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MANUFACTURES : 1909

STATISTICS FOR THE PAPER AND WOOD PULP INDUSTRY

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INTRODUCTION.

This bulletin gives the statistics for the paper and wood pulp industry for the calendar year 1909, as shown by the Thirteenth Census. It will be reprinted as a part of Volume X of the reports of the Thirteenth Census.

The general results of the census inquiry are summarized in certain tables presented in connection with the text, while other tables give statistics in detail by states. Special tables are also presented in which the statistics for the establishments engaged in the paper and wood pulp industry are classified according to character of ownership, value of products, number of wage earners, and prevailing hours of labor, while still another set of tables gives detailed information in regard to the quantity and cost of materials, the quantity and value of the products, the principal kinds of equipment used, and imports and exports.

Scope of census.—Census statistics of manufactures are compiled primarily for the purpose of showing the absolute and relative magnitude of the different branches of industry covered and their growth or decline. Incidentally the effort is made to present data throwing light upon character of ownership, size of establishments, and similar subjects. When use is made of the data for these purposes it is imperative that due attention should be given to the limitations of the figures, particularly in any attempt to derive from them figures purporting to show average wages, cost of production, or profits. These limitations are fully discussed in the general report on manufactures for the United States as a whole (Volume VIII of Thirteenth Census Reports) and need not be repeated here.

The census did not cover establishments which were idle during the entire year or had a value of products of less than \$500, nor the manufacturing done in educational, eleemosynary, and penal institutions.

Period covered.—The returns relate to the calendar year 1909, or the business year which corresponded most nearly to that calendar year, and cover a year's operations, except for establishments which began or discontinued business during the year.

The establishment.—As a rule, the term "establishment" represents a single plant or mill, but in some cases it represents two or more plants which were operated under a common ownership or for which one set of books of account was kept.

If, however, the plants constituting an establishment as thus defined were not all located within the same city or state, separate reports were secured in order that the figures for each plant might be included in the statistics for the city or state in which it was located. In some instances separate reports were secured for different industries carried on in the same establishment.

Influence of increased prices.—In comparing figures for cost of materials, value of products, and value added by manufacture in 1909 with the corresponding figures for earlier censuses, account should be taken of the general increase in the prices of commodities

during recent years. To the extent to which this factor has been influential the figures fail to afford an exact measure of the increase in the volume of business.

Persons engaged in the industry.—At the censuses of 1899, 1904, and 1909 the following general classes of persons engaged in manufacturing industries were distinguished: (1) Proprietors and firm members, (2) salaried officers of corporations, (3) superintendents and managers, (4) clerks (including other subordinate salaried employees), and (5) wage earners. In the reports for the censuses of 1904 and 1899 these five classes were shown according to the three main groups: (1) Proprietors and firm members, (2) salaried officials, clerks, etc., and (3) wage earners. The second group included the three classes of salaried officers of corporations, superintendents and managers, and clerks. In certain tables relating exclusively to the present census a somewhat different grouping is employed—that into (1) proprietors and officials, (2) clerks, and (3) wage earners, the first group including proprietors and firm members, salaried officers of corporations, and superintendents and managers. In comparative tables covering the censuses of 1899 and 1904 it is of course necessary to group the figures for 1909 according to the classification that was employed at the earlier censuses.

At this census the number of persons engaged in each industry, segregated by sex, and, in the case of wage earners, also by age (whether under 16 or 16 and over), was reported for a single representative day. For most industries the 15th of December was selected as representing normal conditions of employment, but where conditions were exceptional and the December date could not be accepted as typical an earlier date had to be chosen.

In the case of employees other than wage earners the number thus reported on December 15, or other representative day, has been treated as equivalent to the average for the year, since the number of employees of this class does not ordinarily vary much from month to month. In the case of wage earners the average is obtained in the manner explained in the next paragraph.

In addition to the more detailed report by sex and age of the number of wage earners on December 15, or other representative day, a report was obtained of the number employed on the 15th of each month, without distinction of sex or age. From these figures the average number of wage earners for the year has been calculated by dividing the sum of the numbers reported for the several months by 12. The average thus obtained represents the number of wage earners that would be required to perform the work done if all were constantly employed during the entire year. Accordingly, the importance of the industry as an employer of labor is believed to be more accurately measured by this average than by the number employed at any one time or on a given day.

In 1899 and 1904 the schedule called for the average number of wage earners of each sex 16 years of age and over, and the average number under 16 years of age without distinction of sex, for each month, and these monthly statements were combined in an annual average. Comparatively few manufacturing concerns, however, keep their books in such way as to show readily the number of men, women, and children employed on the average each month. These monthly returns by sex and age were, in fact, largely estimates. It was believed that a more accurate and reliable sex and age dis-

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tribution could be secured by taking as a basis of estimate the actual numbers employed on a single day. In 1889 the time the plant was in operation was used as a basis for computing the average number of employees, whether such time was the entire year or only a fraction of a year. These differences in method have but little effect upon the comparability of the statistics, however, except for certain seasonal industries like canning and preserving.

Prevailing hours of labor.—The census made no attempt to ascertain the number of employees working a given number of hours per week. The inquiry called merely for the prevailing practice followed in each establishment. Occasional variations in hours in an establishment from one part of the year to another were disregarded, and no attention was paid to the fact that a limited number of employees might have hours differing from those of the majority. In the tables all the wage earners of each establishment are counted in the class within which the establishment itself falls. In most establishments, however, all or practically all the employees work the same number of hours, so that these figures give a substantially correct representation of the hours of labor.

Capital.—For reasons stated in the general report on manufactures for the United States as a whole (Volume VIII of Thirteenth Census Reports), the statistics of capital secured by the census canvass are so defective as to be of little value, except as indicating very general conditions. The instructions on the schedule for securing data relating to capital were as follows:

The answer should show the total amount of capital, both owned and borrowed, on the last day of the business year reported. All the items of fixed and live capital may be taken at the amounts carried on the books. If land or buildings are rented, that fact should be stated and no value given. If a part of the land or buildings is owned, the remainder being rented, that fact should be so stated and only the value of the owned property given. Do not include securities and loans representing investments in other enterprises.

Materials.—The statistics as to cost of materials relate to the materials used during the year, which may be more or less than the

materials purchased during the year. The term "materials" includes fuel, rent of power and heat, mill supplies, and containers, as well as materials forming a constituent part of the product.

Expenses.—Under "Expenses" are included all items of expense incident to the year's business, except interest, whether on bonds or other forms of indebtedness, and allowances for depreciation.

Value of products.—The amounts given under this heading represent the selling value or price at the mill of all products manufactured during the year, which may differ from the value of the products sold.

Value added by manufacture.—The value of products is not a satisfactory measure of either the absolute or the relative importance of a given industry, because only a part of this value is actually created by the manufacturing processes carried on in the industry itself. Another part of it, and often by far the larger part, represents the value of the materials used. For many purposes, therefore, the best measure of the importance of an industry is the value created by the manufacturing operations carried on within the industry. This value is obtained by deducting the cost of the materials used from the value of the products. The figure thus obtained is termed in the census reports "value added by manufacture."

Cost of manufacture and profits.—Census data do not show the entire cost of manufacture, and consequently can not be used to show profits. No account has been taken of interest or depreciation. Even if the amount of profit could be determined by deducting the expenses from the value of the products, the rate of return on the investment could not properly be calculated, because of the very defective character of the figures regarding capital.

Primary horsepower.—This item represents the total primary power generated by the manufacturing establishments plus the amount of power, principally electric, rented by them from other concerns. It does not cover the electric power developed by the primary power of the establishments themselves, the inclusion of which would evidently result in duplication.

10/7/13
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 1910
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THE PAPER AND WOOD PULP INDUSTRY.

GENERAL STATISTICS.

SUMMARY FOR THE UNITED STATES.

Summary for the industry: 1909.—Table 1 presents a summary of the statistics for the paper and wood pulp industry as a whole for 1909. It distinguishes three classes of mills: (1) Mills making paper exclusively; (2) mills making wood pulp exclusively; and (3) mills which manufacture both pulp and paper. The pulp manufactured by the mills which produce both pulp and paper is largely made into paper in the establishments where produced. Since a large part of the business is done by mills which combine the two branches, the statistics for these three classes of mills separately have no great significance, and hence in all the tables except Table 1 only figures for the three classes of mills combined are presented. It is obvious, however, that the combined value of products and the combined cost of materials involve much duplication, amounting to approximately \$30,000,000, this being about the value reported for wood pulp manufactured for sale or for use in establishments other than the ones where it was produced.

The statistics here given do not cover the cutting or transportation of timber or pulp wood, which is often done by concerns engaged in the industry, except that the expenses connected with the production of these materials by such establishments are included with the cost of materials.

these establishments contributed products valued at \$129,381,198, or 48.3 per cent of the total value of products reported for the industry as a whole. The 81 establishments manufacturing pulp exclusively formed slightly more than one-tenth of the total number, and the value of their products represented about one-twelfth of the total value of products. The 158 establishments making both pulp and paper formed 20.3 per cent of the total number in the industry as a whole and reported 43.6 per cent of the total value of products. This group includes a number of combination pulp mills and paper mills operated as separate units but under the same ownership. In some of these cases the mills manufacturing pulp sold a certain part of their product, and in others the pulp was all used in the paper mill owned by the same company. In all, there were 82 mills of this character, of which 37 manufactured paper alone and 45 made pulp alone. The companies owning these mills made combined reports covering both branches of the industry, and the 82 mills were counted as 34 establishments.

The establishments in the industry as a whole in 1909 gave employment to an average of 81,473 persons, of whom 75,978 were wage earners, and paid \$50,314,643 in salaries and wages.

The cost of materials used in the industry as a whole in 1909 was \$165,442,341, or more than three-fifths (61.8 per cent) of the total value of products, which was \$267,656,964, and the value added by manufacture (that is, the value of products less cost of materials) was \$102,214,623. Both the value of products and the cost of materials, as already stated, involve considerable duplication, due to the sale of pulp to paper mills. The value of products of the industry in 1909 covers products other than paper and wood pulp to the value of \$3,810,768. These products consist principally of fancy and paper boxes, dyestuffs and extracts, roofing materials, and miscellaneous paper goods.

Comparison with earlier censuses.—Table 2 summarizes the statistics of the paper and wood pulp industry as a whole for each census from 1869 to 1909, inclusive. The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

| Table 1 | Total. | MILLS MAKING— | | |
|--|---------------|------------------|------------------|----------------------|
| | | Paper only. | Pulp only. | Both paper and pulp. |
| Number of establishments. | 777 | 538 | 81 | 158 |
| Persons engaged in the industry. | 81,473 | 40,807 | 6,554 | 34,112 |
| Proprietors and firm members. | 250 | 215 | 26 | 9 |
| Salaried employees. | 5,245 | 2,943 | 390 | 1,912 |
| Wage earners (average number). | 75,978 | 37,649 | 6,138 | 32,191 |
| Primary horsepower. | 1,304,265 | (¹) | (¹) | (¹) |
| Capital. | \$409,348,505 | \$148,021,260 | \$38,336,179 | \$222,991,066 |
| Expenses. | 237,310,150 | 115,341,621 | 19,205,710 | 102,762,819 |
| Services. | 50,314,643 | 24,532,636 | 4,027,939 | 21,754,068 |
| Salaries. | 9,510,141 | 5,255,161 | 652,135 | 3,602,845 |
| Wages. | 40,804,502 | 19,277,475 | 3,375,804 | 18,151,223 |
| Materials. | 165,442,341 | 79,692,160 | 13,657,150 | 72,093,031 |
| Miscellaneous. | 21,553,166 | 11,116,825 | 1,520,621 | 8,915,720 |
| Value of products. | 267,656,964 | 129,381,198 | 21,567,432 | 116,708,334 |
| Value added by manufacture (value of products less cost of materials). | 102,214,623 | 49,689,038 | 7,910,282 | 44,615,303 |

¹ Not reported separately.

Of the 777 establishments canvassed in 1909, more than two-thirds (538, or 69.2 per cent) were engaged in the manufacture of paper exclusively;

| | NUMBER OR AMOUNT. | | | | | | PER CENT OF INCREASE. ¹ | | | | | |
|--|-------------------|---------------|---------------|------------------|------------------|------------------|------------------------------------|-----------|-----------|------------------|------------------|------------------|
| | 1909 | 1904 | 1899 | 1889 | 1879 | 1869 | 1899-1909 | 1904-1909 | 1899-1904 | 1889-1899 | 1879-1889 | 1869-1879 |
| Number of establishments..... | 777 | 761 | 763 | 649 | 742 | 677 | 1.8 | 2.1 | -0.3 | 17.6 | -12.5 | 9.6 |
| Persons engaged in the industry..... | 81,473 | 70,051 | 53,012 | (²) | (²) | (²) | 53.7 | 16.3 | 32.1 | | | |
| Proprietors and firm members..... | 250 | 309 | 431 | (²) | (²) | (²) | -42.0 | -19.1 | -28.3 | | | |
| Salaried employees..... | 5,245 | 3,778 | 2,935 | (²) | (²) | (²) | 78.7 | 38.8 | 28.7 | | | |
| Wage earners (average number)..... | 75,978 | 65,964 | 49,646 | 31,050 | 25,631 | 18,021 | 53.0 | 15.2 | 32.9 | (³) | (³) | (³) |
| Primary horsepower..... | 1,304,265 | 1,093,708 | 762,118 | 297,724 | (²) | 54,287 | 71.1 | 19.3 | 43.5 | 156.0 | | |
| Capital..... | \$409,348,505 | \$277,444,471 | \$167,507,713 | \$89,829,548 | \$48,139,652 | \$34,556,014 | 144.4 | 47.5 | 65.6 | 86.5 | 86.6 | 39.3 |
| Expenses..... | 237,310,150 | 165,807,763 | 105,961,679 | 65,974,646 | (²) | (²) | 124.0 | 43.1 | 56.5 | 60.6 | | |
| Services..... | 50,314,643 | 38,116,244 | 25,247,337 | 14,975,485 | 8,970,133 | 7,208,691 | 99.3 | 32.0 | 51.0 | 68.6 | 66.9 | 24.4 |
| Salaries..... | 9,510,141 | 6,097,032 | 4,500,911 | (²) | (²) | (²) | 111.3 | 56.0 | 35.5 | | | |
| Wages..... | 40,804,502 | 32,019,212 | 20,746,426 | (²) | (²) | (²) | 96.7 | 27.4 | 54.3 | | | |
| Materials..... | 165,442,341 | 111,251,478 | 70,530,236 | 44,228,480 | 34,862,132 | 30,058,563 | 134.6 | 48.7 | 57.7 | 59.5 | 26.9 | 16.0 |
| Miscellaneous..... | 21,553,166 | 16,440,041 | 10,184,106 | 6,770,681 | (²) | (²) | 111.6 | 31.1 | 61.4 | 50.4 | | |
| Value of products..... | 267,656,964 | 188,715,189 | 127,326,162 | 78,937,184 | 57,366,860 | 48,849,285 | 110.2 | 41.8 | 48.2 | 61.3 | 37.6 | 17.4 |
| Value added by manufacture (value of products less cost of materials)..... | 102,214,623 | 77,463,711 | 56,795,926 | 34,708,704 | 22,504,728 | 18,790,722 | 80.0 | 32.0 | 36.4 | 63.6 | 54.2 | 19.8 |

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

² Comparable figures not available.

³ Figures not strictly comparable.

Paper was manufactured in this country near Philadelphia as early as 1690. The growth of the industry, however, was slow until within the last 40 years, during which time the introduction of improved machinery and the use of wood fiber as a material have brought about a remarkable growth in the industry. In the decade 1899-1909 the value of products increased \$140,330,802, or 110.2 per cent, this percentage being higher than that for any other decade since 1869. Some part of this increase, however, was due to advance in prices, particularly during the first half of the decade.

The number of proprietors and firm members was less in 1909 than in either 1904 or 1899. The de-

crease shown is explained by changes in character of ownership as shown in Table 9. Salaried employees were included to some extent with wage earners at the earlier censuses, and comparative figures for this class, therefore, are not shown for censuses prior to that of 1899.

During the decade 1899-1909 the average number of wage earners increased 53 per cent.

