

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE.

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Appointed April 1, 1879; resigned November 3, 1881.

CHAS. W. SEATON, Superintendent,
Appointed November 4, 1881. Office of Superintendent
abolished March 3, 1885.

From Hon J. D. Bayard
Sept 1886
REPORT

ON THE

STATISTICS OF WAGES

IN

MANUFACTURING INDUSTRIES;

WITH SUPPLEMENTARY REPORTS ON

THE AVERAGE RETAIL PRICES OF NECESSARIES OF LIFE,

AND ON

TRADES SOCIETIES, AND STRIKES AND LOCKOUTS,

BY

JOS. D. WEEKS,
SPECIAL AGENT TENTH CENSUS.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.

1886.

Bureau of the Census

LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., April 30, 1886.

Hon. L. Q. C. LAMAR,
Secretary of the Interior.

SIR: I have the honor to transmit herewith the twentieth volume of the final report on the Tenth Census, it being a report on the statistics of wages in manufacturing industries, with supplementary reports on the average retail prices of necessities of life, on trades societies, and on strikes and lockouts, by Joseph D. Weeks, expert and special agent.

These reports were transmitted to the House of Representatives by the Acting Superintendent of Census on February 18, 1884, in obedience to a resolution passed January 9, 1884, referred to the Committee on Labor, and ordered to be printed, and have been published as Miscellaneous Document No. 33.

I have the honor to be, sir, your most obedient servant,

JAMES H. WARDLE,
Chief of Census Division.

REPORT
ON THE
STATISTICS OF WAGES
IN THE
MANUFACTURING INDUSTRIES,
WITH
SUPPLEMENTARY STATEMENTS,

BY
JOS. D. WEEKS,
SPECIAL AGENT TENTH CENSUS.

TABLE OF CONTENTS.

	Page.
LETTER OF TRANSMITTAL	ix, x
NOTE BY HON. FRANCIS A. WALKER, FORMER SUPERINTENDENT OF CENSUS	x
INTRODUCTORY REMARKS	xi-xxxiv
SCOPE OF THE REPORT	xi
FORMS OF QUESTIONS ASKED	xi-xv
METHODS USED IN COLLECTING AND VERIFYING THESE STATISTICS	xv
INDUSTRIES INCLUDED IN THIS REPORT	xvi
GEOGRAPHICAL DISTRIBUTION OF THE REPORTS TABULATED	xvii, xviii
TIME COVERED BY THE RATES GIVEN	xviii, xix
CLASSES OF EMPLOYÉS	xix
RATES OF WAGES AND UNIT OF PAYMENT	xix
FLUCTUATION IN RATES OF WAGES	xix, xx
EXTRA EARNINGS	xx
ADVANTAGES AND DISADVANTAGES OF OVER-TIME	xx
ALLOWANCES	xx, xxi
DEDUCTIONS	xxi
METHOD OF PAYMENT	xxi-xxiii
INTERVAL OF PAYMENT	xxiii-xxviii
HOURS OF LABOR	xxviii-xxxiii
REGULARITY OF EMPLOYMENT	xxxiv
PRICES OF PRODUCT AND LABOR COST	xxxiv

WAGES TABLES.

AGRICULTURAL IMPLEMENTS (11 tabulations)	3-9
BELLS (1 tabulation)	10
BELTING (4 tabulations)	11, 12
BOOTS AND SHOES (13 tabulations)	13-22
BREWERIES AND DISTILLERIES (9 tabulations)	23-26
BRICK-MAKING (10 tabulations)	27-34
BRIDGE-BUILDING (2 tabulations)	35, 36
CANNING INDUSTRY, THE (2 tabulations)	37, 38
CIGARS AND TOBACCO (22 tabulations)	39-50
CLOTHING (5 tabulations)	51-53
FLOUR- AND GRIST-MILLS (47 tabulations)	54-73
GAS AND GAS COKE (6 tabulations)	74-77
GLASS (17 tabulations)	78-102
FLINT (10 tabulations)	79-91
GREEN (3 tabulations)	92-95
PLATE	96
WINDOW (4 tabulations)	97-102
HATS (2 tabulations)	103-107
ICE INDUSTRY, THE (2 tabulations)	108, 109
IRON AND STEEL INDUSTRIES (149 tabulations)	110-234
BLAST-FURNACES (40 tabulations)	110-134
ANTHRACITE (10 tabulations)	113-119
BITUMINOUS (11 tabulations)	119-124
CHARCOAL (19 tabulations)	124-134
FOUNDERIES (24 tabulations)	135-153
CAR-WHEEL (7 tabulations)	135-138
STOVE (11 tabulations)	139-148
GENERAL (6 tabulations)	149-153
HARDWARE, CUTLERY, AND EDGE TOOLS (17 tabulations)	154-166

