Shipbuilding," a general circular similar to the one just presented was printed upon the first page of the Schedule. A letter or circular similar in tenor, but with changes to suit it to the part of the Schedule upon which it was printed, appeared upon the first page of Schedule No. 3 relating to "Mines, Quarries, Pits, etc.," Schedule No. 4 devoted to "Domestic Manufactures and Agricultural Products and Property," Schedule No. 5 devoted to "The Fisheries," Schedule No. 6 which covered the statistics of "Coastwise and Ocean Commerce," Schedule No. 7 relating to "Libraries and Reading Rooms," and Schedule No. 8 containing statistics of "Schools and School Property," which related to both public and private schools, colleges, and academies; upon each of these Schedules, also, were given extracts from the Census law for the information of the party called upon to fill the Schedule.

Date of Establishment.

1.—Date of establishment of this manufactory.

2.—Founded by whom.

3.—State year in which the present firm or corporate name was adopted.

Full replies to Inquiries **1, 2,** and **3** will supply the needed information for a history of manufactures in this Commonwealth. They will show the years of inception of our industries, the names of the pioneers or founders of our great industries, the changes in the various firms with dates of such changes, and the information, if complete, will undoubtedly establish the fact of the stability and solid growth of the manufacturing industries of the Commonwealth.

Inquiry **1** was very generally filled. Inquiry **2** was only partially filled, there being so many establishments at the present day, the present proprietors of which do not know by whom the business was started. Inquiry **3** was not generally answered, the parties who filled the Schedule evidently thinking that if Inquiry **1** was answered that covered the ground sufficiently; as the answers to Inquiry **3** were only of relative value no particular effort was made to fill in Schedules in which this omission occurred; of course in a great many cases the answers to Inquiries **1** and **3** would be the same.

Partners.

4.—Partners. Number of Partners. 5.—Males. 6.—Females.
No. of *General* Partners. " "
No. of *Special* Partners. " "

Stockholders, etc.

7.—Stockholders. Number of Stockholders. 8.—Males. 9.—Females.
10.—If managed by a company, state whether incorporated under *General Law*, a *Special Law*, or *not* incorporated.
11.—State whether originally established as a *private firm* or *Corporation.*
12.—Year in which incorporated.
13.—Amount of Capital Stock at time of incorporation.
14.—Amount of Capital Stock on June 30, 1885.

From the replies to Inquiries **1** to **14** information can be obtained as to the actual and relative numbers of partners in private firms and stockholders in corporations, the changing of private firms into corporations, the year in which corporations were organized, and the increase or decrease in capital stock as regards the time of incorporation and the present time.

This section of the Schedule was generally well filled; a common omission was in the case of those establishments conducted by one person who evidently did not consider that he himself was a "partner;" this omission was easily supplied, for in the majority of cases the answer was "one partner;" in case such designations as Brooks Bros., or Small, Jones, & Co., appeared upon the addressed page, letters were sent in order to ascertain the actual number of partners. It would be well, in future, to insert with instructions calling for similar information the statement that one person should consider himself as a "partner" for Census purposes.

Capital Invested.

15.—Amount.
16.—In Land.
17.—In Buildings and Fixtures.
18.—In Machinery.
19.—In Implements and Tools.
20.—Cash capital.
21.—Credit capital; supplied by partners or stockholders.
22.—Credit capital; bills payable, accounts on long time, etc.
23.—Total *real* (fixed), *cash*, and *credit* Capital invested in this establishment.

The statistics of Capital Invested in previous Censuses have lacked completeness. The *credit capital*, which is as essential to the carrying on of a great establishment as the *real* and *cash* capital, has been entirely omitted from the returns. This *credit capital* should include all income from investments, interest, and all other aids to capital. Inquiries **16** to **23** should be answered so as to cover completely the real, cash, and credit capital needed, and actually used, to carry on this establishment.

No part of the Manufactures Schedule cost the Census Office more wearisome correspondence than the section devoted to Capital Invested; the inquiries in regard to credit capital were new to the Census, and in spite of the explanation given the Schedules were returned without answers being filled in to Inquiries **21** and **22.** The absolute importance of the statistics of credit capital is coming to be generally recognized. The subject is more carefully considered hereinafter in the discussion of the Inquiries in the Annual Statistics Schedule now in use in the State of Massachusetts. It was also with difficulty that the manufacturers could be induced to separate their capital invested according to Inquiries **16, 17, 18,** and **19;** in many cases the land was bought at a nominal value and the present owners could not state its cost; in many cases the buildings, fixtures, machinery, implements and tools, were lumped in one sum and the manufacturers confessed their inability to separate this sum according to the items; it would seem as though a proper system of bookkeeping would enable any manufacturer to show the balance standing to the debit of his accounts for buildings, fixtures, machinery, and implements and tools; but the fact is that manufacturers do not always keep their books in the way best calculated to supply answers to Cen-

sus inquiries. It may be stated that the Census should conform to the form of accounts kept by the manufacturers, but this would end in a similar way, for if a good model were taken as the proper form, there would be the same number of manufacturers whose books would not conform to this good model.

Markets, Transportation, etc.

24.—Where are the products of this establishment sold principally.
25.—Total value of goods *exported* during the year ending June 30, 1885.
26.—Cost per ton for transportation to principal market.
27.—Total amount paid for *freight* on *purchases* during year ending June 30, 1885.
28.—Total amount paid for *freight* on *goods sold* during year ending June 30, 1885.
29.—Where is the principal *competition* in the manufacture of goods.
30.—Where is the principal *competition* in selling goods.
31.—Are sales decreased by the *importation* of foreign-made goods.

The answers to Inquiries **24** to **31** will supply facts in relation to inter-state and foreign commerce, as regards the *different* manufacturing industries of the Commonwealth, which have heretofore been lacking. While the information supplied will be of general value to the people of the Commonwealth, it will be of more particular value to the various industries.

At the present day, when the subject of inter-state commerce has become so important that laws have been passed and commissioners appointed to see to their proper enforcement, statistics relative to markets and transportation are of a particular value to the manufacturing fraternity; as the answers to such inquiries must be statements of facts, there is no opportunity for the Census Office to know whether they are exactly correct, and so the Office is debarred from estimating, or from making comparisons which might disclose manifest errors; as regards the answer to Inquiry **25**, of course the amount must be less than the total amount of goods manufactured, but in the case of no other inquiry is there any opportunity for comparison.

Stock or Materials Used.

32.—Chief raw materials used.
33.—Where such material is produced.
34.—Market where such material is purchased.
35.—Price of such material, June 30, 1885. Price at factory. Price where purchased.

36.—Combustible value of the average amount of stock on hand (raw, and in process of manufacture) in this establishment.

37.—Average length of credit obtained on purchases of stock or materials used.

38. Description of all stock or materials used or consumed in manufacturing, work done, repairs, or re-manufacturing, during the year ending June 30, 1885.

39.—Quantity used or consumed. Basis. Number.

40.—Value.

41.—Total value of stock or materials used or consumed in this establishment during the year ending June 30, 1885.

Inquiries **32** to **35** are a continuation, in some respects, of those in relation to "Markets and Transportation." The design is to obtain the sources of supply of the chief raw materials used in each industry, the principal market for purchasing such materials, and on a fixed basis, such as pound, ton, etc., the price where purchased, and the price at factory, the latter price of course including commissions, freight, etc. Inquiries **36** and **37** are self-explanatory, excepting as regards *combustible value* which is explained in the "General Instructions" on the back of page **10**. Inquiries **38** to **41** call for the description, quantity, and value of all stock or materials used or consumed in this establishment in the making of goods or the doing of work. By "basis" is meant pound, ton, yard, etc., as the case may be.

All materials used for fuel should be stated separately. State different kinds of coal. Include water, and gas, electric lights, or other means of illumination; also chemicals, mill supplies, packing boxes, etc. Specify all cases of "repairs," and also all cases in which goods already manufactured are used in re-manufacturing. Use the letter "R" to indicate raw or crude materials and "M" to indicate goods already manufactured but used as "stock" in your industry. Write these letters after the names of the articles in the spaces under **38**.

Do not use the terms "sundries," "miscellaneous," "other articles," etc. The design is to secure the *most complete detail* as regards articles used as stock, and extra copies of page **3** will be sent if this detail requires more space than is allotted.

The "total value," Inquiry **41**, should be a correct mathematical total of the various amounts given in the spaces under **40**.

Inquiries **32** to **35** covered some points which it was not supposed that every establishment could answer; the results of such

information are not secured from simple aggregation, for one-half dozen complete Schedules in any one industry would be as thoroughly indicative as if all the Schedules for that particular industry were answered. For that reason in the case of the smaller establishments, especially, where the figures have no distinguishing value, the parties were not called upon to fill out the specified inquiries. Inquiries **36** and **37** were generally well answered, and they did not call for much correspondence in order to supply omissions. In the case of thousands of establishments, where the business is small, the amount of stock carried inconsiderable in value, and most of the stock or material purchased for cash, of course the inquiries were not answered. There is probably no part of a Schedule devoted to manufactures that causes the manufacturer more trouble to supply detailed information than those comprehended by Inquiries **38** to **41**; in a great many cases, perhaps in one-half, the manufacturer confesses his inability to state the quantity and value of the stock used by him; he has an accurate idea of the goods made, and he knows that he is making a profit, is able to pay his bills, and make a living; he does not keep his books in such a way as to show the quantity and value of different articles used in his business, but they are all lumped in one general merchandise or supply account. The larger establishments, especially the corporations, however, supply full details, and as they use the greater part of the raw material used in the State, it is not worth while to insist upon the smaller establishments filling out in detail the items of stock used. In the majority of these cases it would be an estimate, and a general statement as to the nature of stock used and the value is the best that can be generally obtained.

Goods Manufactured or Work Done.

42.—Principal manufactured products.

43.—A specified quantity of a principal product.

44.—Gross cost of such specified quantity.

45.—Selling price for such specified quantity.

46.—Statement of value of weekly product during the year ending June 30, 1885. Highest. Lowest. Average.

47.—Proportion that the business for the year ending June 30, 1885, bears to the greatest capacity for production of this establishment.

48.—Are the products of this establishment sold at first hands *from* the factory or shop, by commission agents, wholesale dealers, jobbers,—or how.

49.—Combustible value of the average amount of manufactured goods, or completed "work done," on hand in this establishment.

50.—Average length of credit allowed on sales of goods manufactured, or work done.

51.—Description of all goods manufactured, work done, repairs, or re-manufacturing, during the year ending June 30, 1885.

52.—Quantity manufactured, work done, etc. Basis. Number.

53.—Value.

54.—Total value of all goods manufactured, work done, repairs, and re-manufacturing, in this establishment during the year ending June 30, 1885.

Inquiries **42** to **45** call for the *principal* product or products, and the gross cost and selling price of a specified quantity, as, for instance, 100,000 yards of cotton print cloth, 1000 cases of one kind of boots or shoes, a locomotive, printing-press, etc., as the case may be.

Inquiry **46** is designed to show, as regards *weeks*, the highest, lowest, and average product during the Census Year. *After* the words "Highest," "Lowest," and "Average" *the date of the Saturday of the week considered* should be written in, in order to supply comparisons between different establishments.

Inquiry **47** calls for a comparison between the *actual* business done during the Census Year and the greatest business that could have been done if the establishment had been run to its fullest capacity. In case "night work" is included in the comparison that fact should be stated.

Inquiry **49** will require only a reference to the definition of "combustible value" in the General Instructions.

Inquiries **51** to **54** cover goods manufactured and work done in the same manner as Inquiries **38** to **41** cover stock and materials used.

The *most complete detail* as regards goods made is desired. Avoid the terms "sundries," "miscellaneous," etc. Extra copies of page **4** will be sent if this detail requires more space than is allotted. By "basis" is meant pound, ton, yard, as the case may be.

The "total value," Inquiry **54**, should be a correct mathematical total of the various amounts given in the spaces under **53**.

Inquiries **42** and **46** cover points similar in their nature to those referred to as covered by inquiries **32** to **35**; that is, their great value comes from their being representative and not from their being accumulative results of all the establishments in the State.

Inquiry **47** was misunderstood, or not understood, by a great many manufacturers and much correspondence was needed in order to make the matter plain to them. The point that it was desired to learn was how many more people could be employed in the manufacturing establishments of the State without any change in the plant, that is, without building any more mills, factories, or workshops, or in putting in any more machinery; in other words, how many vacant benches or unemployed machines were there which, in case of a great increase in trade, could be utilized; the inquiry is included in the Annual Statistics Schedule now in use in Massachusetts and is one of the most indicative figures of the conditions of the various industries that can be obtained. Inquiries **48** to **50** are similar in their nature to inquiries **36** and **37**, and about the same results were secured. A parallel is found between inquiries **51** to **54** and inquiries **38** to **41**. A manufacturer, as has been stated, has a better idea of the quantity and value of the different kinds of goods he has manufactured than he has of the quantity and value of the various kinds of stock he has used, but there is here found a new item of disturbance. A manufacturer is afraid that the secrets of his business may be disclosed, and if also engaged in the manufacture of an article in which he alone, or but two or three other persons in the city or State are engaged, he is averse to calling the manufactured articles by their real name because, as he says, he does not wish the secrets of his business disclosed. The State, while it has a right, undoubtedly, to call for the statistics of industries, as evidently has no right to use those figures in any way that would be to the prejudice of any individual manufacturer. Although the manufacturers were assured that by the forms of presentation it would be impossible for parties in the same business, or for outside parties, to learn the secrets of their business, yet as a rule, there were individual cases who preferred to use general titles under inquiry **51** rather than to specify the particular articles made by name; every effort was made to secure as complete a detail as possible, but special assurances were given in a great many cases that certain articles of manufacture would be so thoroughly concealed that no use of printed figures could ever possibly be made to the prejudice of the manufacturer himself.

Persons Employed.

55.—Number of *Males*, under 10 years of age, employed.
56.—Number of *Males*, 10 and over but under 14 years of age, employed.
57.—Number of *Males*, 14 and over but under 21 years of age, employed.
58.—Number of *Males*, 21 years of age and over, employed.
59.—Whole Number of *Males*, of all ages, employed in this establishment *at the present time.*
60.—Number of *Females*, under 10 years of age, employed.
61.—Number of *Females*, 10 and over but under 14 years of age, employed.
62.—Number of *Females*, 14 and over but under 21 years of age, employed.
63.—Number of *Females*, 21 years of age and over, employed.
64.—Whole Number of *Females*, of all ages, employed in this establishment *at the present time.*
65.—Whole Number of Persons, of *both sexes* and *all ages*, employed in this establishment *at the present time.*
66.—How many *Males*, employed in this establishment at the present time, are *married.*
67.—How many *Females*, employed in this establishment at the present time, are *married.*
68.—Smallest Number of Persons employed, *at any one time*, during the year ending June 30, 1885.
69.—Greatest Number of Persons employed, *at any one time*, during the year ending June 30, 1885.
70.—Month of the Census year in which the *smallest number* of Persons was employed.
71.—Month of the Census year in which the *greatest number* of Persons was employed.
72.—Greatest Number of Persons that could be advantageously employed in this establishment at any one time with present buildings, machinery, etc.

Inquiries **55** to **58** call for the *age classification* of the *Males* employed, and Inquiries **60** to **63** the same facts for *Females* employed. Inquiry **59** calls for *Males* of all ages, Inquiry **64** for *Females* of all ages, and Inquiry **65** for the *Whole Number* of both sexes and all ages. "Present time" means June 30, 1885. Inquiries **66** and **67** are self-explanatory. Inquiries **68** to **71** call for information that will indicate, by industries, the condition of business, at various periods, during the Census year. Inquiry **72** means the number of employés that would be required to secure the greatest capacity for production in this establishment. See Inquiry **47.**

The statistics of "persons employed" formed another figure of difficulty in the prosecution of Census work; note, for instance, the classification by age and sex as called for by Inquiries **55** to

65. A manufacturer employing the same people the year round could make such records as would enable him with little difficulty to answer these inquiries, but if we consider the case of a large corporation employing from 3,000 to 4,000 hands, the necessity of supplying correct and reliable answers to these inquiries actually calls for an age census of employés; each person must be reached individually by a printed slip, or must be called upon verbally to supply the information, and there is no doubt but what the obtaining of this information is a hardship to the busy manufacturer, and causes an actual loss to the employés, especially those who are piece workers; a great many manufacturers reply that they do not know the ages of their employés, and do not care to ask them, and it can be seen that it is not a particularly pleasant task for a manufacturer to insist upon each of his employés giving him their particular age, especially when they know that their ages have been called for and entered upon the population Schedule. If we press inquiries **66** and **67** the manufacturer often replies that he does not know or care whether the males and females in his employment are married or not, and it is often considered an impertinence to ask any such question; in fact, although the questions contained in the Schedule under consideration all supply information that is desired or has been called for, for use in statistical matters, it is an open question whether the State or National Government should try to secure such detailed information; a reference to the Annual Statistics Schedule, which has been several times mentioned, will show that it contains but a few inquiries, and those are readily answered by the manufacturers. Inquiries **68** to **71** were well answered, the pay-roll supplying the desired information. The connection between inquiry **72** and inquiry **47** is explained in the instructions.

Working Time.

73.—Number of Hours constituting a day's work for women and minors in this establishment.

74.—Number of Hours constituting a day's work for adult males in this establishment.

75.—Daily working time on Saturdays, for all persons employed.

76.—Longest working time for male adults in any full working day.

77.—Shortest working time for male adults in any full working day.

78.—Average daily working time, May to November, for all persons employed.

79.—Average daily working time, November to May, for all persons employed.

80.—Number of persons, under 14 years of age, employed for 32 weeks during year ending June 30, 1885.
81.—Number of Days that work continued on *full time* in this establishment during the year ending June 30, 1885.
82.—On *three-quarters* time.
83.—On *two-thirds* time.
84.—On *half* time.
85.—On *less* than half time.
86.—Whole Number of Days that work continued in this establishment during the year ending June 30, 1885.
87.—Number of Days lost from stoppages for repairs, improvements, etc.
88.—Number of Days lost from suspensions or shut-downs on account of slack trade.
89.—Number of Days lost from strikes or lock-outs.
90.—Whole Number of Days idle.
Number of Persons employed by the *Day*:
91.—Under 10 years of age.
92.—10 and over but under 14 years of age.
93.—14 and over but under 21 years of age.
94.—21 years of age and over.
95.—Whole Number of persons employed by the *Day* in this establishment.
Number of *Piece Hands:*
96.—Under 10 years of age.
97.—10 and over but under 14 years of age.
98.—14 and over but under 21 years of age.
99.—21 years of age and over.
100.—Whole Number of *Piece Hands* employed in this establishment.
101.—Months constituting the *busy season.*

The object of Inquiries **73** to **80** is to ascertain the working time of individuals; of Inquiries **81** to **90,** the working time of the establishment, as such; and of Inquiries **91** to **100,** the manner of working, that is, whether as *Day* or *Piece* hands. Inquiry **101** is connected with Inquiry **69** in some degree. The object of Inquiry **101** is to cover, *by names of the months*, the entire "busy season" in this establishment, and thus secure showings for each industry.

Inquiries **73** to **80** were easily answered. Inquiries **81** to **90** called for more work on the part of the manufacturer, but they supplied a time balance for his establishment that was of value to him as well as to the Census Office; this fact seems to have been appreciated by the manufacturers, and the statistics supplied form a supplement to the statistics of the unemployed, obtained upon the population Schedule as previously explained. The continual growth of the system of piece work, and the gradual falling off

from census to census of those employed by the day, excepting those for unskilled labor, was brought out by Inquiries **95** to **100**. Inquiry **101** is self explanatory, and few manufacturers were unable to supply the desired information.

Salaries.

102.—Occupation, branch of industry, particular business, or kind of work done, by persons paid *salaries* in this establishment, during the year ending June 30, 1885.

103.—Sex. Male or Female.

104.—Number and ages. Under 10; 10 and over, under 14; 14 and over, under 21; 21 and over.

105.—Basis. Week, Month, or Year.

106.—Amount.

107.—Total amount paid in salaries in this establishment during the *month* ending June 30, 1885. To persons.

108.—Total amount paid in salaries in this establishment during the *year* ending June 30, 1885. To persons.

The object of Inquiries **102** to **108** is to *entirely separate* the salary receivers from the wage earners in this establishment, and to secure the salaries paid by the week, month, or year, in detail by specified occupations, and with sex and age distinctions for the whole number paid salaries.

While manufacturers as a rule do not object to making transcriptions of their pay roll, showing the actual sums paid to their employés, there was much indisposition shown to stating the exact sums paid to the presidents, treasurers, and principal officers of the large corporations. They were assured that the figures would be used only in a general way, but there was evidently a feeling that they did not wish to have the salaries of the presidents, treasurers, superintendents, officers, etc., in the various industries brought into direct comparison with the individual wages paid to employés in the same industry. This is a vital point, however, in statistics of labor, and every effort was made by the Census Office to secure the filling out of Inquiries **102** to **108** as regarded managers, superintendents, overseers, bookkeepers, etc.

Wages Paid: in General.

109.—Total amount paid in wages in this establishment during the *month* ending June 30, 1885. To persons.

110.—Total amount paid in wages in this establishment during the *year* ending June 30, 1885. To persons.

111.—Specified wages paid, for the last week in June, 1885, in this establishment. Under $5; $5 to $6; $6 to $7; $7 to $8; $8 to $9; $9 to $10; $10 to $12; $12 to $15; $15 to $20; over $20.
112.—Number receiving such wages. Males. Females.

Inquiries **109** and **110** call for the amounts paid to *wage earners* as distinct from salary receivers. The information called for by Inquiries **111** and **112** can be easily classified from the pay-roll for the last week in June, 1885.

The Inquiries **111** and **112** sucured a *classified wage* instead of an actual wage or an average wage; it, as it were, marshalled the employés in each industry, and showed the number receiving the amount specified per week; it is undoubtedly one of the most indicative wage tables that can be secured. It is more easily ascertained than statistics of average or actual wages, and it is recommended as the form of wage statistics which might be secured in every State of the Union, so as to form State comparisons, and if extended to foreign countries would enable an international comparison, which would be of more value, because covering all the employés, than any partial comparison on the basis of actual or average wages. As the particular names of occupations are not used in such a classification, it would not disclose information that some manufacturers, especially in foreign countries, would be unwilling to give. It is to be hoped that statistical offices throughout the world will endeavor to obtain statistics of wages upon so easily secured and easily compared a basis.

Relation of Wages to Cost of Production.

113.—Description of any principal product of this establishment.
114.—Basis.
115.—A specified quantity of such product.
116.—Total cost of production of such product.
117.—Total wage cost of such product.
118.—Total cost of all raw materials used in such product.

Inquiries **113** to **118** call for the "wage cost," "cost of all raw materials," and "total cost of production" of a specified quantity of any principal product of this establishment.

This is a special investigation. Inquiries **113** to **118** are intended to show the relation of wages to cost of production. It was well answered by the large establishments and corporations generally and covers the ground, as the small establishments, in a majority of cases, cannot supply valuable figures.

Wages Paid: in Detail.

119.—Occupation, branch of industry, particular business, or kind of work done, by persons paid *wages* for *day* or *piece* work in this establishment during the year ending June 30, 1885.

120.—Day or Piece.

121.—Sex. Male or Female.

122.—Number and Age. Under 10; 10 and over, under 14; 14 and over, under 21; 21 and over.

123.—Basis. Hour, Day, or Week.

124.—Amount.

The object of Inquiries **119** to **124** is to secure statistics of the amounts paid to wage earners for their services by the hour, day, or week, with distinctions as to sex, day or piece work, and ages.

Salaried workers, as a rule, represent no definite production, and the amounts paid them virtually belong in the general expenses. In the case of wage earners their pay has a well-defined relation to the cost of production, and it is obvious that the custom of combining salaries and wages must have resulted in vitiating the statistical value of wage averages. Nearly every industry has its subsidiary branches, or occupations, or trades, or subdivisions of labor, or kind of work done. An attempt has been made in the Population Schedules of the present Census to secure the occupations of the people with more specific detail than heretofore. To supplement this minute classification it is necessary to secure the wages paid in each branch of an industry.

The following table shows, to a certain extent, the subdivisions of some of our leading industries as regards branches or occupations. It is designed that the "Wages Paid: in Detail" should be even more minute in its classification. If the space allotted on page **7** is insufficient, extra pages will be sent by mail on application.

Industries.	*Branches.*	*Industries.*	*Branches.*
Agricultural implements,	19	Flax and jute goods,	39
Artisans' tools,	24	Food preparations,	52
Boots and shoes,	73	Furniture,	39
Brick,	11	Glass,	24
Building trades,	18	Hats: fur, wool, and silk,	29
Carpetings,	47	Hosiery,	49
Carriages and wagons,	17	Liquors: malt and distilled,	20
Clothing,	35	Machines and machinery,	59
Cotton goods,	186	Metals and metallic goods,	139

Printing and publishing,	83	Wooden goods,	32
Printing, dyeing, bleaching, and finishing cotton textiles,	43	Woollen goods,	94
Stone,	22	Worsted goods,	136

In these 24 industries 1295 occupations, or branches of business, are represented, and it is in this fine, and even finer detail that we wish the statistics of wages paid, together with such information as will describe the work performed. In arriving at the number of branches specified above, the distinctions of sex, age, and day and piece, have been borne in mind.

Not all of these branches, given for an industry, will be found in *every* establishment classified in that industry. It is only in the grand aggregation that all of these subdivisions will appear.

Owing to the age classification, Inquiry **122**, but one *age* should be entered on a line on page **7**. In case the "Basis" changes (Inquiry **123**) extra lines must be used. This instruction applies also in case of changes in sex, or day and piece. The wages paid, ("Amount," Inquiry **124**) are *averages*, or they may be *actual* in the case of a few employés only.

The following illustrations will make the above instructions more easily understood.

Wages Paid: in Detail.