Summary, by states.—Table 3 summarizes the more important statistics of the industry as a whole, by states, the states being arranged according to the value of products reported for 1909. Some states for which data can not be shown separately ranked higher than some named in the table.

| STATE. | Number of establishments: 1909 | WAGE EARNERS. | | | | VALUE OF PRODUCTS. | | | | VALUE ADDED BY MANUFACTURE. | | | | PER CENT OF INCREASE. ¹ | | | | | | | | |
|-----------------------|--------------------------------|----------------------|-------------------------|-------|------|--------------------|-------------------------|-------|------|-----------------------------|-------------------------|-------|------|------------------------------------|-----------|--------------------|-----------|-----------------------------|-----------|-----------|-----------|-----------|
| | | Average number: 1909 | Per cent of total: 1909 | Rank. | | Amount: 1909 | Per cent of total: 1909 | Rank. | | Amount: 1909 | Per cent of total: 1909 | Rank. | | Wage earners (average number). | | Value of products. | | Value added by manufacture. | | | | |
| | | | | 1909 | 1904 | | | 1909 | 1904 | | | 1909 | 1904 | 1899-1909 | 1904-1909 | 1899-1904 | 1899-1909 | 1904-1909 | 1899-1904 | 1899-1909 | 1904-1909 | 1899-1904 |
| United States... | 777 | 75,978 | 100.0 | | | \$267,656,964 | 100.0 | | | \$102,214,623 | 100.0 | | | 53.0 | 15.2 | 32.9 | 110.2 | 41.8 | 48.2 | 80.0 | 32.0 | 36.4 |
| New York..... | 178 | 12,073 | 15.9 | 2 | 1 | 48,859,610 | 18.3 | 1 | 1 | 17,092,327 | 16.7 | 2 | 1 | 30.3 | -2.8 | 34.0 | 82.9 | 29.4 | 41.3 | 40.6 | 14.4 | 23.0 |
| Massachusetts..... | 88 | 12,848 | 16.9 | 1 | 2 | 40,096,713 | 15.0 | 2 | 2 | 17,747,100 | 17.4 | 1 | 2 | 41.8 | 9.8 | 29.2 | 81.1 | 25.3 | 44.6 | 73.6 | 26.2 | 37.6 |
| Maine..... | 45 | 8,647 | 11.4 | 3 | 3 | 33,950,230 | 12.7 | 3 | 3 | 13,446,017 | 13.2 | 3 | 3 | 78.3 | 14.2 | 56.1 | 156.7 | 47.9 | 73.6 | 120.3 | 48.0 | 48.8 |
| Wisconsin..... | 57 | 7,467 | 9.8 | 4 | 4 | 25,962,099 | 9.7 | 4 | 4 | 9,269,534 | 9.1 | 4 | 4 | 76.1 | 17.8 | 49.5 | 138.3 | 45.5 | 63.8 | 121.6 | 29.6 | 71.0 |
| Pennsylvania..... | 62 | 6,656 | 8.8 | 5 | 5 | 19,872,717 | 7.4 | 5 | 5 | 8,474,406 | 8.3 | 5 | 5 | 37.5 | 12.7 | 22.0 | 62.0 | 29.0 | 25.6 | 43.8 | 22.8 | 17.1 |
| Ohio..... | 47 | 4,673 | 6.2 | 6 | 6 | 16,965,260 | 6.3 | 6 | 6 | 6,066,975 | 5.9 | 6 | 6 | 46.8 | 20.3 | 22.0 | 159.2 | 54.8 | 67.5 | 118.6 | 26.2 | 73.3 |
| New Hampshire..... | 34 | 3,413 | 4.5 | 8 | 8 | 13,994,251 | 5.2 | 7 | 7 | 4,740,882 | 4.6 | 8 | 7 | 42.7 | 35.3 | 5.5 | 93.2 | 56.7 | 23.3 | 44.0 | 31.6 | 9.4 |
| Michigan..... | 32 | 4,327 | 5.7 | 7 | 7 | 13,922,124 | 5.2 | 8 | 8 | 4,897,529 | 4.8 | 7 | 8 | 114.8 | 41.8 | 51.5 | 230.1 | 89.6 | 74.0 | 224.3 | 77.4 | 82.8 |
| New Jersey..... | 37 | 2,223 | 2.9 | 9 | 10 | 7,554,428 | 2.8 | 9 | 9 | 2,785,677 | 2.7 | 9 | 10 | 86.8 | 36.5 | 36.9 | 136.4 | 49.8 | 57.8 | 88.2 | 37.8 | 36.6 |
| Connecticut..... | 51 | 1,720 | 2.3 | 10 | 9 | 5,527,334 | 2.1 | 10 | 10 | 2,223,918 | 2.2 | 10 | 9 | 20.7 | -1.7 | 22.8 | 55.0 | 9.7 | 41.3 | 40.5 | -3.3 | 45.4 |
| Indiana..... | 27 | 1,501 | 2.0 | 11 | 11 | 5,202,330 | 1.9 | 11 | 11 | 1,705,185 | 1.7 | 12 | 11 | -17.3 | -7.3 | -10.8 | 24.7 | 32.8 | -6.1 | 0.4 | 21.8 | -17.6 |
| Illinois..... | 19 | 1,397 | 1.8 | 12 | 15 | 4,983,075 | 1.9 | 12 | 15 | 1,883,635 | 1.8 | 11 | 14 | 124.2 | 45.7 | 53.9 | 248.0 | 104.0 | 70.6 | 197.2 | 83.4 | 62.0 |
| Maryland..... | 13 | 1,249 | 1.6 | 13 | 13 | 4,894,401 | 1.8 | 13 | 13 | 1,615,979 | 1.6 | 13 | 16 | 33.3 | 23.9 | 7.6 | 89.0 | 48.5 | 27.3 | 88.1 | 91.7 | -1.9 |
| Vermont..... | 25 | 1,030 | 1.4 | 15 | 12 | 3,901,634 | 1.5 | 14 | 12 | 1,446,279 | 1.4 | 16 | 12 | -15.3 | -19.5 | 5.3 | 15.3 | 1.9 | 13.2 | -14.9 | 12.1 | -24.1 |
| Virginia..... | 9 | 912 | 1.2 | 17 | 14 | 3,656,745 | 1.4 | 15 | 14 | 1,508,373 | 1.5 | 14 | 13 | 202.0 | 8.2 | 228.8 | 330.2 | 20.5 | 256.9 | 243.7 | 21.2 | 183.6 |
| West Virginia..... | 9 | 1,162 | 1.5 | 14 | 18 | 2,652,037 | 1.0 | 17 | 18 | 968,618 | 0.9 | 18 | 18 | 313.5 | 113.2 | 94.0 | 402.3 | 104.3 | 145.8 | 281.5 | 80.1 | 111.8 |
| Minnesota..... | 9 | 607 | 0.8 | 19 | 19 | 2,385,026 | 0.9 | 19 | 19 | 947,250 | 0.9 | 19 | 19 | | 53.3 | | | 108.1 | | | | 101.9 |
| Delaware..... | 6 | 546 | 0.7 | 21 | 17 | 2,291,728 | 0.8 | 20 | 16 | 704,555 | 0.7 | 21 | 17 | 21.1 | -0.2 | 21.3 | 43.3 | 20.3 | 19.1 | 23.3 | 11.0 | 11.0 |
| California..... | 4 | 312 | 0.4 | 22 | 21 | 969,172 | 0.4 | 22 | 21 | 528,777 | 0.5 | 22 | 21 | | 20.5 | | | 51.4 | | | | 44.5 |
| Iowa..... | 4 | 205 | 0.3 | 23 | 22 | 437,388 | 0.2 | 24 | 23 | 156,574 | 0.2 | 24 | 24 | 13.9 | 34.9 | -15.6 | 79.1 | 72.7 | 3.7 | 13.9 | 27.9 | -10.9 |
| Kansas..... | 3 | 97 | 0.1 | 25 | 24 | 217,982 | 0.1 | 25 | 24 | 97,576 | 0.1 | 26 | 23 | | | | | 7.9 | | | | -21.0 |
| All other states..... | 18 | 2,913 | 3.8 | | | 9,360,680 | 3.5 | | | 3,907,457 | 3.8 | | | | | | | | | | | |

¹ Percentages are based on figures in Table 25. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.

There are 31 states represented in the industry, although 79.8 per cent of the total value of products was reported by the first 8 states shown in Table 3. New York was in 1909 the most important state as measured by value of products, but ranked second in average number of wage earners and in value added by manufacture. Massachusetts, which ranked second among the states in value of products, was first in average number of wage earners and in value added by manufacture. Maine ranked third in each respect. Of the 8 states which reported products valued at \$10,000,000 or over, Michigan shows the most rapid development in the industry during the period from 1899 to 1909, the number of wage earners in this state increasing 205.6 per cent and the value of products 230.1 per cent. Still higher percentages of increase are shown for West Virginia and Virginia, in which states, however, the industry was of less importance; even in 1909.

In general the states held the same or nearly the same rank with respect to value of products in 1909 as in 1904, and most of the states had the same, or practically the same, rank in value added by manufacture in 1909 as in value of products.

PERSONS ENGAGED IN THE INDUSTRY.

Summary: 1909.—Table 4 shows for 1909 the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

| CLASS. | PERSONS ENGAGED IN THE INDUSTRY: 1909 | | |
|--|---------------------------------------|---------------|---------------|
| | Total. | Male. | Female. |
| All classes | 81,473 | 70,916 | 10,557 |
| Proprietors and officials..... | 2,298 | 2,269 | 29 |
| Proprietors and firm members..... | 250 | 232 | 18 |
| Salaried officers of corporations..... | 773 | 766 | 7 |
| Superintendents and managers..... | 1,275 | 1,271 | 4 |
| Clerks..... | 3,197 | 2,393 | 804 |
| Wage earners (average number)..... | 75,978 | 66,254 | 9,724 |
| 16 years of age and over..... | 75,721 | 66,151 | 9,570 |
| Under 16 years of age..... | 257 | 103 | 154 |

The average number of persons engaged in the operation of paper and wood pulp mills during 1909 was 81,473, of whom 75,978, or 93.3 per cent, were wage earners, 2,298, or 2.8 per cent, proprietors and officials, and 3,197, or 3.9 per cent, were clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 70,916, or

87 per cent, were males and 10,557, or 13 per cent, females. The average number of wage earners under 16 years of age was only 257.

The average number of wage earners in each state for 1909, 1904, and 1899 is given in Table 25. The average number distributed by sex and age is not shown for the individual states, but Table 26 gives such a distribution of the number employed on December 15, or the nearest representative day. Female wage earners were reported as employed in 26 states, the largest number, 4,618, being reported for Massachusetts, and the next largest number, 961, for Wisconsin. The number of wage earners under 16 years of age employed in Massachusetts was 132, or practically half of the total for all states.

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 5.

| CLASS. | PERSONS ENGAGED IN THE INDUSTRY. | | | | Per cent of increase: ¹ 1904-1909 |
|----------------------------------|----------------------------------|------------------------|---------------|------------------------|--|
| | 1909 | | 1904 | | |
| | Number. | Per cent distribution. | Number. | Per cent distribution. | |
| Total | 81,473 | 100.0 | 70,051 | 100.0 | 16.3 |
| Proprietors and firm members.... | 250 | 0.3 | 309 | 0.4 | -19.1 |
| Salaried employees..... | 5,245 | 6.4 | 3,778 | 5.4 | 38.8 |
| Wage earners (average number)... | 75,978 | 93.3 | 65,964 | 94.2 | 15.2 |

¹ A minus sign (-) denotes decrease.

Table 6 shows the average number of wage earners in the industry as a whole distributed according to age, and in the case of those 16 years of age or over, according to sex, for 1909, 1904, and 1899. The number of children employed was so small that the increase from 1899 to 1909 has little significance.

| CLASS. | AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY. | | | | | |
|----------------------------|---|------------------------|---------------|------------------------|---------------|------------------------|
| | 1909 | | 1904 | | 1899 | |
| | Number. | Per cent distribution. | Number. | Per cent distribution. | Number. | Per cent distribution. |
| Total | 75,978 | 100.0 | 65,964 | 100.0 | 49,646 | 100.0 |
| 16 years of age and over.. | 75,721 | 99.7 | 65,709 | 99.6 | 49,477 | 99.7 |
| Male..... | 66,151 | 87.1 | 56,827 | 86.1 | 41,547 | 83.7 |
| Female..... | 9,570 | 12.6 | 8,882 | 13.5 | 7,930 | 16.0 |
| Under 16 years of age.... | 257 | 0.3 | 255 | 0.4 | 169 | 0.3 |

Wage earners employed, by months.—Table 7 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for 20 of the leading states in which an average of 500 or more wage earners were employed during the year.

Table 7

| STATE. | WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909 ¹ | | | | | | | | | | | | |
|----------------------------|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Average number during the year. | January. | February. | March. | April. | May. | June. | July. | August. | September. | October. | November. | December. |
| United States | 75,978 | 74,986 | 75,780 | 76,291 | 75,983 | 77,013 | 76,829 | 75,009 | 74,517 | 75,147 | 76,026 | 76,717 | 77,430 |
| Connecticut..... | 1,720 | <i>1,638</i> | 1,664 | 1,672 | 1,675 | 1,725 | 1,665 | 1,709 | 1,733 | 1,718 | 1,755 | 1,820 | 1,861 |
| Delaware..... | 546 | 566 | 553 | 567 | 548 | 554 | <i>530</i> | 536 | 535 | 536 | 536 | <i>530</i> | 559 |
| Illinois..... | 1,397 | <i>1,183</i> | 1,247 | 1,291 | 1,398 | 1,414 | 1,393 | 1,372 | 1,390 | 1,488 | 1,516 | 1,541 | 1,534 |
| Indiana..... | 1,501 | 1,493 | 1,509 | 1,565 | 1,540 | <i>1,402</i> | 1,455 | 1,416 | 1,409 | 1,493 | 1,517 | 1,552 | 1,661 |
| Maine..... | 8,647 | 8,820 | 8,748 | 8,813 | 8,606 | 8,681 | 8,802 | 8,589 | 8,397 | 8,334 | 8,552 | 8,582 | 8,841 |
| Maryland..... | 1,249 | <i>1,158</i> | 1,269 | 1,270 | 1,255 | 1,276 | 1,217 | 1,231 | 1,235 | 1,270 | 1,243 | 1,290 | 1,272 |
| Massachusetts..... | 12,848 | 12,614 | 12,735 | 12,759 | 12,673 | 12,825 | 12,843 | <i>12,611</i> | 12,791 | 12,907 | 13,080 | 13,100 | 15,234 |
| Michigan..... | 4,327 | 4,170 | 4,213 | <i>4,168</i> | 4,238 | 4,374 | 4,480 | 4,393 | 4,444 | 4,460 | 4,365 | 4,356 | 4,261 |
| Minnesota..... | 607 | <i>541</i> | 588 | 612 | 629 | 634 | 638 | 614 | 546 | 616 | 619 | 625 | 618 |
| New Hampshire..... | 3,413 | 3,368 | 3,374 | 3,413 | 3,460 | 3,487 | 3,471 | 3,338 | <i>3,255</i> | 3,370 | 3,618 | 3,366 | 3,431 |
| New Jersey..... | 2,223 | <i>2,100</i> | 2,118 | 2,104 | 2,146 | 2,217 | 2,227 | 2,244 | 2,265 | 2,277 | 2,298 | 2,344 | 2,342 |
| New York..... | 12,073 | 12,298 | 12,750 | 12,780 | 12,387 | 12,788 | 12,451 | 11,855 | <i>11,433</i> | 11,450 | 11,618 | 11,506 | 11,558 |
| North Carolina..... | 825 | 875 | 937 | 829 | 800 | 809 | 804 | 813 | <i>759</i> | 832 | 840 | 793 | 809 |
| Ohio..... | 4,673 | 4,687 | 4,660 | 4,651 | 4,657 | <i>4,528</i> | 4,625 | 4,596 | 4,605 | 4,711 | 4,766 | 4,779 | 4,811 |
| Oregon..... | 988 | 939 | 937 | 937 | 1,139 | 1,175 | 1,035 | 885 | 836 | 834 | 877 | 1,122 | 1,144 |
| Pennsylvania..... | 6,656 | 6,577 | <i>6,481</i> | 6,554 | 6,549 | 6,716 | 6,696 | 6,586 | 6,577 | 6,685 | 6,697 | 6,916 | 6,838 |
| Vermont..... | 1,030 | 1,118 | 1,117 | 1,133 | 1,022 | 1,077 | 1,092 | 940 | 885 | 903 | 993 | 1,049 | 1,036 |
| Virginia..... | 912 | 893 | 900 | 915 | <i>865</i> | <i>865</i> | 872 | 900 | 997 | 921 | 920 | 968 | 927 |
| West Virginia..... | 1,162 | 1,057 | 1,055 | 1,147 | <i>1,050</i> | 1,113 | 1,123 | 1,218 | 1,311 | 1,250 | 1,178 | 1,240 | 1,202 |
| Wisconsin..... | 7,467 | <i>7,161</i> | 7,186 | 7,286 | 7,541 | 7,544 | 7,651 | 7,598 | 7,571 | 7,445 | 7,359 | 7,545 | 7,716 |

¹ The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

There was comparatively little variation in the number of wage earners from month to month. The largest number employed during any month of 1909 was 77,430, in December, and the smallest number, 74,517, in August, the minimum number being equal to 96.2 per cent of the maximum. In 1904 the maximum number, 67,724, was shown for October, and the minimum number, 63,284, for February, the latter number being equal to 93.4 per cent of the former.