	Page.
IRON AND STEEL INDUSTRIES—Continued.	
MACHINERY (40 tabulations).....	167-196
ROLLING-MILLS AND NAIL FACTORIES (25 tabulations)	197-232
TIN AND SHEET-IRON WORKS (3 tabulations).....	233, 234
MARBLE-WORKS (3 tabulations)	235, 236
MINING (28 tabulations).....	237-260
COAL (8 tabulations).....	237-245
COPPER (4 tabulations)	246, 247
IRON (6 tabulations)	248-254
SILVER (2 tabulations).....	255
STONE QUARRYING AND WORKING (8 tabulations)	256-260
PAINTS AND WHITE LEAD (5 tabulations)	261-263
PAPER MANUFACTURE (36 tabulations)	264-288
PIANOS AND ORGANS (5 tabulations)	289-292
PINS (2 tabulations)	293
PORK-PACKING (4 tabulations).....	294, 295
POTTERY AND EARTHEN-WARE (6 tabulations).....	296, 304
POWDER (2 tabulations).....	305
SUGAR-REFINING (1 tabulation)	306
TANNERIES (22 tabulations).....	307-322
TEXTILES (80 tabulations)	323-409
CARPETS (3 tabulations)	323-326
COTTON MANUFACTURE (36 tabulations)	327-367
HEMP AND JUTE MANUFACTURE (1 tabulation).....	368
SILK MANUFACTURE (4 tabulations)	369-373
WOOLEN INDUSTRY, THE (36 tabulations).....	374-409
WOOD-WORKING (131 tabulations).....	410-500
CARRIAGE- AND WAGON-WORKS (26 tabulations)	410-426
CAR-WORKS (4 tabulations)	427-430
COOPERAGE (4 tabulations)	431, 432
FURNITURE (41 tabulations).....	433-450
SAW- AND PLANING-MILLS (52 tabulations).....	460-497
SHIP-CARPENTRY (4 tabulations).....	498-500
<hr/>	
WAGES OF MECHANICS EMPLOYED IN THE MANUFACTURING AND MINING INDUSTRIES	501-563
ENGINEERS	503-516
BLACKSMITHS	517-524
MACHINISTS	525-531
PAINTERS	532-534
CARPENTERS	535-543
COMMON LABORERS	544-563

LETTER OF TRANSMITTAL.

PITTSBURGH, PA., May 15, 1883.

Hon. CHAS. W. SEATON,
Superintendent of Census.

SIR: I have the honor to forward herewith my report on the statistics of wages in certain of the industries of the United States.

This report includes six hundred and twenty-seven tables, giving the rates of wages paid in fifty-three of the more prominent manufacturing, mechanical, and mining industries of the country, in most cases rates for a series of years being given. In addition to the rates of wages, a number of supplementary statements are given, relating to allowances and deductions, methods and intervals of payment, regularity of employment, relation of labor to cost, etc.

This report is supplemented by reports on the average retail prices of necessities of life, on trades societies, and on strikes and lockouts.

In collecting these statistics no attempt was made to procure returns from all establishments, or even a great number of establishments, engaged in each industry reported upon. It was deemed best to select in each branch of business those works, in the several sections of the country, which might be regarded as typical establishments, and to secure the most complete and accurate returns practicable from these. In deciding upon the establishments from which returns should be asked, reference was had to the age, standing, productive capacity, and general reputation of individual firms and corporations.

It is believed that the figures given in these tables, received, as they have been in most instances, from establishments of standing, fairly represent the average wages paid in the different industries in different sections of the country for the years named. The methods adopted for securing accuracy in making the rates commensurable and in tabulating the returns have been such that the liability to important errors has been reduced to a minimum. With scarcely an exception, the form in which the tables actually appear in this report has been submitted to the parties making the returns, and the form, as well as the statements and figures, has been approved before publication. Inasmuch as great care has been taken to avoid typographical errors, it is believed that the reports are substantially correct.

It will be noticed that a few quite important industries are not represented in this report, while the rates of wages in others are not as full as could be desired. For this the special agent is not accountable. No important branch of manufacture was overlooked. Schedules were sent to the most prominent establishments in all of the chief industries, and if some are not represented it is because returns of sufficient detail or exactness could not be obtained after repeated solicitation.