119. Occupation, branch of industry, particular business, or kind of work done, by persons paid WAGES for DAY or PIECE work in this establishment during the year ending June 30, 1885.	**120.** Day or Piece.	**121.** SEX. Male or Female.	**122.** Number and Ages. Under 10.	10 and ov'r, under 14.	14 and ov'r, under 21.	21 and over	**123.** BASIS. Hour, Day or Week.	**124.** Amount.
Weavers, (8 looms)	Day	Male				5	Day	$ 1 50
Weavers, (8 looms)	Piece	Male				2	Week	$ 8 97
Weavers, (6 looms)	Piece	Female			10		Day	$ 1 20
Weavers, (6 looms)	Piece	Female				13	Day	$ 1 40
Weavers,	Day	Male				10	Hour	$ 13
Weavers,	Day	Male			20		Week	$ 5 50

A most strenuous attempt was made to secure the exact detail wages for every occupation, branch of industry, particular business, and kind of work done by persons paid wages for day or piece work in the manufacturing establishments of the State. No more complete Schedules can be supplied than were furnished to the Office by the large establishments, including the corporations. Some of them employed special clerks to go over the pay rolls and

secure the desired figures; in many cases months of time and hundreds of dollars were expended in order to supply the Census Office with exact figures. The fine statistics of "occupations" drawn from the Population Schedule, aggregating, as we have stated, more than 22,000 details, supplies the basis of the framework into which these *average actual* wages will be fitted, and presented in due time to the public. The lack of value in statistics of wages when given as averages for industries has long been recognized. If we say that the average in the cotton industry for all employés is a certain sum, we have to ignore the question of sex, the question of age, the question of mode of work, and the question of skill or lack of skill in the various employments; that is, the skilled laborer says when he sees the figures that he earns more than the average stated, the unskilled laborer says that he earns less than the average stated, and both doubt the figures supplied. The only true way to present statistics of actual wages is to give them for every branch of employment, then like conditions can be compared with like conditions, and high salaries in one branch do not fictitiously raise up low salaries paid in another branch, nor do low salaries in one branch fictitiously depress the high salaries paid in another branch of an industry.

Motive Power.

125.—What Motive Power is in use in this establishment—steam, water, electric, caloric, gas, oil, vapor, horses, hand (males or females), foot (males or females), windmill, etc.

126.—If *Steam*, state number of engines and boilers in use. Engines. Boilers.

127.—Horse power of same. Full capacity. Actually used.

128.—If *Water*, state number of wheels in use.

129.—Horse power of same. Full capacity. Actually used.

130.—Name of stream, reservoir, etc., from which water power is derived.

131.—If *Electric*, state horse power actually used, and describe the machines supplying same. Horse power. Description of machines.

131.—If *Caloric*, *Gas*, *Oil*, or *Vapor* engines, state horse power actually used, and describe the engines supplying same. Horse power. Description of machine.

132.—Number of *Horses* used to furnish power, and how utilized. Number. How utilized.

133.—Number of *Persons* running machines by *hand* power. Males. Females.

134.—Number of *Persons* running machines by *foot* power. Males. Females.

135.—If *Windmills*, state number and estimated horse power. Number. Horse Power.

Inquiries **125** to **135** are designed to secure statistics of the motive power in use in all the manufacturing establishments in the Commonwealth. In the case of steam engines, boilers, and water wheels the full capacity in *horse power* is called for, and also the average horse power actually used. In the case of other engines, or electrical power, the horse power used is called for and also a short description of the machines in use. The number of horses and windmills supplying power is desired, and also the number of persons running machines by hand or foot power, with distinctions as to sex.

The answers to Inquiries **125** and **135** are questions of fact, and a statistical office has little opportunity to make corrections or supply omissions; when taken in consideration with statistics upon the displacement of hand labor by the introduction of machinery, the study of the statistics of motive power becomes necessary; it is not essential that such information should be given each year, but at the end of each decade it seems absolutely essential in order to show the growing power of machinery in manufactures, that full statistics of the various kinds of motive power in use in manufactories should be obtained.

Machinery, Tools, and Implements.

136.—Value of all fixed and movable machinery, including all machines for supplying motive power, in use in this establishment.

137.—Respective values of machinery of home manufacture, and that imported, in this establishment. Home. Foreign.

138.—Value of imported machinery introduced into this establishment during the *ten years* ending June 30, 1885.

139.—Description of the principal labor-saving Machinery, Tools, and Implements, used in this establishment, by which production has been increased and cost of same reduced.

140.—Number. Home manufacture. Imported.

141.—Value. Home manufacture. Imported.

In answering Inquiries **136** to **138** the *value* required is the *cost*, even though the machinery, etc., may have deteriorated in value since its purchase.

The design of Inquiries **139** to **141** is to show the respective numbers and values of machines of home and foreign manufacture and also to learn the extent to which such machines are used in the various industries. Extra copies of page **8** will be forwarded on application in case the space allotted for replies is insufficient.

The number of spindles, and power and hand looms used in the manufacture of "Cotton Goods" should be stated; also, sets of machinery and power and hand looms used in the maufacture of "Woollen and Worsted Goods," the number and kinds of saws in saw-mills, vats (with capacities) in tanneries, engines and machines in paper mills, runs of stone in grist mills, and, *generally*, all special machines,tools, and implements, peculiar to an industry.

Statistics relating to machinery, tools, and implements are intimately connected with those relating to motive power and should be obtained for similar reasons. Considerable reluctance was shown by some manufacturers to filling in replies to Inquiry **139,** probably from the reason that much of the machinery was used for special purposes, and they did not wish that any designation should appear in the Census volume; as this was a case in which the publication might be of prejudice to the individual manufacturer, the details in this section were not considered as being so vital as in many others.

Size and Value of Establishments.

142.—Description of Buildings, etc., connected with this establishment.
143.—Number of Mills, Factories, Workshops, Floors, Rooms.
144.—Materials of which constructed.
145.—Value, if owned.
146.—Interest paid on mortgage during the year ending June 30, 1885.
147.—Years in which erected.
148.—Amount expended in repairs and refitting during year ending June 30, 1885.
149.—Amounts paid out during the year ending June 30, 1885, for,—
150.—Rent.
151.—Taxes.
152.—Insurance.
153.—Total floor area occupied, in all buildings, in square feet.
154.—Persons employed, of each sex, in the stories specified, of all buildings. *Basements.* Males, Females. *First Stories.* Males, Females. *Second Stories.* Males, Females. *Third Stories.* Males, Females. *Fourth Stories.* Males, Females. *Fifth Stories.* Males, Females. *Sixth Stories.* Males, Females. *Attic Floors.* Males, Females.

The object of Inquiries **142** to **154** is to ascertain the number, materials of which constructed, value, years in which erected, floor area, and persons employed in the various stories of the mills, factories, and workshops of the State, and also parts of buildings (floors and rooms) used for manufacturing purposes.

These Inquiries also call for the amounts expended during the Census year for interest, repairs, rent, taxes, and insurance, on such buildings or parts of buildings. These latter Inquiries will supply certain insurance statistics which have always been needed, but in which previous Censuses have been deficient.

Inquiries **142** to **154** are self-explanatory; they called for a variety of information, some of which the manufacturers objected to supplying because it enabled the Office, in conjunction with other statistics, to figure out their exact profits. Other Inquiries, such as **153** and **154**, called for figures that required almost as much time to ascertain as did the classification of employés by ages. The returns, however, were generally full, and Inquiries **142** and **143** will enable the Census Office to present a description of the manufactories as regards plant, such as has never before been obtained in any Census; it will show the whole number of establishments having 1, 2, 3, or more mills, 1 or more factories, 1 or more workshops, 1 or more floors or rooms, and will bring out those small establishments which occupy but part of a room, or a portion of a floor, or which are carried on in cellars or basements, or in rooms of dwelling houses, or, as is often the case in the building trades, where a party, for instance a mason, has only a locker in which he keeps the implements needed in his industry.

Losses by Fire.

155.—Number of *fires* in this establishment during year ending June 30, 1885.
156.—Value of property destroyed.
157.—Amount received as insurance.
158.—Total fire losses during the *ten years* ending June 30, 1885.
159.—Total fire losses since business was established.
160.—Causes of fires during last *ten years*.
161.—Inflammable materials used in this industry.

Inquiries **155** to **161** call for other insurance statistics which will be of general value to all manufacturers, and of special value to the State Insurance Department and the companies doing business in the Commonwealth.

Inquiries **155** to **161** need no explanation; they are of value only in the aggregate, and not disclosing any information which could be of detriment either to a city, town, or industry, were well filled.

Accidents.

162.—Number of deaths, resulting from accident, in this establishment, during the year ending June 30, 1885.
163.—State *Sex* and *Age* of employés losing their lives.
164.—Cause of accident.
165.—Number of employés permanently disabled by accidents.
166.—State *Sex* and *Age* of employés thus disabled.
167.—Cause of accident.
168.—Number of boiler explosions during the year ending June 30, 1885.

Inquiries **162** to **168** relating to accidents are self-explanatory. They were well answered, and seemed to cover the ground thoroughly.

Work furnished Women at their Homes.

169.—Number of women furnished with work at their homes, by this establishment, during the year ending June 30, 1885.
170.—Value of stock or materials furnished them to be "made up," or manufactured during the year ending June 30, 1885.
171.—Value of goods made, or amount paid for work done by them, during the year ending June 30, 1885.
172.—Total wages paid to them, or paid to others for work done by them, during the year ending June 30, 1885.
173.—Were the value of stock or materials included in the answers to Inquiries 38 to 41, page 3—the value of goods made or work done in the answers to Inquiries 51 to 54, page 4—and the total wages paid in the answers to Inquiries 109 and 110, page 6.
174.—Are the materials furnished or sent direct to the women doing the work, to contractors, or are the women employed by sub-contractors.
175.—What percentage of your total production during the year ending June 30, 1885, was sent outside of the City or Town in which your principal mill, factory, or workshop is located for partial or complete manufacture.
176.—What percentage was sent outside the Commonwealth of Massachusetts.

Inquiries **169** to **174** are not of general application,—in fact they apply, in full, to but few industries, including Boots and Shoes, Clothing, Furniture, Elastic Goods, and Palm-leaf and Straw Goods. Inquiries **175** and **176** will have a much wider range of application, as the questions are *general* in their nature, and should be answered for *all industries*.

Inquiries **169** to **176** cover a complicated part of statistics of manufactures in many industries, particularly boots and shoes, clothing, and straw goods; the sub-division of labor is such, that

the parties who are called the manufacturers are not able to supply the information desired in the Schedule as regards their particular industry; for instance, a firm may be engaged in the manufacture of boots and shoes; they may employ a number of men to do the cutting; every other part of the work may be contract work, and done outside of their own establishment; they pay a firm of lasters for lasting the work, they pay a firm of stitchers for doing the stitching, another firm for bottoming and heeling, and when the manufactured goods are received in their factory they are unable to give statistics except for work done under their own supervision. This is also the case with clothing firms; they cut their goods, and then give them out to contractors who carry on shops, or who may take them in wagons and distribute them through the country districts, calling for them when they are completed. In such cases the so-called manufacturer is unable to give any statistics in regard to persons employed or wages paid. This is also true in the straw industry, where the supplied material is sold to farmers' wives and daughters who braid it and make it into hats and bonnets and then resell them to the contractors; these variations from "straight" manufacturing have added largely to the labors of Census taking, especially as many small firms that work for the larger establishments keep no record of the persons employed or wages paid by them, being satisfied if, at the end of each week, they are enabled to pay their help with the money obtained from the manufacturer and have a sufficient margin left for themselves. This plan of work, the contract system, is creeping into other industries, and as it spreads it will continue to make the Census of industries more difficult; for this reason, a diminution must be made in the number of inquiries in order to complete the enumeration within a reasonable time, and present the results before they are so old that they have lost their value.

Condition of the Employés of this Establishment.

177.—Amount of fund for the relief of sick or disabled employés of this establishment, or the families of those killed by accident.

178.—Amount paid out in benefits during the year ending June 30, 1885.

179.—How is this fund raised.

180.—Number of volumes in the library maintained especially for the use of the employés of this establishment.

181.—Is there a reading room, hall, or other means of education, exercise, amusement, etc., maintained especially for the use of the employés of this establishment.

182.—Are any of the employés of this establishment, *and how many*, stockholders, or profit sharers by virtue of co-operation or industrial partnership.

183.—Do the employés of this establishment have an opportunity to add to their regular yearly earnings by virtue of extra work, or premium (high grade) work.

184.—How many dwelling houses are owned by the proprietors of this establishment, and occupied by its employés.

185.—Number of such tenants.

186.—Whole number of persons in the families of such tenants.

187.—Average amount charged for the *yearly rent* of a 2 roomed tenement.

188.—Average amount charged for the *yearly rent* of a 3 roomed tenement.

189.—Average amount charged for the *yearly rent* of a 4 roomed tenement.

190.—Average amount charged *by the week* for board in corporation boarding-houses—males; females.

191.—How many dwelling houses have the proprietors of this establishment sold to their employés, and received full payment therefor.

192.—How many are being paid for now.

193.—Total mortgages on same, and average rate of interest.

Inquiries **177** to **193** call for statistics relating to the condition of the employés in this establishment as regards relief funds and benefits therefrom, libraries, reading rooms, halls, etc., for their use, workingmen stockholders, co-operation, industrial partnership, premium work, workingmen owning or at present purchasing or renting houses from their employers, with rates for rent, board, and interest on mortgages.

Inquiries **177** to **193** are statistics of labor; that is, they relate particularly to the condition of the employés of establishments, and bring out certain facts in regard to their condition. The replies were generally complete and satisfactory. Although the inquiries and material secured are included in a Schedule of Manufactures, as we might say by courtesy, yet there has been no objection to making returns, and the information cannot fail to disclose many valuable points in regard to the condition of the wage workers of the Commonwealth.

GENERAL INSTRUCTIONS.

[Special Explanations and Instructions, when deemed necessary, are given upon pages facing those upon which the Inquiries explained are found.]

Census Day, and Year.—The *Census Day* is June 30, 1885. The *Census Year* began July 1, 1884, and ended June 30, 1885. *Present time* means the Census Day. In the answers to certain of the Inquiries the element of time is not necessary; in some the condition or facts *on* the Census Day are required, and in others *for* the Census Year. Which time is intended is plainly shown by exact statements or by direct implication.

Money Values.—Money values should be given in *Dollars* only, **omitting** all cents or fractions of dollars, excepting in the case of Inquiries **35, 106, 112,** and **124.** For instance, $38,629.89 should be written $38,630. In all cases where the number of cents is 50 or over, increase the dollars by one, as above. If the cents number less then 50, omit them entirely. It is evident that in the case of "Salaries and Wages Paid" the *cents* are absolutely essential. In such cases a second column for *cents* will be found.

Mercantile Values.—The prices or values given for stock or materials used or goods made should be the prices at which bought or sold, or market values, and should include all expenses for packing, or making ready for market, for those articles bought or sold. In the case of "work done" the value is the amount received for the work done.

Book Values.—Certain values required are matters of record, such as Capital Invested, and *exact amounts* should be given from your books of account.

Combustible Values.—The assessors' valuation of real property *is not desired;* in giving the value of buildings, etc., state the amount that would be claimed from an insurance company to replace the building, etc., if destroyed by fire.

Symbols.—In all cases where an Inquiry can be answered directly write in the reply in the proper space. Sometimes an Inquiry *will not be applicable* to a certain industry and no answer can be given. In such cases use the following symbol: (**X**).

When, from any good reason, it is impossible to give *exact* answers to any Inquiry, make the best possible *estimate*, and add the letter "**E**" to indicate that the answer is an *estimate.*

When it is impossible to give answers to Inquiries, *which are yet applicable*, fill in the space for answer with the following symbol: (**—**). As every such omission will detract from the value of the aggregated statistics on any point, the symbol should be used only,

and will be accepted only, in cases where the omission is inevitable and where it will not seriously impair the value of similar statistics from other establishments.

In all cases where the information supplied is *doubtful as to fact*, or *lacking in completeness*, indicate the fact by "underscoring," or drawing a straight line (————) under the doubtful or incomplete information.

Number of Inquiries.—The number of Inquiries is apparently much larger than in previous Censuses. In reality this is not so. To facilitate reference and to render it possible to answer each Inquiry directly and without complication, and, also, in order to avoid all compound questions, the usual Inquiries have been subdivided, and to each part a number has been given. In the correspondence which will necessarily be required to complete the Schedules these numbers will form a means for specific reference.

Instructions by Mail.—The Census Office holds itself in readiness to return prompt replies by mail, when fuller instructions are requested regarding any of the Inquiries in this Schedule.

The general instructions given above, if they had been carefully read by the parties making returns, would have saved the Census Office much time and money; as it was, hundreds of letters were received which showed plainly that the writers had not read even the general instructions, much less the special ones given in relation to each inquiry. Although a Census law may require that certain information shall be supplied, no law can be passed which will force a manufacturer to read his instructions, and fill in a Schedule with as little expense to the Commonwealth as possible. There seems to be no way in the case of the ignorant, or those averse to supplying information, except to send out notices, write letters, put Special Agents upon the track of the delinquents, and use all these time-taking and money-requiring plans for securing information, correcting erroneous returns, and supplying omissions in Schedules. A classification of industries was made in the Massachusetts State Census of 1875 by which articles of virtually the same nature were brought under industry headings. The United States Census of 1880 added to this classification, in some cases by subdividing those that were unwieldy, and covered many different articles. In 1885 in the Massachusetts State Census this classification was still further extended and improved upon, and the

following list of 83 industries includes or covers every article manufactured in the State. It may be, and probably will be, necessary in future Censuses to extend this classification; but as it stands to-day it is the most satisfactory one in use in obtaining statistics of industries.

Industries.

1.—Agricultural implements.
2.—Arms and ammunition.
3.—Artificial teeth and dental work.
4.—Artisans' tools.
5.—Awnings, tents, and decorations.
6.—Boots and shoes.
7.—Boxes (paper and wooden).
8.—Brick, tiles, and sewer pipe.
9.—Brooms, brushes, and mops.
10.—Building.
11.—Burial cases, caskets, coffins, etc.
12.—Buttons and dress trimmings.
13.—Carpetings.
14.—Carriages and wagons.
15.—Cement, kaolin, lime, and plaster.
16.—Charcoal and kindlers.
17.—Chemical preparations (compounded).
18.—Clocks and watches.
19.—Clothing.
20.—Concrete walks, paving, etc.
21.—Cooking, lighting, and heating apparatus.
22.—Cordage and twine.
23.—Corks, bungs, and taps.
24.—Cotton goods.
25.—Cotton, woollen and other textiles.
26.—Crayons, pencils, crucibles, etc.
27.—Drugs and medicines.
28.—Dyestuffs.
29.—Earthen, plaster, and stone ware.
30.—Electrical apparatus and appliances.
31.—Electroplating.
32.—Emery and sand paper and cloth.
33.—Fancy articles.
34.—Fertilizers.
35.—Fine arts and taxidermy.
36.—Fireworks and matches.
37.—Flax, hemp, and jute goods.
38.—Food preparations.
39.—Furniture.
40.—Gas and residual products.
41.—Glass.
42.—Glue, isinglass, and starch.
43.—Hair work (animal and human)
44.—Hose: rubber, linen, etc.
45.—Hosiery and knit goods.
46.—Ink, mucilage, and paste.
47.—Ivory, bone, shell, and horn goods, etc.
48.—Jewelry burnishing and lapidary work.
49.—Leather.
50.—Linen.
51.—Liquors and beverages (not spirituous).
52.—Liquors: malt, distilled, and fermented.
53.—Lumber.
54.—Machines and machinery.
55.—Metals and metallic goods.
56.—Mixed textiles.
57.—Models and patterns.
58.—Musical instruments aud materials.
59.—Oils and illuminating fluids.
60.—Paints, colors, and crude chemicals.
61.—Paper and paper goods.
62.—Perfumes, toilet articles, etc.
63.—Photographs and photographic materials.
64.—Polishes and dressing.
65.—Printing, publishing, and bookbinding.
66.—Print works, dye works, and bleacheries.

67.—Railroad construction.
68.—Rubber and elastic goods.
69.—Salt.
70.—Scientific instruments and appliances.
71.—Shipbuilding.
72.—Silk and silk goods.
73.—Sporting and athletic goods.
74.—Stone.
75.—Straw and palm leaf goods.
76.—Tallow, candles, soap, and grease.
77.—Tobacco, snuff, and cigars.
78.—Toys and games (children's).
79.—Trunks and valises.
80.—Whips, lashes, and stocks.
81.—Wooden goods.
82.—Woollen goods.
83.—Worsted goods.

SCHEDULE No. 2—Special.

GAS COMPANIES.

The majority of the information called for in the Special Schedule devoted to "Gas Companies" is the same as in the general Schedule for "Manufactures," but in this and in the three other special Schedules referred to below, some special inquiries were inserted in each case. As regards "Gas Companies" these special points cover the subjects of price, transportation, etc.

Prices; Transportation, etc.

19.—Average price charged, to house and store consumers, per 1000 cubic feet of gas.
20.—Total amount paid for *freight* on *coal* during year ending June 30, 1885.
21.—Amount paid for all expenses of *management* during year ending June 30, 1885.
22.—Amount paid for all expenses of *manufacture* during year ending June 30, 1885.
23.—Number of *miles* of pipe laid.
24.—Names of *all* towns or cities in which consumers reside.

Inquiry **19** calls for the average prices charged to house and store consumers per 1000 cubic feet of gas. Inquiries **20** to **22** call for information respecting freight on coal, and the expenses of manufacture and management during the Census year. Inquiry **23** should cover the miles of single pipe laid. In answering Inquiry **24** the names of *all* towns or cities, in which consumers reside, should be given.

PRINTING AND PUBLISHING.

The special inquiries relating to "Printing and Publishing" cover the kind of work done, etc., a description of newspapers and other periodicals, books, pamphlets, engravings, sheet music, etc., and particulars concerning the expenses for preparation.

Kind of Work Done, etc.

CLASSIFICATION.—Newspapers (daily, weekly, bi-weekly, three times a week, weekly, every other week, etc.) and Periodicals (semi-monthly, monthly, quarterly, yearly, etc.)

Engravings (wood, steel, copper-plate, heliotypes, and other processes), Lithographs, Chromo Lithographs, Maps, Charts, Plans, etc.

Books, Pamphlets, Diaries, Sheet Music, etc.

Job Printing of all kinds (letter press and lithographic), Blank Books, Valentines, Show Cards, Stationery, etc.

Bookbinding (when *connected* with the establishment only).

For Census purposes we have divided all printing, or printing and publishing establishments into 5 classes. The first includes the printing and publishing of newspapers and periodicals; the second, the printing and publishing of engravings of all kinds, maps, charts, plans, etc.; third, the printing and publishing of books, pamphlets, diaries, sheet music, etc.; fourth, job printing of all kinds; and fifth, bookbinding when *connected* with the establishment *only*. Establishments engaged exclusively in bookbinding will be supplied with a Schedule different from the present one, which is intended only for printing and publishing establishments.

Inquiries 20 to 24 call for a specification of the kind of work done in each establishment.

Newspapers, and Other Periodicals.

25.—Title of Newspaper, or other Periodical.
26.—Where published.
27.—How often published.
28.—To what object devoted.
29.—Annual subscription price.
30.—Year in which established.
31.—Size of page, in inches. *The print.*
32.—Size of page, in inches. *The paper.*
33.—Number of pages to a copy.
34.—How often are *supplements* issued.
35.—Is this newspaper, or periodical, folded, pasted, wired, with cover, or otherwise bound.
36.—Number of copies published *during* the week, or *for* the week ending June 30, 1885.
37.—Number of copies published *during* the year ending June 30, 1885.
38.—Number of pages in the copies published *during* the week, or *for* the week ending June 30, 1885 (including supplements).
39.—Number of pages in the copies published *during* the year ending June 30, 1885, (including supplements).

40.—Has this newspaper, or other periodical, always borne the same name? If not, state different names, and the years in which used for the first time.

This section of Inquiries is devoted entirely to newspapers and other periodicals. Nearly all the questions are self-explanatory, and do not call for any broad instruction. Inquiry **31** calls for the area covered by the print, and Inquiry **32** for the size of the paper upon which the newspaper or periodical is printed. If Inquiry **40** is fully answered it will supply the material for a complete history of the newspapers and periodicals in the Commonwealth.

Books, Pamphlets, Engravings, Sheet Music, etc.

41.—Class of works published; objects to which devoted, etc.

The object of Inquiry **41** is to ascertain the class of works published, and the objects to which devoted. The space supplied for answer is large enough to allow of a full description of the kind of publishing business carried on.

Expenses for Preparation.

42.—Classification of Expenses for Preparation (applicable in all cases where such expenses are incurred) and including salaries of editors and reporters, for telegraphing, correspondence, purchase of MSS., composition, presswork, binding (done in *this* establishment), etc.

43.—Cost.

44.—Total amount of expenses for preparation during the year ending June 30, 1885.

Expenses for preparation are peculiar to the publishing business. It is desired that the classification under Inquiry **42** shall be as complete in detail as possible.

Do not use the terms "sundries," "miscellaneous," etc.

The "total amount of expenses," Inquiry **44**, should be a correct mathematical total of the various amounts given in the spaces under **43**.

PRINT WORKS, DYE WORKS, AND BLEACHERIES.

The special features of this Schedule related to processes, stock or materials used, and products.

Processes, etc.

20.—Kind of *Family work* done; nature of processes.

21.—Kind of textiles *printed*.

22.—Kind of textiles *bleached*.

23.—Kind of textiles *finished*.

24.—Kind of textiles *dyed*.

It is well known that there are certain dye works and bleacheries which make a specialty of subjecting articles of clothing to the processes specified; these we have included under the heading "family work." On the other hand, what are known as print works, dye works, and bleacheries have for a business the preparation of various kinds of textiles for market.

Inquiry **20** calls for a specification of family work done and the nature of the processes. Inquiries **21, 22, 23,** and **24,** call for a description of the kind of textiles printed, bleached, finished, and dyed for market. The object of these inquiries is to ascertain the nature of the processes carried on in each establishment, and the kind of goods subjected to those processes in each establishment.

Stock or Materials Used.

25.—Description of all stock or materials used or consumed, or subjected to previously specified processes, during the year ending June 30, 1885.

26.—Quantity used or consumed, or subjected to processes. Basis. Number.

27.—Value of all stock or materials used or consumed, and of all textiles or other articles before being subjected to processes.