In New York the greatest number of wage earners were employed in May, but in four of the eight leading states (Massachusetts, Maine, Wisconsin, and Ohio) the month of maximum employment was December. The months of maximum and minimum employment for 1909, and the number of wage earners reported for both months, are given for a larger number of states in Table 26.

Prevailing hours of labor.—In Table 8 the wage earners in the industry as a whole have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

Nearly three-fourths (71.4 per cent) of the wage earners employed in the industry as a whole in 1909 were in mills where the prevailing hours were 60 or more per week.

Of the seven groups shown in the table, the largest was that made up of the wage earners in establishments where the prevailing hours were 60 per week, such wage earners constituting 30.2 per cent of the total number, and the second largest group was made

up of those working 72 hours or over per week, which group formed 21.7 per cent of the total. The group working 60 hours per week was the most important in 7 of the 20 states for which figures are given. In Connecticut, Delaware, Maryland, Minnesota, and Oregon the most common working time was more than 60 but less than 72 hours per week, while in Illinois, Indiana, New Jersey, New York, and North Carolina it was 72 hours and over.

Table 8

| STATE. | AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY: 1909 | | | | | | | |
|-------------------------|--|--|--------------------|--------------|--------------------|---------------|--------------------|---------------|
| | Total. | In establishments with prevailing hours— | | | | | | |
| | | 48 and under. | Between 48 and 54. | 54. | Between 54 and 60. | 60. | Between 60 and 72. | 72 and over. |
| United States .. | 75,978 | 5,595 | 6,063 | 3,448 | 6,592 | 22,941 | 14,832 | 16,457 |
| Connecticut..... | 1,720 | | | 229 | 112 | 542 | 567 | 270 |
| Delaware..... | 546 | | | | | | 286 | 260 |
| Illinois..... | 1,397 | | | | 189 | 446 | 138 | 624 |
| Indiana..... | 1,501 | | | | | 263 | 141 | 1,097 |
| Maine..... | 8,647 | 1,011 | 2,775 | 1,992 | 236 | 841 | 667 | 1,125 |
| Maryland..... | 1,249 | | | | | 83 | 1,103 | 63 |
| Massachusetts..... | 12,848 | 944 | 386 | 848 | 3,697 | 4,023 | 2,425 | 525 |
| Michigan..... | 4,327 | | | | 225 | 2,534 | 1,084 | 484 |
| Minnesota..... | 607 | | | | | 77 | 448 | 82 |
| New Hampshire..... | 3,413 | 1,282 | 508 | | 446 | 651 | 244 | 282 |
| New Jersey..... | 2,223 | 12 | | | 394 | 194 | 726 | 897 |
| New York..... | 12,073 | 1,295 | 1,979 | 279 | 502 | 2,656 | 2,563 | 2,799 |
| North Carolina..... | 825 | | | | | | | 825 |
| Ohio..... | 4,673 | | | | 468 | 1,498 | 1,233 | 1,474 |
| Oregon..... | 988 | | | | | 347 | 641 | |
| Pennsylvania..... | 6,656 | 122 | | 100 | 168 | 3,643 | 91 | 2,532 |
| Vermont..... | 1,030 | 268 | 415 | | 35 | 203 | 51 | 58 |
| Virginia..... | 912 | | | | 63 | 655 | | 194 |
| West Virginia..... | 1,162 | | | | 57 | 680 | 329 | 96 |
| Wisconsin..... | 7,467 | 661 | | | | 3,195 | 1,442 | 2,169 |

Character of ownership.—Table 9 presents statistics with respect to the character of ownership of the paper and wood pulp mills in the United States.

In 1909, of the total number of mills, 81.5 per cent were under corporate ownership, as compared with 77.1 per cent in 1904. In 1909 the value of products

of these establishments represented 92.8 per cent of the total and in 1904, 89.9 per cent.

| CHARACTER OF OWNERSHIP. | NUMBER OF ESTABLISHMENTS. | | VALUE OF PRODUCTS. | |
|--------------------------------|---------------------------|--------------|--------------------|---------------|
| | 1909 | 1904 | 1909 | 1904 |
| Total | 777 | 761 | \$267,656,964 | \$188,715,189 |
| Individual..... | 71 | 86 | 5,990,893 | 5,519,842 |
| Firm..... | 70 | 88 | 11,657,927 | 13,529,652 |
| Corporation..... | 633 | 587 | 248,435,331 | 169,665,695 |
| Other..... | 3 | ..... | 1,572,813 | ..... |
| Per cent of total | 100.0 | 100.0 | 100.0 | 100.0 |
| Individual..... | 9.1 | 11.3 | 2.2 | 2.9 |
| Firm..... | 9.0 | 11.6 | 4.4 | 7.2 |
| Corporation..... | 81.5 | 77.1 | 92.8 | 89.9 |
| Other..... | 0.4 | ..... | 0.6 | ..... |

Table 10 gives statistics for establishments classified according to form of ownership for the 18 states employing an average of more than 500 wage earners in 1909 for which figures can be shown without disclosing individual operations. The three establishments under "other" forms of ownership have in this table been included with those under corporate ownership.

In 1909, 1,912 wage earners, or 2.5 per cent of the total, were employed in establishments under individual ownership; 3,524, or 4.6 per cent, in those under firm ownership; and 70,542, or 92.8 per cent, in those owned by corporations (including those under "other" ownership).

| STATE. | NUMBER OF ESTABLISHMENTS OWNED BY— | | | WAGE EARNERS IN ESTABLISHMENTS OWNED BY— | | | VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY— | | | VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY— | | |
|----------------------------|------------------------------------|-----------|---------------|--|--------------|---------------|---|---------------------|----------------------|--|--------------------|---------------------|
| | Individuals. | Firms. | Corporations. | Individuals. | Firms. | Corporations. | Individuals. | Firms. | Corporations. | Individuals. | Firms. | Corporations. |
| United States | 71 | 70 | 636 | 1,912 | 3,524 | 70,542 | \$5,990,893 | \$11,657,927 | \$250,008,144 | \$3,443,407 | \$5,058,707 | \$93,712,509 |
| Connecticut..... | 9 | 6 | 36 | 188 | 161 | 1,371 | 405,647 | 491,366 | 4,630,321 | 172,179 | 238,539 | 1,813,200 |
| Delaware..... | ..... | 2 | 4 | ..... | (X) | 546 | ..... | (X) | 2,291,728 | ..... | (X) | 704,555 |
| Illinois..... | ..... | 1 | 18 | ..... | (X) | 1,397 | ..... | (X) | 4,983,075 | ..... | (X) | 1,883,635 |
| Indiana..... | 1 | 2 | 24 | (X) | 58 | 1,443 | (X) | 155,267 | 5,047,063 | (X) | 61,101 | 1,644,084 |
| Maine..... | 2 | 5 | 38 | (X) | 1,408 | 7,239 | (X) | 4,839,434 | 29,110,796 | (X) | 2,060,219 | 11,385,798 |
| Maryland..... | 3 | 3 | 7 | 8 | 52 | 1,189 | 16,347 | 62,028 | 4,816,026 | 6,967 | 12,364 | 1,596,648 |
| Massachusetts..... | 4 | 8 | 76 | (X) | 1,496 | 11,352 | (X) | 5,259,889 | 34,836,824 | (X) | 3,397,099 | 14,350,001 |
| Michigan..... | 3 | 1 | 28 | 48 | (X) | 4,279 | 107,721 | (X) | 13,814,403 | 47,891 | (X) | 4,849,638 |
| Minnesota..... | ..... | ..... | 9 | ..... | ..... | 607 | ..... | ..... | 2,385,026 | ..... | ..... | 947,250 |
| New Hampshire..... | 1 | 5 | 28 | (X) | 92 | 3,321 | (X) | 408,620 | 13,585,631 | (X) | 173,086 | 4,567,796 |
| New Jersey..... | 3 | 3 | 31 | 56 | 84 | 2,083 | 157,862 | 266,793 | 7,129,768 | 63,931 | 88,821 | 2,632,925 |
| New York..... | 21 | 16 | 141 | 273 | 280 | 11,520 | 957,261 | 975,251 | 46,927,098 | 371,027 | 376,378 | 16,344,922 |
| Ohio..... | 1 | 1 | 45 | (X) | (X) | 4,673 | (X) | (X) | 16,965,260 | (X) | (X) | 6,066,975 |
| Pennsylvania..... | 19 | 5 | 38 | 373 | 363 | 5,920 | 895,018 | 1,166,905 | 17,810,794 | 416,917 | 458,211 | 7,599,278 |
| Vermont..... | 1 | 8 | 16 | (X) | 152 | 878 | (X) | 559,144 | 3,342,490 | (X) | 190,085 | 1,256,194 |
| Virginia..... | 1 | ..... | 8 | (X) | ..... | 912 | (X) | ..... | 3,656,745 | (X) | ..... | 1,508,373 |
| West Virginia..... | ..... | 1 | 8 | ..... | (X) | 1,162 | ..... | (X) | 2,652,037 | ..... | (X) | 968,618 |
| Wisconsin..... | 1 | ..... | 56 | (X) | ..... | 7,467 | (X) | ..... | 25,962,099 | (X) | ..... | 9,269,534 |

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases, an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. The figures for corporations include those for the few comparatively unimportant establishments operated by cooperative associations or under other miscellaneous forms of ownership.

ESTABLISHMENTS CLASSIFIED ACCORDING TO SIZE.

Classification by value of products.—Table 11 presents statistics for 1909 and 1904 for establishments grouped according to the value of their products.

| VALUE OF PRODUCTS PER ESTABLISHMENT. | NUMBER OF ESTABLISHMENTS. | | VALUE OF PRODUCTS. | |
|---------------------------------------|---------------------------|--------------|--------------------|------------------|
| | 1909 | 1904 | 1909 | 1904 |
| Total | 777 | 761 | \$267,656,964 | \$188,715,189 |
| Less than \$5,000..... | 20 | 23 | 64,416 | 74,086 |
| \$5,000 and less than \$20,000..... | 57 | 59 | 719,516 | 749,259 |
| \$20,000 and less than \$100,000..... | 203 | 254 | 11,354,011 | 14,204,394 |
| \$100,000 and less than \$1,000,000.. | 447 | 395 | 161,938,623 | 126,385,745 |
| \$1,000,000 and over..... | 50 | 30 | 93,580,398 | 47,301,705 |
| Per cent of total | 100.0 | 100.0 | 100.0 | 100.0 |
| Less than \$5,000..... | 2.6 | 3.0 | (¹) | (¹) |
| \$5,000 and less than \$20,000..... | 7.3 | 7.8 | 0.3 | 0.4 |
| \$20,000 and less than \$100,000..... | 26.1 | 33.4 | 4.2 | 7.5 |
| \$100,000 and less than \$1,000,000.. | 57.5 | 51.9 | 60.5 | 67.0 |
| \$1,000,000 and over..... | 6.4 | 3.9 | 35.0 | 25.1 |

¹ Less than one-tenth of 1 per cent.

In 1909, 6.4 per cent of the establishments manufactured products valued at \$1,000,000 or over, as against

3.9 per cent in 1904. While such establishments represented a comparatively small proportion of the total number at both censuses, they reported 35 per cent of the total value of products in 1909 and 25.1 per cent in 1904. Establishments manufacturing products valued at \$100,000 but less than \$1,000,000 were the most important class, forming 57.5 per cent of the total number and reporting 60.5 per cent of the total value of products in 1909, although the latter percentage is somewhat smaller than the corresponding percentage for 1904.

The average value of products per establishment increased from \$247,983 in 1904 to \$344,475 in 1909, and the average value added by manufacture, as computed from the figures in Table 2, from \$101,792 to \$131,550. The average number of wage earners per establishment shows an increase from 86.7 in 1904 to 97.8 in 1909.

Classification by number of wage earners.—Table 12 classifies the establishments in the 21 leading states according to the number of wage earners employed.

| STATE. | TOTAL. | | ESTABLISHMENTS EMPLOYING IN 1909— | | | | | | | | | | | | | | | | |
|---------------------|--------------------|--------------------------------|-----------------------------------|----------------------|---------------|-----------------------|---------------|------------------------|---------------|-------------------------|---------------|--------------------------|---------------|--------------------------|---------------|----------------------------|---------------|--------------------------|---------------|
| | Es-tab-lish-ments. | Wage earners (average number). | No wage earners. | 1 to 5 wage earners. | | 6 to 20 wage earners. | | 21 to 50 wage earners. | | 51 to 100 wage earners. | | 101 to 250 wage earners. | | 251 to 500 wage earners. | | 501 to 1,000 wage earners. | | Over 1,000 wage earners. | |
| | | | Es-tab-lish-ments. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. | Es-tab-lish-ments. | Wage earners. |
| United States.... | 777 | 75,978 | ..... | 36 | 112 | 157 | 2,119 | 196 | 6,567 | 156 | 11,282 | 166 | 27,473 | 49 | 16,457 | 16 | 10,906 | 1 | 1,062 |
| Connecticut..... | 51 | 1,720 | ..... | 6 | 23 | 19 | 254 | 19 | 701 | 4 | 324 | 3 | 418 | ..... | ..... | ..... | ..... | ..... | ..... |
| Delaware..... | 6 | 546 | ..... | ..... | ..... | 2 | 29 | ..... | ..... | 1 | 88 | 3 | 429 | ..... | ..... | ..... | ..... | ..... | ..... |
| Illinois..... | 19 | 1,397 | ..... | 1 | 5 | 4 | 56 | 6 | 229 | 4 | 302 | 3 | 529 | 1 | 276 | ..... | ..... | ..... | ..... |
| Indiana..... | 27 | 1,501 | ..... | ..... | ..... | 3 | 54 | 10 | 298 | 11 | 790 | 3 | 359 | ..... | ..... | ..... | ..... | ..... | ..... |
| Maine..... | 45 | 8,647 | ..... | 1 | 2 | 5 | 56 | 11 | 382 | 7 | 576 | 10 | 1,794 | 6 | 2,058 | 4 | 2,717 | 1 | 1,062 |
| Maryland..... | 13 | 1,249 | ..... | 3 | 8 | 3 | 34 | 4 | 134 | ..... | ..... | 2 | 340 | ..... | ..... | 1 | 733 | ..... | ..... |
| Massachusetts..... | 88 | 12,848 | ..... | 2 | 9 | 12 | 158 | 12 | 390 | 11 | 867 | 37 | 6,379 | 12 | 3,662 | 2 | 1,383 | ..... | ..... |
| Michigan..... | 32 | 4,327 | ..... | ..... | ..... | 5 | 58 | 7 | 240 | 4 | 264 | 14 | 2,654 | 1 | 347 | 1 | 764 | ..... | ..... |
| Minnesota..... | 9 | 607 | ..... | ..... | ..... | 2 | 29 | 2 | 54 | 3 | 205 | 2 | 319 | ..... | ..... | ..... | ..... | ..... | ..... |
| New Hampshire..... | 34 | 3,413 | ..... | ..... | ..... | 13 | 177 | 9 | 260 | 2 | 117 | 5 | 674 | 4 | 1,498 | 1 | 687 | ..... | ..... |
| New Jersey..... | 37 | 2,223 | ..... | 1 | 5 | 7 | 92 | 11 | 382 | 11 | 690 | 6 | 748 | 1 | 306 | ..... | ..... | ..... | ..... |
| New York..... | 178 | 12,073 | ..... | 11 | 28 | 44 | 587 | 52 | 1,709 | 38 | 2,808 | 24 | 3,884 | 8 | 2,556 | 1 | 501 | ..... | ..... |
| North Carolina..... | 3 | 825 | ..... | ..... | ..... | 1 | 7 | ..... | ..... | ..... | ..... | 1 | 122 | ..... | ..... | 1 | 696 | ..... | ..... |
| Ohio..... | 47 | 4,673 | ..... | ..... | ..... | 5 | 88 | 15 | 496 | 14 | 955 | 11 | 1,695 | 1 | 439 | 1 | 1,000 | ..... | ..... |
| Oregon..... | 5 | 983 | ..... | ..... | ..... | 1 | 18 | ..... | ..... | 1 | 96 | 2 | 347 | ..... | ..... | 1 | 527 | ..... | ..... |
| Pennsylvania..... | 62 | 6,656 | ..... | 9 | 25 | 15 | 201 | 10 | 359 | 8 | 580 | 13 | 2,374 | 5 | 1,802 | 2 | 1,315 | ..... | ..... |
| Vermont..... | 25 | 1,030 | ..... | 1 | 5 | 9 | 122 | 9 | 294 | 5 | 292 | ..... | ..... | 1 | 317 | ..... | ..... | ..... | ..... |
| Virginia..... | 9 | 912 | ..... | 1 | 2 | 1 | 12 | ..... | ..... | 4 | 275 | 2 | 242 | 1 | 381 | ..... | ..... | ..... | ..... |
| Washington..... | 2 | 556 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 175 | 1 | 381 | ..... | ..... | ..... | ..... | ..... | ..... |
| West Virginia..... | 9 | 1,162 | ..... | ..... | ..... | ..... | ..... | 4 | 139 | 2 | 111 | 2 | 329 | ..... | ..... | 1 | 583 | ..... | ..... |
| Wisconsin..... | 57 | 7,467 | ..... | ..... | ..... | 3 | 39 | 9 | 316 | 18 | 1,298 | 20 | 3,380 | 7 | 2,434 | ..... | ..... | ..... | ..... |

Of the 777 establishments reported in 1909, 4.6 per cent employed from 1 to 5 wage earners each, 20.2 per cent from 6 to 20, 25.2 per cent from 21 to 50, 20.1 per cent from 51 to 100, and 21.4 per cent from 101 to 250. There were only 66 establishments that employed more than 250 wage earners. Of these, 17 employed over 500. More than a third of the wage earners, however, worked in mills employing over 250 each.