It will also be noted that quite a number of these tables give the rates of wages paid from 1850. The thirty years from 1850 to 1880 cover a period of remarkable financial, industrial, and political changes. There were at least two important financial panics between these dates—that of 1857 and that of 1873. These years cover the period of depression that preceded, and of high prices and great demand that accompanied and succeeded, the late war. During this period specie payments were suspended at least twice, and gold commanded a high premium. It was the era of the introduction of labor-saving machinery, of new methods of manufacturing, of the rapid development of individual industrial establishments, and of the continued subdivision of labor.

During this time the laws of the country regarding import duties have varied considerably. All of these circumstances have made this period a most interesting one to students of industrial questions.

The interest taken in this investigation by some of our most prominent manufacturers has been a source of pleasant surprise. The labor involved in answering the questions contained in one of the schedules has not been inconsiderable, and the conditions also have been such that it has been very difficult in many instances to ascertain the rates of wages paid in the earlier years.

Little attention is generally paid to the preservation of pay-books, and still less to the collation and preservation of statistics, and therefore the work of ascertaining these earlier rates was in many cases one of considerable

LETTER OF TRANSMITTAL.

research and difficulty; but, although there was no hope of a pecuniary return for all this labor, great interest has been taken by many manufacturers in securing the exact facts. As the result chiefly of this interest and effort, the body of statistics of wages gathered together in this report is much fuller and more complete than has ever before been brought together, and the thanks of all interested in the vital questions that gather around wages are due to those who have so earnestly, carefully, and disinterestedly assisted the special agent in collecting these statistics.

My thanks, in connection with this report, are due to the assistant special agents who have loyally assisted in this work, Messrs. E. T. Peters, John Caruthers, E. W. Crane, Jesse H. Jones, and especially to Mr. S. C. Armstrong, the chief assistant in my office.

Respectfully,

JOS. D. WEEKS,
Expert and Special Agent.

NOTE BY THE FORMER SUPERINTENDENT OF CENSUS.

The tables which are embraced in the following report of special agent Weeks constitute, it is believed, the largest magazine of statistics relating to the wages of labor to be found in any single publication. When this investigation was begun three years ago, it was agreed upon between Mr. Weeks as special agent, and myself as the head of the Census Office, that no discussion should be undertaken of the results reached; but that the efforts of the special agent should be directed exclusively to obtaining the largest possible collection of facts, the greatest care and pains being taken to secure precision in the statements of wages, and to make not only the several statements relating to one productive establishment, but also the statements relating to all establishments belonging to the same branch of industry, strictly comparable among themselves.

Every one who has had to do with the collection or discussion of industrial statistics knows how difficult it is to bring statements from various sources into the conditions where they can justly be compared among themselves. Much of the uncertain and misleading nature of industrial statistics, which, as they are generally used, do in some degree justify the complaint that "nothing will lie like figures", is due to the fact that the statements involved have never been fairly reduced to common terms.

I think Mr. Weeks has performed this task with great intelligence as well as with devoted zeal. While no large body of statistics can be assumed to be free from error, the following collection of statistical data relating to the wages of labor in the United States is believed to have been as thoroughly tested and as carefully purged as it is reasonable to expect in the case of any statistical work whatsoever. All the virtue there is in frequent revision has been imparted to these tables. No attempt has been made even to cast the averages of the figures given. They are presented in their original form, as the returns from so many hundreds of productive establishments, generally of the highest class, and widely distributed over the country, as to the rates of wages actually paid in them during a term of years varying from five to thirty and more. Beyond securing precision of statement, so that the same title shall always mean the same thing, and bringing the figures all to the terms of the current money of the country, nothing has been undertaken by the Census Office. The combination of these statistics is left to the reader, who can combine and recombine them to suit his purposes. It was thought that the tables would command even higher confidence as a magazine of economic facts if no generalizations whatever were attempted by the special agent.

FRANCOIS A. WALKER.

BOSTON, *July 3*, 1883.

INTRODUCTORY REMARKS.

SCOPE OF THE REPORT.

It is the intention of this report to give the rates of wages paid to the most important classes of employes in different establishments in various industries for a series of years. These rates, unless otherwise stated, are the average rates of wages of the different classes of employes named, per the unit of payment given in the tables. Each table shows only the average rates of wages at the establishments making the report for the time covered by the same. Although no attempt was made to ascertain the rates from a large number of establishments in each industry, and from these to make an average, it is believed that these rates will fairly represent the wages paid for labor in the same industry throughout the district wherein the establishment from which a report has been received is situated; and that thus the tables will furnish the means of obtaining a fair average for the whole country. The rates of wages at the several works of the same class in a given district do not vary much for the same class of labor. For a short time one establishment may have a slight advantage, or be somewhat at a disadvantage, but the tendency is to equality.