28.—Total value of all stock or materials used or consumed, and of textiles or other articles subjected to processes, in this establishment during the year ending June 30, 1885.

It is well known that in print works, dye works, and bleacheries, articles are not manufactured in their entirety for the market. The work done in these establishments completes them, or finishes them, and it is the value of this work done that constitutes the measure of the business done by this class of establishments. In many Censuses it has been the plan to incorporate the value of the articles subjected to these processes in arriving at the products of print works, dye works and bleacheries. This manner of procedure is manifestly wrong, for it leads to a duplication of manufactures, and counts over again as products the various textiles which have been previously accounted for in the returns of cotton and woollen mills, etc. The procedure referred to has been all the more misleading, because the value of the work done forms but a small part of the entire value of the completed goods.

Products.

29.—Description of all textiles or other articles subjected to processes during the year ending June 30, 1885.

30.—Quantity subjected to processes. Basis. Number.

31.—Value of the *work done*, or the *value added* by subjecting textiles or other articles to processes.

32.—Total value of *work done*, or the *value added* to textiles or other articles by subjecting them to processes, in this establishment during the year ending June 30, 1885.

Inquiry **29** calls for a description of all textiles or other articles subjected to processes during the Census year. Inquiry **30** calls for the quantities, subjected to processes, and Inquiry **31** for the value of the *work done*, or the value *added* by subjecting textiles or other articles to processes.

SHIPBUILDING.

The points specially considered in this Schedule related to vessels built, and further statistics concerning vessels built and repaired.

Vessels Built, etc.

20.—Names and kind of vessels built.

21.—Tonnage.

22.—Trade for which intended.

The object of Inquiry **20** is to ascertain the names and kinds of vessels built; for instance, "Volunteer," "yacht," indicates the form of answer for this Inquiry. Inquiry **21** calls for the tonnage, and Inquiry **22** for the trade for which intended. If the answers to Inquiry **22** are full and explicit, their aggregation will show plainly the uses to which Massachusetts built vessels are put, and will also indicate, by comparison, the lines of trade which are not supplied by Massachusetts shipbuilders.

Vessels Built and Repaired.

27.—Kind of vessels built or repaired.

28.—Number. Built. Repaired.

29.—Vessels repaired. Value of work done. Value of new equipment.

30.—Vessels built. Value of hulls. Value of complete equipment.

31.—Combined values.

32.—Total value of all vessels and boats built, and of all repairs and new equipment, during the year ending June 30, 1885.

Inquiry **27** calls for a description of the vessels built or repaired. In answering Inquiry **28**, state the number built and the number repaired respectively. Inquiry **29** should be answered by giving the value of the work done on vessels repaired, and the value of

the new equipments supplied them. Similarly, in answering Inquiry **30**, give the value of the hulls of all new vessels built, and the value of the complete equipments supplied such new vessels. Inquiry **31** calls for the combined values of the value of the work done and value of new equipment as regards vessels repaired, and value of hulls and value of complete equipment as regards new vessels built. It will be seen that the values given under **31** relate to the kind of vessels specified under Inquiry **27.**

The "total value," Inquiry **32,** should be a correct mathematical total of the various amounts given in the spaces under **31.**

SCHEDULE No. 3—Mines, Quarries, Pits, etc.

The object of this Schedule was to obtain information from those owning, hiring, or operating mines, quarries, pits, bogs, muck beds, marl deposits, and salt works. It was found in the actual enumeration that the statistics of quarries are so intimately connected with manufactures, the majority of the firms quarrying the rough granite, and also dressing it for the market, that the statistics were transferred to Industry No. 74 under Manufactures, called "Stone." There does not seem to be any special need so far as Massachusetts and some other states are concerned of such a Schedule, as all the products referred to can be included in the Schedule devoted to Agriculture (for the products obtained upon Schedule No. 3 are all products of the land) if we except salt works, and these latter were included in Industry No. 38, Manufactures, under the heading "Food Preparations." In many of the States of the Union a Schedule devoted to Mines is absolutely necessary, for the mining products in some of them are of more importance than those of agriculture or of manufactures. It is seen plainly that no set of Schedules fitted for a particular state or country are fitted for another state or country, unless the proper changes are made to make the inquiries applicable; for this reason statisticians, instead of depending upon forms and plans issued by other statistical offices, should study the general principles of practical statistics, and, understanding the general scope of their work, should apply these principles to obtain the particular information needed in their own state or country. The point that should always be borne in mind is the different disposition of the people as regards giving statistical

information. In Massachusetts, where the manufacturers and employés have been called upon for the past 18 years to supply statistics to be used in the Reports of the Bureau of Statistics of Labor, it is comparatively easy to obtain statistics on all desired points. In other States where the bureaus are new it is impossible to obtain as full and accurate returns; therefore a new bureau cannot expect in a year or two to take as advanced a position as the bureaus that have been in existence for 10 or 15 years. In every State there is a certain amount of preliminary work to be done in order to bring that State to the standard of those States that have had bureaus for a number of years. During this time, also, the older bureaus have been advancing and taking up still finer kinds of statistical work; for this reason any attempt to have the statistical bureaus of the United States work with the same schedule, or upon the same blank, would be useless unless the older bureaus should consent to go back to the line of work being carried on by the new bureaus; this course the old bureaus cannot be expected to follow.

The special features in Schedule No. 3 relate to securing information regarding the kinds of productive property specified.

Productive Property: By Name.

1.—Name of Productive Property.

Beds, muck.
Bogs, peat.
Fish ponds (private property).
Fish ways (private property).
Mines, asbestos.
Mines, coal.
Mines, iron.
Mines (not specified).
Marl deposits.
Pits, clay;
Pits, gravel.
Pits, sand.
Quarries, granite.
Quarries, limestone.
Quarries, marble.
Quarries, sandstone.
Quarries, slate.
Quarries, soapstone.
Quarries (not specified).
Salt works.

2.—Number.
3.—Whether on a *Farm*, or *not*.
4.—Total area, in acres.
5.—Total area excavated from beginning (cubic yards).
6.—Acres of land *actually* worked.
7.—Value of *Land*.

In Inquiry 1 the names of the principal kinds of productive property connected with mines, quarries, pits, etc., are printed in, but blank lines were given upon the Schedule on which the names of other kinds of productive property could be written. The object

of Inquiry **2** is to ascertain the number of such mines, quarries, etc., and of Inquiry **3** as to whether they are located on a farm or not.

Inquiry **4** calls for the total area, in acres, of the productive property under consideration, Inquiry **5** for the total area excavated (in cubic yards) since the mine, quarry, pit, etc., was opened, Inquiry **6** for the acres of land *actually* worked at the present time, and Inquiry **7** for the value of the *land* in itself.

In the case of fish ponds, fish ways, and salt works, Inquiries **4 5, 6,** and **7** may or may not be applicable. In case they are not applicable, the sign **X** referred to in the general instructions may be used.

The answers given to Inquiries regarding fish ponds and fish ways were all transferred, and considered as part of Schedule No. 5, devoted to "The Fisheries."

SCHEDULE NO. 4—Domestic Manufactures.

Agricultural Products and Property.

The object of this Schedule was to obtain returns from those owning, hiring, or carrying on farms, market gardens, orchards, nurseries, and seed gardens.

Domestic Manufactures.—Perhaps a better term would have been "home manufactures," for by one of those circuitous forms of induction displayed by parties who are called upon to fill out Schedules, the term "domestic manufactures" was understood by many to mean the manufacture of domestic articles; of course there was no warrant in the Schedule for such an understanding, but the statistician is obliged to be governed by the way that parties do understand his inquiries, and not by the way that he thinks they ought to understand them.

Domestic Manufactures.

1.—Names of Articles.

Ashes, bu.
Axe handles, no.
Barrels, no.
Barrels, half, no.
Barrels, clam, no.
Barrels, cranberry, no.
Baskets, no.
Beeswax, lbs.
Blankets, pairs.
Boots, including "work on," pairs.
Brooms, no.
Brushes, no.
Butter, lbs.
Candles, lbs.
Canned fruit, lbs.
Cardigan jackets, no.
Carpeting, rag, yds.
Catsup, qts.
Charcoal, bu.
Cheese, lbs.
Cider, gals.
Cider, boiled, gals.
Cloth, yds.

Clothing, including "work on."
Clothes dryers, no.
Crocheted goods.
Dried fruit, lbs.
Evergreen goods.
Firewood, cords.
Gaiters, pairs.
Gloves, pairs.
Hammer handles, no.
Harnesses, no.
Hats, palm-leaf, including "work on," no.
Hats, straw, including "work on," no.
Hoops, no.
Hoops, barrels, no.
Hoops, nail keg, no.
Hoop-poles, no.
Hop-poles, no.
Horse-radish, grated, bottles.
Hot-bed mats, no.
Knit goods.
Last blocks, no.
Leather blacking, gals.
Leggins, pairs.
Liniment, bottles.
Lumber, M. ft.
Maple molasses, gals.
Maple sugar, lbs.
Mats, no.
Mittens, pairs.
Mop-sticks, doz.
Nail kegs, no.
Oil, gals.
Ox-bows, pairs.
Ox-yokes, no.
Perry, gals.
Pickles, barrels.
Picture frames, no.
Posts, fence, no.
Quilts, no.
Railroad sleepers, no.
Rails, fence, no.
Rope, lbs.
Rugs, no.
Salt, bu.
Scarfs, no.
Shirts, no.
Shoes, including "work on," pairs.
Skirts, no.
Socks, pairs.
Soft soap, barrels.
Sorghum molasses, gals.
Straw braid, yds.
Stockings, pairs.
Suspenders, pairs.
Type, for the blind, sets.
Vinegar, gals.
Whiplashes, no.
Whipstocks, no.
Wine, gals.
Wooden goods.
Yarn, lbs.

2.—Quantity manufactured *for sale.*
3.—Value.
4.—Quantity manufactured *for use in the family.*
5.—Value.

Names of Articles.—The person filling out this Schedule will find the names of the principal articles of Domestic Manufacture enumerated on pages **2, 3,** and **4.** If he, or his family, is engaged in the manufacture of articles which are not mentioned by name, blank spaces will be found on page **4** for their proper entry. If these blank spaces are not sufficient, he should *cross out* the name of some article that he *does not* make, insert the name of the article *he does* make, consider the Inquiries as applying to it, and write in the answers.

Under "Lumber" include telegraph poles, piles, etc., and all similar articles which are not mentioned specifically by name in column **1.**

But one line seems to have been misunderstood by the farmers; the "barrels, cranberry," was considered by some to call for the number of barrels of cranberries; in fact, some of them inserted the word "of" so as to carry out their idea; a better form would have been "cranberry barrels."

The alphabetical arrangement of articles of domestic manufacture and of agricultural products and property, as shown in the various sections of the Agricultural Schedule, presented and considered in detail hereinafter, does not seem to be so likely to stimulate the memory of a party filling out a Schedule as would a classified arrangement such as is given below. The changes in the forms of inquiries, as regards different articles, necessitated, however, the use of the alphabetical arrangement in the Schedule itself.

CLASSIFIED ARRANGEMENT OF ARTICLES OF DOMESTIC MANUFACTURE, AND AGRICULTURAL PRODUCTS AND PROPERTY.

Animal Products.

Beeswax,
Calf skins,
Candles,
Hides,
Honey,
Manure,
Pelts,
Wool, merino,
Wool, Saxony,
Wool: other than merino or Saxony.

Clothing, Needle-work, etc.

Blankets,
Boots (including "work on"),
Cardigan jackets,
Carpeting, rag,
Clothing (including "work on"),
Crocheted goods,
Gaiters,
Gloves,
Hats (including "work on"),
Knit goods,
Leggins,
Mats,
Mittens,
Quilts,
Rugs,
Shirts,
Shoes,
Skirts,
Socks,
Stockings,
Suspenders,
Yarn.

Dairy Products.

Butter,
Cheese,
Cream,
Milk.

Food Products.

Canned fruit,
Catsup,
Chow chow,
Dried fruit,
Horse-radish, grated,
Ice,
Ice cream,
Lard,
Maple molasses,
Maple sugar,
Pickles,
Sausages,
Sorghum molasses,
Vinegar.

Greenhouse Products.

Flowers, leaves, and vines, cut. Plants, flowering and other.

Hothouse and Hotbed Products.

Asparagus plants,
Asparagus roots,
Cabbage plants,
Cauliflower plants,
Celery plants,
Pepper plants,
Tobacco plants,
Tomato plants.

Liquors and Beverages.

Brandy, cider,
Cider,
Cider, boiled,
Perry,
Wine.

Nursery Products.

Shrubs,
Trees, fruit,
Trees, ornamental,
Vines.

Poultry Products.

Eggs,
Eggs, fancy,
Eggs, game,
Feathers,
Manure, hen and bird,
Poultry, dressed: chickens,
Poultry, dressed: geese,
Poultry, dressed: turkeys,
Poultry, dressed: other than chickens, geese, and turkeys.

Wood Products.

Ashes,
Bark,
Basket willow,
Bean poles,
Charcoal,
Fence rails,
Fire wood,
Hoop poles,
Hop poles,
Logs,
Logs, box board,
Logs, shingle,
Lumber,
Piles,
Poles, staging,
Poles, telegraph,
Poles, telephone,
Posts, fence,
Railroad sleepers,
Shingles,
Wood (for powder),
Wood (for pulp).

Wooden Goods.

Anchor stocks,
Axe handles,
Barrels,
Barrels, cranberry,
Barrels, half,
Basket rims,
Baskets,
Brooms,
Brushes,
Buckets, ship,
Butts, white oak,
Clothes driers,
Die blocks,
Flails,
Frost blocks,
Hammer handles,
Hoops,
Hoops, barrel,
Hoops, nail keg,
Ladders,
Mop sticks,
Ox-bows,
Ox-yokes,
Pails, stable,
Picture, frames,
Rounds, ladder,
Sleds,
Spokes, wagon,
Strawberry crates,
Whipstocks,
Not classified.

Other Products.

Boxes, palm-leaf,
Braid, palm-leaf,
Buttresses, lightning rod,
Carrageen,
Chairs (cane seating),
Collars, husk,
Conductor irons,
Corn, broom,
Evergreen goods,
Flax,
Grape cuttings
Harnesses,

Hops,
Horse powders,
Hotbed mats,
Jewelry chains,
Liniment,
Manure, sea,
Mats, husk,
Mats, palm-leaf,
Oil,
Ointment,
Roots and herbs, medicinal and aromatic,
Seeds, garden, field, and flower,
Seeds, grass,
Seeds, millet,
Seeds, pansy,
Soft soap,
Straw braid,
Straw mats,
Tobacco,
Webs, palm-leaf,
Wheat straw, bleached,
Whiplashes,
Window shades.

Cereals.

Barley,
Buckwheat,
Corn, Indian,
Corn, pop,
Oats,
Rye,
Wheat.

Fruits, Berries, and Nuts.

Apples,
Apricots,
Barberries,
Blackberries,
Blueberries,
Butternuts,
Cherries,
Chestnuts,
Citron,
Crab-apples,
Cranberries,
Currants,
Gooseberries,
Grapes,
Grapes, hothouse,
Huckleberries,
Mangoes,
Melons,
Peaches,
Peaches, hothouse,
Pears,
Plums,
Quinces,
Raspberries,
Shellbarks,
Strawberries,
Thimbleberries.

Hay, Straw, and Fodder.

Hay, clover,
Hay, English,
Hay, meadow,
Hay, millet,
Hay, salt,
Hay, not classified,
Straw,
Fodder, barley,
Fodder, corn,
Fodder, dry,
Fodder, oat,
Fodder, rape,
Fodder, rye,
Fodder, sorghum,
Fodder, wheat,
Maslin,
Stover,
Beets (for stock),
Cabbage (for stock),
Turnips (for stock).

Meats and Game.

Beef,
Mutton,
Pigs, dressed,
Pork,
Tripe,
Veal,
Game, wild.

Vegetables.

Artichokes,
Asparagus,
Beans,
Beans, string and shell,
Beet greens,
Beets, table,
Brussels sprouts,
Cabbage,
Cabbage greens,
Carrots,
Cauliflower,
Celeriac,
Celery,
Chiccory,
Corn, green,
Corn salad,
Cucumbers,
Dandelions,

Egg plant,
Endive,
Horse-radish,
Kale,
Kohl rabi,
Leeks,
Lettuce,
Lettuce (hot-bed),
Martynias,
Mushrooms,
Okra,
Onions,
Onions (for setting out),
Oyster plant,
Parsley,
Parsnips,
Pease,
Pease, green,
Peppers,
Potatoes,
Pumpkins,
Radishes,
Radishes, black,
Rhubarb,
Sorrel,
Spinach,
Squashes,
Tarragon,
Tomatoes,
Tomatoes (hot-house),
Turnips, table,
Watercress,
Not classified.

Land.

CULTIVATED:
Hay (used for),
Principal crops (used for),
Market gardens,
Nurseries,
Orchards,
Seed gardens,
Other cultivated,
Cranberry bogs.

UNCULTIVATED:
Permanent pasture,
Other unimproved,
Unimprovable,
Mines, quarries, pits, etc.

WOODLAND.
Over 30 years' growth,
Of 30 years growth or less,
From seed or transplanted seedlings,
Not classified.

Buildings.

Dwelling-houses,
Barns,
Bee-houses,
Breeding-houses,
Carriage-houses,
Charcoal kilns,
Cheese-houses,
Engine-houses,
Granaries,
Greenhouses,
Grist and saw mills,
Hen-houses,
Hog-houses,
Hop kilns,
Hot-bed sashes,
Ice-houses,
Milk-houses,
Outbuildings,
Poultry-houses,
Pumping-houses,
Sheds,
Shops,
Slaughter-houses,
Stables,
Storehouses,
Sugar-houses,
Tobacco barns,
Tool-houses,
Water tanks,
Windmills.

Machines, Implements, etc.

Carts, wagons, harnesses, etc.,
Cultivators,
Feed cutters,
Harrows,
Hay cutters,
Hay tedders,
Horse hoes,
Horse powers,
Horse rakes,
Hot air engines,
Implements,
Manure spreaders,
Mowing machines,
Plows,
Reaping machines,
Seed sowers,
Steam engines,
Threshing machines,
Other machines.

Domestic Animals, etc.

Asses,
Bees (swarms of),
Bulls,
Calves,
Colts,
Dogs,
Ducks,
Geese,
Goats,

Guinea fowls,
Heifers,
Hens, chickens (fancy),
Hogs,
Horses,
Lambs,
Milch cows,
Mules,
Oxen,
Pigeons, fancy,
Pigs,
Sheep, merino,
Sheep, Saxony,
Sheep: other than merino or Saxony,
Steers,
Turkeys.

Fruit Trees and Vines.

Apple,
Apricot,
Butternut,
Cherry,
Chestnut,
Crab-apple,
Fig,
Hickory,
Mulberry,
Nectarine,
Peach,
Pear,
Plum,
Pomegranate,
Quince,
Shellbark,
Walnut,
Grape vines.

Persons Employed in Domestic Manufactures.

6.—Sex and Ages.
Number of Males under 10.
" " Males from 10 to 14.
" " Males above 14. TOTAL.

8.—Sex and Ages.
Number of Females under 10.
" " Females from 10 to 14.
" " Females above 14. TOTAL.

We wish, under this head, simply the number of different males and females, of the specified ages, engaged at some time during the Census Year in Domestic Manufactures. The time they have been employed respectively in Domestic Manufactures and in Agriculture, their wages and board, the amount of and compensation for work done at home for manufacturing firms (such as "work on" clothing, boots and shoes, hats, etc.) should be entered on page **9**, under the heading "Wages paid in Agriculture and Domestic Manufactures."

If the party filling this Schedule, his wife, daughters, or any other parties residing in the family, have been engaged in Domestic Manufactures, they should be included in the answers on page **4**, as well as those who may have been hired for such work.

It was intended that Inquiries **6** and **8** should include only those persons employed for wages, the object being to get the whole number occupied or engaged in turning out articles of domestic manufacture; the substitution of either the word "occupied" or "engaged" for the word "employed" would have undoubtedly led to more intelligent returns in many cases.

Agricultural Products.—Quantity, Value, and Acreage.

10.—Names of Products.

Asparagus, bunches
Barley, bu.
Beans, bu.
Beans, string and shell, bu.
Beets (for stock), bu.
Beets, table, bu.
Buckwheat, bu.
Cabbage, heads
Carrots, bu.
Corn, broom, lbs.
Corn, green, bu.
Corn, Indian, bu.
Corn, pop, bu.
Cranberries, bu.
Flax, lbs.
Fodder, barley, tons
Fodder, corn, tons
Fodder, oat, tons
Fodder, rye, tons
Hay, clover, tons
Hay, English, tons
Hay, meadow, tons
Hay, millet, tons
Hay, salt, tons
Hay, not classified, tons
Hemp, lbs.
Hops, lbs.
Oats, bu.
Onions, bu.
Parsnips, bu.
Pease, bu.
Pease, green, bu.
Potatoes, white, bu.
Potatoes, sweet, bu.
Rye, bu.
Strawberries, qts.
Tobacco, lbs.
Turnips (for stock), bu.
Turnips, table, bu.
Wheat, bu.

11.—Quantity.
12.—Value.
13.—Acreage.

Acreage.—In the case of the **40** Agricultural Products comprehended by Inquiries **10, 11, 12,** and **13,** on page **5,** the acreage of land devoted to such crops is desired. Give the acreage in whole numbers and fractions.

Quantity and Value.—In the case of *all* Agricultural Products, comprehended by Inquiries **10, 11, 12, 13, 14, 15,** and **16,** on pages **5, 6,** and **7,** the quantity and value are desired. In those cases where the basis of quantity or measure is omitted the person answering should supply his standard of weight or measurement in the proper column, next to the "Names of Products." Values should be given in *dollars only*, all *cents*, or fractions of dollars, being omitted. The prices or values given should be the prices at which sold, or market values, and should include all expenses for packing, or making ready for market, for those products sold.

Names of Articles.—The principal Agricultural Products are enumerated on pages **5, 6,** and **7.** If the person filling out this Schedule raises products not mentioned by name, blank spaces will be found on pages **5** and **7** for their proper entry. If these blank spaces are not sufficient, he should *cross out* the name of some product that he *does not* raise, insert the name of the product *he does* raise, consider the Inquiries as applying to it, and write in the answers.

Hay.—We have classified Hay as returned by the State Census of 1875. Any needed changes can be easily made by *crossing out* the printed classification and *writing in* the present designation. A blank space is left for hay that it may be impossible to classify in detail, but your hay crop should not be entered in lump.

Double Returns.—Beets and Turnips are classified as "for stock" (including the coarser kinds) and for "table" (meaning the finer grades). The quantities and values of each kind should be given separately. Sugar beets should be included with "Beets, for stock." Cucumbers are called for by "bushels" and "number," and Grapes by "bushels" and "pounds." The variations in value require separate returns in each case, or the average value, being made from widely differing prices, would be statistically worthless.

Milk and Cream.—The total milk and cream product during the Census year is desired. The manner in which milk is used or sold is called for specifically on page **7**, under the heading of "Dairy Products."

It was found impossible, in many cases, to ascertain the acreage devoted to the cultivation of the smaller agricultural products which have just been specified; quite often the land cultivated is but a small portion of an acre, and the farmer cannot give an estimate of how much space was covered; then, many farmers plant for the second time, or plant one crop with another, and these complications render it impossible for the farmers, as a rule, to specify the actual acreage devoted to each specified crop. If the farmers kept proper books of accounts, and knew they were to be called upon officially each year for returns of products, the results obtained would no doubt be largely in excess of the figures secured by the decennial Census. We can hardly expect, however, that the farmers will, as a rule, keep such books of account when it is borne in mind that the manufacturers do so much more without keeping records that would enable them to make proper returns of their business. In the case of many large farms the proprietors keep books, and in those cases the Schedules were fully and accurately filled.

Agricultural Products.—Quantity and Value.

14.—Names of Products.

Apples, bu.	Barberries, bu.	Basket willow, lbs.
Apricots, bu.	Bark, cords	Beef, lbs.

Beet greens, bu.
Blackberries, qts.
Blueberries, qts.
Butternuts, bu.
Cabbage plants, no.
Cabbage greens, bu.
Calf skins, no.
Carrageen, lbs.
Cauliflower, heads
Celery, bunches
Celery plants, no.
Cherries, bu.
Chestnuts, bu.
Chiccory, lbs.
Citron, lbs.
Crab-apples, bu.
Cream, gals.
Cucumbers, bu.
Cucumbers, no.
Currants, qts.
Dandelions, bu.
Eggs, doz.
Eggs, fancy, doz.
Eggs, game, doz.
Feathers, lbs.
Flaxseed, bu.
Flowers, leaves, and vines, cut,
Game, wild, lbs.
Gooseberries, qts.
Grapes, bu.
Grapes, lbs.
Hair, for plastering, lbs.
Hides, no.
Honey, lbs.
Horse-radish, lbs.
Huckleberries, qts.
Ice, tons
Leeches, doz.
Lettuce, heads
Mangoes, bu.
Manure, animal, cords
Manure, hen and bird, bu.
Manure, sea, cords
Melons, no.
Milk, gals.
Mutton, lbs.
Oyster plant, bu.
Parsley, bu.
Peaches, bu.
Pears, bu.
Pelts, no.
Peppers, bu.
Plants, flowering and other *from* greenhouses or gardens, no.
Plums, bu.
Pork, lbs.
Poultry, dressed: chickens, lbs.
Poultry, dressed: geese, lbs.
Poultry, dressed: turkeys, lbs.
Poultry, dressed: other than chickens, turkeys, and geese, lbs. (See "Domestic Animals, etc.")
Pumpkins, lbs.
Quinces, bu.
Radishes, bunches
Raspberries, qts.
Rhubarb, lbs.
Roots and herbs, medicinal and aromatic,
Seeds, garden, field, and flower, lbs.
Seeds, grass, bu.
Seed, millet, bu.
Shellbarks, bu.
Shrubs *from* nurseries, no.
Silk cocoons, lbs.
Spinach, bu.
Squashes, lbs.
Straw, tons
Teasles, lbs.
Thimbleberries, qts.
Tomatoes, bu.
Tomato plants, no.
Trees, fruit — *from* nurseries, no.
Trees, ornamental—*from* nurseries, no.
Tripe, lbs.
Veal, lbs.
Vines *from* nurseries, no.
Watercress, bunches
Wool, Saxony, lbs.
Wool, merino, lbs.
Wool, other than Saxony or merino, lbs.