Expenses.—As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$237,310,150, distributed as follows: Cost of materials, \$165,442,341, or 69.7 per cent; wages, \$40,804,502, or 17.2 per cent; salaries, \$9,510,141, or 4 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$21,553,166, or 9.1 per cent. These proportions, as may be seen by comparing the items in Table 26, vary somewhat in the several states.

ENGINES, POWER, AND FUEL.

Engines and power.—The amount of power used in the paper and wood pulp industry was first reported at the census of 1869. Table 2 shows that the total amount of power used increased from 54,287 horsepower in 1869 to 1,304,265 in 1909. Table 13 shows

statistics of power as reported at the censuses of 1909, 1904, and 1899.

| POWER. | NUMBER OF ENGINES OR MOTORS. | | | HORSEPOWER. | | | PER CENT DISTRIBUTION OF HORSEPOWER. | | |
|--|------------------------------|--------------|--------------|------------------|------------------|----------------|--------------------------------------|--------------|--------------|
| | 1909 | 1904 | 1899 | 1909 | 1904 | 1899 | 1909 | 1904 | 1899 |
| Primary power, total..... | 6,990 | 5,701 | 5,238 | 1,304,265 | 1,093,708 | 762,118 | 100.0 | 100.0 | 100.0 |
| Owned..... | 6,229 | 5,661 | 5,238 | 1,264,185 | 1,090,757 | 761,858 | 96.9 | 99.7 | 100.0 |
| Steam..... | 2,705 | 2,487 | 2,016 | 469,089 | 370,852 | 255,854 | 36.0 | 33.9 | 33.6 |
| Gas..... | 46 | 24 | 13 | 6,675 | 1,916 | 1,062 | 0.5 | 0.2 | 0.1 |
| Water wheels..... | 3,470 | 3,149 | 3,209 | 785,961 | 717,979 | 504,762 | 60.3 | 65.6 | 66.2 |
| Water motors..... | 8 | 1 | (1) | 2,185 | 10 | (1) | 0.2 | (2) | ..... |
| Other..... | ..... | ..... | ..... | 275 | ..... | 180 | (2) | ..... | (2) |
| Rented..... | 761 | 40 | (1) | 40,080 | 2,951 | 260 | 3.1 | 0.3 | (2) |
| Electric..... | 761 | 40 | (1) | 38,610 | 2,748 | 85 | 3.0 | 0.3 | (2) |
| Other..... | ..... | ..... | ..... | 1,470 | 203 | 175 | 0.1 | (2) | (2) |
| Electric motors..... | 2,963 | 574 | 91 | 130,120 | 31,604 | 2,814 | 100.0 | 100.0 | 100.0 |
| Run by current generated by establishment..... | 2,202 | 534 | 91 | 91,510 | 28,856 | 2,729 | 70.3 | 91.3 | 97.0 |
| Run by rented power..... | 761 | 40 | (1) | 38,610 | 2,748 | 85 | 29.7 | 8.7 | 3.0 |

¹ Not reported.

² Less than one-tenth of 1 per cent.

The total primary power used in the paper and wood pulp mills increased from 762,118 horsepower in 1899 to 1,304,265 horsepower in 1909, or 71.1 per cent. Water wheels still supply the greater part of the power used in the manufacture of paper and wood pulp, although such power represented a smaller proportion of the total primary power in 1909 than in 1904. Some part of this decrease is due to the great increase in rented electric power, much of which represents water power transformed into electrical energy. There was also an increase in the relative importance of both steam engines and gas and other internal-combustion

engines. The number and horsepower of electric motors used for distributing power by means of current generated in the establishment show a great increase.

Table 14 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in 20 of the leading states.

Table 14

| STATE. | PRIMARY HORSEPOWER. | | | | | | | | | ELECTRIC HORSEPOWER. | | FUEL USED. | | | | | |
|----------------------|-------------------------------------|-------------------|------------------------------------|----------------|--------------|--------------------------|---------|-----------|--------|--|---|-------------------------|--------------------------|--------------------|---------------|------------------------------------|-------------------|
| | Number of establishments reporting. | Total horsepower. | Owned by establishments reporting. | | | | | Rented. | | Total rented and generated by establishment. | Generated in the establishment reporting. | Coal. | | Coke (short tons). | Wood (cords). | Oil, including gasoline (barrels). | Gas (1,000 feet). |
| | | | Total. | Steam engines. | Gas engines. | Water wheels and motors. | Other. | Electric. | Other. | | | Anthracite (long tons). | Bituminous (short tons). | | | | |
| United States | 777 | 1,304,265 | 1,264,185 | 469,039 | 6,675 | 788,146 | 275 | 38,610 | 1,470 | 130,120 | 91,510 | 558,677 | 5,460,314 | 500 | 226,001 | 584,536 | 6,485,293 |
| Connecticut | 51 | 19,509 | 19,454 | 11,449 | | 8,005 | | 55 | | 255 | 200 | 23,184 | 92,807 | | 64 | 97 | 540 |
| Delaware | 6 | 4,318 | 4,318 | 3,677 | | 641 | | | | | | 60,334 | | | | | |
| Illinois | 19 | 15,169 | 15,165 | 11,185 | | 3,966 | | 4 | | 1,925 | 1,921 | 223,676 | | | | | 700 |
| Indiana | 27 | 18,382 | 17,085 | 14,930 | | 1,050 | | 1,297 | | 2,695 | 1,398 | 285,274 | | | | 2,535 | 18,482 |
| Maine | 45 | 223,787 | 215,985 | 48,271 | | 30 | 167,684 | | 7,572 | 230 | 22,395 | 14,823 | 15,202 | 590,101 | 41,099 | | |
| Maryland | 13 | 11,407 | 11,162 | 10,251 | | 911 | | 10 | 235 | 6,413 | 6,403 | | 132,467 | | | | 354,808 |
| Massachusetts | 88 | 115,792 | 113,133 | 59,727 | 285 | 53,121 | | 2,004 | 655 | 6,241 | 4,237 | 69,131 | 465,347 | | 4,769 | 19 | |
| Michigan | 32 | 48,700 | 47,530 | 31,900 | | 15,630 | | 1,170 | | 4,232 | 3,062 | 385,344 | | | 11,298 | | 47 |
| Minnesota | 9 | 23,440 | 22,940 | 2,310 | | 20,630 | | 500 | | 1,258 | 758 | | 35,360 | | 8,880 | | |
| New Hampshire | 34 | 79,912 | 74,747 | 19,603 | | 55,144 | | 5,165 | | 13,963 | 8,798 | 8,133 | 186,189 | | 73,847 | 42 | |
| New Jersey | 37 | 22,996 | 22,816 | 19,338 | 500 | 2,978 | | 180 | | 1,036 | 856 | 167,046 | 79,431 | | | | 52 |
| New York | 178 | 337,548 | 323,962 | 66,196 | 65 | 257,701 | | 13,586 | | 28,149 | 14,563 | 173,387 | 872,378 | | 2,775 | 176 | |
| North Carolina | 3 | 9,650 | 9,650 | 6,800 | | 2,850 | | | | 8,000 | 8,000 | 125,600 | | | | | |
| Ohio | 47 | 51,402 | 50,398 | 43,815 | 2,600 | 3,708 | 275 | 1,004 | | 9,776 | 8,772 | 492,136 | | | | | 4,581,706 |
| Oregon | 5 | 39,651 | 39,651 | 5,857 | 5 | 33,789 | | | | 1,270 | 1,270 | | | | | 228,562 | |
| Pennsylvania | 62 | 66,910 | 64,493 | 58,155 | 25 | 6,313 | | 2,417 | | 10,982 | 8,565 | 98,456 | 733,072 | | 15,855 | 2,188 | 58,259 |
| Vermont | 25 | 38,191 | 38,161 | 3,376 | | 34,785 | | 30 | | 232 | 202 | 4,136 | 51,642 | | 4,711 | | |
| Virginia | 9 | 9,770 | 9,770 | 4,510 | | 5,260 | | | | 50 | 50 | | 111,287 | | 200 | | |
| West Virginia | 9 | 11,025 | 10,760 | 5,910 | 650 | 4,200 | | 265 | | 695 | 430 | | 49,442 | | | | 1,392,857 |
| Wisconsin | 57 | 136,903 | 135,683 | 30,214 | 1,429 | 104,040 | | 870 | 350 | 5,603 | 4,733 | | 432,234 | | 37,678 | 4,756 | |
| All other states | 21 | 19,803 | 17,322 | 11,615 | 22 | 5,685 | | 2,481 | | 4,950 | 2,469 | | 56,193 | 500 | 24,825 | 346,109 | 77,894 |

In 1909 New York, Maine, Wisconsin, and Massachusetts together reported 814,030 horsepower, or 62.4 per cent of the aggregate for the industry. Steam power was the most important form of power in 12 of the states shown separately, and water power in 8. New York reported a larger amount of steam, water, and electric power than any other state, while Ohio reported the largest amount of power developed by gas and other internal combustion engines.

Fuel consumed.—Owing to the extensive use of water power in the paper and wood pulp industry, less fuel is consumed in generating power than would otherwise be required. Bituminous coal was the principal class of fuel used in 1909. The largest amount was reported by New York, which state also used the largest amount of anthracite coal. Of the total amount of gas used, 70.6 per cent was reported for Ohio.

SPECIAL DATA RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

MATERIALS.

Summary for the United States.—Table 15 shows statistics of the materials used in the industry for 1909, 1904, and 1899.

The total cost of materials reported by establishments engaged in the manufacture of paper and wood pulp in 1909 was \$165,442,341, as compared with \$111,251,478 in 1904, and \$70,530,236 in 1899, an increase during the decade of 134.6 per cent. These totals involve much duplication due to the use of the products of one establishment, especially pulp, as material for another. Substantial gains were made during the decade 1899-1909 in the quantities of the various materials used, with the exception of "other chemical fiber" and straw. The relative gains in quantity, however, were not as great as those in cost.

Of the total cost of materials used in 1909, that of pulp wood represented 20.4 per cent; that of wood pulp purchased, 26.5 per cent; that of rags, including cotton and flax waste and sweepings, 6.5 per cent; that of old or waste paper, 8.3 per cent; and that of manila stock, straw, and all other materials, including fuel, mill supplies, etc., 38.3 per cent. The corresponding proportions in 1899 were as follows: Pulp wood, 13.9 per cent; wood pulp purchased, 26 per cent; rags, etc., 9.4 per cent; old or waste paper, 6.9 per cent; manila stock, straw, and all other materials, 43.8 per cent. The large amount included under "all other materials" represents the cost of chemicals, clay, sizing, fuel, rent of power, mill supplies, etc. The cost of fuel and rent of power, in 1909, as shown by Table 27, was \$18,320,266, this item representing 11.1 per cent of the total cost of materials.

| | 1909 | 1904 | 1899 |
|---|----------------------|----------------------|---------------------|
| Total cost | \$165,442,341 | \$111,251,478 | \$70,530,236 |
| Pulp wood..... | \$33,772,475 | \$20,800,871 | \$9,837,516 |
| Wood pulp, purchased: | | | |
| Tons..... | 1,241,914 | 877,702 | 644,006 |
| Cost..... | \$43,861,357 | \$27,633,164 | \$18,369,464 |
| Ground— | | | |
| Tons..... | 452,849 | 317,286 | 261,962 |
| Cost..... | \$9,487,508 | \$5,754,259 | \$4,361,211 |
| Soda fiber— | | | |
| Tons..... | 154,626 | 120,978 | 94,042 |
| Cost..... | \$6,862,864 | \$5,047,105 | \$3,430,809 |
| Sulphite fiber— | | | |
| Tons..... | 626,029 | 433,160 | 273,194 |
| Cost..... | \$27,184,726 | \$16,567,122 | \$10,112,189 |
| Other chemical fiber— | | | |
| Tons..... | 8,410 | 6,278 | 14,808 |
| Cost..... | \$326,259 | \$264,678 | \$465,255 |
| Rags, including cotton and flax waste and sweepings: | | | |
| Tons..... | 357,470 | 294,552 | 234,514 |
| Cost..... | \$10,721,559 | \$8,864,607 | \$6,595,427 |
| Old or waste paper: | | | |
| Tons..... | 983,882 | 588,543 | 356,193 |
| Cost..... | \$13,691,120 | \$7,430,335 | \$4,869,409 |
| Manila stock, including jute bagging, rope, waste, threads, etc.: | | | |
| Tons..... | 117,080 | 107,029 | 99,301 |
| Cost..... | \$3,560,033 | \$2,502,332 | \$2,437,256 |
| Straw: | | | |
| Tons..... | 303,137 | 304,585 | 367,305 |
| Cost..... | \$1,460,282 | \$1,502,886 | \$1,395,659 |
| All other materials..... | \$58,375,515 | \$42,517,283 | \$27,025,505 |

Pulp wood used.—Unlike the schedules used in 1904 and 1899, the schedule used in collecting data at the census of 1909 did not provide for reporting the kind or quantity of pulp wood used in the manufacture of pulp. Such data for 1909 were collected, however, by the Census Bureau in collaboration with the Forest Service of the Department of Agriculture, and the figures secured are shown in Table 16 in comparison with the census figures for 1904 and 1899.

| KIND. | WOOD CONSUMED IN THE MANUFACTURE OF WOOD PULP (CORDS). | | | Per cent of increase. ² | |
|------------------------|--|------------------|------------------|------------------------------------|-------------|
| | 1909 ¹ | 1904 | 1899 | 1904- | 1899- |
| | | | | 1909 | 1904 |
| Total | 4,001,607 | 3,050,717 | 1,986,310 | 31.2 | 53.6 |
| Spruce, domestic..... | 1,653,249 | 1,732,531 | 1,160,118 | -4.6 | 49.3 |
| Spruce, imported..... | 768,332 | 538,305 | 349,084 | 42.7 | 54.2 |
| Poplar, domestic..... | 302,876 | 213,058 | 236,820 | 42.2 | -10.0 |
| Poplar, imported..... | 25,622 | 35,313 | 20,133 | -27.4 | 75.4 |
| Hemlock, domestic..... | 559,657 | (³) | (³) | | |
| All other wood..... | 691,871 | 531,510 | 220,155 | 30.2 | 141.4 |

¹ The figures represent the wood used by all mills manufacturing wood pulp, which includes a few where it was not the primary product.

² A minus sign (-) denotes decrease.

³ Included with "all other wood."

Up to 1899 native spruce and poplar were used almost exclusively for pulp wood. Since that time, however, the advancing price of the native stock has led to the increased importation of these woods from Canada and to the use of other and cheaper native woods.

Table 17 shows the cost of the pulp wood used in the manufacture of wood pulp during 1909, 1904, and 1899 in each of the five leading states in the industry.

New York reported the largest absolute increase of any of the states in expenditures for pulp wood from 1899 to 1909, with Maine second, while Maine shows the highest relative increase, with Wisconsin second.

| STATE. | COST OF WOOD USED IN THE MANUFACTURE OF WOOD PULP. | | |
|----------------------------|--|---------------------|--------------------|
| | 1909 | 1904 | 1899 |
| United States | \$33,772,475 | \$20,800,871 | \$9,837,516 |
| New York..... | 9,667,765 | 6,530,006 | 3,208,522 |
| Maine..... | 7,984,338 | 4,838,375 | 1,718,091 |
| Wisconsin..... | 4,325,839 | 2,502,892 | 1,136,051 |
| New Hampshire..... | 3,222,871 | 2,011,363 | 1,157,960 |
| Pennsylvania..... | 2,111,025 | 1,222,491 | 711,450 |
| All other states..... | 6,460,637 | 3,695,744 | 1,905,442 |

Wood pulp used.—Table 18 shows the quantity of the different kinds of wood pulp used, both domestic and imported, during the years 1909, 1904, and 1899.

| KIND. | WOOD PULP USED (TONS). | | |
|---------------------------------|------------------------|-----------------------------------|------------------|
| | Total. | Produced by establishments using. | Purchased. |
| Total: | | | |
| 1909..... | 2,826,591 | 1,584,677 | 1,241,914 |
| 1904..... | 2,018,764 | 1,141,062 | 877,702 |
| 1899..... | 1,172,880 | 528,874 | 644,006 |
| Ground: | | | |
| 1909, total..... | 1,321,368 | 868,519 | 452,849 |
| Domestic..... | 1,201,832 | 868,519 | 333,313 |
| Imported..... | 119,536 | | 119,536 |
| 1904, total..... | 1,012,862 | 695,576 | 317,286 |
| 1899, total..... | 568,284 | 306,322 | 261,962 |
| Soda fiber: | | | |
| 1909, total..... | 297,408 | 142,782 | 154,626 |
| Domestic..... | 287,945 | 142,782 | 145,163 |
| Imported..... | 9,463 | | 9,463 |
| 1904, total..... | 187,382 | 66,404 | 120,978 |
| 1899, total..... | 172,142 | 78,100 | 94,042 |
| Sulphite fiber: | | | |
| 1909, total..... | 1,199,405 | 573,376 | 626,029 |
| Domestic..... | 1,027,012 | 573,376 | 453,636 |
| Imported..... | 172,393 | | 172,393 |
| 1904, total..... | 812,242 | 379,082 | 433,160 |
| 1899, total..... | 417,646 | 144,452 | 273,194 |
| Other chemical fiber, domestic: | | | |
| 1909..... | 8,410 | | 8,410 |
| 1904..... | 6,278 | | 6,278 |
| 1899..... | 14,808 | | 14,808 |

The total quantity of wood pulp used in the paper mills in 1909 was 2,826,591 tons, as compared with 1,172,880 tons in 1899, an increase during the 10-year period of 1,653,711 tons, or 141 per cent. Of the total quantity of wood pulp used, 56.1 per cent was produced in 1909 by the establishments in which it was used, as compared with 45.1 per cent in 1899. During the decade 1899-1909 the quantity of ground wood pulp used increased 753,084 tons, or 132.5 per cent; that of soda fiber increased 125,266 tons, or 72.8 per cent; and that of sulphite fiber, 781,759 tons, or 187.2 per cent. There was, however, a decrease of 6,398 tons, or 43.2 per cent, in the quantity of other chemical fiber. Of the entire quantity of wood pulp used in 1909, sulphite fiber constituted 42.4 per cent, as compared with 35.6 per cent in 1899, this being the only one of the four classes of fiber for which a larger proportion is shown for 1909. The proportion of the total quantity of wood pulp used which was represented by ground wood decreased from 48.5 per cent in 1899 to 46.7 per cent in 1909; the proportion represented by soda fiber from 14.7 per cent to 10.5 per cent; and that represented by other chemical fiber from 1.3 per cent to three-tenths of 1 per cent.

Materials, by states.—Table 19 shows, by states, the quantity and cost of the principal materials used in the paper and wood pulp mills in 1909, with the quantities alone for 1904 and 1899.

| MATERIAL AND STATE. | MATERIALS. | | | |
|--|--------------|------------------|------------------|------------------|
| | 1909 | | 1904 | 1899 |
| | Cost. | Quantity (tons). | Quantity (tons). | Quantity (tons). |
| Wood pulp, purchased, total..... | \$43,861,357 | 1,241,914 | 877,702 | 644,006 |
| Ground, total..... | 9,487,508 | 452,849 | 317,286 | 261,962 |
| New York..... | 3,202,648 | 150,844 | 111,082 | 93,749 |
| Maine..... | 1,831,737 | 98,553 | 60,132 | 48,740 |
| Wisconsin..... | 1,457,025 | 64,959 | 43,814 | 36,089 |
| All other states..... | 2,996,098 | 138,493 | 102,258 | 83,384 |
| Soda fiber, total..... | 6,862,864 | 154,626 | 120,978 | 94,042 |
| Massachusetts..... | 1,731,456 | 38,434 | 39,991 | 25,493 |
| Ohio..... | 1,303,292 | 27,326 | 9,631 | 4,563 |
| New York..... | 715,803 | 17,452 | 7,058 | 20,447 |
| Maine..... | 649,660 | 14,821 | 12,813 | 8,718 |
| Michigan..... | 629,847 | 14,950 | 10,759 | 7,547 |
| All other states..... | 1,832,746 | 41,643 | 40,716 | 27,274 |
| Sulphite fiber, total..... | 27,184,726 | 626,029 | 433,160 | 273,194 |
| New York..... | 6,157,218 | 162,847 | 145,974 | 66,769 |
| Massachusetts..... | 4,654,074 | 91,103 | 63,313 | 36,912 |
| Wisconsin..... | 3,716,104 | 84,884 | 57,996 | 32,252 |
| Ohio..... | 2,292,178 | 47,167 | 27,344 | 12,647 |
| Maine..... | 2,118,781 | 52,805 | 34,020 | 36,541 |
| New Hampshire..... | 1,452,253 | 39,599 | 7,437 | 12,123 |
| All other states..... | 6,794,118 | 147,624 | 97,076 | 75,950 |
| Other chemical fiber, total..... | 326,259 | 8,410 | 6,278 | 14,808 |
| Rags, including cotton and flax waste and sweepings, total..... | 10,721,559 | 357,470 | 294,552 | 234,514 |
| Massachusetts..... | 4,859,936 | 93,558 | 99,468 | 86,715 |
| Pennsylvania..... | 1,226,978 | 64,654 | 56,207 | 34,969 |
| Illinois..... | 638,094 | 43,262 | 3,023 | 974 |
| All other states..... | 3,996,551 | 155,996 | 135,854 | 111,856 |
| Old or waste paper, total..... | 13,691,120 | 983,882 | 588,543 | 356,193 |
| New York..... | 2,000,335 | 155,436 | 101,472 | 51,691 |
| Michigan..... | 2,193,302 | 114,497 | 60,417 | 32,836 |
| New Jersey..... | 1,294,513 | 114,437 | 47,613 | 37,244 |
| Massachusetts..... | 1,861,709 | 106,216 | 60,424 | 42,866 |
| Pennsylvania..... | 1,208,765 | 106,150 | 65,726 | 46,697 |
| All other states..... | 5,132,496 | 387,146 | 252,891 | 144,859 |
| Manila stock, including jute bagging, rope waste, thread, etc., total..... | 3,560,033 | 117,080 | 107,029 | 99,301 |
| Ohio..... | 856,420 | 25,949 | 12,268 | 14,994 |
| New Jersey..... | 554,016 | 21,162 | 24,161 | 13,947 |
| Massachusetts..... | 660,065 | 17,515 | 14,339 | 10,955 |
| All other states..... | 1,489,532 | 52,454 | 56,261 | 59,405 |
| Straw, total..... | 1,460,282 | 303,137 | 304,585 | 367,305 |
| Indiana..... | 681,604 | 140,580 | 119,981 | 119,414 |
| Ohio..... | 335,951 | 70,322 | 71,936 | 93,127 |
| Illinois..... | 252,372 | 57,254 | 61,936 | 75,350 |
| All other states..... | 190,355 | 34,981 | 50,732 | 79,414 |

The total quantity of wood pulp purchased in 1909 was 1,241,914 tons, as compared with 877,702 tons in 1904 and 644,006 tons in 1899, an increase of 597,908 tons, or 92.8 per cent, during the decade. The total quantity of the different kinds of wood pulp used, including that purchased and that produced in the establishment where used, is given in Table 18.

PRODUCTS.

Summary for the United States.—Table 20 shows the quantity and value of the several kinds of paper products manufactured in 1909, 1904, and 1899 by establishments in the industry, the quantity and value of wood pulp manufactured for sale or for use in other establishments, and the total production of wood pulp, which includes that made for use in the same establishment.

The total value of all products for establishments engaged primarily in the manufacture of paper and wood pulp was \$267,656,964 in 1909, as compared with \$188,715,189 in 1904 and \$127,326,162 in 1899, an increase of 110.2 per cent during the decade.

| PRODUCT. | 1909 | 1904 | 1899 |
|--|----------------------|----------------------|----------------------|
| Total value..... | \$267,656,964 | \$188,715,189 | \$127,323,162 |
| News paper: | | | |
| Total— | | | |
| Tons..... | 1,175,554 | 912,822 | 569,212 |
| Value..... | \$46,855,560 | \$35,906,460 | \$20,091,874 |
| In rolls— | | | |
| Tons..... | 1,091,017 | 840,802 | 454,572 |
| Value..... | \$42,807,064 | \$32,763,308 | \$15,754,992 |
| In sheets— | | | |
| Tons..... | 84,537 | 72,020 | 114,640 |
| Value..... | \$4,048,496 | \$3,143,152 | \$4,336,882 |
| Book paper: | | | |
| Plain— | | | |
| Tons..... | 575,616 | 434,500 | 282,093 |
| Value..... | \$42,846,674 | \$31,156,728 | \$19,466,804 |
| Coated— | | | |
| Tons..... | 95,213 | (²) | (²) |
| Value..... | \$9,413,961 | (²) | (²) |
| Plate, lithograph, map, woodcut, etc.— | | | |
| Tons..... | 6,498 | 19,837 | 22,366 |
| Value..... | \$555,352 | \$1,458,343 | \$2,018,958 |
| Cover— | | | |
| Tons..... | 17,578 | 22,150 | 18,749 |
| Value..... | \$1,982,853 | \$2,023,986 | \$1,665,376 |
| Cardboard, bristol board, card middles, tickets, etc.— | | | |
| Tons..... | 51,449 | 39,060 | 28,494 |
| Value..... | \$3,352,151 | \$2,764,444 | \$1,719,813 |
| Fine paper: | | | |
| Writing— | | | |
| Tons..... | 169,125 | 131,934 | 90,204 |
| Value..... | \$24,966,102 | \$19,321,045 | \$12,222,870 |
| All other— | | | |
| Tons..... | 29,088 | 14,898 | 22,503 |
| Value..... | \$4,110,536 | \$2,928,125 | \$3,673,104 |
| Wrapping paper: | | | |
| Manila (rope, jute, tag, etc.)— | | | |
| Tons..... | 73,731 | 86,826 | 89,419 |
| Value..... | \$6,989,436 | \$6,136,050 | \$5,929,764 |
| Heavy (mill wrappers, etc.)— | | | |
| Tons..... | 108,561 | 96,992 | 82,875 |
| Value..... | \$4,380,794 | \$4,035,588 | \$4,143,240 |
| Straw— | | | |
| Tons..... | 32,988 | 54,232 | 91,794 |
| Value..... | \$870,419 | \$1,389,348 | \$2,027,518 |
| Bogus or wood manila, all grades— | | | |
| Tons..... | 367,932 | 228,371 | 203,826 |
| Value..... | \$19,777,707 | \$10,099,772 | \$9,148,677 |
| All other— | | | |
| Tons..... | 179,855 | 177,870 | 67,338 |
| Value..... | \$10,202,035 | \$8,774,804 | \$3,293,174 |
| Boards: | | | |
| Wood pulp— | | | |
| Tons..... | 71,036 | 60,863 | 44,187 |
| Value..... | \$2,639,496 | \$2,347,250 | \$1,406,130 |
| Straw— | | | |
| Tons..... | 171,789 | 167,278 | 157,534 |
| Value..... | \$3,750,851 | \$4,367,560 | \$3,187,342 |
| News— | | | |
| Tons..... | 74,606 | 38,560 | 32,119 |
| Value..... | \$2,215,469 | \$1,174,216 | \$930,531 |
| All other— | | | |
| Tons..... | 514,208 | 253,950 | 131,777 |
| Value..... | \$17,539,768 | \$9,070,531 | \$4,829,316 |
| Other paper products: | | | |
| Tissues— | | | |
| Tons..... | 77,745 | 43,925 | 28,406 |
| Value..... | \$8,553,654 | \$5,056,438 | \$3,486,652 |
| Blotting paper— | | | |
| Tons..... | 9,577 | 8,702 | 4,351 |
| Value..... | \$1,186,180 | \$1,046,790 | \$580,750 |
| Building (roofing, asbestos, and sheathing) paper— | | | |
| Tons..... | 225,824 | 145,024 | 96,915 |
| Value..... | \$9,251,368 | \$4,845,628 | \$3,025,967 |
| Hanging papers— | | | |
| Tons..... | 92,158 | 62,606 | 54,330 |
| Value..... | \$4,431,514 | \$3,013,464 | \$2,263,345 |
| Miscellaneous— | | | |
| Tons..... | 96,577 | 106,296 | 49,101 |
| Value..... | \$6,869,169 | \$6,729,820 | \$2,795,841 |
| Wood pulp made for sale or for use in establishments other than where produced, total: | | | |
| Tons..... | 910,846 | 780,706 | 650,651 |
| Value..... | \$30,177,366 | \$23,144,574 | \$18,497,701 |
| Ground— | | | |
| Tons..... | 310,747 | 273,400 | 280,052 |
| Value..... | \$5,649,466 | \$4,323,495 | \$4,433,699 |
| Soda fiber— | | | |
| Tons..... | 155,844 | 130,366 | 99,014 |
| Value..... | \$6,572,152 | \$5,159,615 | \$3,612,602 |
| Sulphite fiber— | | | |
| Tons..... | 444,255 | 376,940 | 271,585 |
| Value..... | \$17,955,748 | \$13,661,464 | \$10,451,400 |
| All other products..... | \$4,738,549 | \$1,924,195 | \$919,415 |
| Wood pulp. | | | |
| Quantity produced (including that used in mills where manufactured), total tons..... | 2,495,523 | 1,921,768 | 1,179,525 |
| Ground, tons..... | 1,179,266 | 968,976 | 586,374 |
| Soda fiber, tons..... | 298,626 | 196,770 | 177,114 |
| Sulphite fiber, tons..... | 1,017,631 | 756,022 | 416,037 |

¹ In addition, in 1909, paper and wood pulp to the value of \$2,567,267 were made by establishments engaged primarily in the manufacture of paper bags; fancy and paper boxes; explosives; miscellaneous paper goods; pulp goods; roofing materials; sand and emery paper and cloth; and steam packing. These products, which consisted chiefly of building, roofing, and sheathing paper, paper boards, and wood pulp, represented 61,931 tons of paper and 3,432 tons of pulp.

² Not reported separately.

These totals involve considerable duplication due to the sale of pulp to other establishments in the industry, but the duplication was of about equal relative amount at each census.

Of the 4,216,708 tons of paper of all kinds manufactured during the year 1909, 1,175,554 tons, or 27.9 per cent, was news paper. Book paper (including coated, plate, and cover) formed 16.5 per cent; cardboard, 1.2 per cent; fine paper, 4.7 per cent; wrapping paper, 18.1 per cent; boards, 19.7 per cent; tissue paper, 1.8 per cent; blotting paper, two-tenths of 1 per cent; building (roofing, asbestos, and sheathing) paper, 5.4 per cent; hanging papers, 2.2 per cent; and miscellaneous paper products, 2.3 per cent. The corresponding proportions of the 2,167,593 tons of all kinds of paper produced in 1899 were as follows: News paper, 26.3 per cent; book paper, 14.9 per cent; cardboard, 1.3 per cent; fine paper, 5.2 per cent; wrapping paper, 24.7 per cent; boards, 16.9 per cent; tissues, 1.3 per cent; blotting paper, two-tenths of 1 per cent; building paper, 4.5 per cent; hanging papers, 2.5 per cent; and miscellaneous paper products, 2.3 per cent.