15.—Quantity.
16.—Value.

In the five cases where the word "from" is printed in italics in the list of products, the original word used was "*in*," but the word "*from*" seems to make the meaning a little plainer.

Dairy Products.—Milk, Butter, and Cheese.

17.—Value.
18.—Quantity of *milk* used by family, gals.
19.—Quantity of *milk* made into *butter* by family, gals.
20.—Quantity of *milk* made into *cheese* by family, gals.

21.—Total quantity of milk *used by or in family*, gals.
22.—Quantity of *milk* sold to *cheese factories*, gals.
23.—Quantity of *milk* sold (not including that sold to cheese factories), gals.
24.—Total quantity of milk *sold*, gals.
25.—Total product of *milk* (used by or in family, or sold) during the Census year, gals.
26.—Milch cows supplying this total product of *milk*, no.
27.—Quantity of *butter* made by family (see page 2), lbs.
28.—Quantity of *cheese* made by family (see page 2), lbs.

The person filling this Schedule, in accordance with Instructions, has previously given the quantity and value of Butter and Cheese made by him (whether used or sold) and has also given his total Milk product for the Census year. The object of the Inquiries from **17** to **28** is to ascertain the *disposition and use* of the Milk product in detail. The grand aggregates for the Commonwealth, if each farmer makes his return as requested, will be of particular value to the Dairy Industry, and special attention and care are required. Inquiries **25, 27,** and **28,** can be answered by bringing forward information previously given on pages **2** and **6.** The answers are required here in order to make the presentation of "Dairy Products" complete in itself, and to allow opportunities for comparison. Inquiry **21** simply calls for the total of **18, 19,** and **20,** and Inquiry **24** for the total of **22** and **23.** Inquiry **25** calls, in the same manner, for the total of Inquiries **21** (milk used in family) and **24** (milk sold).

Although the Inquiries from **18** to **28,** taken in connection with the instruction, would seem to be intelligible to the farmer, yet they were as a rule misunderstood, for the parties did not possess the proper information to supply an answer. It would require ten pages of this book in order to show the different points of view from which individual farmers answered the inquiries, each, of course, taking his own peculiar method of figuring up his dairy products as a basis for his answers. In order to make a success of an enumeration of this kind, it would be absolutely necessary to have thoroughly instructed Special Agents visit each farmer, and by personal inquiries extract the information that was desired; the whole subject was evidently too intricate for the average farmer to understand and make replies that would balance, and bear the test of critical examination.

Farms.

29.—Acreage of this Farm.
30.—Value (of the land).
31.—*Owned*, *hired*, or worked *on shares*.
32.—Capital invested in cultivating *this farm* not including the value of Farm Property enumerated in this Schedule.

Agricultural Machines, Implements, etc.

33.—Description.

Cultivators,	Horse powers,	Seed sowers,
Feed cutters,	Hay tedders,	Threshing machines,
Harrows,	Manure spreaders,	Other machines,
Hay cutters,	Mowing machines,	Agricultural implements,
Horse rakes,	Plows,	Carts, wagons, etc., and
Horse hoes,	Reaping machines,	harnesses.

34.—Number of—
35.—Value.

It is absolutely necessary that there should be a separate Schedule filled out for each separate Farm ; that is, a person having more than one farm should receive and fill out a Schedule for each.

We consider a farm to be the home of a farmer, his workshop and his means of obtaining a subsistence ; this necessitates certain appliances to enable him to carry on successfully the work of the farm ; these necessary adjuncts comprise arable soil for crop land, pasture land for stock ; woodland for material for fuel, fencing, etc., and all the buildings requisite for housing family, products, and animals.

As a general rule, a *farm* means land cultivated for the support or profit of the proprietor. In this respect, there are three farming classes : *first*, those who are farmers in the general acceptation of the term ; *second*, those who carry on market gardens ; *third*, those who cultivate more or less land from which agricultural products of any kind are *sold*.

The Industrial Statistics have nothing to do with the valuation of buildings not on farms, the valuation of village lots, nor the number or value of animals except those upon farms.

Inquiry **32** was not understood either by the farmers or the Enumerators. It was supposed, when the Schedule was prepared, that a farmer would have in addition to his land, buildings, machines, implements, etc., some ready cash or capital with which to

carry on his business; there may have been a disinclination on the part of many farmers to thus disclose the amount of cash capital used in their business as farmers; at any rate the inquiry was not answered, and it is doubtful whether any change in the wording of it would have secured favorable replies.

Buildings.

39.—Description of Buildings.

Dwelling houses,	Greenhouses,	Slaughter houses,
Barns,	Grist and saw mills,	Stables,
Carriage houses,	Ice houses,	Storehouses,
Cheese houses,	Out-buildings,	Sugar houses,
Cider mills,	Sheds,	Tobacco barns.
Granaries,	Shops,	

40.—Number of—

41.—Materials of which constructed.

42.—Value.

Description.—The names of the different kinds of buildings, usually found upon farms, are in the printed list. Blank spaces are provided for any other kinds of farm buildings.

Materials.—In the column under this heading state whether the buildings are of *wood*, *brick*, *stone*, etc. The initial letters "W" for wood, "B" for brick, "S" for stone, etc., may be used. Combinations of building materials such as wood and brick may be indicated by "W B," etc. Blank spaces are provided in case a farm has buildings of a certain kind constructed of more than one kind of material; for instance, *wooden* houses, *brick* houses, *stone* houses, etc.

Value.—The value desired for buildings is the *combustible* value—that is, the amount that would be claimed from an insurance company to replace the building if destroyed by fire.

Although the number of cider mills on *farms* only were to be returned on this Schedule, in many cases the enumerators made the error of returning cider mills *not* on farms. The enumerators made similar errors as regards grist and saw mills, ice houses, slaughter houses, sugar houses, tobacco barns, etc., in many cases returning products on these Schedules, and then returning them again on the Manufactures Schedule; in order to avoid duplication in these towns, a careful comparison had to be made between Schedules No. 2 and No. 4.

Fertilizers.

36.—Description.

Animal manure, cords	Commercial fertilizers (purchased), lbs.	Commercial fertilizers (compounded on the farm), lbs.
Hen and bird manure, bu.		
Sea manure, cords		

37.—Quantity.
38.—Value.

No special instruction was given as to whether the quantity and value of fertilizers referred to the amount on hand on the Census day, or whether it was intended to cover the amount used during the Census year; by this oversight in the instructions the value of the answers to the first three inquiries was vitiated, and the correct replies related only to the commercial fertilizers.

Fences.

43.—Description.

Wooden, rods	Wire, rods	Mixed (wood and stone), rods
Stone (stone wall), rods	Wire, barbed, rods	
Stone (faced wall), rods		

44.—Length.
45.—Value.

After a long correspondence with enumerators and farmers, inquiries **43** to **45** were abandoned as impracticable; so many farms have changed hands that the present owners have no idea of the value of the fences on their farms, and the length could only be obtained by actual measurement; this would have added so much to the cost of the Census that it was deemed best to abandon the inquiries.

Land.—Cultivated, Uncultivated, and Woodland.

46.—Land Classification.

CULTIVATED LAND:	UNCULTIVATED LAND:	WOODLAND:
Hay land,	Permanent pasture land,	Of 30 years' natural growth or less,
Principal crops,	Other unimproved land,	Of over 30 years' natural growth,
Market gardens,	Unimprovable land,	From seeds or transplanted seedlings.
Nurseries,	Mines, quarries, pits, etc., (the land).	
Orchards (the land),		
Seed gardens,		
Other cultivated land.		

47.—Total Acreage in this farm.
48.—Total Value of the land in this farm.

Acreage.—The total acreage of this farm has been given on page **8.** The land classification on page **9,** when added up, should give a total just equal to the farm acreage on page **8.** Special care should be taken in the distribution of the acreage under the various heads given.

Cultivated Land.—The acreage devoted to hay should be given separately ; then the acreage devoted to the other crops mentioned on page **5,** and for which the acreage was required. After giving the acreage in market gardens, nurseries, orchards, or seed gardens, the balance of the cultivated land should be given on the remaining line.

Uncultivated Land.—Land used for roads, or covered by deep water, or well known to be unfit for profitable cultivation, should be returned as *unimprovable.* In general, if you believe a tract of land on your farm, by proper irrigation or drainage, or by filling in, can be made productive, return such land as *unimproved.* Should there be a mine, quarry, pit, bog, etc. (see page **10**), upon your farm its acreage must be included so as to secure the *total farm acreage* as given on page **8.**

Woodland.—The division of your woodland so as to show the age of your trees will be of special value and is incorporated as an Inquiry in this Schedule in accordance with a resolve of the Legislature of 1884, as are also the Inquiries relating to "Forest Products."

By some farmers the line "principal crops" was understood to mean the acreage and value of *crops* instead of the acreage and value of the land upon which those crops were raised, as was intended by the Schedule. There was no good reason for the farmers making such an interpretation of the inquiry, but the errors were patent, and correspondence or the services of a Special Agent were required to correct them.

Forest Products.

49.—Kind of Wood, and Lumber, cut during Census Year.

Oak,	Chestnut,	Beech and birch,
Maple,	Pine,	All other kinds.

50.—Average age at time of cutting.

51.—Value of timber, or wood, whether growing or cut, destroyed by *forest fires* during Census year.

The object of these inquiries was to ascertain the kind of wood

and lumber cut during the Census year, the average age at time of cutting, and the destruction caused by forest fires during the Census year; the inquiries were generally well answered.

Farm Population.

52.—Classification.
Members of family, Farm laborers, Total.
House servants,
53.—Males.
54.—Females.
55.—Total.

We desire to obtain the whole number of persons necessary to the proper carrying on of the farm, whether members of the proprietor's family or engaged by him for farm labor, or in domestic manufactures.

The answers to Inquiries **52** to **55** were vitiated in so many cases by returning all the members of the family, whether they were engaged in the carrying on of the farm or not, that the aggregates were not considered reliable and they were not used in the Census Report; the instructions seemed to be plain, but instructions are of little value if the party who fills out a Schedule has a preconceived idea as to the meaning of the inquiries.

Wages Paid in Agriculture and Domestic Manufactures.

56.—Age classification.
Under 10; 14 to 21; Above 60.
10 to 14; 21 to 60;
57.—Persons employed in Agriculture.
Males.—Monthly wage *with* board; *without* board. Females.—Monthly wage *with* board; *without* board.
58.—Persons employed in Domestic Manufactures.
Males.—Monthly wage *with* board; *without* board. Females.—Monthly wage *with* board; *without* board.
59.—Total amount of wages, *including board*, paid to persons employed in *Agriculture* during the year ending November 15, 1885.
60.—Total amount of wages, *including board*, paid to persons employed *only* in *Domestic Manufactures* during the year ending November 15, 1885.

It is well known that farm labor is variable, the greatest number being employed in the "busy season." Many persons are employed during "haying time" only. All persons employed in

Agriculture or Domestic Manufactures *at any time during the Census year* should be entered under this heading.

In giving "total amount of wages" endeavor to keep the distinction shown between Inquiries **59** and **60**, but if impossible to separate enter the total for Agriculture *and* Domestic Manufactures under **59**.

Inquiries **56** to **58** were quite generally misunderstood, and so much extraneous material was inserted in the answers that the aggregates were not considered reliable for Census purposes. Inquiries **59** and **60** were generally well answered, and were reliable.

Domestic Animals, etc.

61.—Names of Animals, etc.

Asses,
Bees (swarms of),
Buffaloes,
Bulls,
Calves,
Colts,
Dogs,
Ducks,
Geese,
Goats,
Guinea fowls,
Heifers,
Hens and chickens,
Hogs,
Horses,
Lambs,
Milch cows,
Mules,
Oxen,
Pea fowls,
Pigeons,
Pigs,
Sheep, merino,
Sheep, Saxony,
Sheep, other than merino or Saxony,
Steers,
Turkeys.
Domestic animals purchased in other States during the Census Year.
Domestic animals purchased in foreign countries, and imported therefrom, during the Census Year.

62.—Number of—

63.—Value.

Consider as *Calves* those under one year of age; as *Lambs* those under one year; as *Pigs* those under six months; as *Hogs* those over six months; as *Colts* those under three years; as *Heifers* until they "come in."

If you own Domestic Animals, used for service or food, which are not specified in the printed list, *cross out* the name of some animal you do not own, *insert* the name of the one you do own, consider the questions as applying, and write in the answers. Follow the same plan in the case of Fruit Trees and Vines.

But little if any difficulty was found with Inquiries **61** to **63**.

Fruit Trees and Vines.

64.—Names of Trees and Vines.

Apple, Apricot, Butternut,

Cherry,	Mulberry,	Pomegranate,
Chestnut,	Nectarine,	Quince,
Crab-apple,	Peach,	Shellbark,
Fig,	Pear,	Walnut,
Hickory,	Plum,	Grape vines.

65.—Number of—
66.—Value.

Generally well filled, but the variation in price was very marked in different places, some farmers considering their trees as being very valuable, when others placed but a nominal value upon them. A marked peculiarity in the return of fruit trees and vines, and of fruits, berries, and nuts, was the returning of products without any return of trees or vines, and, *vice versâ*, the return of fruit trees and vines without any corresponding products being entered in the proper sections. This may have sprung from two causes; either the farmer and enumerator remembered the products and forgot the property, or remembered the property and forgot the products, or else, as was undoubtedly the case in many instances, the property was returned, but there being no products that year they were not given in the Schedule.

Silos and Ensilage.

67.—Silos. Number.
68.—Aggregate capacity, cubic feet.
69.—Materials of which constructed.
70.—Aggregate cost.
71.—Corn, acreage
72.—Rye, acreage } Agricultural Products used for ENSILAGE.
73.—Other fodder, acreage
74.—Cost of *corn* ensilage, per ton
75.—Cost of *rye* ensilage, per ton
76.—Cost of *other fodder* ensilage, per ton
77.—Total amount of ensilage fed out as fodder during the Census Year, tons
78.—Total value of same.
79.—Relative *food value* of ensilage in proportion to good English hay.

In giving the relative food value of ensilage as compared with good English hay it is necessary to adopt some standard to indicate the food value of the hay. The simplest plan is to consider the hay as represented by **100.** Then if ensilage, as a food, is, for instance, of one-fifth more value relatively than hay, indicate the ensilage value by **120;** if one-fifth less food value, by **80.**

In many cases the farmers, instead of stating the acreage of corn, rye, and other fodder, the products of which were used for ensilage, returned their whole acreage of corn, rye, and other fodder, thus destroying the value of the returns. Despite the careful instruction given as regarded inquiry **79** it was not understood, and a farmer, if he considered that ensilage was half as good again as good English hay, would put down 50 instead of 150 as he should have done according to the instructions. So many variations were found not in accordance with the general evidence obtained from other sources, that correspondence was resorted to, and it was found that the question had been misunderstood, or rather that the farmer did not understand the instruction, nor know how to put down exactly what he did mean.

Other Productive Property.

80.—Name of—

Clay pits,	Mines, asbestos,	Quarries, limestone,
Fish ponds (private property),	Mines, coal,	Quarries, marble,
	Mines, iron,	Quarries, sandstone,
Fish ways (private property),	Mines (other metals),	Quarries, slate,
	Peat bogs and muck beds,	Quarries, soapstone,
Gravel pits,		Sand pits,
Marl deposits,	Quarries, granite,	Salt works.

81.—Number of—

It is intended that on this Schedule you should state only the *number* of Mines, Quarries, Pits, Bogs, etc., that there may be upon your farm and included in the acreage given on pages **8** and **9**.

The enumerators in filling out Inquiries **80** and **81** returned the specified kinds of productive property whether they had been worked or not. It was found that the productive property of this nature was of great extent in the State, but that the greater part of it had not yet been used; in many country towns the gravel pits are only resorted to when it is necessary to fix up the roads, and there being no market in the vicinity for the sand and clay, it remains there until the advance of railroads and of manufacturing industries open up these properties and make them of value. It will be seen that the farmer has everything to gain by the advancement of the manufacturing industry; it supplies a constant market for his crops, and the building industry supplies him with a market for the other products of his land that have

lain dormant for years, and would have continued to do so, but for the demand created by the establishment of workshops and factories, and the settlement in his neighborhood of the employés of such establishments. In addition to the general instructions that were printed in this Schedule and which have been hereinbefore given, it was found necessary to issue from the Census Office certain special instructions for the guidance of the Enumerators who took up the Agricultural Schedule.

SPECIAL INSTRUCTIONS No. 1.

COMMONWEALTH OF MASSACHUSETTS.

BUREAU OF STATISTICS OF LABOR,

20 Beacon Street,

BOSTON, November 5, 1885.

SIR:

Enclosed you will find letter of designation as Enumerator to gather the statistics asked for in Schedule No. 4.

Extra Schedules, Work Report, Time Account, Express Receipts, and a List of persons from whom returns are expected, will be sent you by express.

The instructions in Schedule No. 4 should be thoroughly understood before you commence your work, and with the following additional instructions all points would seem to be covered.

A farm is considered to be the home of a farmer: it answers for his workshop and his means of obtaining a subsistence, and comprises crop, pasture, and wood lands, buildings, stock, and appliances. From all persons owning, hiring, or carrying on a farm, returns should be obtained whether the product is sold or consumed on the farm, and also from all persons owning, hiring, or carrying on Market Gardens, Orchards, Nurseries, and Seed Gardens, or engaged in raising fruits, flowers, or poultry for sale.

No returns are expected from persons having small gardens from which no profit is derived, or which are not carried on for business purposes.

Large tracts of wood, pasture, or meadow lands should be returned, and in the case of non-resident owners of such, the returns should be obtained by mail. As a rule no notice is to be taken of village lots.

The List sent you has the names of persons, returned by the Enumerators, from whom returns are expected. You should look carefully for any others who, in your opinion, should make returns, add their names to the List, check between the red lines the names of those who make returns, and return the List with your completed work.

When parts of a farm are in adjoining towns, the return for the whole should be made in the town where the farm buildings are situated, and the several Enumerators should see that no omissions or duplications occur in such cases.

Care should be taken in the return of fences, that the whole length of a parti-fence is not returned by both owners.

Remember that an intelligent estimate is better than no answer, and that if you were making the inquiries with a view of purchasing, you would receive answers.

It is expected that you will fill the Schedules. If you find any already filled, examine them to see that they are filled correctly.

You are expected to act in the matter of travel and expense, as if it were your private business, using public rather than private conveyance when possible. An estimate of the amount likely to be necessary must be made and authority for the same obtained, before any expense is contracted.

As soon as you have completed ten (10) Schedules, return them to this office by express, using one of the enclosed labels, and if there is any point in your work needing correction, you will be advised at once.

SPECIAL INSTRUCTIONS No. 2.

SCHEDULE NO. 4.

COMMONWEALTH OF MASSACHUSETTS.

BUREAU OF STATISTICS OF LABOR,

20 Beacon Street,

BOSTON, November 30, 1885.

SIR:

The following additional instructions are sent you for your guidance, which, if carefully read, will answer most of the questions which are being asked by the Enumerators designated to gather the statistics of Domestic Manufactures and Agricultural Products and Property. (Schedule No. 4.)

The certificate must be signed by the farmer, or other recipient of the Schedule, or by some person authorized by him. If a person who has given you returns, which you consider substantially correct, prefers not to sign the certificate, you can sign for him.

You should not attempt to fill Schedule No. 2, at the request of manufacturers who ask your assistance.

When parts of a farm are in adjoining towns, and a return is made in the town where the farm buildings are situated, if the person making the return has detached wood lots, pasture, or meadow lands, not properly considered part of the home farm, they should be returned, as detached lots, in the town in which they are situated.

The names of non-resident land owners can be obtained from the Assessors' Lists, and in the case of non-productive land, you may return the acreage and value as given by the Assessors, stating the kind of land.

Values should be fixed by the person making the returns. They are not to be based on prices of today, but should be what the articles have brought, if sold. If on hand, then an estimate must be made, and you should call attention to any estimates which seem incorrect.

In cases where for any reason peculiarities or complications arise, explain the matter on a separate sheet, and attach it to the Schedule.

The symbol **X** need not be used.

The subjoined inquiries, noted by page and number, are answered by the following explanations.

PAGE 2.

Boots, Clothing, etc., including "work on." (Inquiry 1.) If the whole of any of the articles named are made in the family, the number or quantity should be given with the value of the articles made. If work is done on articles taken in from manufacturers or others, the number and quantity of the articles "worked on" should be given, and the value of the work done.

The wearing apparel of the family is not to be inquired into under the above inquiries.

Cider. The Cider made on the farm, or made for the farmer from his apples, should be given. Proprietors of Cider Mills will make returns as Manufacturers, on another Schedule, directly to this office, but if they are also farmers, you should obtain returns of the Cider made from the apples grown on their lands only.

PAGE 4.

Persons employed in Domestic Manufactures. All who have contributed toward the manufacture of any of the articles named on the preceding pages should be returned here. The fact that the same persons will be returned on Page **9** makes no difference.

PAGE 5.

Agricultural Products. When more than one crop is raised on the same land, enter in column 13, the acreage against *each crop*, and against the crop last raised say "second planting."

When vegetables are raised for family use, on a small piece of land termed the "kitchen garden," the vegetables need not be returned in detail, but in the space below "Wheat," say "Garden Vegetables," and give value of the whole with the acreage of the garden.

Fodder. (Inquiry 10.) The returns here should be filled for the whole quantity grown. The inquiries numbered 71 to 77 have no bearing on these answers.

If corn stalks have been used for Fodder, after the corn has been gathered, make another entry of "Fodder, dry," with quantity and value.

PAGE 6.

Cream. (Inquiry 14.) The return should be made here of the total amount of Cream used or sold, as such. That made into Butter should be classed as part of the Milk on Page **7**.

Milk. The total quantity of milk produced should be given. If milk is purchased it is not to be included here.

Poultry, Dressed. Only dressed poultry is to be given here. Live chickens, geese, turkeys, etc., *on hand Nov.* 15, 1885, are given on Page **10.**

PAGE 7.

Dairy Products. (Inquiry 26.) The average number of cows which a farmer has kept during the year is the number required here. When milk has been purchased, give the number of cows kept by the person making the return, and state on the line following the number of gallons of milk purchased.

PAGE 8.

Farm Property. You will observe that the preceding pages have asked for Products. This page and the following ask for the Farm Property as it existed Nov. 15, 1885. (See front cover.)

Acreage of this Farm. (Inquiry 29.) If lots of wood land and other land belong to the farm proper, they should be included here, this question being intended to cover the acreage of the home farm. If they are detached, and are not considered a part of the farm, they should not be so returned.

Capital Invested. (Inquiry 32.) This inquiry is to ascertain the Cash Capital which a farmer has, as ready money, with which to hire labor, purchase seed, fertilizers, etc., until he receives an income from his crops. If he has none, so state it. It does *not* mean the total amount expended for those purposes during the year.

Agricultural Implements. (Inquiry 33.) These are the small tools and appliances not elsewhere named. They are not to be named, but are to be valued in one total.

Carts, Wagons, etc., and Harnesses. In cases where persons have horses and carriages used for pleasure driving, or teams used in some business other than farming, these should not be returned. Only such as are used for farm uses, or the business of the farmer, should be returned. This would include a single driving horse and vehicle.

Description of Buildings. (Inquiry 39.) The same rule will apply under this inquiry. Dwellings, barns, etc., which are connected with a farm should be returned.

Fertilizers. (Inquiry 36.) The whole amount used during the year, whether bought or made on the premises, should be given.

Fences. (Inquiry 43.) When the obtaining of answers to the inquiry in regard to Stone Wall is likely to consume much time you need not insist upon answers. Answers in general terms which will show whether the wall is considered of some value, or none, would be useful.

PAGE 9.

Land Classification. (Inquiry 46.) If there are detached lots of any of the lands here mentioned, which are not included as part of the home farm (Inquiry 29), state in the spaces at the left of the column, Inquiry 47, the number of acres of each kind which may be detached.

Cultivated Land. Under Hay land, return the whole land from which hay is cut. Under Principal Crops, return the land devoted to such crops as

the returns on Page 5 show to be the chief crops raised, such as corn, potatoes, strawberries, etc. When land is used for more than one purpose state it, as, for instance, after "Orchards (the land)," say "Used also for hay," or after "Other unimproved land," say "Used also for cranberries."

Forest Products. (Inquiry 49.) The quantity of wood cut is not asked. The object of these inquiries is to ascertain the age at which the forests are being cut.

Farm Population. (Inquiry 52.) This should give the average number in a household, of persons who have helped in any way to carry on the business for which these returns are made, either on the farm or in housework, and none others.

Wages Paid. (Inquiries 56 to 60.) The persons only to whom wages are paid should be included in this table. The value of the labor of those who are not paid wages should not be included. The number of persons of the various ages who have been hired by the month should be given, with the price per month paid them, and whether they are boarded or not will determine in which column that price should be entered. The answers to Inquiries 59 and 60 should give the total wages paid, counting board as wages.

If day labor has been employed, state on the bottom of the page opposite Page 9, as nearly as possible, the number of persons employed in each of the two kinds of employment, with the average daily wages.

PAGE 10.

Fruit Trees and Vines. (Inquiries 64, 65, and 66.) Such trees and vines as are cared for, for the purpose of selling them or their products, should be entered here. Chestnut, hickory, and other nut trees not cared for as fruit-bearing are not to be counted.

SCHEDULE No. 5—The Fisheries.

The object of the Schedule devoted to "The Fisheries" was to find out the number of vessels composing the fishing fleet, their names and description, the year in which built, where the vessel was built, the tonnage, whether the vessel was registered or not, and the number of months engaged in the fisheries during the Census year. The inquiries in regard to outfit covered the original cost of the vessel and outfit, the present value of the vessel and outfit, the decrease of both vessel and outfit in value, the average annual cost to keep in repair, the cost of outfit during the Census year, the average annual cost of outfit during the past ten years, the value of imported manila and hemp used in outfit during the Census year, the value of the manila and hemp used in the original construction, and the total cost of repairs and of outfit during the Census year.