The total amount of wood pulp made for sale or for use in establishments other than where produced for 1909 was 910,846 tons, as compared with 780,706 tons in 1904 and 650,651 tons in 1899, an increase of 260,195 tons, or 40 per cent, during the decade. Of the total quantity of wood pulp produced in 1909, ground wood formed 34.1 per cent; soda fiber, 17.1 per cent; and sulphite fiber, 48.8 per cent, as compared with 43 per cent, 15.2 per cent, and 41.7 per cent, respectively, in 1899. Both soda and sulphite fiber show large increases for the decade 1899-1909, but ground wood pulp shows only a small increase.

The quantity of wood pulp produced in all mills in the industry in 1909 was 2,495,523 tons, as compared with 1,921,768 tons in 1904 and 1,179,525 tons in 1899, thus showing an increase during the decade of 1,315,998 tons, or 111.6 per cent. Of the total quantity of wood pulp produced in 1909, including that made for sale or for use in establishments other than that in which it was produced and that used in the establishments where produced, ground wood formed 47.3 per cent; soda fiber, 12 per cent; and sulphite fiber, 40.8 per cent, as compared with 49.7 per cent, 15 per cent, and 35.3 per cent, respectively, in 1899. The output of sulphite fiber increased 144.6 per cent during the decade, that of ground wood pulp 101.1 per cent, and that of soda fiber 68.6 per cent. A larger proportion of the wood pulp produced in 1909 was used in the establishments where produced than was the case in 1899. This is shown by the fact that

the proportion of each of the three kinds of fiber manufactured for sale or for use in establishments other than where produced was smaller in 1909 than at the census 10 years earlier.

Table 21 shows the actual amount of increase and the percentage of increase for both the quantity and value of the principal products of the paper mills during the decade from 1899 to 1909.

| Table 21 | INCREASE: 1899-1909 | | | | |
|---|---------------------|------------------|--------|-----------|--------|
| | PRODUCT. | Amount. | | Per cent. | |
| | | Quantity (tons). | Value. | Quantity. | Value. |
| News paper, total..... | 606,342 | \$26,763,686 | 106.5 | 133.3 | |
| In rolls..... | 636,445 | 27,052,072 | 140.0 | 171.7 | |
| In sheets..... | -30,103 | -288,386 | -26.3 | -6.7 | |
| Book paper, plain..... | 293,523 | 23,379,870 | 104.1 | 120.1 | |
| Cardboard, bristol board, eard middles, tickets, etc..... | 22,955 | 1,632,338 | 80.6 | 94.9 | |
| Fine paper: | | | | | |
| Writing..... | 78,921 | 12,743,232 | 87.5 | 104.3 | |
| All other..... | 6,585 | 437,432 | 29.3 | 11.9 | |
| Wrapping paper: | | | | | |
| Bogus or wood manila, all grades..... | 164,106 | 10,629,030 | 80.5 | 116.2 | |
| Heavy (mill wrappers, etc.)..... | 25,686 | 237,554 | 31.0 | 5.7 | |
| Manila (rope, jute, tag, etc.)..... | -15,688 | 1,059,672 | -17.5 | 17.9 | |
| Boards: | | | | | |
| Wood pulp..... | 26,849 | 1,233,366 | 60.8 | 87.7 | |
| Straw..... | 14,255 | 563,509 | 9.0 | 17.7 | |
| News..... | 42,487 | 1,284,938 | 132.3 | 138.1 | |
| Tissues..... | 49,339 | 5,067,002 | 173.7 | 145.3 | |
| Blotting paper..... | 5,226 | 605,430 | 120.1 | 104.2 | |
| Building (roofing, asbestos, and sheathing) paper..... | 128,909 | 6,225,401 | 133.0 | 205.7 | |
| Hanging papers..... | 37,828 | 2,166,169 | 69.6 | 95.6 | |

¹ A minus sign (-) denotes decrease.

Actual increases are shown in the quantities of all of the different varieties of paper for which separate totals are given in Table 21, with the exception of news paper in sheets and manila wrapping paper. Both news paper in sheets and manila wrapping paper, however, show an increased value per ton in 1909 over that shown for 1899. Of the several products the largest actual increase, amounting to 636,445 tons, is shown for the production of news paper in rolls. The quantity and value of the news paper in sheets show an actual decrease. Next to news paper in rolls the largest amount of increase in value is shown for book paper. All but four of the classes of paper listed in the table show a larger relative increase in value than in quantity, the exceptions being "all other" fine paper, heavy wrapping paper, tissues, and blotting paper.

Products, by states.—Table 22 shows, by states, the quantities and values of the different kinds of products of paper and wood pulp mills in 1909, and the quantities produced in 1904 and 1899. This table also shows, by states, the total quantity of the different kinds of wood pulp produced, including that used in the mills where manufactured, in 1909, 1904, and 1899.

PAPER AND WOOD PULP—PRODUCTS, BY STATES: 1909, 1904, AND 1899.

Table 22

| PRODUCT AND STATE. | PRODUCTS. | | | | PRODUCT AND STATE. | PRODUCTS. | | | |
|---|--------------|------------------|------------------|------------------|---|------------|------------------|------------------|------------------|
| | 1909 | | 1904 | 1899 | | 1909 | | 1904 | 1899 |
| | Value. | Quantity (tons). | Quantity (tons). | Quantity (tons). | | Value. | Quantity (tons). | Quantity (tons). | Quantity (tons). |
| News paper, total..... | \$46,855,560 | 1,175,554 | 912,822 | 569,212 | Boards—Continued. | | | | |
| In rolls, total..... | 42,807,064 | 1,091,017 | 840,802 | 454,572 | Straw—Continued. | | | | |
| New York..... | 13,842,676 | 355,155 | 330,423 | 162,153 | Michigan..... | \$68,348 | 2,583 | 2,776 | 4,110 |
| Maine..... | 11,355,479 | 311,608 | 213,476 | 112,995 | New York..... | 26,462 | 746 | 7,111 | 7,806 |
| Wisconsin..... | 5,896,478 | 142,641 | 93,149 | 58,850 | All other states..... | 489,473 | 19,184 | 41,916 | 14,906 |
| Minnesota..... | 1,646,753 | 39,116 | 18,230 | (1) | News, total..... | 2,215,469 | 74,606 | 38,560 | 32,119 |
| Vermont..... | 688,363 | 16,455 | 34,304 | 22,685 | New Jersey..... | 971,972 | 33,411 | 15,870 | 15,931 |
| All other states..... | 9,377,315 | 226,042 | 151,220 | 97,889 | New York..... | 144,844 | 5,477 | 7,230 | 3,775 |
| In sheets, total..... | 4,048,496 | 84,537 | 72,020 | 114,640 | All other states..... | 1,098,653 | 35,718 | 15,460 | 12,413 |
| Wisconsin..... | 1,305,228 | 26,510 | 28,600 | 31,225 | All other, total..... | 17,539,768 | 514,208 | 253,950 | 131,777 |
| New York..... | 819,569 | 19,653 | 17,123 | 42,804 | New York..... | 3,985,633 | 111,487 | 64,742 | 16,680 |
| All other states..... | 1,923,699 | 38,374 | 26,297 | 40,611 | Connecticut..... | 1,839,145 | 46,957 | 36,087 | 21,958 |
| Book paper: | | | | | Ohio..... | 1,814,196 | 54,116 | 24,843 | 13,134 |
| Plain, total..... | 42,846,674 | 575,616 | 434,500 | 282,093 | Massachusetts..... | 1,672,910 | 45,380 | 12,117 | 13,592 |
| Massachusetts..... | 7,103,256 | 88,744 | 93,439 | 39,551 | Michigan..... | 1,652,327 | 48,355 | 12,106 | 3,950 |
| Maine..... | 5,931,547 | 82,169 | 66,797 | 30,041 | Illinois..... | 1,478,251 | 51,200 | 27,416 | 16,428 |
| Pennsylvania..... | 5,579,757 | 73,763 | 57,779 | 52,366 | Indiana..... | 1,335,538 | 40,556 | 20,137 | 13,455 |
| Michigan..... | 5,231,704 | 72,677 | 48,742 | 44,433 | New Jersey..... | 1,139,852 | 37,302 | 14,822 | 5,234 |
| New York..... | 4,303,427 | 66,139 | 29,092 | 27,611 | Pennsylvania..... | 1,024,411 | 41,314 | 23,893 | 18,936 |
| Ohio..... | 3,902,300 | 48,589 | 17,825 | 13,861 | All other states..... | 1,597,505 | 37,541 | 17,787 | 8,410 |
| Wisconsin..... | 3,795,920 | 57,493 | 49,989 | 25,206 | Other paper products: | | | | |
| New Hampshire..... | 1,046,167 | 13,400 | 12,039 | 9,137 | Tissues, total..... | 8,553,654 | 77,745 | 43,925 | 28,406 |
| All other states..... | 5,952,596 | 72,642 | 58,798 | 39,887 | New York..... | 2,786,101 | 30,049 | 18,101 | 8,415 |
| Coated, total..... | 9,413,961 | 95,213 | (2) | (2) | New Jersey..... | 1,296,540 | 8,939 | 6,162 | 4,480 |
| Massachusetts..... | 2,354,911 | 26,135 | (2) | (2) | Wisconsin..... | 988,516 | 10,835 | 5,989 | 2,960 |
| All other states..... | 7,059,050 | 69,078 | | | New Hampshire..... | 755,015 | 8,737 | 2,508 | 3,973 |
| Plate, lithograph, map, woodcut, etc., total..... | 555,352 | 6,498 | 19,837 | 22,366 | Connecticut..... | 438,097 | 2,041 | 2,169 | 1,740 |
| Cover, total..... | 1,982,853 | 17,578 | 22,150 | 18,749 | Vermont..... | 331,013 | 3,500 | 3,045 | 1,918 |
| Massachusetts..... | 489,275 | 3,898 | 2,448 | 4,035 | All other states..... | 1,958,372 | 13,644 | 5,951 | 4,920 |
| Connecticut..... | 327,881 | 2,438 | 2,895 | 3,620 | Blotting paper, total..... | 1,186,180 | 9,577 | 8,702 | 4,351 |
| All other states..... | 1,165,697 | 11,242 | 16,807 | 11,094 | Virginia..... | 640,550 | 5,079 | 3,344 | 1,807 |
| Cardboard, bristol board, card middles, tickets, etc., total..... | 3,352,151 | 51,449 | 39,060 | 28,494 | All other states..... | 545,630 | 4,498 | 5,358 | 2,544 |
| Massachusetts..... | 2,135,206 | 26,694 | 23,504 | 13,564 | Building (roofing, asbestos, and sheathing) paper, total..... | 9,251,368 | 225,824 | 145,024 | 96,915 |
| New York..... | 514,709 | 10,438 | 10,948 | 4,382 | Pennsylvania..... | 1,937,000 | 60,168 | 67,797 | 45,923 |
| All other states..... | 702,236 | 14,317 | 4,608 | 10,548 | Illinois..... | 1,918,123 | 48,082 | 7,954 | |
| Fine paper: | | | | | Massachusetts..... | 1,870,079 | 14,602 | 7,153 | 14,372 |
| Writing, total..... | 24,966,102 | 169,125 | 131,934 | 90,204 | New York..... | 825,681 | 21,743 | 10,963 | 8,044 |
| Massachusetts..... | 15,580,692 | 85,268 | 76,503 | 54,791 | New Jersey..... | 737,884 | 21,878 | 20,802 | 7,133 |
| Wisconsin..... | 3,271,402 | 27,379 | 17,333 | 10,332 | Ohio..... | 598,680 | 18,974 | 15,400 | 7,275 |
| Pennsylvania..... | 2,339,130 | 26,426 | 19,857 | 16,824 | All other states..... | 1,363,921 | 40,377 | 14,955 | 14,168 |
| Ohio..... | 2,100,911 | 16,379 | 6,552 | 3,315 | Hanging papers, total..... | 4,431,514 | 92,158 | 62,606 | 54,330 |
| Connecticut..... | 507,694 | 2,711 | 3,430 | 2,001 | New York..... | 2,865,839 | 62,179 | 42,722 | 39,598 |
| All other states..... | 1,166,273 | 10,962 | 8,259 | 2,941 | Pennsylvania..... | 566,695 | 9,769 | 7,814 | 4,416 |
| All other, total..... | 4,110,536 | 29,088 | 14,898 | 22,503 | Wisconsin..... | 411,240 | 8,868 | 1,754 | 120 |
| Massachusetts..... | 1,857,876 | 4,327 | 4,272 | 13,264 | All other states..... | 587,740 | 11,342 | 10,316 | 10,201 |
| Pennsylvania..... | 1,168,937 | 12,825 | 2,238 | 3,120 | Miscellaneous, total..... | 6,869,169 | 96,577 | 106,296 | 49,101 |
| All other states..... | 1,083,723 | 11,936 | 8,388 | 6,119 | Massachusetts..... | 1,623,031 | 19,322 | 15,186 | 5,852 |
| Wrapping paper: | | | | | New York..... | 793,169 | 30,320 | 8,858 | 9,556 |
| Manila (rope, jute, tag, etc.), total .. | 6,989,436 | 73,731 | 86,826 | 89,419 | Ohio..... | 784,035 | 5,788 | 28,127 | 4,530 |
| Massachusetts..... | 1,543,083 | 11,025 | 7,517 | 6,697 | Vermont..... | 607,440 | 10,974 | 9,696 | 1,366 |
| New Jersey..... | 1,381,123 | 13,663 | 7,279 | 7,377 | Pennsylvania..... | 302,523 | 2,390 | 2,508 | 6,333 |
| Ohio..... | 1,264,635 | 12,393 | 10,056 | 18,579 | Michigan..... | 229,718 | 3,484 | 2,876 | 2,971 |
| New York..... | 1,045,375 | 17,347 | 20,888 | 22,760 | Connecticut..... | 206,079 | 1,702 | 1,135 | 402 |
| Pennsylvania..... | 670,071 | 5,702 | 5,964 | 6,930 | All other states..... | 2,323,174 | 22,597 | 37,910 | 18,091 |
| Connecticut..... | 428,292 | 4,035 | 5,428 | 2,790 | Wood pulp, made for sale or for use in establishments other than where produced, total..... | 30,177,366 | 910,846 | 780,706 | 650,651 |
| All other states..... | 656,857 | 9,566 | 29,694 | 24,286 | Ground, total..... | 5,649,466 | 310,747 | 273,400 | 280,052 |
| Heavy (mill wrappers, etc.), total.. | 4,380,794 | 108,561 | 96,992 | 82,875 | New York..... | 1,859,391 | 100,383 | 128,695 | 122,607 |
| Pennsylvania..... | 1,777,450 | 36,619 | 31,043 | 5,921 | Maine..... | 1,822,734 | 107,116 | 64,480 | 78,954 |
| New York..... | 695,468 | 18,951 | 12,741 | 38,556 | Wisconsin..... | 816,470 | 37,964 | 35,645 | 28,396 |
| Maine..... | 482,872 | 11,463 | 11,768 | 953 | Vermont..... | 542,348 | 30,543 | 23,529 | 29,389 |
| New Jersey..... | 298,231 | 6,767 | 2,000 | 3 | All other states..... | 608,523 | 34,741 | 21,051 | 20,706 |
| Ohio..... | 147,869 | 5,725 | 6,314 | 5,646 | Soda fiber, total..... | 6,572,152 | 155,844 | 130,366 | 99,014 |
| Massachusetts..... | 89,649 | 1,350 | 3,074 | 10,254 | Maine..... | 1,748,294 | 41,106 | 45,376 | 32,956 |
| All other states..... | 889,255 | 27,686 | 30,052 | 21,542 | New York..... | 1,375,169 | 33,236 | 17,379 | 15,034 |
| Straw, total..... | 870,419 | 32,988 | 54,232 | 91,794 | Pennsylvania..... | 683,610 | 16,589 | 17,465 | 11,668 |
| Ohio..... | 217,050 | 8,682 | 9,078 | 10,619 | All other states..... | 2,765,079 | 64,913 | 50,146 | 39,356 |
| New York..... | 116,922 | 3,374 | 4,369 | 14,650 | Sulphite fiber, total..... | 17,955,748 | 444,255 | 376,940 | 271,585 |
| All other states..... | 536,447 | 20,932 | 40,785 | 66,525 | New York..... | 5,586,136 | 146,256 | 89,368 | 76,658 |
| Bogus or wood manila, all grades, total..... | 19,777,707 | 367,932 | 228,371 | 203,826 | New Hampshire..... | 3,731,579 | 93,269 | 91,895 | 80,718 |
| Maine..... | 7,596,427 | 132,233 | 66,631 | 31,849 | Wisconsin..... | 2,895,047 | 73,719 | 53,632 | 35,261 |
| New York..... | 4,206,208 | 79,952 | 75,262 | 74,724 | Maine..... | 1,799,476 | 46,073 | 58,261 | 27,143 |
| Wisconsin..... | 2,588,031 | 51,641 | 16,838 | 17,981 | All other states..... | 3,943,510 | 84,938 | 83,784 | 51,805 |
| New Hampshire..... | 2,429,835 | 45,627 | 26,647 | 13,963 | Wood pulp produced (including that used in mills where manufactured), total..... | 2,495,523 | 1,921,768 | 1,179,525 | |
| Vermont..... | 700,578 | 12,635 | 8,517 | 13,700 | Ground, total..... | 1,179,266 | 968,976 | 586,374 | |
| Pennsylvania..... | 278,993 | 6,167 | 1,571 | 11,457 | New York..... | 405,376 | 379,029 | 245,293 | |
| All other states..... | 1,977,635 | 39,677 | 32,905 | 40,152 | Maine..... | 324,264 | 230,340 | 129,878 | |
| All other, total..... | 10,202,035 | 179,855 | 177,870 | 67,338 | Wisconsin..... | 166,822 | 124,746 | 77,305 | |
| Wisconsin..... | 2,346,068 | 41,471 | 53,886 | 13,956 | Vermont..... | 48,390 | 51,839 | 48,153 | |
| Michigan..... | 2,254,318 | 38,224 | 18,326 | 3,586 | All other states..... | 234,414 | 183,022 | 85,745 | |
| New York..... | 1,660,271 | 30,474 | 43,926 | 6,695 | Soda fiber, total..... | 298,626 | 196,770 | 177,114 | |
| Pennsylvania..... | 1,228,064 | 15,507 | 18,514 | 9,997 | Pennsylvania..... | 80,776 | 53,682 | 61,662 | |
| Ohio..... | 668,678 | 13,218 | 12,489 | 7,400 | Maine..... | 78,940 | 53,257 | 44,162 | |
| Indiana..... | 521,121 | 9,109 | 1,510 | 658 | New York..... | 39,441 | 26,966 | 24,346 | |
| All other states..... | 1,523,515 | 31,852 | 29,219 | 25,046 | All other states..... | 99,469 | 62,865 | 46,944 | |
| Boards: | | | | | Sulphite fiber, total..... | 1,017,631 | 756,022 | 416,037 | |
| Wood pulp, total..... | 2,639,496 | 71,036 | 60,863 | 44,187 | New York..... | 234,717 | 200,019 | 124,996 | |
| New York..... | 948,796 | 23,757 | 11,011 | 12,133 | Maine..... | 217,501 | 173,324 | 57,579 | |
| All other states..... | 1,690,700 | 47,279 | 49,852 | 32,054 | Wisconsin..... | 154,391 | 113,047 | 59,793 | |
| Straw, total..... | 3,750,851 | 171,789 | 167,278 | 157,534 | New Hampshire..... | 133,687 | 115,195 | 87,852 | |
| Indiana..... | 1,692,128 | 82,056 | 59,114 | 70,081 | All other states..... | 277,335 | 154,437 | 85,817 | |
| Ohio..... | 853,100 | 37,710 | 33,953 | 40,531 | | | | | |
| Illinois..... | 621,340 | 29,510 | 22,408 | 20,100 | | | | | |