The section devoted to "Apparatus" called for the number and

value of dories, fyke nets, gill nets, trawl and hand lines, purse seines, mackerel pockets, eel and lobster pots, seines and seine boats, traps, trawls, and weirs. Under the heading "Capital Invested" the amount invested in vessels including outfit, in land, wharves, buildings and fixtures, machinery, implements, and tools, cash capital, and credit capital, were called for.

The division of the Schedule relating to "Markets" called for the percentage of local capital invested in the fisheries, the value of fish exported during the Census year, the value of fish imported or purchased from foreign vessels during the Census year, the percentage of same, fish caught and sold at each port, the percentage of fish sold at other ports, and a statement of the principal markets for the products of the fisheries.

As regards "Persons Employed" the fishing firms were called upon to state the number of resident and non-resident fishermen, the number of shore laborers and factory hands, and curers and packers not in factories; also, as regards "Nationalities"; that is, whether the persons so employed were of English, Irish, British Provincial, Spanish, French, Portuguese, Swedish, etc., extraction.

The number of women employed in the fisheries was also called for.

The section devoted to "Wages and Profits" called for the highest, lowest, and average wages paid, the number paid wholly by wages, the number paid wages and allowed for board, the average price of board, the comparative value of wages and board, the number having a share in the profits of the catch, the average amount of such share, the number owning shares in vessels, the number paid wholly by a share in the profits, the number paid by wages and a share in the profits, the number paid cash advances, and the number allowed credit.

The division "Kind of Fish, Where Caught," called for the description, quantity, and value of the different kinds of fish, caught in American waters, in British waters, or on the high seas.

The object of these inquiries was to ascertain officially, if possible, the respective quantities and values of the fish caught in the three specified localities.

The section devoted to "Food Fish Preparation" called for the names of the kinds of food fish prepared, the method of preparation and the quantity and value of preserved living fish, refrig-

erated fish, pickled and kench cured fish, dried fish, pickled fish, canned fish, and boneless and desiccated fish prepared for the market. The Fishery Schedule was intended to cover only fresh fish, and fish prepared by the addition of salt only. The manufactured fish was to be returned upon the Manufactures Schedule under the heading "Food Preparations."

The section devoted to "Fishery Products of all kinds" called for the quantity, number, and value of the following described kinds of fish:

Fishery Products (all kinds); Description, Quantity, Value.

111.—Description of Fishery Products:
112.—Alewives,
113.—Bait,
114.— "
115.— "
116.—Bass,
117.—Bluefish,
118.—Carp,
119.—Cod,
120.—Cusk,
121.—Eels,
122.—Flounders,
123.—Haddock,
124.—Hake,
125.—Halibut,
126.—Herring,
127.—Inorganic products,
128.—Irish moss (carrageen),
129.—Kelp and seaweed,
130.—Mackerel,
131.—Mackerel (Spanish),
132.—Menhaden,
133.—Perch,
134.—Pickerel,
135.—Pike,
136.—Pollock,
137.—Salmon,
138.—Porgy,
139.—Seals,
140.—Shad,
141.—Shells,
142.—Smelt,
143.—Squeteague,
145.—Swordfish,
146.—Tautog,
147.—Trout,
148.—Turbot,
149.—Turtles,
150.—Whales.

"Catch" from July 1, 1884, to June 30, 1885. Basis. Number. Amount.
"Catch" from Jan. 1, 1885, to Jan. 1, 1886. Basis. Number. Amount.

175.—Total value of all kinds of fishery products "caught" from July 1, 1884, to June 30, 1885.
176.—Total value, from January 1, 1885, to January 1, 1886.

The quantity and value of domestic and imported salt and of ice used in the fisheries was called for. The statistics of accidents covered the number of deaths and the number of employés permanently disabled by accidents during the Census year, with the age of such employés. Statistics of motive power, and of machinery, tools, and implements were required by inquiries similar to

those which have been given in Schedule No. 2. The general instructions for the "Fishery Schedule" were the same as for the "Manufactures Schedule."

SCHEDULE No. 6—Coastwise and Ocean Commerce.

The Schedule devoted to "Coastwise and Ocean Commerce" called for the name of each vessel, whether it was engaged in coastwise or ocean commerce, the kind of vessel, its tonnage, the value, and a statement as to what flag the vessel sailed under; the quantity of freight carried during the Census year was called for, as also the amount received for transporting this freight. Similar inquiries called for the number of passengers carried, and the amount received for carrying them. Two inquiries that were not very generally answered requested the length in miles of a regular trip, and the time employed in the trip. The majority of vessels in the United States are owned by citizens of different States, and suitable inquiries called for the amount owned by citizens of Massachusetts, by other American citizens, and by foreigners. The owners of vessels were called upon to state the principal port or ports visited by each vessel, and the principal article or articles transported to said port or ports. An attempt was made to obtain the nationalities of seamen employed upon the vessels, stating whether they were American, English, Irish, Canadian, Spanish, Portuguese, Italian, etc., but in the majority of cases the owners were unable to answer. The practice is to ship a crew for a particular port; when that port is reached that crew is usually discharged, and when the vessel is ready to sail a new crew is engaged. It would require considerable bookkeeping to supply accurate figures concerning the nationalities of seamen. Inquiries similar to those found in Schedule No. 2, relating to "Manufactures," were made concerning the salaries paid to officers, and wages paid to seamen employed upon vessels.

SCHEDULE No. 7—Libraries and Reading Rooms.

For the first time statistics of reading rooms were included in the Massachusetts State Census of 1885. The Inquiries in regard to libraries called for a statement as to the number of secular libraries, and as to whether they were city or town public, public or private school, college, scientific, artistic, law, medical, hospi-

tal, association, or private circulating libraries. As regards religious libraries a classification was made for church, Sunday-school, and religious association libraries. The following inquiries were general in their nature as regards all libraries: the name of the library, the year in which it was opened to the public, the name of the donor of library building or endowment fund, or the principal donor of books, how the library is supported, the amount of endowment, the quarterly income from fund, the value of the library building when owned, the annual rental of the library rooms when hired, number of manuscripts, pamphlets, and bound books in the library, the estimated value of same, and what days the library was kept open, and for how many hours daily; the sex and age of persons using the library principally, its comparative use day and evening, and the class of books called for principally—whether fiction, travel, biography, scientific, artistic, etc.; the number of books used in the library and at home was called for; that is, the total circulation was given. Inquiries in relation to "reading rooms" covered the points as to whether this reading room was connected with the library, its name, the year in which opened, donors of building fund or books, means of support, amount of endowment, quarterly income from fund, value of building if owned and rental if hired, number of newspapers and pamphlets on file, number of works of reference on file, estimated value of all reading matter on file at a specified time, estimated value of reading room fixtures, greatest seating capacity of the reading room, average number using the reading room daily during the Census year, its comparative use day and evening by males and females, and what days the reading room was kept open and for how many hours daily, the sex and age of the persons using the room, the class of newspapers, periodicals, and books called for particularly, and the whole number of males and females using the room during the Census year.

SCHEDULE No. 8—DIVISIONS A and B—Schools and School Property.

Public Schools, Colleges, Academies, and other Private Schools.

In the Schedules the public schools were classified as primary, grammar, high, Latin, normal and training, free colleges, institutes, etc. The parties making the returns, principally chairmen of the

school committees, found it impossible to make an accurate classification by kinds of schools as regards buildings, for in many country towns a primary and a grammar school, or a grammar and a high school, are often found in the same building, and in many small towns all the grades of schools are in the same building. In many towns, also, the schools are not graded, and this prevented an accurate classification. The Inquiries made were—the number of public school buildings, by each classification in each town or city, the value of the same, and the value of public school property (not including libraries). Inquiries in relation to private schools covered the points as to whether they were incorporated or unincorporated, the name of the proprietor, president, principal, or master, the year in which the private school was started and incorporated, the number of school buildings owned and their value, the number of school buildings hired and their value, and the school property, not including libraries, in the buildings occupied by private schools. By school property was meant maps, pianos, chemical and other scientific apparatus, and such miscellaneous books of reference as do not form a library; in a word, it includes the value of all material in the building used for educational purposes. It was directed that the value of the furniture should be included in the value of the building, for it is the school furniture that makes it a school building.

INDUSTRIAL STATISTICS OF MASSACHUSETTS.

ANNUAL SCHEDULE.—MANUFACTURES.

The object of the "Annual Statistic Schedule" is to obtain statistics of manufactures *each year*. The framers of the law wisely dropped the great majority of the questions included in the decennial Schedule for 1885, and made that for 1886 and succeeding years as simple as possible, but 12 inquiries being included in the Schedule. It covers but three pages, ten by eight inches, the first page being devoted to a general statement to the manufacturers, extracts from the Annual Statistics law, and the certification to be signed by the party making the return. The first column on page 2 is devoted to the general instructions; the second column on page 2 is filled with the inquiries; opposite each inquiry on page 3 is the special explanation for each inquiry, and the blank space

for the answers; so that a party who desires, for instance, to answer Inquiry 3 finds on the same line with the inquiry the explanation for that inquiry and the space for the answer.

It is impossible in a printed description to give any adequate idea of the construction of a Schedule; the best that can be done is to give the text portion of the inquiries and explanations and the headings of the blank spaces supplied for the answers.

ANNUAL SCHEDULE.—Manufactures.

[KIND OF GOODS MADE OR WORK DONE.]

*To*_____

_____*Town (or City) of*_____

Please read This Page, the General Instructions on Page 2, and the Explanations on Page 3, before writing in Answers.

To comply with the Laws of the Commonwealth, as given for your information below, you are called upon to answer the Inquiries made in this Schedule. All instructions necessary for your guidance will be found upon Pages 2 and 3. Any person authorized by you may write in the particulars.

By Chap. 174, Acts of 1886, this Bureau was directed to collect the Annual Statistics of the Manufactures of the Commonwealth. The object of this Schedule is to ascertain the products, capital invested, and other particulars concerning the condition of Manufactures in the Commonwealth for the year ending December 31, 1886, or, if more easily given, for the last financial year of an establishment.

By Sections 1 and 2 of the Annual Statistics Law (see below) it is provided that the Annual Schedule shall be sent *by mail* to manufacturers, and returned by them, by mail, to this Bureau. This provision enables manufacturers to make returns without annoyance, and with plenty of time for the purpose, without disclosing information concerning their private business to Enumerators or individuals of the locality. The front leaf will be detached before tabulation, and thus the clerks will not know whose Schedules are passing through their hands.

Black ink should be used in writing, in all cases where possible. Replies written in pencil will be accepted, if the writing is firm and legible.

It is of importance to every one engaged in developing the manufacturing resources of the Commonwealth that the fullest and most correct return possible should be obtained from each recipient of this Schedule; and no manufacturer, or employer engaged in a mechanical trade, should allow himself to perform his duty in a careless or imperfect manner.

The facts supplied by you are not to be used as the basis of any system of taxation, or other liability, and the information secured will be presented in the

Annual Statistics Abstract *by figures only, the names of persons in no case being printed*, and every precaution will be taken in town and city showings so that the business of individual manufacturers may not be divulged. The Bureau is bound by law (see section 4, below) to consider your answers in this Schedule as **strictly confidential.**

This Schedule was mailed to your address.

Twenty Days from above Date is allowed you by Law in which to make your return and mail same, in accompanying envelope (first affixing thereto the enclosed stamped, addressed label), to this office.

All parties filling out this Schedule must certify that the answers are correct. This is required by law (see section 2, below) and a form for signature will be found at the foot of this page. Your post office address must be given so that we may communicate with you by mail in case any error or omission is found in your Schedule.

EXTRACTS FROM THE ANNUAL STATISTICS LAW.—CHAP. 174, ACTS OF 1886.

SECTION 1. It shall be the duty of the bureau of statistics of labor, annually, on or before the fifteenth day of December, to transmit by mail to the owner, operator or manager of every manufacturing establishment in the Commonwealth, a schedule embodying inquiries as to, * * * * (See Inquiries on Page 2).

SECTION 2. It shall be the duty of every owner, operator or manager of every establishment engaged in manufacturing, and receiving the foregoing schedule, to answer the inquiries borne thereon for the year ending the thirty-first day of December, *or for the last financial year of the establishment*, and return said schedule to said bureau, with the answers therein certified as to their accuracy, on or before the twentieth day of January following the receipt of such schedule,

* * * * * * * * * *

SECTION 4. No use shall be made in said reports of the names of individuals, firms or corporations, supplying the information called for by this act, such information being deemed confidential, and not for the purpose of disclosing any person's affairs, and any agent or employee of said bureau violating this provision shall forfeit a sum not exceeding five hundred dollars or be imprisoned for not more than one year.

CERTIFICATE.

THIS IS TO CERTIFY that the Answers to the Inquiries in this Schedule are complete and correct to the best of my knowledge and belief.

Signed: *.....

.....

Particular Post-office Address:.....

[* The signature should include the name of the person, firm, company, or corporation owning, operating, or managing this establishment, and also the name of the partner, or the name and title of the officer, certifying to the completeness and correctness of this Schedule.]

GENERAL INSTRUCTIONS.

[Special Explanations are given upon page 3 coming between the Inquiries and Answers when the Schedule is opened, and being upon the same line make cross-references easy.]

The Inquiries.—The Inquiries provided for by law are twelve in number, "the name of the individual, firm, or corporation" being the first, and the "kind of goods made or work done" forming the second. Inquiries 1 and 2 are on the first page, while numbers 3 to 12 are on the second page. *The Answers should*, **in all cases,** *be written on Page* 3.

Annual Statistics Day, and Year.—The *Annual Statistics Day* is December 31, 1886. The *Annual Statistics Year* began January 1, 1886, and ended December 31, 1886. *Present time* means the Annual Statistics Day. In the answers to certain of the Inquiries the element of time is not necessary; in some the condition or facts *on* the Annual Statistics Day are required, and in others *for* the Annual Statistics Year.

Money Values.—Money values should be given in *Dollars* only, **omitting** all cents or fractions of dollars. For instance, $38,629.89 should be written $38,630. In all cases where the number of cents is 50 or over, increase the dollars by one, as above. If the cents number less than 50, omit them entirely.

Mercantile Values.—The prices or values given for stock or materials used or goods made should be the prices at which bought or sold, or market values, and should include all expenses for packing, or making ready for market, for those articles bought or sold. In the case of "work done" the value is the price paid for the work done.

Book Values.—Certain values required are matters of record, such as Capital Invested, and *exact amounts* should be given from your books of account.

Estimates.—When, from any good reason, it is impossible to give *exact* answers to any Inquiry, make the best possible *estimate*, and add the letter "**E**" to indicate that the answer is an *estimate.*

Number of Inquiries.—The number of Inquiries is much smaller than in previous Censuses. The Annual Statistics Schedule, with its few, simple inquiries, takes the place of the large Decennial Census Schedule. See inclosure, "*To the Manufacturers of Massachusetts.*"

Instructions by Mail.—The Census Office holds itself in readiness to return prompt replies by mail, when fuller instructions are requested regarding any of the Inquiries in this Schedule.

INQUIRIES.

3.—Number of Partners or Stockholders. [*At close of last fiscal year.*]

4.—Capital Invested. [*December 31, 1886, or on last day of your last fiscal year.*]

5.—Principal Stock or Raw Material used, and Total Value. [*During the year ending December 31, 1886, or during your last fiscal year.*]

6.—Gross Quantity and Value of Articles manufactured. [*During the year ending December 31, 1886, or during your last fiscal year.*]

7.—Average Number of Persons employed, distinguishing as to Sex, and whether Adults or Children.

8.—Smallest Number of Persons employed, and the Month in which such number was employed.

9.—Largest Number of Persons employed, and the Month in which such number was employed.

10.—Total Wages, not including salaries of managers, paid during the year, distinguishing as to Sex, Adults, and Children. [*For wage workers only.*]

11.—Proportion that the business of the year bore to the greatest capacity for production of the establishment.

12.—Number of Weeks in operation during the year, Partial Time being reduced to Full Time.

EXPLANATIONS.

3. Private firms are usually composed of *general* partners, but in some cases *special* partners are connected with same. These answers are of particular value in arriving at the number of manufacturers. A person doing business by himself is considered as one (1) *general* partner.

4. Only the *total* Capital invested is called for, but that "total" should include the various amounts invested in land, buildings, fixtures, machinery, implements and tools, your cash capital, and also your credit capital. These values need not necessarily be the original cost, but rather what you considered the actual value to be December 31, 1886, or on the last day of your last financial year. Cash capital should include not only the actual cash on hand but also the cost of your stock of merchandise on hand December 31, 1886, or on the last day of your last financial year.

All the capital used in securing your production, of whatever nature, whether on hand, borrowed, or accumulated from profits,

should be included. Credit capital (*borrowed* capital) includes all amounts supplied by partners or stockholders, these sums being practically loaned by them to the firm; credit capital also includes what money you have the use of through the giving of notes or the obtaining of credit for a long time either for goods or cash.

5. We desire to ascertain the quantity and value of the *principal* stock or material used in your business. For instance, a cotton mill should give the quantity and value of *raw cotton* used; a boot and shoe factory should give the quantity and value of *leather* used; a tannery, the quantity and value of *hides* used; a building contractor, the quantity and value of *lumber* and of *brick* used. The quantity and value of the minor articles of stock are not called for. The values given should be what the articles *cost you.*

6. This is the *most important question* in the Schedule. The object of taking the statistics of industry is primarily to ascertain *the product*, that is, the value of goods made and the amount received for work done in the way of repairing of articles already manufactured, or of work done upon articles originally manufactured by somebody else. In all cases where possible you should mention *by name* the different articles made, and the quantity and value of each article. If you cannot state the names and quantities of all the articles made or repaired, or the nature of the work done, be sure to give the principal ones and also a *total figure* which will indicate the *amount of business done by you for the entire year.* This total figure should be the *selling price* of your goods, or the price charged your customers for repairing, or work done.

This *value of product* being your *selling price* must include the value of all your stock used, your total wages paid, and also your *gross* profit. As the Bureau does not call for all the stock used, nor for amounts paid out for rent and other expenses, the office has no means of ascertaining your *net* profit, even if it were so disposed.

7, 8, 9. The law contemplates a classification of persons employed by sex, and as to whether adults or children. This latter point would require an age classification,—under 14 years, 14 to 21 years, and 21 years and over. As the manufacturers have given such a classification in the recent Decennial Statistics for 1885, and as such statements require much labor to prepare, the classification is omitted in this schedule but will be included in that

for 1887. Manufacturers will find no difficulty in answering Inquiries 7, 8, and 9 in their present simple form.

10. For the same reasons as given above under 7, 8, and 9 *total wages* only are called for, the classification as regards sex, adults, and children being omitted. The classification will be required in the returns for 1887, and parties in charge of pay rolls can adopt some plan now which will enable them to easily supply the figures that will be required in January, 1888, for the year 1887.

Uuder *Total Wages* should be given all those who work by the piece, day, week, etc., and whose labor *directly produces or adds to the value of* the articles made or *performs* the work done. It is absolutely necessary that the *total amount paid out in wages* by you during the year ending December 31, 1886, or for your last financial year, should be given, and also the *average number of persons* to whom these wages were paid.

11. This inquiry, when answered correctly, supplies a comparison between the *actual* business done during the year ending December 31, 1886, or during your last financial year, and the greatest business that *could have been done* if the establishment had been run to its fullest capacity; that is, if the greatest possible number of employés that could have been advantageously employed with the present plant or facilities had been actively employed on all the working days of the year.

12. This inquiry is simple. If a factory ran full time for 26 weeks, half-time for 13 weeks, and two thirds time for 12 weeks, and stopped one week for repairs, the answer to Inquiry 12 would be—40½ weeks.

ANSWERS.

3.—Partners or Stockholders. Males. Females. Total.
No. of *General* Partners.
No. of *Special* Partners.
No. of Stockholders.
4.—Capital Invested.
5.—Principal Stock or Material used. Article. Quantity. Value.
6.—Articles manufactured. Articles. Quantities. Values.
7.—Average No. of Persons employed during year.
8.—Smallest No. employed. No. Month.
9.—Largest No. employed. No. Month.
10.—Total Wages.
11.—Proportion, per cent.
12.—In operation, weeks.

These inquiries have been well understood and well answered.

They were sent by mail according to the law, filled out by the parties receiving them, and returned by mail to the Office.

The use of one envelope both for sending the Schedule and for its return by the aid of the gum label has been previously explained. Notwithstanding the full explanations given, it became necessary to issue a special instruction in relation to Inquiries **6** and **11**, a copy of which is appended.

SPECIAL NOTICE.

PLEASE READ SCHEDULE INSTRUCTIONS.

PLEASE READ THE FOLLOWING INSTRUCTIONS.

Every point in this Schedule should be answered.

We find that the Inquiries which are not answered and require the most correspondence are numbers **6** and **11**.

In answer to **Inquiry 6**, besides giving the *Description and Value of Goods made*, also state the **Quantity**, as we are desirous of establishing a basis of comparison by quantities produced as well as by values, which latter are often misleading.

In answer to **Inquiry 11**, state the proportion the business of the year bore to the greatest capacity for production of your establishment; that is, whether with the same plant and facilities you could have employed a larger number of persons, thus increasing your production a certain percentage.

The reasons that led to the adoption of the annual collection of statistics, and of the small schedule, are best given in a circular letter issued to the manufacturers of Massachusetts by the Chief of the Bureau of Statistics of Labor, a copy of which we present.

TO THE MANUFACTURERS OF MASSACHUSETTS.

By Chapter 199 of the Acts of 1837, entitled "An Act to obtain statistical information in relation to certain branches of industry," the Legislature of the Commonwealth called upon manufacturers to make returns relative to the quantity and value of stock used, and of goods manufactured, the amount of capital invested, and the number of hands employed, and in that year returns were made in accordance with the provisions of the Act; similar returns were also made in the years 1845, 1855, 1865, 1875, and 1885. The schedules for the census of industries have grown larger each

decade as the conditions of manufacturing have become more complicated.

In 1874 the Act providing for the collection of industrial statistics for 1875 transferred the whole work of the Census from the office of the Secretary of the Commonwealth to that of the Bureau of Statistics of Labor. In carrying on the work of 1875 I became thoroughly convinced that the results of a decennial census of industries were not commensurate with the expense necessary for such Census, and the annoyance to the manufacturer in making the returns required by law. In consultation with many of the leading manufacturers of the State it became apparent that the collection of statistics annually, upon a short and simple Schedule, would give to the producing community results of great value. Governor Robinson took an interest in this matter, and in his address to the General Court, Jan. 7, 1886, he suggested the expediency of a more frequent inquiry into, and report upon, the facts and changes touching the great industries of the State, and said further, "Censuses taken at intervals of ten years are liable to be quite inadequate for comparison, for the reason that one decade may end when our industries are in a flourishing condition, while the next may terminate in a year of great depression. Statistics are relied upon as of great value in scientific and economic inquiries, but they may be very misleading and insufficient to present the true conditions when collected only at long intervals. An annual account involving a few inquiries to be taken as of January first and the results reported immediately, or by the first of April following, would present to the Legislature and to the people the exact data needed relating to total products and other important features, so that proper comparisons could be made through good and bad years alike. Such annual accounts should involve but few inquiries; as for instance, capital invested, quantity and value of stock or materials used, quantity and value of principal products, total number of persons employed, total wages paid, capacity of works, number of weeks in operation, and perhaps some general classification of wages by sex."

In accordance with this suggestion a bill was laid before the Committee on Manufactures which received its unanimous approval, and the approval of those manufacturers who came before the committee, no one objecting to it. The committee reported the bill, and it passed both branches without criticism, and became

Chapter 174 of the Acts of 1886, entitled, "An Act relating to the annual collection of statistics of manufactures." This Act practically calls for answers to but nine questions and repeals the law calling for the decennial collection of industrial statistics.

It is believed that the simple annual collection will prove of far greater value to the public than the decennial collection. The question of the preservation of the industrial position of Massachusetts is one which appeals to the patriotism of every manufacturer in the State. The new industrial competition springing up in the South, a competition which, if properly understood, means the greater development of the industries of our own State, will result in transferring some of our industries to other localities. To know whether the volume of production in this State is keeping pace with the past, resort must be had to an annual collection of facts. Apprehension often exists relative to the decay of manufacturing industries. This apprehension can only be removed by faithful returns made at short intervals. The Census of 1885 has been pushed with the greatest energy, often to the annoyance of manufacturers, but with the patriotic desire to show to the public the full volume of the production of our State, that our producers might know whether they were holding their own in comparison with past decades, and if so, might have the encouragement to be gained only by a complete statement of the facts relating to the industries of the Commonwealth. Nearly all of the manufacturers of the State have responded to the demands of the Legislature made through this Bureau. Now, with the abandonment of the Decennial Schedule, which of necessity grew to considerable proportions, manufacturers are called upon to make a simple return each year, involving but few minutes labor, of the facts concerning their industry for their own last fiscal year. In the interest, therefore, of the industrial welfare and prosperity of the Commonwealth, let me urge all concerned to promptly and cheerfully comply with the demands of the Legislature.

The Annual Schedule for 1887 contained a few changes. The point was brought out strongly that a statement for the last fiscal year ending in 1887 would be accepted if more easily given than one for the year ending December 31, 1887. It was stated more clearly in the instructions that, for persons employed, the largest or smallest number employed at any one time should be given. Particular caution to exclude the salaries of managers, bookkeepers,

clerks, overseers, and superintendents from all wage showings was inserted.

As Inquiries **4** and **6** still seemed to be hard to answer, and as much correspondence was required in order to obtain correct replies, the information sent in the letters was put in printed form and given on page **4** under the heading

SPECIAL EXPLANATIONS.

4. Capital Invested.

In securing the statistics of manufactures for the year 1885 upon the Census Schedules, and for the year 1886 upon the Annual Statistics Schedules, the inquiry that has caused the manufacturers the most trouble seems to be number 4, relating to "Capital Invested." The bookkeeper of a large firm, or corporation, could easily prepare a balance account showing the assets and liabilities, but such a statement is not the one desired by this Office. We wish to secure under the total capital invested, a figure showing the whole amount of money, whether invested in plant, goods, accounts, etc., which may be needed and used in the production of goods. Perhaps the difference between a bookkeeper's balance and the census statement may be best shown by a printed illustration, and we supply the following Bookkeeper's Balance, and Census Statement:

BOOKKEEPER'S BALANCE.

Assets.		Liabilities.	
Land,	$20,000	*Capital stock*,	$150,000
Buildings,	50,000	*Notes payable (for goods)*,	8,600
Machinery,	25,000	*Notes payable (borrowed money)*,	15,000
Implements and tools,	5,000	*Accounts payable*,	45,586
Accounts receivable,	48,565	*Balance (profit and loss)*,	41,156
Mdse., and stock in process,	95,463		
Patent rights,	10,000		
Patterns,	5,314		
Cash on hand, and in bank,	1,000		
	$260,342		$260,342

CENSUS STATEMENT.

Land,	$20,000
Buildings,	50,000
Machinery,	25,000
Implements and tools,	5,000
Accounts receivable (balance),	2,979
Mdse. and stock in process,	95,463
Patent rights,	10,000
Patterns,	5,314
Cash on hand, and in bank,	1,000
Notes payable (borrowed money and due for goods),	23,600
Total capital invested, used, and necessary for the production of goods,	$238,356

It will be seen that we wish the value of the land. If the land were hired, it would be impossible to give this figure under this head, for the amount paid for rent would be an expense. So, too, with buildings; if not owned, they would be rented, and the rent would be an expense. These rents would come from the cash on hand, and the return of cash capital, in this way, would account for rented land and buildings.

The value of machinery, implements and tools, and patterns should evidently be included in capital invested, as these items form a permanent investment required from day to day for the manufacture of goods. Merchandise on hand, manufactured and paid for, and also stock on hand, paid for and in process, should be included, because so much cash capital has been put in this form, and has been used to secure the product.

Notes payable should include all those notes, whether due to stockholders, members of the firm, or other parties, where they represent what has been borrowed and used in the business, in order to aid in the larger production of manufactured goods.

If a firm should pay all its bills, and all the accounts due the firm should also be paid, and the balance being in favor of the firm, the surplus cash would naturally be added to cash capital; so, in making up the census statement, the difference between the accounts payable and the accounts receivable should be added to the capital invested, if the balance is in favor of the firm, and deducted if against the firm, for the amount due outside parties in such a case would have to be made up from the capital invested. Of course the cash on hand in the office or in the bank should be included as part of the capital invested. Accrued profits, still used in the business, should be included under cash capital. Business notes given in lieu of cash, as payment for goods purchased, should be included.

If each manufacturer would bear this classification carefully in mind, he would be able to make up his statement of capital invested with little difficulty. Of course there are, in certain firms, certain peculiarities in investments which may require special decisions.

6. Articles Manufactured, and Quantities and Selling Values of the Same.

In the past censuses, excepting in a very limited degree, all comparisons of relative product from year to year have been based upon values. As is well known, these values are fluctuating, and a dollar's worth of goods in 1885 meant more than a dollar's worth in 1875; besides this, all values in 1875, being on the currency basis, were 12 per cent higher than a gold basis, and, for this reason, in order to make comparisons between 1875 and 1885, it is necessary to reduce the values given for 1875 twelve per cent in order to secure a comparison upon a gold basis.

Having the Annual Statistics Schedule, and being able each year to call upon the manufacturers for the quantity and value of goods manufactured, it is the aim of the Bureau to gather such figures as will enable it to make comparisons from year to year upon the basis of quantities. The comparisons by values will not be omitted, but they will be supplemented by this more valuable figure—the comparison by actual production shown by quantity.

In the cases of a few industries, we cite below the bases upon which returns should be made. The request for such detailed information as regards quantities made, is not confined to these industries, however, but in *all* industries the quantities should be specified.

Cotton Goods: Give number of *pounds* of cotton cloth produced, as well as the number of yards; give *pounds*, if only one basis can be supplied.

Boots and Shoes: Give number of *pairs* of boots, *pairs* of shoes, *pairs* of slippers, etc., instead of giving the number of cases, which latter designation is indefinite. Designate the kinds,—as men's, women's, boys', youths', misses,' children's, etc. By boots is meant long-legged boots.

Clothing: Give the number of dozens of shirts, drawers, etc., and the number of overcoats, undercoats, vests, pairs of pantaloons, etc., made.

Cordage and Twine: Give the number of pounds produced.

Furniture: Give the number of dozens of chairs, number of lounges, tables, mattresses, parlor or chamber sets, etc., made.

Leather: Give the number of pounds or feet of the various kinds of leather tanned or curried.

Woollen Goods: Give the number of *yards* of woollen goods manufactured. Designate the kinds,—as cassimeres, union cassimeres, satinets, meltons, cheviots, etc.

A college professor, who has given much attention to the subject of teaching statistical processes, propounds the following inquiries to which answers are appended:

1. *What are the chief difficulties in getting full and truthful answers to Census questions relating to industries?*

(a) The failure of parties receiving Schedules to read the instructions carefully.

(b) A natural objection on the part of individuals and firms to stating the *details* of private business. Corporations rarely fail to answer fully and promptly.

(c) Lack of proper accounts to supply the desired facts.

(d) Because time and expense are required to answer many inquiries.

(e) Many inquiries made are impracticable.

(f) Many inquiries apply only to certain industries.

2. *What questions relating to industries are practically never answered with precision so that statistics on these subjects are to be received only with great caution?*

(a) Average number of persons employed. This inquiry entails much labor upon large establishments.

(b) Capital invested. There is an objection to giving details. In many cases it is difficult to state the details, for proper accounts are not always kept, and the "scaling down" for depreciation leaves the book figures much lower than marketable values. There is often a fear expressed that the information supplied will fall into the hands of the assessors, who lay the taxes.

(c) Inquiries calling for information as to expenses and profits. There is an indisposition to supply figures that will enable any one to figure out the gross or net profits of an establishment.

3. *How does the Census office control the returns of individuals so that it is almost impossible for them to make false returns?*

(a) The relations of Capital Invested, Stock Used, Goods Made, Persons Employed, and Working Time from perfect schedules are brought out by grand averages for each industry, and are easily applied. Cases of disproportionate returns are investigated by correspondence. In many cases the questioned figures are substantiated, there often being peculiar circumstances connected with the industry.

4. *How far is it allowable for the Census office to fill out industrial returns which are incomplete?*

(a) By transferring information given in the wrong part of a Schedule but omitted in the proper place.

(b) At least 75 per cent. answer substantially correct, although 25 per cent are slow in answering at all. The remaining 25 per cent are usually small establishments. Although one-quarter in number they do not represent more than 10 per cent. of the total product. They know their business is small and think it of no great account if they do not make a return. Letter writing comes hard to them and they seem to be gifted with unusual powers for misunderstanding simple inquiries, no matter how graphically explained. In such cases, the Census Office having exhausted time and patience to obtain a product that probably does not exceed $500 per annum, finally *estimates* the product and other points, taking care to make them *less* than the supposed fact, so that no aggregates may be exaggerated. The same plan may be followed as

regards all statistics of production, but estimates are not allowable in the case of population or social statistics. In these instances the usual plan is to call the point "unknown" or "not given." Then, statements of fact are not improperly influenced by guess-work.

CHAPTER V.

TABULATION.

We have reached the fourth stage in the progress of statistical work. First, the preparation of the schedule and instructions, then the collection of information followed by the examination of returns. When the schedules have passed through these three stages they are ready for the fourth—or *Tabulation.*

The past fifty years has seen a great advance in manufactures and in the mechanic arts. The factory and workshops have grasped every industry, and by the sub-division of employment, and the use of machinery in those sub-divisions, have made each workingman a specialist. Few workingmen at the present day manufacture a complete article. They make a *part* only, but make that part better than it was ever made before.

The profitable inventions in machinery have had three points in view, or have secured those points—first, reduction in brain labor; second, reduction in physical labor; third, a saving in material and a consequent reduction in the cost of production.

Notwithstanding the great expansion of manufacturing and commercial business, the consequent increase in the number of banks, large business houses, and the various branches of the city, state, and national governments, the computation incident to business and accounts has been carried on uniformly in the old ways in vogue a century or more ago. We have had "lightning calculators" who now find the dime museum their most lucrative field. We have had expert accountants who are called in when business records are in a bad condition as the result of ignorance, or systematic embezzlement. The great body of the people have clung to the old ways and have resisted, or rather ignored, innovations. The metric system, with its sensible decimal basis, is tolerated, but is used by the few only.

It would not be creditable to human ingenuity and progress to assume that no inventor has realized the need of quick computation and done nothing to secure it.

The progress in computation and tabulation, like that in all sciences, has been one of evolution as regards *methods*. There has been no change as regards the *kind of work* to be done. That has always consisted and will ever consist of two, in themselves, simple processes—*Counting* and *Addition*. Counting is adding one at a time. Addition is the aggregating of larger numbers than one. In both cases, the result is called the *total*. It is evident, therefore, that the problem of "quick computation" is to introduce new and rapid methods of doing the same kind of work that always has been done.

We can imagine the first counting or tabulating was done orally, the *results* only being written down. The next natural step would be to cut notches in a stick, or to use beans, peas, small stones, or other articles that could be added after the tallies had been made upon the stick, or the beans, etc., dropped into some receptacle. The next move would be to make marks or lines. Thus four would be indicated by 𝍸, the horizontal-diagonal line being added to make five—𝍸. But one answer or point was tallied at a time, at first. The progress to a sheet upon which several answers could be tallied was easy and natural. In a similar manner, when a number of *numbers* were to be added or aggregated, only one series of answers would be handled at one time. By a natural progression would come the ruled sheet upon which many columns or numbers could be recorded, and then added.

The first calculating machine of which we have any record, unless the Chinese abacus be considered, was invented in 1642 by Blaise Pascal who was born at Clermont, France, in 1623. This machine was the basis of those now used to indicate the revolutions of printing presses, in gas meters, and for hundreds of other purposes. M. Thomas of Colmar invented the arithmometer by which all ordinary mathematical operations are performed. Messrs. E. and G. Scheutz of Sweden invented the first difference machine, or engine, which was improved upon by Mr. Charles Babbage, an Englishman, who made use of punched cards similar to those used in the Jacquard loom. Mr. Babbage died in 1871, and the engine was never completed. Mr. Grant of Boston, Massachusetts, has

constructed a difference engine for the University of Pennsylvania said to be less expensive than Babbage's and less complicated than Scheutz's. In 1883 the application of electricity to tabulation was made by Mr. Herman Hollerith, of New York, and in the same year, by the author of this book, to addition. Thus, at the present time, the principal tabulating, adding, and arithmetical machines in use in the world are the inventions of Americans, two being residents of Boston.

It should not be supposed that the machines previously referred to are all that have been invented to secure rapid computation. The following list, compiled from Knight's Mechanical Dictionary, gives an idea of the fecundity of inventors in this line.

Abacus.
Adding-machine.
Addressing-machine.
Almucanter-staff.
Ambulator.
Angular instruments.
Arrow.
Atwood's machine.
Authometer.
Back-staff.
Balance.
Ballot-box.
Batter-level.
Bench-marks.
Bevel-square.
Boning.
Bow.
Burette.
Calculating-machine.
Caliper-rule.
Calipers.
Chain-inclinometer.
Circumferentor.
Circumventor.
Coin-assorter.
Coin-weighing machine.
Comparateur.
Conformator.
Counter.
Counter-scales.
Cross.
Cross-staff.
Danish balance.
Datum-line.
Declinator.
Delineator.
Demi-circle.
Dendrometer.
Dividers.
Dividing-engine.
Dotchin.
Dumpy-level.
Dynamometer.
Electrometer.
Electric-balance.
Fare-box.
Fare-register.
Faucet, measuring.
Fore-staff.
Funnel, measuring.
Gage.
Gaging-rod.
Garment-measurer.
Gas-meter.
Gas register.
Geometric square.
Grading instrument.
Graduated-glass.
Grain measurer.
Grain-scales.
Grain-tester.
Gun-pendulum.
Gunter's chain.
Gunter's scale.
Hydrostatic balance.
Hygrometric balance.
Indicator.
Jacob's staff.
Label.
Level (varieties).
Letter-balance.
Leveling-staff.
Libella.
Limb.
Linen-prover.
Litrameter.
Log.
Lumber-measurer.
Map measurer.
Meter (varieties).
Metrograph.
Metronome.
Micrometer.
Miter-square.
Multiplying machine.
Napier's bones.
Needle-instrument.
Nonius.
Numbering machine.
Numbering stamp.
Object-staff.
Octant.
Odometer.
Optical square.
Outkeeper.
Paging machine.

Pedometer.
Perambulator.
Plane table.
Planemeter.
Platform-scales.
Plotting-scale.
Plumb.
Prismatic compass.
Quadrant.
Quadrat.
Recipiangle.
Register.
Scale.
Scales.
Sea-way measurer.
Sector.
Semicircle.
Sextant.
Shuffle-scale.
Sliding scale.
Specific gravity apparatus.
Speed-indicator.
Sphereometer.
Spring balance.
Square.
Stadium.
Station-pointer.
Steelyards.
Stereometer.
Surveying-cross.
Surveying-chain.
Surveying-compass.
Surveying-instruments.
Swan-pan.
Tally.
Tangent-scale.
Tape-measure.
Testing machine.
Theodolite.
Time-table.
Tourists' indicator.
Transit.
Traverse-board.
Triangular-scale.
Tripod, surveyor's.
Tron.
T-square.
Universal square.
Vernier.
Vernier compass.
Vernier-transit.
Volvette.
Way-wiser.
Weather-glass.
Weigh-bridge.
Weighing machine.
Weighing scales.

As indicated in many cases by their names these calculating or registering machines are used for a great variety of purposes, but few, however, being of practical value in statistical work. By this we mean *proved* value. An inventor may claim that his machine is better than any other one made, but its practical use may disclose unforeseen drawbacks in some points which neutralize acknowledged gains in other directions.

We have not the space in which to describe the various machines, but shall simply state their applicability to various kinds of statistical work. It is not intended to advertise any particular machine, but to mention all known to the author and enable statisticians to make their own selections for special work. In machine tabulation or aggregation the "scheme" adopted in itself fixes the style of machine to be used. The "factory system" when applied to tabulation means sub-division of labor as it does in other industries, and each part of the labor, each sub-division, requires its own mechanical device. The calculating machine that will do everything is on a par with the patent medicine that cures all human ills. Each particular tabulation requires its peculiar "result slips" upon which to record the results of the machine work, and as much invention is required in some of them as the construction a new calculating machine would call for. In some instances, the manner in which cer-

tain results obtained by machine tabulation are *entered upon* the special result slips supplies the statistician with ten times the material for use that the original counting furnished. Thus it is that the brain that invents the "scheme" for machine tabulation and records its results upon novel result slips does more than any machine can accomplish—in fact, the machine is useless without it. The clerk who runs the machine may need to do but a small amount of brain labor, but this diminution should not be credited to the machine nor its inventor, but instead to the one who invents the "scheme" to use the machine, and whose brain labor dominates every movement of his mechanical servant. These plain words are written so that parties who start to use mechanical devices in statistical work may not be disappointed if the machines do not run themselves.

The present application of printed or mechanical devices for rapid computation to statistical work are as follows:

I. *Counting or tallying one at a time:—*

(*a*) The Self-counting Tabulation Sheet.
(*b*) The Abacus Adding Machine.
(*c*) The Pascal Counting Machine.
(*d*) The Rotary Counting Machine.
(*e*) Seaton's Tallying Machine.
(*f*) The Electrical Tabulating Machine.
(*g*) The Electrical Adding Machine.
(*h*) The Chip System.
(*i*) The Automatic Door Counting Machine.
(*j*) Italian Tabulating Machine.
(*k*) Benton's Counting Devices.

II. *Counting or tallying small numbers from* 1 *to* 100.

(*a*) The Self-counting Tabulation Sheet.
(*b*) The Rotary Counting Machine.
(*c*) The Electrical Adding Machine.
(*d*) The Chip System.
(*e*) Column Adding Machines. (Various makes.)

III. *Counting or tallying from* 1 *to* 144 *points at one handling of the schedules.*

(*a*) The Automatic Door Counting Machine.

IV. *Counting or tallying more than* 144 *points at one handling of the schedules.*

(*a*) The Chip System.
(*b*) The Printing Tabulator.

V. *Adding one series of numbers, showing consecutive totals from* 1 *to* 1,000,000,000.

(*a*) The Valuation, Quantity, and Number Self-counting Sheet.
(*b*) The Billionnaire Adding Machine.
(*c*) The Electrical Adding Machine.
(*d*) The Cylinder Adding Machine.

VI. *Adding from* 1 *to* 144 *series of numbers, each aggregating any amount.*

(*a*) The Chip System.

VII. *Processes used in preparing schedules for tabulation.*

(*a*) The Slip System.
(*b*) The Chip System.
(*c*) The Slip-Chip System.

VIII. *Other devices for quick computation.*

(*a*) Thatcher's Percentage Machine.
(*b*) Percentage Charts.
(*c*) Addition Percentage Tables.
(*d*) The Arithmometer.
(*e*) Electrical Multiplying Machine.
(*f*) Bookkeeper's Trial Balance Sheet.
(*g*) Multiplication Proof Sheet.

IX. *Improved schedules and result slips.*

(*a*) Record Margin Schedule. (To secure secrecy.)
(*b*) Coupon Schedule.
(*c*) The General Sorter Result Slip. By sex, etc., and 12 related points; may be extended indefinitely.
(*d*) The Age Result Slip.
(*e*) The Place of Birth Result Slip.
(*f*) The Parent Nativity Result Slip.
(*g*) The Occupation Tally Scheme, and Result Slips. Actually used for 22,000 details.

(*h*) Correlated Result Slips.
(*i*) The Children and Children Living Result Slip.
(*j*) The Chip System Result Slip.
(*k*) The Adding Machine Result Slip.
(*l*) The Punch Schedule. For electrical tabulation.
(*m*) The Enumerator's Punch Schedule.

X. *Other machines, etc., used in mechanical tabulation and addition.*

(*a*) Sorting Boxes.
(*b*) Proof Boxes.
(*c*) Proof Wires.
(*d*) Punches.
(*e*) Position Cards.
(*f*) Numbering Machines.
(*g*) Cutting Machines.
(*h*) Perforating Machines.
(*i*) Printing Machines.
(*j*) Elastic Label Cards.
(*k*) Notched File Cards.
(*l*) Eyelet Sets, and Eyelets.
(*m*) Wire Binders.

As has been stated, none of these machines can be used advantageously unless the "scheme" is prepared and the ways to utilize the machine explained to the clerks. Then they mean much more for the same money, or the same for much less money. How much more or how much less depends entirely upon the nature of the work to be done, and no general rule can be given, and no special rule, unless that particular work has been done covering the same details as that for which an estimate of cost is desired; so much depends, also, upon the facility or availability of different clerks that no estimate can be guaranteed to be realized practically.

Machine tabulation requires "grasp" and "consecutivity" in the clerk—that is the ability to "grasp" instructions and the brain power to apply them in "consecutive" order as laid down in the scheme. The instructions should be written, in type writer work, or printed. Machine clerks should be as expert in *horizontal* as in *perpendicular* addition. Machine tabulators are not obliged to bend over to their work, there is a certain fascination in running a machine, there is more physical than brain tire; for these reasons,

and others, machine tabulation is more healthful for the clerks than the old systems.

Mechanical and printed devices for quick computation will eventually be placed upon the market at such prices and on such terms that they will come within the reach and means of all persons whose livelihood is gained by arithmetical calculations in any form. These devices will be to the brain-wearied accountant what the sewing machine has been to the seamstress or the typewriter to the copyist. Their use will not throw accountants out of employment, but will enable them to do more and better work for the salaries paid them. They will make it possible for statistical officers to prepare exhaustive reports with small appropriations, and will enable State and National Governments to tabulate and aggregate census and industrial returns in less time and for less money than has been possible with the old forms of work. Given a certain work to do, mechanical tabulation will do it in less time and for less money; given a certain sum of money, mechanical tabulation will do much more for the money; and, finally, by mechanical tabulation, many things can be done that no other system can accomplish, or which would be so expensive that they would never be undertaken on the old plan.

CHAPTER VI.

THE PRESENTATION OF RESULTS.

A fine schedule, careful enumeration and correction, and accurate tabulation may yet fail in impressing the public, owing to a poor presentation of the results. The results need careful "editing." Merely interesting facts must always be cut out to make room for the valuable. Worthless lines must be excised, and the tables must be so arranged as to avoid blank spaces which are usually filled in with unmeaning "dashes" (——) and leaders (· · · · ·). In no way is the possession of statistical knowledge shown so plainly as in the printed arrangement of statistical tables.

The general rule to follow as regards detailed statistics is to present in detail what the reader or student may reasonably wish to use in detail, or may wish to combine in some way different from the totals or recapitulations given with the detail.

The maker of statistical tables should always bear in mind that his object is to supply information. In his head lines he should aim to help the reader—not to mystify him. He should use footnotes freely to this end. The best statistical style is necessarily tautological, for tautology is directness. In literature you may say "spade" in one line and "instrument of husbandry" in another, but in statistics you must say "spade" every time.

Statistical tables should always be "carried out;" that is, *totals* should be given for every sub-division occurring in the detail tables, whether by cities, towns, industries, or classifications. These are called "recapitulations." "Totals" are a few items added together; "aggregates" cover many items. Tables of percentages and averages should follow the recapitulations so that the principal points of the tables may be handled easily by these percentages and averages, which render it unnecessary to memorize long numbers.

A great gain may be made as regards space needed for statistical presentations by "correlating" facts, that is by so arranging tables that several classes of facts, and their relation to each other, can be shown in one table. In the Massachusetts State Census for 1885, conjugal condition and color and race are shown by cities and towns, sex, age periods, and native and foreign born in *one* table, so that if in a certain town you wish to know the number of white, married females, native born, from 30 to 39 years of age, one place in a column gives you the desired correlated information.

The foot-note should be supplemented by the head-note at the top of the first page of the presentation, and, when necessary, as in census statistics, by a full page or more of condensed description.

All statistical tables should be carefully analyzed, with full explanations and descriptions in text, and many small but valuable tables may be included which might properly be called trivial in the body of the printed work. A table of contents, with a considerable degree of detail, should follow the title page. Indexes, at the end of the book, are of use and value when there is much text, but in purely statistical works, in which the text is only introduced to explain the tables, the detail table of contents answers all purposes. In cases where statistics on many points are given as regards cities and towns a tabular index may be advantageously used.

In head lines for tables, punctuation can, as a rule, be dispensed with, to the typographical improvement of the page. The practice of putting periods after figures denoting "years" has nothing to commend it, while it destroys entirely the symmetry of the page.

When a table is too wide for a single page, so arrange it as to have it extend across two pages. Better do this, even if the table is somewhat "open," than perpetuate that statistical monstrosity —a table with the head lines and figures running horizontal with the length of the page. Such a page is unhandy to read, and when this horizontal-perpendicular plan is followed for a number of pages, not only is the reader wearied but the book loses in the line of a book's great strength—*usability*—and some of its strongest points may escape the attention of persons who often "skip" these "turned-'round" pages.

As explained in Chapter VIII., diagrams may often be used advantageously in books and analyses to emphasize results. The statistician may read and compare figures more easily without the

diagrams but to the average mind the graphic line, the block of color, or the circles of various sizes, carry a basis of comparison that simple figures do not supply them. Routine tables, or those in which new lines are added from time to time, are particularly susceptible of exposition by means of diagrams.

As regards the preparation of copy several hints can be given. Use a medium size sheet of paper. Better have two sheets, easily handled, than one that is unhandy all the time. As a general rule, in statistical work, it costs more to devise ways to *save* paper than it does to use it freely. Have a unit of size for all paper, say 8½ inches by 11 inches, and have double sheets, quarters, eighths, etc., based on that unit. Your written material will then "pack up" squarely and save wear and tear on the ends. Whenever there are many copy pages requiring head lines to be written in, always have them printed when it is cheaper rather than condemn a clerk to the drudgery of writing them in. If a dollar can be saved by printing, follow that plan and utilize your clerks' abilities on more broadening work. Certain forms of detail work are drudgery pure and simple. When a page of copy is prepared, for a new table, let the printer set it up so you can examine it critically. Nothing brings out imperfections like "cold type," and it is much better for you to see the imperfections and correct them in "a sample block" than to have them perpetuated and, perhaps, finally pointed out by an outside critic when it is too late to remedy the evil. The closest bonds of friendship and sympathy should unite the statistician and the printer. If they work together the result can rarely fail to be a success for both. Even the printer suffers when he prints an unsuccessful book.

Avoid "indices" in tables as much as possible. The ordinary marks,—asterisk, dagger, double dagger, etc., are far from handsome, but the small index figure also lacks beauty and besides is a constant tax to the anxious eye.

When preparing copy, if a figure is found to be wrong *do not erase it!* You may wish to use that "wrong figure" in some way. Instead of erasing, *mark it out*, and write the correct figure over it, or beside it. Do not waste time, knives, and pencils by allowing clerks to sharpen their own pencils. Buy a pencil sharpening machine for five dollars which will sharpen better than any knife can do it, with the office boy's aid, two hundred pencils in an

hour. Choose carefully your grades of pencils for different kinds of work.

As regards "proofs," have each page on a separate sheet of paper. It is easier to read, and can more easily be handled for comparisons, verifications, etc. Have a wide margin so as give plenty of room for corrections, changes, and additions. Read your proof (or "revise") from copy, and make typographical and other changes. Then have "second revises," with all changes made as indicated on proof or first revise. Add and re-figure all statistical material on the second revise. Errors may have crept in which only a careful re-figuring will disclose.