¹ Included in "all other states."

² Not reported separately.

Equipment.—Table 23 shows the number and capacity of the different paper machines and the different types of pulp equipment reported for the industry in 1909, 1904, and 1899.

| Table 23 | EQUIPMENT. | 1909 | 1904 | 1899 |
|------------------------|-------------------------------------|-----------|-----------|------------------|
| Paper machines: | | | | |
| | Total number..... | 1,480 | 1,369 | 1,232 |
| | Capacity, yearly, tons..... | 5,293,397 | 3,857,903 | 2,782,219 |
| Fourdrinier— | | | | |
| | Number..... | 804 | 752 | 663 |
| | Capacity per 24 hours, tons..... | 10,508 | 8,569 | (¹) |
| Cylinder— | | | | |
| | Number..... | 676 | 617 | 569 |
| | Capacity per 24 hours, tons..... | 6,316 | 4,740 | (¹) |
| Pulp equipment: | | | | |
| | Grinders, number..... | 1,435 | 1,362 | 1,168 |
| | Digesters, total number..... | 542 | 517 | 426 |
| | Sulphite fiber, number..... | 348 | 309 | (²) |
| | Soda fiber, number..... | 194 | 208 | (²) |
| | Capacity, yearly, tons of pulp..... | 3,405,621 | 2,644,753 | 1,536,431 |
| | Ground, tons..... | 1,809,685 | 1,515,088 | (²) |
| | Sulphite, tons..... | 1,250,983 | 885,092 | (²) |
| | Soda, tons..... | 344,953 | 244,573 | (²) |

¹ Not reported.

² Not reported separately.

Paper machines.—The number of Fourdrinier machines increased 21.3 per cent, and the number of cylinder machines 18.8 per cent, during the decade, while their combined yearly capacity increased 2,511,178 tons, or 90.3 per cent. The total capacity of the

Fourdrinier machines per 24 hours in 1909 was 10,508 tons, or an average of 13.1 tons per machine, as compared with 8,569 tons, or 11.4 tons per machine, in 1904. The total capacity of the cylinder machines in 1909 was 6,316 tons, or an average of 9.3 tons per machine, as compared with 4,740 tons, or 7.7 tons per machine, in 1904. The capacity of the machines was not reported in 1899.

Pulp-mill equipment.—The total capacity of the pulp mills increased 121.7 per cent during the decade 1899 to 1909 and 28.8 per cent during the five-year period 1904–1909. The capacity of the apparatus for manufacturing the three classes of pulp was not reported for 1899, but during the period 1904–1909 the capacity increased as follows: Grinders, 19.4 per cent; sulphite digesters, 41.3 per cent; and soda digesters, 41 per cent.

Imports and exports.—Table 24 shows the imports of paper, paper stock, and wood pulp, and the exports of paper and wood pulp, in the different years from 1899 to 1909 as reported by the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

| Table 24 | IMPORTS. | | | | EXPORTS. | | | YEAR ENDING JUNE 30— | IMPORTS. | | | | EXPORTS. | | |
|-----------|-------------------|----------------------------|----------------------------------|-------------|-------------------|----------------------------------|-----------|-------------------------|-------------------|----------------------------|----------------------------------|-------------|-------------------|----------------------------------|-----------|
| | Paper (value). | Paper stock (value). | Wood pulp. | | Paper (value). | Wood pulp. | | | Paper (value). | Paper stock (value). | Wood pulp. | | Paper (value). | Wood pulp. | |
| | | | Quan- tity (long tons). | Value. | | Quan- tity (long tons). | Value. | | | | Quan- tity (long tons). | Value. | | Quan- tity (long tons). | Value. |
| 1909..... | \$11,632,571 | \$3,638,034 | 274,217 | \$8,629,263 | \$7,663,139 | 9,219 | \$448,960 | 1903..... | \$4,733,036 | \$3,015,084 | 116,881 | \$3,387,770 | \$7,180,014 | 10,029 | \$445,228 |
| 1908..... | 12,223,058 | 3,675,926 | 237,514 | 7,313,326 | 8,064,706 | 10,645 | 519,625 | 1902..... | 4,223,125 | 2,770,255 | 67,416 | 2,059,092 | 7,312,030 | 17,120 | 740,103 |
| 1907..... | 10,727,885 | 5,580,528 | 213,110 | 6,348,857 | 9,856,733 | 11,196 | 498,552 | 1901..... | 4,002,989 | 2,183,686 | 46,757 | 1,586,402 | 7,438,901 | 27,468 | 1,051,867 |
| 1906..... | 6,998,761 | 4,374,464 | 157,224 | 4,584,942 | 9,536,065 | 13,162 | 587,878 | 1900..... | 3,795,645 | 3,261,778 | 82,441 | 2,405,630 | 6,215,833 | 12,748 | 458,463 |
| 1905..... | 5,623,638 | 3,796,595 | 167,504 | 4,500,955 | 8,238,088 | 10,582 | 473,585 | 1899..... | 3,191,589 | 2,614,914 | 33,319 | 671,506 | 5,477,884 | 24,970 | 696,319 |
| 1904..... | 5,319,086 | 2,900,713 | 144,796 | 3,602,668 | 7,543,728 | 13,496 | 593,474 | | | | | | | | |

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the paper and wood pulp industry are presented, by states, in Tables 25 and 26.

Table 25 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in the

industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 26 gives more detailed statistics for the industry for 1909 only.

PAPER AND WOOD PULP—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

| STATE. | Census. | Number of establishments. | PERSONS ENGAGED IN INDUSTRY. | | | | Primary horse-power. | Capital. | Salaries. | Wages. | Cost of materials. | Value of products. | Value added by manufacture (value of products less cost of materials). |
|-------------------------|---------|---------------------------|------------------------------|-------------------------------|---------------------|--------------------------------|----------------------|-----------|-----------|----------|--------------------|--------------------|--|
| | | | Total. | Proprietors and firm members. | Salaried employees. | Wage earners (average number). | | | | | | | |
| Expressed in thousands. | | | | | | | | | | | | | |
| United States..... | 1909 | 777 | 81,473 | 250 | 5,245 | 75,978 | 1,304,265 | \$409,349 | \$9,510 | \$40,805 | \$165,442 | \$267,657 | \$102,215 |
| | 1904 | 761 | 70,051 | 309 | 3,778 | 65,964 | 1,093,708 | 277,444 | 6,097 | 32,019 | 111,251 | 188,715 | 77,464 |
| | 1899 | 763 | 53,012 | 431 | 2,935 | 49,646 | 762,118 | 167,508 | 4,501 | 20,746 | 70,530 | 127,326 | 56,796 |
| California..... | 1909 | 4 | 340 | 2 | 26 | 312 | 7,163 | 2,068 | 36 | 207 | 440 | 959 | 529 |
| | 1904 | 3 | 273 | 2 | 12 | 259 | 3,808 | 1,176 | 20 | 181 | 274 | 640 | 366 |
| | 1899 | | | | | | | | | | | | |
| Connecticut..... | 1909 | 51 | 1,920 | 24 | 176 | 1,720 | 19,509 | 7,195 | 351 | 924 | 3,303 | 5,527 | 2,224 |
| | 1904 | 50 | 1,933 | 29 | 154 | 1,750 | 18,021 | 5,893 | 236 | 843 | 2,738 | 5,039 | 2,301 |
| | 1899 | 49 | 1,576 | 36 | 115 | 1,425 | 14,621 | 3,968 | 152 | 633 | 1,982 | 3,565 | 1,583 |
| Delaware..... | 1909 | 6 | 599 | 4 | 49 | 546 | 4,318 | 3,314 | 61 | 310 | 1,587 | 2,292 | 705 |
| | 1904 | 6 | 575 | 6 | 22 | 547 | 5,115 | 3,176 | 70 | 252 | 1,270 | 1,905 | 635 |
| | 1899 | 6 | 476 | 6 | 19 | 451 | 4,010 | 2,143 | 62 | 194 | 1,028 | 1,600 | 572 |
| Illinois..... | 1909 | 19 | 1,542 | 3 | 142 | 1,397 | 15,169 | 8,400 | 200 | 727 | 3,099 | 4,983 | 1,884 |
| | 1904 | 19 | 1,036 | 4 | 73 | 959 | 12,818 | 3,993 | 120 | 462 | 1,416 | 2,443 | 1,027 |
| | 1899 | 15 | 664 | 6 | 35 | 623 | 9,551 | 1,555 | 37 | 250 | 798 | 1,432 | 634 |
| Indiana..... | 1909 | 27 | 1,627 | 7 | 119 | 1,501 | 18,382 | 7,132 | 173 | 754 | 3,497 | 5,202 | 1,705 |
| | 1904 | 36 | 1,737 | 5 | 112 | 1,620 | 19,775 | 6,511 | 132 | 664 | 2,517 | 3,917 | 1,400 |
| | 1899 | 39 | 1,962 | 12 | 134 | 1,816 | 23,797 | 5,379 | 186 | 724 | 2,471 | 4,170 | 1,699 |
| Iowa..... | 1909 | 4 | 225 | | 20 | 205 | 1,435 | 673 | 25 | 81 | 281 | 437 | 156 |
| | 1904 | 4 | 165 | | 13 | 152 | 1,005 | 368 | 12 | 66 | 131 | 253 | 122 |
| | 1899 | 4 | 193 | 2 | 11 | 180 | 1,210 | 182 | 12 | 64 | 107 | 244 | 137 |
| Kansas..... | 1909 | 3 | 109 | 1 | 11 | 97 | 920 | 330 | 14 | 46 | 120 | 218 | 98 |
| | 1904 | 3 | 105 | 6 | 8 | 91 | 1,078 | 132 | 8 | 46 | 78 | 202 | 124 |
| | 1899 | | | | | | | | | | | | |
| Maine..... | 1909 | 45 | 9,146 | 17 | 482 | 8,647 | 223,787 | 65,133 | 1,019 | 5,267 | 20,504 | 33,950 | 13,446 |
| | 1904 | 37 | 7,935 | 11 | 350 | 7,574 | 152,294 | 41,274 | 605 | 4,052 | 13,868 | 22,951 | 9,083 |
| | 1899 | 35 | 5,121 | 12 | 258 | 4,851 | 92,330 | 17,473 | 445 | 2,163 | 7,119 | 13,223 | 6,104 |
| Maryland..... | 1909 | 13 | 1,349 | 15 | 85 | 1,249 | 11,407 | 8,399 | 140 | 639 | 3,278 | 4,894 | 1,616 |
| | 1904 | 16 | 1,074 | 19 | 47 | 1,008 | 7,343 | 6,350 | 76 | 397 | 2,453 | 3,296 | 843 |
| | 1899 | 21 | 983 | 11 | 35 | 937 | 8,503 | 2,721 | 59 | 326 | 1,731 | 2,590 | 859 |
| Massachusetts..... | 1909 | 88 | 13,742 | 24 | 870 | 12,848 | 115,792 | 42,524 | 1,690 | 6,542 | 22,350 | 40,097 | 17,747 |
| | 1904 | 87 | 12,365 | 33 | 627 | 11,705 | 104,954 | 41,074 | 1,185 | 5,588 | 17,947 | 32,012 | 14,065 |
| | 1899 | 93 | 9,606 | 35 | 510 | 9,061 | 82,200 | 26,693 | 861 | 3,938 | 11,919 | 22,141 | 10,222 |
| Michigan..... | 1909 | 32 | 4,581 | 5 | 249 | 4,327 | 48,700 | 15,754 | 423 | 2,142 | 9,025 | 13,922 | 4,897 |
| | 1904 | 30 | 3,221 | 6 | 163 | 3,052 | 31,357 | 8,398 | 218 | 1,306 | 4,531 | 7,341 | 2,760 |
| | 1899 | 27 | 2,130 | 9 | 107 | 2,014 | 22,856 | 4,506 | 143 | 701 | 2,708 | 4,218 | 1,510 |
| Minnesota..... | 1909 | 9 | 640 | | 33 | 607 | 23,440 | 3,235 | 64 | 361 | 1,438 | 2,385 | 947 |
| | 1904 | 4 | 418 | | 22 | 396 | 7,153 | 1,491 | 31 | 234 | 677 | 1,146 | 469 |
| | 1899 | | | | | | | | | | | | |
| New Hampshire..... | 1909 | 34 | 3,668 | 13 | 242 | 3,413 | 79,912 | 27,534 | 485 | 2,106 | 9,253 | 13,994 | 4,741 |
| | 1904 | 25 | 2,674 | 5 | 147 | 2,522 | 49,784 | 14,041 | 209 | 1,315 | 5,328 | 8,930 | 3,602 |
| | 1899 | 29 | 2,524 | 20 | 113 | 2,391 | 48,590 | 8,163 | 173 | 1,037 | 3,953 | 7,245 | 3,292 |
| New Jersey..... | 1909 | 37 | 2,445 | 11 | 211 | 2,223 | 22,996 | 10,742 | 456 | 1,181 | 4,769 | 7,554 | 2,785 |
| | 1904 | 38 | 1,773 | 15 | 129 | 1,629 | 17,336 | 7,123 | 233 | 787 | 3,022 | 5,043 | 2,021 |
| | 1899 | 34 | 1,308 | 25 | 93 | 1,190 | 12,978 | 3,671 | 163 | 553 | 1,715 | 3,195 | 1,480 |
| New York..... | 1909 | 178 | 13,018 | 59 | 886 | 12,073 | 337,548 | 90,912 | 1,471 | 6,744 | 31,767 | 48,860 | 17,093 |
| | 1904 | 177 | 13,262 | 85 | 759 | 12,418 | 390,730 | 56,462 | 1,132 | 6,402 | 22,806 | 37,751 | 14,945 |
| | 1899 | 179 | 10,001 | 129 | 604 | 9,268 | 227,767 | 37,349 | 859 | 4,100 | 14,563 | 26,716 | 12,153 |
| Ohio..... | 1909 | 47 | 4,972 | 3 | 296 | 4,673 | 51,402 | 20,970 | 596 | 2,419 | 10,898 | 16,965 | 6,067 |
| | 1904 | 53 | 4,108 | 3 | 222 | 3,883 | 36,288 | 14,433 | 327 | 1,683 | 6,154 | 10,962 | 4,808 |
| | 1899 | 51 | 3,399 | 19 | 196 | 3,184 | 28,517 | 7,873 | 278 | 1,118 | 3,769 | 6,544 | 2,775 |
| Pennsylvania..... | 1909 | 62 | 7,196 | 32 | 508 | 6,656 | 66,910 | 27,747 | 820 | 3,303 | 11,398 | 19,873 | 8,475 |
| | 1904 | 65 | 6,283 | 53 | 324 | 5,906 | 54,837 | 21,469 | 518 | 2,839 | 8,510 | 15,411 | 6,901 |
| | 1899 | 73 | 5,195 | 74 | 281 | 4,840 | 41,849 | 16,424 | 385 | 1,989 | 6,374 | 12,268 | 5,894 |
| Vermont..... | 1909 | 25 | 1,133 | 22 | 81 | 1,030 | 38,191 | 8,432 | 141 | 594 | 2,455 | 3,902 | 1,447 |
| | 1904 | 28 | 1,399 | 20 | 99 | 1,280 | 42,952 | 5,629 | 123 | 617 | 2,540 | 3,831 | 1,291 |
| | 1899 | 27 | 1,320 | 16 | 88 | 1,216 | 34,526 | 4,854 | 129 | 571 | 1,685 | 3,385 | 1,700 |
| Virginia..... | 1909 | 9 | 981 | 1 | 68 | 912 | 9,770 | 5,268 | 153 | 412 | 2,148 | 3,657 | 1,509 |
| | 1904 | 9 | 1,058 | | 65 | 993 | 7,800 | 5,517 | 134 | 363 | 1,789 | 3,034 | 1,245 |
| | 1899 | 7 | 336 | | 34 | 302 | 6,345 | 2,282 | 58 | 103 | 411 | 850 | 439 |
| West Virginia..... | 1909 | 9 | 1,221 | 2 | 57 | 1,162 | 11,025 | 3,603 | 97 | 478 | 1,683 | 2,652 | 969 |
| | 1904 | 7 | 585 | 3 | 37 | 545 | 4,575 | 2,215 | 47 | 230 | 760 | 1,298 | 538 |
| | 1899 | 6 | 305 | 2 | 22 | 281 | 4,785 | 926 | 26 | 98 | 274 | 528 | 254 |
| Wisconsin..... | 1909 | 57 | 7,878 | 1 | 410 | 7,467 | 136,903 | 33,738 | 731 | 3,891 | 16,693 | 25,962 | 9,269 |
| | 1904 | 52 | 6,627 | 2 | 287 | 6,338 | 105,940 | 24,409 | 435 | 2,988 | 10,692 | 17,844 | 7,152 |
| | 1899 | 47 | 4,442 | 3 | 199 | 4,240 | 76,876 | 16,580 | 308 | 1,649 | 6,713 | 10,896 | 4,183 |
| All other states..... | 1909 | 18 | 3,141 | 4 | 224 | 2,913 | 59,586 | 16,246 | 364 | 1,677 | 5,456 | 9,362 | 3,906 |
| | 1904 | 12 | 1,445 | 2 | 106 | 1,337 | 18,745 | 6,310 | 226 | 703 | 1,700 | 3,466 | 1,766 |
| | 1899 | 21 | 1,471 | 14 | 81 | 1,376 | 20,807 | 4,766 | 165 | 535 | 1,210 | 2,516 | 1,306 |

¹ Figures can not be shown without disclosing individual operations.



PAPER AND WOOD PULP—DETAILED STATISTICS, BY STATES: 1909.

Table 26

| STATE. | Number of establishments. | PERSONS ENGAGED IN INDUSTRY. | | | | | | | WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY. | | | | | | Primary horse-power. |
|-------------------------------------|---------------------------|------------------------------|-------------------------------|---|---------|---------|-----------------|----------------------|--|--------|--------------|---------|-----------|---------|----------------------|
| | | Total. | Proprietors and firm members. | Salaried officers, superintendents, and managers. | Clerks. | | Wage earners. | | | Total. | 16 and over. | | Under 16. | | |
| | | | | | Male. | Female. | Average number. | Number, 15th day of— | | | Male. | Female. | Male. | Female. | |
| | | | | | | | | Maximum month. | Minimum month. | | | | | | |
| United States... | 777 | 81,473 | 250 | 2,048 | 2,393 | 804 | 75,978 | De 77,430 | Au 74,517 | 78,672 | 68,497 | 9,909 | 107 | 159 | 1,304,265 |
| California..... | 4 | 340 | 2 | 10 | 11 | 5 | 312 | De 330 | Oc 285 | 330 | 324 | 6 | | | 7,163 |
| Connecticut..... | 51 | 1,920 | 24 | 95 | 51 | 30 | 1,720 | De 1,861 | Ja 1,638 | 1,868 | 1,573 | 282 | 7 | 6 | 19,509 |
| Delaware..... | 6 | 599 | 4 | 14 | 27 | 8 | 546 | Mh 567 | Je ¹ 530 | 559 | 479 | 80 | | | 4,318 |
| Illinois..... | 19 | 1,542 | 3 | 50 | 69 | 23 | 1,397 | No 1,541 | Ja 1,183 | 1,575 | 1,552 | 19 | 4 | | 15,169 |
| Indiana..... | 27 | 1,627 | 7 | 56 | 44 | 19 | 1,501 | De 1,661 | My 1,402 | 1,668 | 1,577 | 85 | 4 | 2 | 18,382 |
| Iowa..... | 4 | 225 | | 12 | 4 | 4 | 205 | Mh 243 | Jy 134 | 183 | 169 | 14 | | | 1,435 |
| Kansas..... | 3 | 109 | 1 | 6 | 3 | 2 | 97 | Fe 133 | Au 42 | 106 | 87 | 19 | | | 920 |
| Maine..... | 45 | 9,146 | 17 | 165 | 252 | 65 | 8,647 | De 8,841 | Se 8,334 | 8,892 | 8,399 | 477 | 16 | | 223,787 |
| Maryland..... | 13 | 1,349 | 15 | 31 | 46 | 8 | 1,249 | No 1,290 | Ja 1,158 | 1,247 | 1,091 | 154 | 2 | | 11,407 |
| Massachusetts..... | 88 | 13,742 | 24 | 268 | 401 | 201 | 12,848 | De 13,234 | Jy 12,611 | 13,313 | 8,673 | 4,508 | 22 | 110 | 115,792 |
| Michigan..... | 32 | 4,581 | 5 | 95 | 120 | 34 | 4,327 | Je 4,480 | Mh 4,168 | 4,395 | 3,618 | 777 | | | 48,700 |
| Minnesota..... | 9 | 640 | | 20 | 11 | 2 | 607 | Je 638 | Ja 541 | 618 | 608 | 10 | | | 23,440 |
| New Hampshire..... | 34 | 3,668 | 13 | 88 | 139 | 15 | 3,413 | Oc 3,618 | Au 3,255 | 3,423 | 3,292 | 131 | | | 79,912 |
| New Jersey..... | 37 | 2,445 | 11 | 81 | 89 | 41 | 2,223 | No 2,344 | Ja 2,100 | 2,348 | 2,148 | 168 | 14 | 18 | 22,996 |
| New York..... | 178 | 13,018 | 59 | 425 | 352 | 109 | 12,073 | My 12,788 | Au 11,433 | 12,531 | 12,100 | 431 | | | 337,548 |
| Ohio..... | 47 | 4,972 | 3 | 126 | 108 | 62 | 4,673 | De 4,811 | My 4,528 | 4,796 | 4,055 | 737 | 3 | 1 | 51,402 |
| Pennsylvania..... | 62 | 7,196 | 32 | 167 | 250 | 91 | 6,656 | No 6,916 | Fe 6,481 | 6,842 | 6,064 | 744 | 17 | 17 | 66,910 |
| Vermont..... | 25 | 1,133 | 22 | 44 | 24 | 13 | 1,030 | Mh 1,133 | Au 885 | 1,113 | 1,035 | 78 | | | 38,191 |
| Virginia..... | 9 | 981 | 1 | 34 | 28 | 6 | 912 | Au 997 | My ¹ 865 | 935 | 838 | 94 | 3 | | 9,770 |
| West Virginia..... | 9 | 1,221 | 2 | 29 | 24 | 4 | 1,162 | Au 1,311 | Ap 1,050 | 1,202 | 1,155 | 47 | | | 11,025 |
| Wisconsin..... | 57 | 7,878 | 1 | 160 | 210 | 40 | 7,467 | De 7,716 | Ja 7,161 | 7,629 | 6,655 | 958 | 13 | 3 | 136,903 |
| All other states ² | 18 | 3,141 | 4 | 72 | 130 | 22 | 2,913 | | | 3,099 | 3,005 | 90 | 2 | 2 | 59,586 |

| STATE. | Capital. | EXPENSES. | | | | | | | | | | Value of products. | Value added by manufacture (value of products less cost of materials). |
|-------------------------------------|---------------|---------------|-------------|-------------|---------------|-------------------------|---------------|------------------|------------------------------------|----------------|--------------|--------------------|--|
| | | Total. | Services. | | | Materials. | | | Miscellaneous. | | | | |
| | | | Officials. | Clerks. | Wage earners. | Fuel and rent of power. | Other. | Rent of factory. | Taxes, including internal revenue. | Contract work. | Other. | | |
| United States... | \$409,348,505 | \$237,310,150 | \$6,268,319 | \$3,241,822 | \$40,804,502 | \$18,320,266 | \$147,122,075 | \$635,461 | \$2,002,079 | \$527,915 | \$18,387,711 | \$267,656,964 | \$102,214,623 |
| California..... | 2,068,048 | 757,198 | 25,840 | 10,410 | 206,622 | 99,432 | 340,963 | 2,505 | 6,554 | | 64,872 | 969,172 | 528,777 |
| Connecticut..... | 7,194,953 | 5,085,020 | 268,589 | 82,111 | 923,600 | 407,218 | 2,896,198 | 2,412 | 31,003 | 9,314 | 464,575 | 5,527,334 | 2,223,918 |
| Delaware..... | 3,313,559 | 2,027,287 | 27,186 | 34,021 | 309,591 | 155,160 | 1,432,013 | | 6,462 | | 62,854 | 2,291,728 | 704,555 |
| Illinois..... | 8,400,333 | 4,567,670 | 118,514 | 81,299 | 727,420 | 320,352 | 2,779,088 | 8,080 | 17,723 | 3,927 | 511,267 | 4,983,075 | 1,883,635 |
| Indiana..... | 7,131,771 | 4,872,964 | 118,046 | 55,161 | 753,755 | 408,737 | 3,088,408 | 13,153 | 22,615 | 24,925 | 388,164 | 5,202,330 | 1,705,185 |
| Iowa..... | 673,226 | 425,661 | 21,679 | 2,969 | 81,234 | 48,175 | 232,639 | | 1,798 | 1,600 | 35,567 | 437,388 | 156,574 |
| Kansas..... | 329,513 | 219,375 | 10,098 | 3,712 | 46,430 | 13,097 | 107,309 | | 2,430 | | 36,299 | 217,982 | 97,576 |
| Maine..... | 65,133,247 | 29,289,896 | 650,926 | 368,018 | 5,266,656 | 2,628,561 | 17,875,652 | 525,124 | 282,020 | 84,873 | 1,608,066 | 33,950,230 | 13,446,017 |
| Maryland..... | 8,398,665 | 4,253,865 | 63,250 | 77,076 | 639,057 | 236,571 | 3,041,851 | | 9,974 | | 186,086 | 4,894,401 | 1,615,979 |
| Massachusetts..... | 42,523,682 | 34,670,185 | 1,093,532 | 596,738 | 6,541,636 | 2,331,897 | 20,017,716 | 12,195 | 395,610 | 280,594 | 3,400,267 | 40,096,713 | 17,747,100 |
| Michigan..... | 15,754,419 | 12,417,132 | 284,879 | 137,803 | 2,141,844 | 958,147 | 8,066,448 | | 113,847 | 46,253 | 667,911 | 13,922,124 | 4,897,529 |
| Minnesota..... | 3,234,935 | 2,028,591 | 48,983 | 15,360 | 360,986 | 162,937 | 1,274,839 | | 20,807 | | 144,679 | 2,385,026 | 947,250 |
| New Hampshire..... | 27,533,569 | 12,857,734 | 293,719 | 191,762 | 2,105,769 | 1,019,534 | 8,233,835 | 4,457 | 113,368 | 921 | 894,369 | 13,994,251 | 4,740,882 |
| New Jersey..... | 10,741,820 | 7,024,916 | 315,768 | 140,006 | 1,181,485 | 597,233 | 4,171,518 | 15,900 | 35,555 | | 567,421 | 7,554,428 | 2,785,677 |
| New York..... | 90,911,790 | 43,775,408 | 997,937 | 473,213 | 6,743,806 | 3,028,118 | 28,739,165 | 38,690 | 352,660 | 21,216 | 3,380,603 | 48,859,610 | 17,092,327 |
| Ohio..... | 20,969,694 | 15,515,130 | 404,240 | 192,088 | 2,419,215 | 1,049,097 | 9,849,188 | 4,800 | 86,867 | 10,768 | 1,498,867 | 16,965,260 | 6,066,975 |
| Pennsylvania..... | 27,746,888 | 17,494,422 | 538,035 | 282,227 | 3,303,034 | 1,544,116 | 9,854,195 | 2,485 | 59,591 | 130 | 1,910,609 | 19,872,717 | 8,474,406 |
| Vermont..... | 8,431,703 | 3,462,582 | 111,090 | 29,922 | 593,752 | 243,335 | 2,212,020 | 2,300 | 36,324 | | 233,839 | 3,901,634 | 1,446,279 |
| Virginia..... | 5,267,553 | 2,969,729 | 112,430 | 40,751 | 412,122 | 194,063 | 1,954,309 | | 13,272 | | 242,782 | 3,656,745 | 1,508,373 |
| West Virginia..... | 3,603,392 | 2,471,610 | 61,217 | 36,046 | 478,113 | 204,818 | 1,478,601 | | 23,392 | 16,000 | 173,423 | 2,652,037 | 968,618 |
| Wisconsin..... | 33,737,744 | 22,746,558 | 484,297 | 246,771 | 3,891,469 | 1,616,021 | 15,076,544 | 2,060 | 299,600 | 23,164 | 1,106,632 | 25,962,099 | 9,269,534 |
| All other states ² | 16,248,001 | 8,377,217 | 218,064 | 144,358 | 1,676,906 | 1,053,647 | 4,399,576 | 1,300 | 70,577 | 4,230 | 808,559 | 9,360,680 | 3,907,457 |

¹ Same number reported for one or more other months.
² All other states embrace: District of Columbia, 1 establishment; Georgia, 1; Louisiana, 1; Missouri, 1; North Carolina, 3; Oregon, 5; Rhode Island, 1; South Carolina 1; Texas, 2; Washington, 2.