It is not simply a blunder,—it is a crime for a statistician to print statistical tables containing figurative errors. His tables may be faulty in material and construction but the mathematical part should always be correct. If necessary, a "third revise" may be called for if many changes have been made, and that should be carefully compared with the "second revise" to see if all corrections have been made. You are now ready to order to plate (stereotype or electrotype) or print. If to plate, you have one more chance to compare plate proofs with the last revise, to see if the printer has done his correction work properly. If to press, be sure your printer is reliable, or insist upon revises until you can send a clean sheet to press. As a matter of record you should keep in a suitable book an account by dates, of the times when copy was sent, by pages, as to when the proof or first revise was returned, when ordered to plate or press, and when sample copies of print were received. This record may be of great service in estimating, as regards future publications. The printer fixes the speed on the preparation of a book, and the date of its publication. Useless it is to push your own work unless the printer's facilities are equal to your own. As a safeguard, all pages ordered to press or print should be endorsed "Ready for press *when corrected*," and signed by the party so ordering to print. If errors corrected by you on the last revise are not corrected in the printed copy, then the printer must make it good by printing new pages and destroying the old. For this reason, as soon as printed pages are received they should at once be compared with the last revise, of which a *duplicate* copy with all changes thereon should be kept in the office.

The following rules should be borne in mind by those having

charge of the preparation of copy and proof-reading. No rules can be given which will be unalterable, nor should there be. The best use of a rule, sometimes, is to call particular attention to the exceptions to it.

1. "System" is absolutely necessary in every part of the science of "Practical Statistics."
2. Adopt a unit of medium size for copy paper, and double, halve, etc., that unit.
3. White paper, ruled horizontally in blue and perpendicularly in red is a standard.
4. Use black ink for body of table, and red ink for totals or aggregates. Blue ink may be used advantageously, sometimes, together with the black and red.
5. Write on one side of the paper only.
6. Plain, legible, writing is best. No shading or fancy flourishes should be indulged in. As there are only ten characters every one should learn to make good figures, and write them units under units, tens under tens, etc. Use a comma (5,986,348) to set off each three places. For percentages, a raised decimal point,—19·86. For cents, a point on the line,—$6.32.
7. Page all copy with blue or red pencil in upper right hand corner. The consecutive numbering machine can also be used. Add "X" to indicate the last page of any division of copy.
8. Keep "old copy" until you are sure it will not be needed again for reference.
9. Foot-notes should be written upon the pages to which they refer.
10. If pages are taken out after copy is numbered, include them in the next number. Thus if page 58 is followed by page 63, mark the last page 59–63. This is more logical than to mark it 58–62, then 63.
11. If extra sheets are inserted add *a*, *b*, *c*, as 58*a*, 58*b*, 58*c*, and *x* for the *last* page added, as 58*cx*, showing it is the last of the additions. If a small slip is to be inserted mark it with a letter, as "G," and having put a caret (^) at the proper place in the page, write—"*Insert G.*"
12. The paging should be consecutive from "1" to the last

page of copy in a book. As title pages, introductions, and tables of contents are usually paged in Roman, the Arabic paging beginning with the first page of the book proper (always *odd* on right hand pages and *even* on left hand pages) this completing copy can be *paged on* at the end of the copy for the book proper.

13. New sentences and paragraphs should always be plainly designated.
14. Punctuate your own copy, and notify the printer to "follow copy." Proper punctuation is an indication that the author knows the meaning of what he has written, for incorrect punctuation may change the author's meaning, or even render his writing meaningless.
15. If you wish a change in type, draw a perpendicular line down the side of the copy, and write the name of the type desired.
16. When copy is sent, always indicate the page-heads, and running-titles, and names of tables. This will save the printer's time and the expense for changes.
17. The proof-reading for a statistical work should all be done by one person, or one person should have the final revision of all proofs, and should order to plate or press.

CHAPTER VII.

WORKING AND ILLUSTRATIVE DIAGRAMS.

As the word diagram is generally understood, statistically, its use is to illustrate the relation of numbers. It is thought by many that diagrams impress a fact more forcibly upon the reader or student than do comparative columns of figures, or results. On the other hand, some statisticians maintain that nothing can be more graphic than the figures themselves, and that the habit of comparing figures is as readily acquired as the habit of judging from diagrams.

It would be impossible here to show all the forms of illustrative diagrams. Much of the comparison is based upon the use of different colored inks, which contrasts throw up prominently the desired comparisons.

Illustrative diagrams usually take the form of the narrow graphic line, the wide graphic line, the block system, the decimal dot system, or the sub-divided circle or square. In some works, white lines upon a black base are used. In others, figures of various kinds are sub-divided to indicate comparative values, as in Mulhall's Statistical Dictionary. The statistical atlas based upon the United States Census of 1880, prepared by Henry Gannett, the geographer of the Census, is probably the finest specimen of diagram work that has been printed in this country. The diagram work done by the Royal Bureau of Statistics at Rome, Italy, under the direction of Signor Luigi Bodio is very fine. Nearly every one who has studied statistics is familiar with the colored maps in which comparisons are indicated by different tints of the same color, or by different colors. Black ink is used in a similar way, perpendicular lines indicating one thing, horizontal lines another, crossed lines or lattice work indicating a third point, and so on as far as the ingenuity of the draughtsman or engraver can carry the process.

Schedules, leaving out the inquiries which are printed in, are, in themselves, diagrams; and after the word-form of the schedule has been settled upon, it calls for another order of talent, but one just as necessary, to draw the skeleton of the schedule into which the inquiries are to be fitted. These must be so arranged as to fit the schedule page, related subjects being brought upon the same page. A subject must not be divided between two pages if it can possibly be avoided, and a proper allowance of space suitably arranged must be kept for the answers or replies. This arrangement pre-supposes a knowledge of the kinds of answers that will be received, and good work calls for an intimate knowledge of census taking and the usual replies. Parties filling schedules are prone to write the answers in the wrong spaces, and a systematic arrangement with heavy or double lines to mark divisions of subjects is of great assistance to the enumerator or the person who fills out a schedule himself. The book schedules used in the Massachusetts State Census of 1885 covered 90 pages and 968 inquiries, and these had to be arranged in proper diagram form as copy for the printer. When the wording of the inquiries was settled upon, each page took from three to four hours' work for the drawing alone, and many pages had to be re-drawn in order to secure the proper relations between the spaces for inquiries and the spaces for answers, to confine a subject to one page or less, and to make the necessary inquiries fit the page. The practical statistician should be a good plane draughtsman, and should understand the use of many drawing utensils and appliances.

Another class of diagrams calls for more knowledge and invention than the schedule skeleton. This is the class of result slips, including all those forms upon which the results of a tabulation are taken down. Their proper construction in advance of the tabulation, as they must be printed before the tabulation begins, requires the ability to foresee the end of a tabulation. Not only must the regular results be provided for, but proper spaces must be left in which to record the exceptions to the general rule. The genius of statistical tabulation lies in the selection of the proper system for a specified kind of work, and its application or fitting to the work in hand. All rules have their exceptions, and the exceptions to statistical rules require more time and attention usually than does the mass of the work done under the general rule.

Each tabulation requires its particular result slip, and paper should not be spared. The crowding of points on a result slip causes more labor in the end, and, if the results are not related, time is lost by the supposed economy in paper.

After the tabulation is done, and the result slips are ready for final examination before being put into copy, then another class of diagrams are needed upon which to secure aggregations and make comparisons in order to discover errors. These diagrams, usually ruled paper, form the intermediary copy, or office copy, from which the printers' copy is prepared. In the preparation of result slips the papyrograph, hektograph, cyclostyle, and autocopyist may be used, but in Census work so many are needed that printing is the cheapest manner of preparation. The ruled sheets should have the headings printed in where they are numerous, for it will be cheaper than to have a clerk spend his or her time in the drudgery of copying head-lines.

CHAPTER VIII.

APPLIED STATISTICS.

By "applied statistics" we mean the use of statistics. It would be of no practical value to spend money in the collection, tabulation, and presentation of statistics unless the results were applied or used for some good purpose. For many years, until 1869, there were no official statistics of labor excepting the reports of various commissions. The members were not statisticians and the statistical matter presented in their reports was small in quantity, and usually based upon very few returns. The statistics were usually "pro" and "con," that is "facts" supplied by both sides, each side ignoring the facts presented by the other side.

Foreign governments had for years collected or recorded statistics of mortality, and of births and marriages. Their application consisted in figuring birth, marriage, and death rates, or proportion to the hundred or thousand. Censuses were taken also in order to ascertain the "movement" of the population, that is, the increase or decrease. These statistics of population were applied in various ways,—in the United States the figures forming the basis of apportionment for representatives to Congress.

The reports of Parliamentary committees in Great Britain, and of commissions in the United States, demonstrated that political economists must forsake the realms of theory, logic, and argument, and begin to investigate the domain of fact. There was a grim nonsense in declaring that the people were as well off as could be expected. It has been truly said that the surest sign of progress is discontent with one's environment. Since 1869 the bureaus of statistics of labor have grown rapidly in number in this country, and foreign countries are now following in the path laid out by our American statistical offices.

The appropriations made for the support of the American offices

are too small. Too little money is paid for competent service, and the allowances for contingent expenses are inadequate. A statistician is a professional man. To succeed in his chosen profession he must make it a life work. He must read and study incessantly to keep abreast with the times. He is continually called upon to discuss the different phases of the labor question with specialists, and with one and all he must maintain the argument or discussion with credit. He must be prepared to talk intelligently upon socialism, anarchism, the ten-hour law, the education and employment of children, convict labor, employers' liability, profit sharing, co-operation, arbitration and conciliation, and scores of other questions connected with the labor problem.

There should be but one basis for appropriations for statistical work. The law making power should be sure that its official statistician is conscientious and reliable, and, whether he selects the topics for investigation or whether they are ordered by legislative resolve, he should be given what money he needs to complete his work. The statistician should be judged by the results he presents to the public and not by the amount of money he spends. The tendency is to elaborateness of detail in all statistical presentations and these details largely increase the expense of statistical work.

How are statistics applied or used? The newspapers, ever ready to disseminate information, are first in the field. As soon as a statistical publication is ready, advance sheets are sent to the newspapers. They print abstracts and editorials, and the attention of the people is drawn to the work in question. Then follow the speakers and orators, including the politicians. All political parties find aid in the same statistics, for few subjects are so one-sided that something cannot be justly said on more than one side. The law makers follow next in their use of statistics, and it is for them, chiefly, that the treasure-houses of statistics have been opened. Next in line are the writers of review and magazine articles, and finally the authors of books. Among those latter are the compilers of statistical dictionaries, year books, almanacs, guide books, abstracts, compendiums, atlases, etc. They are all dependent for new and original information upon the statistician, whether his source of supply may be records or the results of original investigations. The public demand is for more records, more original

investigations, more facts about the people for the use of the people—and, by furnishing a basis of fact for legislation, more laws to benefit the people. The statistician's work is as broad as humanity and as long as the world may exist. He is a social pioneer who works, not with weapons of destruction, but with the money of the people wisely used for the good of the people—not for a class, a sect, a hobby, a theory, or any personally selfish ends.

CHAPTER IX.

SOME SPECIAL FEATURES IN STATISTICS.

As we have stated, the public demand is now for finer details in statistics. Formerly, the aggregates for counties sufficed; now the details for cities, towns, and minor sub-divisions are deemed absolutely essential. The introduction of machine tabulation renders possible many tabulations that would never have been undertaken upon the old plan.

The Hon. Carroll D. Wright, Commissioner of Labor for the United States, and Chief of the Massachusetts Bureau of Statistics of Labor, set forth so graphically the value of certain special features in statistics in his opening address before the American Social Science Association, of which he is president, at Saratoga, Sept. 5, 1887, that no better presentation of these facts could be made, and the most important are quoted hereinafter:

"The inquiry as to the *age* of each person in the community involves some cloudiness in the answer, and yet on the whole the results are satisfactory, the chief difficulty being with imported citizens, who rarely remember their age as to years but usually give it at the nearest even period; so one will always find in all age statistics, wherever they have been collected, whether in this or in other countries, a concentration on quinquennial periods. This concentration, however, is growing less and less in our own country, as the influence of the public schools reaches a larger and larger number of our children. Until this concentration is reduced to a minimum the age statistics secured under the census cannot be used in a strictly scientific sense for the establishment of mortality rates, either for insurance purposes or for the common use of determining the age death rate. In some localities, however, they are so nearly accurate as to be exceedingly valuable for scientific purposes."

In the Massachusetts State Census for 1885 the figures are presented for each year from *one* to that of the oldest person, and in detail by months from one to eleven, with distinction as to sex.

A presentation by age periods, twelve in number, is found to be of great practical value to the people.

"Statistics of *illiteracy* receive much public attention. While it is evident from inherent conditions that the statistics of illiteracy cannot be correct, it is fully apparent that whatever misleading inferences may be drawn from them, such inferences are on the side of safety, for if, for instance, under the Tenth Census the returns showed that six million people of ten years of age and over were illiterate in the sense that they could neither read nor write, or that they had not acquired one or the other of these accomplishments, it is perfectly safe to conclude that the number was no less than six million, but, as a matter of fact, much greater than that. So, any action taken by states individually or by the federal government, based upon the census returns relative to illiteracy, will be the result of truth, or less than the truth, and no harm, therefore, can result from their use, even though the number of illiterates given may be only a small proportion of the truth."

No question can be more important than the one of *illiteracy*. If education is the corner stone of the republic the statistics of illiteracy show that the stone is undermined. Many states are cognizant of this fact, and compulsory education laws, evening and half-time schools, efficient factory, workshop, and store inspection, and other safeguards are being applied with rigor. Any system of national aid to education must be based upon statistics, and the particular value of this special feature must be apparent.

"The statistics of *place of birth* and *parent nativity* are among the most valuable features of the census, a value which is more thoroughly appreciated at the present time through the popular discussion of the question of the restriction of immigration. The census renders one perfectly competent to show the absorption of foreign elements in various branches of industry, and the extent of the absorption."

At the present day many persons maintain that the flood of immigration should be checked. Nearly all agree that the pauper and the criminal should not be allowed to land in this country. In Massachusetts the foreign born number about one-fourth of the population. Those with foreign born fathers and mothers supply another fourth, so only half the population are native born with native born fathers and mothers. This fact when made plain by statistics demolishes the arguments of theorizers. Whether this fact bodes good or ill to the Commonwealth must be settled by as equally conclusive facts as those supplying the simple enumeration.

"In 1875 the *number of aliens* in Massachusetts was ascertained by the state census, and in 1885 this feature was again incorporated and results by place of birth and other particulars secured. In order to show the absorption or non-absorption of immigrants in the ranks of citizenship, and also the extent to which the privileges of our form of government are enjoyed by those who fail to attest their loyalty to our institutions by renouncing all foreign allegiance, it might be expedient to incorporate inquiries in the schedules of the Eleventh Census that will supply full information concerning the ages, place of birth, occupations, illiteracy, etc., of our alien population. The value of such information lies in the fact that they are true to the extent given, and no harm can come from incompleteness."

These statistics have had a practical value in Massachusetts, for the aliens have been stimulated by the facts, and other circumstances, to forswear their foreign allegiances and take out their naturalization papers. This is a question which has two sides. If a large number of Americans had settled in Great Britain or some other foreign country and engaged in business, they might be obedient to those countries' laws, but yet hold back when asked to renounce their allegiance to the United States and become British or French citizens. It is only natural then that our foreign born should cling to their old-time allegiance for purely sentimental reasons, though good citizens in all but name of their adopted country. If foreign countries should pass proscriptive laws regarding American residents we imagine those laws would be deemed illiberal. At the same time, statistics supply us with the true condition of affairs so that our law makers can proceed understandingly with legislation.

"Another class of facts, which can, from the nature of things, rarely be ascertained, relate to *physical, mental, and moral conditions.* No enumeration of the insane, for instance, would be accepted by our worthy secretary, an expert in such matters, as correct. In my own State when I give the number of the insane, as ascertained under the census, I am perfectly well aware that his opinion is worth more than my facts. It is easy to secure the number of insane, as collected in institutions for their care, but the most searching census cannot ascertain accurately the number of insane persons in a state. It can secure the most of them; it can secure all those that are insane to such an extent that their insanity is recognized in the community in which they live, but the finer gradations cannot be comprehended, except in a partial degree. It is safe, therefore, to say that the number of insane reported by any census, in any state, does not equal the fact. There is much danger in this class of statistics. We draw conclusions in regard to the increase of insanity, conclusions which may be true or false, but more often false, because previous enumerations may have

stated and probably did state only half the truth, while subsequent enumerations may give four-fifths of the truth, and conclusions are usually based on the assumption that the whole truth was given in each case."

No part of Census statistics is more interesting than the particulars regarding the defective, dependent, and delinquent classes. American civilization has produced the highest form of wealth and the lowest form of poverty. Perhaps for the word "produced" the phrase "rendered possible" might, with justice, be substituted. The remedy has been commensurate with the disease, for in no other country do public and private charity work so harmoniously together for the melioration of conditions of poverty, the proper treatment of the physically defective, and the reclamation of the evilly disposed. To know the extent of these triple evils is a point gained, and reliable statistics of paupers, criminals, and the afflicted classes, point a finger to be seen by the law maker, the humanitarian, and the philanthropist.

"The progress of *insanity* can be ascertained through the census, and the present problem as to whether insanity increases with our advancing civilization, increased facilities for securing education, and all the beneficent influences which we boast come from our advanced position, can be solved. It is a vital question and one which demands the persistent efforts of the government in ascertaining exact facts. It will take several decades of years, however, to bring the enumeration of the insane to such perfection that the margin of error growing out of insufficient data shall no longer be a factor in determining results. In this work the states can perform far more satisfactory labor than can the federal government.

The prevalence of *idiocy* can only be ascertained to a partial extent, the results being even more faulty than those relating to insanity, because a family might hesitate about giving the facts relative to an idiot child when they would not hesitate to state that an insane person was a member of the family.

So with *homeless children and paupers*. Our pauperism increases much faster statistically than actually, because we are constantly classifying new features of pauperism. Statistically, we reach out and take in all that are in any way dependent upon the public treasury. As against the old, crude, and undefined information relative to pauperism, we have intelligent, comprehensive statistics, which, in themselves, prove a vast increase in pauperism, because we try to match comparative accuracy with crudeness. The result is against us in this period. We must go on with the statistical research, however, until accuracy is the rule, and the comparisons are made on the conditions of accuracy and become as intelligent as the facts themselves. When the legislature appreciates the exact proportions of pauperism, as pauperism includes not only the ordinary condition known as such but that of all the homeless children which must be cared for by society, it can shape its law making with greater intelligence and with more advantage to the community.

"Social statistics should go still further, and comprehend all conditions of *work*, of *education*, and of *school attendance*, surrounding the children of the land. All these ramifications of statistical knowledge have been brought within the scope of the census, because the knowledge was demanded by the people of the the government. The government is wise that recognizes the demand and furnishes the information."

Preceding 1880 the statistics of the pauper, criminal, and physically defective classes were taken in such a way that the aggregate number was a fictitious figure. For instance, the criminals and paupers were counted up, as were the blind, insane, idiotic, etc. By this plan a "blind criminal" was counted *twice*, once as a *criminal* and once as *blind*. By the new method a "blind criminal" is tallied as *one person* only. Thus the correct basis of *individuals* is now used and not the exaggerated and incorrect basis of *conditions*. When the *conditions* reach the number of four or even five for one individual, as they often do, the variation from the actual individual fact is much more marked.

"Another line of information sought for by the federal census, of necessity, are the *statistics of mortality*. Several of the states have established registration boards or created registration offices for the registration of births, deaths, and marriages through municipal and county returns. This is in conformity to the European custom and is the only method by which the facts relating to births, deaths, and marriages can be ascertained with the fullest degree of accuracy. But the states of the union are so few which have taken up this work that the federal census takers have added to their schedules one relating to mortality, and so in those states not collecting such statistics a series of questions is asked concerning deaths occurring during the year closing with the census day. A moment's consideration of this point convinces any one that such statistics must be far from satisfactory; they are, however, always less than the truth. It would seem at first glance quite impossible for a family, in giving information to an enumerator, to forget that a death had occurred during the previous year; yet such is often the case, and the consequence is that death rates in localities where medical science would insist they were the highest are often shown to be the lowest. The death rate in states where there is a reasonably accurate registration of deaths under legal requirements is often higher, so far as statistics show, than is ascertained through the census for states where such requirements do not exist. This defect is true as relates to births and marriages, and yet I see no reason why the United States census should not be made to comprehend such statistics in those states where registration reports are not required. Even with their defects they become more and more accurate, and are useful, as time goes on, in determining the increase or decrease in death rates for any specified locality, but they are, and must be, quite useless in comparing rates in communities widely separated and which come under varying sanitary conditions or conditions of disease.

Censuses of mortality can solve the *relative death rates* of different races in this country, a question which constitutes a vital problem. How exceedingly valuable it would be could the exact facts in this connection be determined in regard to the Indians, the colored people, the adopted citizens of different climes as in comparison with the death rate of what may be called American stock, nor would there be any less value connected with the birth and marriage rates of the same classes of people. In some of our states where birth, death, and marriage returns are required by law these facts can be determined, and logical conclusions drawn therefrom, but unfortunately for the scientist these returns are rarely called for in the very communities where they would be most useful in solving the problems involved in them."

The nation, many states, and large cities have their Boards of Health, and each of them considers the relation or ratio of deaths to population as the index of their success or failure. This ratio upon which so much dependence is placed should be based upon an accurate enumeration of the population and an equally as accurate registration of deaths. No plague can visit us without having its ravages at once recorded. Then follows the investigation as to cause, and the reasons for its spread. Thus science and statistics join hands for the benefit of the human race.

"There are still sociological conditions which have not been included in the federal census and which it may not be advisable to incorporate in the schedules. Some of these have been adopted in our Massachusetts Census with success, the most important of them being questions as to the birth rate among foreign and American mothers, this birth rate being brought into comparison with the number of children reared. It embraces one of the most interesting questions for the social scientist, and, so far as I know, the Massachusetts State Census furnishes the only facts of like nature obtainable in this or any other country. It has been a piece of experimental work on the part of the state. It only indicates what can be done in solving scientific questions, when the people are asked to answer inquiries directed to what on the surface may be considered matters on which the state should make no inquiry. The extension of special inquiries in the direction named, that is, those aimed at the real inside life of the people, is to my mind perfectly justifiable. The law making power of the state, especially in America, is constantly called upon to exercise greater and greater supervision over the affairs of the people. To do this it has to assume autocratic power. Boards of health can order private dwellings to be vacated, and the convenience of the individual in such cases is sacrificed to the welfare of the community. This spirit prevails in all directions. The law making branch of our governments cannot resist the demands; call it socialism, if you choose, the tendency is as strong as it is perceptible, and as inevitable as it is strong. We insist that the dependent classes shall be cared for at the public expense; we say that individual members of society shall be relieved of special taxation for the support of the dependent, because their support is for the

benefit of the whole community. The doctrine is right, and just, and moral. This being the case, the legislature meets the demand. Shall it meet the demand intelligently or blindly? The statistician says he should meet it intelligently, and that statistical science is the chief source of intelligence in such matters. Statistics covering the whole community must be taken through the census. It must comprehend all or none. So, as the inquiries of the census have become enlarged, persons afflicted with acute and chronic diseases, the blind, deaf, dumb, maimed, lame, insane, idiotic, paralytic, bedridden, and other afflicted persons, have come under the searching inquiries of the enumerator. The people object to these things when the inquiry comes. They insist upon intelligent legislation regarding them. Popular antagonism to such inquiries must, therefore, be ignored by the legislature, in order to meet the advanced demands of the very people who create the antagonism."

For years the pessimists have declared that the pure American stock was fast dying out. This has been said in a complaining, despondent way, as if this "dying out" was the greatest of evils. History shows us that all nations have been invaded either peaceably or forcibly and foreign blood mingled with the pure native. America has been invaded peaceably and foreign blood from its admixture has produced the most cosmopolitan nation in the world. The question is not, is the old stock dying out, but rather is the new stock as good as the old. If it is as good, or better, then the pessimists are reasoning on abstract sentiment and ignoring practical fact. Nothing will point the argument so quickly as reliable statistics of fecundity in which the purely native stock is brought into comparison with the mixed or purely foreign stock.

"The *industrial schedule* of the federal census, since it was authorized by law and in nearly every census taken since and including that of 1810, has contained inquiries relating to capital invested, raw material or stock used, total wages paid, aggregate product, and the number of employés, in the leading industries of the country. To these simple inquiries the manufacturers have from time to time made great opposition, although, as a rule, they have supplied information as to all the points involved, except capital invested. The census inquiry on this point has called simply for capital invested. In this form lies the initial defect. *Credit capital*, it is submitted, if used, is just as essential to secure a certain product as the capital that is owned by an establishment itself. Leaving out the factor of the expensiveness of the use of borrowed capital, of the fictitious or inflated value which is given to the product by such use, and limiting ourselves to the purely economic relations of capital and product, infinite harm has been done by the old method of procedure. To solve the problem of the amount of capital required to secure a given product in each of the leading industries of a country is within the ability of the census taker. The manufacturers have stood in their own light. The manufacturer tells you at

once that $2,000,000 of capital cannot produce $4,000,000 worth of goods. The conclusive answer to his statement is that such is the return he has made. He then tells you that census statistics are vicious, and he is correct in this particular instance. If you attempt to correct this error by asking him to account for his whole capital, that paid in and that borrowed, in fact, all the capital which he uses to secure a given product, he antagonizes the work of the state by saying that you are prying into his private affairs. He does not perceive that he has deceived not only himself and his employés but the public generally, and that every argument, conclusion, or deduction, based upon the statistics reported as giving the capital invested in manufacturing, is false in all its elements and consequently exerts a vicious influence in every direction."

It has been the plan of social economists and labor reformers to add the value of stock used and wages paid together, subtract this sum from the value of goods made, and consider the balance as the gross profit. This gross profit has then been compared with the capital invested and a supposed ratio of profit obtained. But inasmuch as the statistics of capital invested have shown too small an aggregate, so this ratio has been correspondingly too large. Double your capital invested and you at once cut down your ratio of profit one-half. Until the *actual capital*, both cash and credit, is ascertained the ratios of profit must be set aside, and when properly ascertained these important ratios must be recast upon the new lines. Thus statistics will furnish the basis for the consideration of the most important question of our times —the question of profits, and its no less important corollary—the distribution of wealth.

"Another error which has been made relates to average earnings, as ascertained by dividing the *aggregate wages paid in any industry by the number of employés* involved. In all censuses where industrial statistics have been a feature in this country, until the Tenth Census, the question relating to employés has simply been the 'number of hands employed.' What is the number of hands employed? Can you ascertain the true quotient which shall represent average wages by dividing the total amount of wages paid during a year in any given industry by the total number of hands employed? I assert that you cannot, for the number of hands employed returned under the old form of inquiry simply meant the number of employés borne on the rolls at the close of the census year, while the total wages paid represented the aggregate amount disbursed in the form of wages to all who had been employed at any time during the same year; the number of people returned might represent a much larger number at the close of the year than were employed at any other period, or the reverse, a much smaller number. In any event, and with the utmost care on the part of the manufacturer, it would be impossible in the answer to such a form of inquiry to state anything more than the number employed at the end of the year, or at some stated period."

Instead of these unreliable wage statistics the *classified wage*, as explained in Chapter V., and the *actual wage for each branch of occupation* must take its place. There should be no margin of uncertainty in wage statistics. They should be actual, and absolute, and as worthy of credence as the reconstructed statistics of profits. Then capital and labor can be placed side by side and judged by their fruits. That this work is under way is shown by the following:

"The *division of labor* which marks this age as distinct in all its industrial features from previous periods constitutes a very interesting study. The attempt has been made in the Census of 1885, for the Commonwealth of Massachusetts, the reports of which are now rapidly approaching completion, to ascertain and report to the finest degree the various but distinctly designated divisions of labor, so far as the occupations of the people are involved. Incomprehensible as it may seem, this classification shows over 20,000 distinct designations. This classification, in connection with nationality as shown by place of birth, age periods, and illiteracy, constitutes a fine contribution to sociological knowledge. This has been done in Massachusetts. It may be done for the United States in the future, now that the basis has been laid."

When wage statistics based upon this scheme are secured, we shall hear no more of *average wages* in any industry, but instead the *actual* wages paid in each branch of occupation in that industry. Then the high-priced and low-priced workers will be classed each by themselves and not merged in an aggregate in which high-priced or low-priced workers may preponderate, giving, naturally, a fictitious, unreliable, untruthful average.

"Perhaps the greatest difficulty which confronts the federal census taker, and which offers the least possibility of solving problems, is to be found in the agricultural department of the work. The products of various localities differ so widely in their character and kind, that any single schedule framed to comprehend them all becomes in itself impracticable. Yet certain facts, like total value and quantity of the great staple products, ought to be easily ascertained. The question of renting or ownership, of the acreage of the farms, of alien ownership, are entirely within the possibilities of census taking without enlarging the field of operations. Such problems ought to be readily solved. They have been solved for the time being in past censuses. As the conditions vary the problems vary, and the intelligence of the government should see to it that the facts sought should be those necessary to indicate the true relations of things in the agricultural field of knowledge.

From what has been said it is readily seen that there is quite a range of problems, the elements for the solution of which can only be supplied through comprehensive censuses. As yet, however, no co-ordinate effort has been made

between the state and federal governments for systematic work. This question is difficult and yet important. Its importance lies in this reflection, that no member of a state or the national government can intelligently discuss the land question, the solution of the immigration problem, the question of how far educational efforts shall be extended, the tariff problem, the questions of currency, of railroad transportation, in fact, any question of any great state or national importance, without full and constant reference to the tables of the census reports.

This being the case, and census work becoming more and more complicated, as all these great questions come nearer and nearer to the people, how important it is that the whole range of census taking should be reduced to systematic forms and methods. The United States cannot do it all, and do it well. The country is too large to admit of extended inquiries through the methods of enumeration. The States should enlist in the work, and they could do it generally without much expense through their established machinery. They should be called upon by the federal government, but aided to the extent of the results furnished, to do certain things at short intervals relative to the enumeration of the people, the ascertaining of products, the ownership of land, and may be half-a-score of leading features, the federal census itself being confined to those things which reach over the whole country and which may be called purely national topics. Such a system, involving the co-operation of the states, would not only simplify labor, but would reduce the burden in many respects and would certainly remove much of the irritation which exists whenever the census is taken; and further simplification should be reached, as I have indicated, through special investigations. All census work, both state and national, should leave out of sight every question which can be brought under the methods of special investigation, in which aggregates are not essential but in which representative facts are just as important as the total facts."

The quotations from Mr. Wright's address cover its main points, and bring out forcibly the great statistical questions of the time. To these, in time, many as valuable points will be added. Industry pictures will be formed showing the composition of each industry—partners, stockholders, salaried workers, and wage laborers—marshalled, as it were, in battle array. Then with statistics of profits and wages we shall get clear views at both sides of the statue of labor. Statistics of trade will be demanded in time, and the dealer will be called upon to disclose for the general good the facts concerning his business. The only way in which the middle-man can be honestly judged is to ascertain the facts concerning him first. If he is a public benefactor, he has nothing to fear. If he is a public evil, he will prefer to be judged on facts rather than opinions—so the facts will have to be secured. At the next National Census a request has already been made that the number of survivors of the Rebellion be ascertained, with cer-

tain facts as to their condition. This enumeration should include all soldiers, in all wars. Statistics is a catholic science and should always give the facts for the people, and not for a class.

This Chapter could be extended indefinitely, but enough has been written to show that statistics is interwoven with the life of the nation. Its results, like the physician's diagnosis, must precede salutary treatment. The best physicians are specialists. Special statistics reach facts while general statistics only reach numbers.

CHAPTER X.

THE TEACHING OF PRACTICAL STATISTICS.

Statistics being a science and destined to have in the future a much greater influence than in the past as regards the progress of mankind, it follows that as the statisticians of to-day retire from active duty or die, others must take the places that they vacate. In other words, the statistician of the present time must teach his science to others.

This teaching may be done in two ways: theoretically in the institution of learning, or practically in the statistical office. We shall endeavor to show hereinafter how statistics may be studied *practically* in the college or academy.

The subject of the study of statistics in colleges has been considered only in the last few years. Mr. Wright, in a paper read before the joint session of the American Economic Association and the American Historical Association, at Sanders Theatre, Harvard University, May 24, 1887, brought into twenty pages all that could then be said upon the matter. We shall quote liberally from the paper in question, for it puts the case strongly as regards the absolute necessity of making educational provisions for the instruction of statisticians. Referring to the European statisticians, Mr. Wright says:

"America has no counterpart to the continental school of statisticians, whose members have entered their particular field of science after special training by a systematic course of instruction. We have our statisticians, to be sure, but they have taken up their work accidentally, and not as a profession. Men engaged in the practice of law or of medicine, or in the other learned professions, enter them only after careful preparation. Our government trains its soldiers and sailors; our colleges and higher institutions of learning fit men for various special scientific and professional labors, but we have not yet reached the advanced stage of educational work in this country which comprehends administration in its broadest terms. The European has an advantage over

those engaged in statistical work in this country. Many of the leading colleges and universities of the continent make special effort to fit men to adopt statistical science as a branch of administration, or as a profession.

Körösi, Neumann-Spallart, Ernst Engel, Block, Böhmert, Mayr, Levasseur, and their score or more of peers, may well excite our envy, but more deeply stimulate the regret that one of their number, from his brilliant training and his scientific attainments, cannot present to you to-day the necessity of copying into the curricula of our American colleges the statistical features of the foreign school. For magnificent achievement the American statistician need not blush in the presence of the trained European, for, without conceit, we can place the name of our own Walker along with the names of those eminent men I have enumerated. With all the training of the schools, the European statistician lacks the grand opportunities which are open to the American. Nowhere has the former been able to project and carry out a Census involving points beyond the simple enumeration of the people, embracing a few inquiries relating to social conditions; such inquiries rarely extending beyond those necessary to learn the ages, places of birth, and occupations of the population. Such a Census, compared with the ninth and tenth Federal enumerations of the United States, appears but child's play.

Dr. Engel once said to me that he would gladly exchange the training of the Prussian Bureau of Statistics for the opportunity to accomplish what could be done in our country. For with it all, he could not carry out what might be done with comparative ease under our government. The European statistician is constantly cramped by his government; the American government is constantly forced by the people. The Parliament of Great Britain will not consent to an industrial Census, the proposition that the features of United States Census taking be incorporated in the British Census being defeated as regularly as offered. Nor does any continental power yet dare to make extensive inquiries into the condition of the people, or relative to the progress of their industries. The continental school of statisticians, therefore, is obliged to urge its government to accomplish results familiar to our people. The statistics of births, deaths, and marriages, and other purely conventional statistics, are substantially all that come to the hands of the official statisticians abroad. In this country, the popular demand for statistical information is usually far in advance of the governments, either State or Federal, and so our American statisticians have been blessed with opportunities which have given them an experience, wider in its scope, and of a far more reaching character than has attended the efforts of the continental school. Notwithstanding these opportunities which surround official statistics in this country, the need of special scientific training for men in the administration of statistical work is great indeed."

One point is brought out strongly in the preceding—that American statisticians have the best opportunity to carry out statistical investigations. Here the *people* demand the facts. In Europe the *rulers* may not wish to have them known, and statistical advancement must bow to imperial mandates. Mr. Wright continues:

"The best school for statistical science in Europe is connected with the Prussian statistical bureau, and was established a quarter of a century ago by Dr. Ernst Engel, the late head of the bureau, probably the ablest living statistician in the old world. The seminary of this statistical bureau is a training school, for university graduates of the highest ability, in the art of administration, and in the conduct of statistical and other economic inquiries that are of interest and importance to the government. The practical work is done in connection with the government offices, among which advanced students are distributed with specific tasks. Systematic instruction is given by lectures, and by the seminary or laboratory method, under a general director. Government officers and university professors are engaged to give regular courses to these advanced students. It is considered one of the greatest student honors in Berlin for a university graduate to be admitted to the Statistical Seminary."

There is no doubt but that the system of instruction and practice followed turns out statisticians fitted to do the work allotted to the European bureaus, but it does not follow that these graduates of courses in statistics would be fitted to carry on investigations in America until they had unlearned many of their old processes and had learned many new ones. Statistics, like medicine, is not an exact science. Hence it watches bad symptoms in the body politic, and, like a skilled physician, looks for causes before attempting to suggest a remedy.

A little, comparatively, has been done in America to teach the science of statistics. But little, if anything, has been done to teach any system of practical statistics. Indeed, the course of study seems to teach the manner of criticizing the work done by others, rather than a way of doing the work. This will be seen from a perusal of the following:

"Our colleges are beginning to feel that they have some duty to perform, in the work of fitting men for the field of administration, and specifically in statistical science. Dr. Ely is doing something at Johns Hopkins, giving some time, in one of his courses on political economy, to the subject of statistics, explaining its theory, tracing the history of the art or science, and describing the literature of the subject. He attempts, in brief, to point out the vast importance of statistics to the student of social science and to put his student in such a position that he can practically continue his study. Johns Hopkins, as soon as circumstances will admit, will probably secure teachers of statistics and administration, in addition to its present corps of instructors.

Dr. Davis R. Dewey, of the Massachusetts Institute of Technology, is also devoting some time, in connection with his other work, to statistical science. He has two courses:

First, A course of statistics and graphic methods of illustrating statistics in which attention is chiefly given to the uses of official statistics of the United

States. Students are directed to the limitations there are in this respect, what compilations have been and are made, and to the possible reconciliation of discrepancies which appear in official reports. This course is taken in connection with a course in United States finance, and the student is trained to find and use the statistics which will illustrate the points taken up, and to present them graphically.

Second, An advanced course is given in statistics of sociology, in which social, moral, and physiological statistics are considered, in short, all those facts of life which admit of mathematical determination to express the "average man." Some of Dr. Dewey's actual problems may serve to illustrate the practical work of his course.

Perhaps the most systematic teaching of the science of statistics in America is given at Columbia College, under the direction of Professor Richmond M. Smith. He has lectured on the subject of statistical science in the Columbia College School of Political Science since the year 1882. His course is an advanced one for the students of the second or third year of that school. In the first year of the work there were but three students of statistical science; at present there are about twenty-five. Professor Smith gives them lectures two hours per week through the greater part of the year. The theoretical lectures cover a brief history of statistics; a consideration of statistical methods; of the connection of statistical science with political and social science; of the attempt to establish social laws from statistical induction; the doctrine of probabilities, etc., this part of the course being based on German and French writers, principally Mayr, Engel, Wagner, Knapp, Oettingen, Quetelet, Block, and others. The practical part of the Columbia course covers the ordinary topics of statistical investigation, and the statistics are taken, as far as possible, from official publications. These latter lectures are of course comments on the tables and diagrams themselves. Wall tables are used to a certain extent, but experience has found it more convenient to lithograph the tables and diagrams, giving a copy to each student, which he can place in his note-book, and thus save the labor of copying."

Mr. Wright is strongly impressed with the value of the work of the statistician. He says—

"The problems which the statistician must solve, if they are solved at all, are pressing upon the world. Many chapters of political economy must be rewritten, for the study of political economy is now brought under the historical and comparative method and statistical science constitutes the greatest auxiliary of such a method. There is so much that is false that creeps into the popular mind, which can only be rectified through the most trustworthy statistical knowledge, that the removal of apprehension alone by it creates a necessity sufficient to command the attention of college authorities. The great questions of the day, the labor question, temperance, tariff reform, all great topics, demand the auxiliary aid of scientific statistics, and a thorough training is essential for their proper use. But in the first place there should be a clear understanding of what is necessary to be taught."

It is certainly essential that "there should be a clear understanding of what is necessary to be taught," and it is equally essential that there should be a clear understanding of the manner of doing the work—the "practical statistics" part of the science. Mr. Wright recognizes this fully, as will be seen:

"Statistics is a science in its nature, and practical in its working.

The science of statistics, practically considered, comprehends the gathering of original data in the most complete and accurate manner; the tabulation of the information gathered by the most improved methods, and the presentation of the results in compact and easily understood tables, with the necessary text explanations. It is the application of statistics which gives them their chief popular value, and this application may, therefore, legitimately be called a part of the science of statistics. The theoretical statistician is satisfied if his truth is the result of statistical investigation, or if his theory is sustained. The practical statistican is only satisfied when the absolute truth is shown, or, if this is impossible, when the nearest approximation to it is reached. But the belief that theory must be sustained by the statistics collected, or else the statistics be condemned, is an idea which gets into the popular mind when the expression, theory of statistics, is used. I would, therefore, avoid it, and I hope that should our colleges adopt courses in statistical science, they will agree upon a nomenclature which shall be expressive, easily understood, and comprehensive in its nature.

The necessity of the study of statistical science would not be so thoroughly apparent if the science was confined to the simple enumeration and presentation of things, or primitive facts, like the number of the people; to tables showing crops, exports, imports, immigration, quantities, values, valuation, and such elementary statements, involving only the skill of the arithmetician to present and deal with them. The moment the combinations essential for comparison are made, there is needed something beyond the arithmetician, for with the production of averages, percentages, and ratios, for securing correct results, there must come in play mathematical genius, and a genius in the exercise of which there should be discernible no influence from preconceived ideas. The science of statistics has been handled too often without statistical science, and without the skill of the mathematician. Many illustrations of this point involving the statistics of this country could be given."

He summarizes, as follows, the various sub-divisions of the science of statistics.

"The teaching of statistical science in our colleges involves three grand divisions:

1. The basis of statistical science, or, as it has been generally termed in college work, the theory of statistics.

2. The practice of statistics, which involves the preparation of inquiries, the collection and examination of the information sought, and the tabulation and presentation of results.

3. The analytical treatment of the results secured.

These three general elements become more important as the science of statistics becomes more developed; that is, while in conventional statistics, or official statistics if you prefer, meaning those which result from continuous entry of the facts connected with routine transactions, like custom house operations, the registration of births, deaths, and marriages, etc., these three elements may not be apparent. But when considered as regards the collection of information from original sources by special investigation through the Census, through our bureaus of statistics of labor and kindred offices, and through the consular service, these three grand elements assume a vast importance, and statistical science demands that men be employed who comprehend thoroughly and clearly all the features of the three elements of the science, for the variety of facts to be collected suggests the variety of features connected with the work."

The need of practical instruction in the working part of the science is stated clearly.

"The analytical work of statistical science demands the mathematical man. While this is true, it is also true that the man who casts a schedule (for instance, to comprehend the various economic facts associated with production), should have the ability to analyze the tabulated results of the answers to the inquiries borne upon the schedule. In other words, the man who casts the schedule should not only be able to foresee the work of the enumerator, or the gatherer of the answers desired, but he should foresee the actual form in which the completed facts should be presented. Furthermore, he should foresee the analysis which such facts stimulate and not only foresee the detail, but foresee in a comprehensive way the whole superstructure which grows from the foundation laid in the schedule. He should comprehend his completed report before he gathers the needed information.

How can these elements in one's statistical education be secured?"

In reply to the objection brought forward by some that our colleges now teach too much and should reduce rather than increase the number of branches, Mr. Wright states:

"Every well appointed college has its chair of political economy, and this department can be broadened sufficiently to take in statistical science, without impairing efficiency in this or any other department. If this cannot be done, then I would say to the colleges of America that the institutions which soonest grasp the progressive educational work of the day will be the most successful competitors in the race. That college which comprehends that it is essential to fit men for the best administrative duties, not only in government, but in the great business enterprises which demand leaders of as high quality as those essential for a chief magistrate, will receive the patronage, the commendation, and the gratitude of the public."

He substantially closes his paper with the following recommendation:

"I urge, therefore, that our American colleges follow the example of European institutions. I would urge upon the government of the United States, and upon the government of the States, the necessity of providing by law for the admission of students that have taken scientific courses in statistics as honorary attachés of, or clerks to be employed in the practical work of, statistical offices. This is easily done without expenditure by the government, but with the very best economic results.

We take a Census in the United States every ten years, but as a rule the men that are brought into the work know nothing of statistics: they should be trained in the very elementary work of Census taking and of statistical science. How much more economical for the government to keep its experienced statisticians busily employed in the interim of Census taking, even if they do no more than study forms, methods, and analyses, connected with the presentation of the facts of the preceding Census. Money would be saved, results would be more thoroughly appreciated, and problems would be solved."

It is impossible here to mention but a small part of the details that a statistician will find connected with his practical work. The plan of tabulation changes with each subject, and instructions for one would be inapplicable to another. But with each practical success will come the desire and ability to undertake new investigations and follow them to their presentation to the public.

General principles or points of instruction to guide the teacher in his work may be stated. From these must be evolved the details inherent in the subject considered.

1. Supply the students with blank *printed* schedules.
2. Supply the information to be written in.
3. Give practical instruction in filling schedules.
4. Examine the schedules when filled and point out errors and omissions.
5. Have the students act as special agents or enumerators, the teacher giving the answers.
6. Have the teacher stimulate inquiry by unsatisfactory replies.
7. Have the students present in writing a statement of all the points of information supplied by the schedules.
8. Have the students discriminate between the *valuable* and the simply *interesting* classes of information.
9. Teach the proper system of classification of the schedules.
10. Sketch tables for presentation; examine and improve them.
11. Have samples of principal tables put into type. Consider rule work, typography, punctuation, general effect, etc.

12 Decide upon the plan of tabulation.
13. Work to secure the correlation of facts in the tabulation and presentation.
14. Teach the uses of mechanical devices for quick computation.
15. Prepare suitable result sheets to take down the results of tabulations.
16. Prepare the intermediary or office copy from the result sheets.
17. Endeavor to condense tables, and cut out weak or useless lines.
18. Prepare copy for press, and criticize carefully.
19. Give instructions regarding proof reading and corrections.
20. Make proper records of the dealings with the printer.
21. Give instructions concerning "revises," "second revises," "plate proof," corrections, and ordering to press.
22. Have each student write an analysis or consideration of the tables prepared.

Although the preparation of schedules comes first in the prosecution of actual statistical work, yet the preparation of schedules with accompanying explanations, instructions, and illustrations is the highest form of practical statistics, and should not be attempted until the student is thoroughly grounded in the other branches of this division of the science. In fact, a student might be proficient in all the other branches, which are executive or progressive in their nature, and yet be unable to prepare a satisfactory schedule or blank, this part of the work being fundamental, inventive, and constructive.

The best plan would seem to be to settle upon some subject for investigation. Have each student prepare a series of inquiries, the maximum number being fixed by the teacher.

The various lists should then be examined and criticized and a final list, with the least number of inquiries possible, adopted. Each student should then put this list into shape for printing. These blanks or schedules should then be examined and criticized, as before, and the best one adopted. The usual result will be that the best forms submitted will have to be put into a new blank, differing in some respects from any particular one submitted by the students. Then explanations and instructions should

be prepared in a similar way and made to go undergo thorough consideration and careful criticism. The blank or schedule should then be put in type and the "proof" again criticized. When the schedules are printed a plan of filling in the schedules should be devised. Each student may fill out a certain number, or each student may obtain a schedule from all the other students. They should not endeavor to make each schedule complete, but "refusals to answer certain inquiries," "indefiniteness in replies," "false returns," etc., may be introduced, and their presence in the tabulation will give the students practice in handling incomplete and unreliable returns. These schedules may now be put through the successive stages of examination, tabulation, presentation, and the final consideration of results secured. This consideration should be limited to the necessary text and notes to make plain the meaning of the tables. Discussions as to *what* the tables prove, and their application to the body politic, are outside of the domain of practical statistics. The same line divides the practical statistician and the "applied" statistician as comes between the author, artist, or composer and the critics of their works.

A careful examination of the statistical field for the past fifty years, as regards all countries, shows that statisticians have given nearly all their time and attention to the consideration of statistical results. But little can be learned concerning the practical part of the work. No papers or books have considered at length the questions to which this volume is devoted, and it is to be presumed that, with a few exceptions, the practical work of statistics has been done in the old way without the advantage of improved methods of quick computation. In all progressive countries, at the present day, in every industry the most improved time-saving and labor-saving devices are used, and in the teaching of practical statistics in this country it would seem to be in accord with progress if the old forms of work were superseded by what are found to be improved methods. The difficulty, as in all reforms, is in getting "out of the old ruts" and into the new ones; but the change should be made if for no other reason than that it will give the same results for less money and more results for the same money.

As has been stated strongly, we must have educated statisticians, and they must study before engaging in actual statistical work.

The plan in the past has been to throw the burden of a census upon individuals who were willing to work but who were unprepared, scientifically and practically, to cope with such a task. The apprentice learns the use of tools under competent supervision, the future chemist practises his future work in his laboratory, and the student physician attends instructive and realistic clinics. Practice before practising is a specially good rule for statisticians, and the students of the new science should have opportunities supplied for preliminary work before endeavoring to superintend a "figure factory." Printing is called "the art preservative of all arts," and, in its own peculiar way, statistics is an ally and a conservator of many other sciences.

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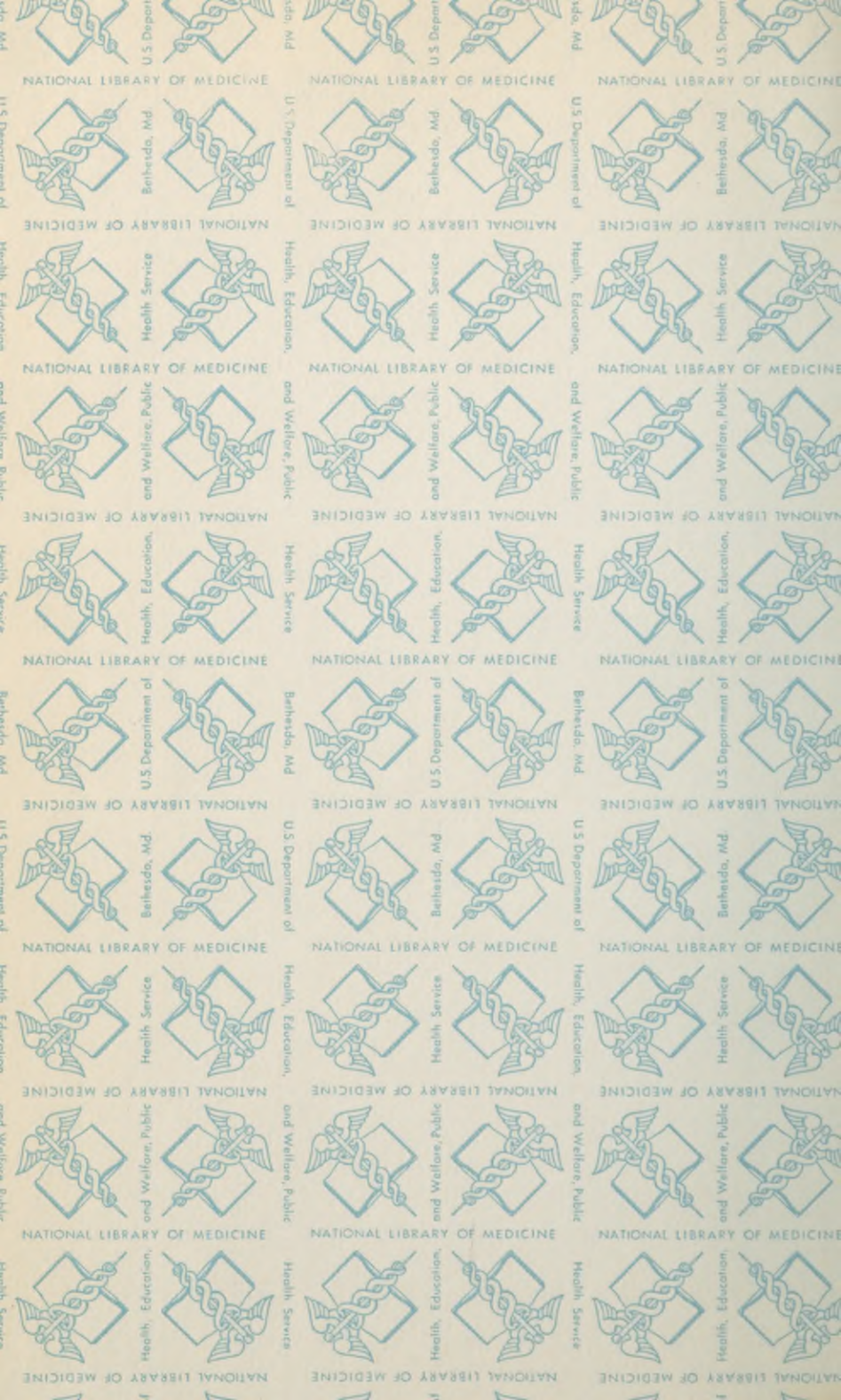
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