As will be explained further on, in reference to methods of investigation, no attempt has been made to report on all the classes of labor in each industry. It would have been well-nigh impossible to secure such a report. Not only do different works differ in their classification of labor and the names attached to the several classes of work, but in the thirty years and more covered by some of the schedules there have been very important changes in productive methods and in the subdivision of labor, so that the work which thirty years ago was done by one employe or by one class of employes is now frequently divided among several. The aim has been to select those classes of labor which seem to have persisted and whose occupation has changed but little during the years covered by the report.

Any student of the wages question is aware that a simple statement of rates of wages is incomplete without a knowledge of other facts which stand related to those facts, producing the effect to increase or diminish the real earnings of the laborer.

Among the facts that are necessary to be known are those relating to allowances or deductions, extra earnings, division of earnings among under-hands, periods and methods of payment, hours of labor, regularity of employment, and others that enter to condition the amount of the nominal wages received. In addition to these are certain elements which do not bear directly on the rate of wages, but are still important in an investigation of this character, such as the efficiency of labor, price of product, percentage of wages to cost, etc. An attempt has been made to ascertain a number of these facts in connection with each report concerning the rates of wages; and these, so far as they have been ascertained, are given in the statements supplementary to each table. Some of the most important facts are tabulated by themselves.

It has not been my wish or design to give utterance to any philosophical views regarding the wages question, believing that these would be out of place in a report of this character. I have simply sought for facts, and have endeavored to place those facts in such shape as to make them accessible to students of social and political questions.

FORMS OF QUESTIONS ASKED.

The forms of questions asked and blanks used in gathering these statistics are as follows:

TENTH CENSUS OF THE UNITED STATES.

STATISTICS OF WAGES IN MANUFACTURING INDUSTRIES.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., June 1, 1880.

The undersigned has been charged by the Superintendent of Census with the collection and arrangement of the statistics of wages in manufacturing industries generally throughout the United States. The success in this work must necessarily depend in a large measure on the good-will and courtesy of those connected with the manufacturing interests of the country, either as employers or employes. It is confidently believed that the evident value of the information sought will dispose all persons to whom this schedule is sent to aid in making this investigation as complete as possible.

STATISTICS OF WAGES.

The following questions have been prepared for the purpose of ascertaining with precision the rates of wages paid in the several branches of manufactures and in the several sections of the country at the present time, and also with a view to instructive comparisons during past periods.

In filling it up, rates of wages or average earnings per week, per month, or per year, etc., can be used as may be most convenient.

Following the tables are certain questions, the answers to which are necessary to explain the tables themselves, and to show the true value to the laborers of the rates of wages or earnings expressed. It is not expected that in all cases these questions can be answered fully and exactly. As these blanks will only be sent to a few of the most prominent establishments in each branch of industry in different sections of the country, it is most earnestly hoped that all persons receiving them will fill them out to the best of their ability.

When it is desired and so expressed, the source of the information will not be given. Where, however, no objection exists, it will be better that the source of information be given in the tables.

JOSEPH D. WEEKS,
Expert and Special Agent.

Address: PITTSBURGH, PENNSYLVANIA.

Statistics of wages in manufacturing industries.

GENERAL STATEMENT.

1. Name of works: ———.
2. Location of works: State, ———; county, ———; town or city, ———.
3. Name of firm, corporation, or individual operating works: ———.
4. Post-office address: State, ———; county, ——— town or city, ———.
5. Total capital (real and personal) invested in works and employed in business: \$——.
6. What articles do you manufacture or produce? If the list includes a large number of articles, please give only the most important, or those on which you employ the largest number of persons:
7. Give date of establishment of works:
8. If incorporated, give date of incorporation:
9. Please state if you object to having the information given in this schedule published as given by you:

Rates of wages or average earnings of all classes of labor from 18— to 1880.

[NOTE.—In filling up this table, either rates of wages or average earnings may be used.]

Classes of employes.	What unit of payment is used in table; i. e., are rates per day, week, year, ton, yard, etc? Please state in this column.	DATES.									
		18—.	18—.	18—.	18—.	18—.	18—.	'18—.	18—.	18—.	18—.
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											

Statements supplementary to wages tables, and explanatory of the same.

EXTRA EARNINGS.

What are and have been the opportunities in your business for extra earnings by over-time, holiday work, etc.?

If such opportunities exist, please state if they have been considered and included in the amounts in the tables of wages and earnings. If not, how much would they increase these rates or earnings?

ALLOWANCES AND DEDUCTIONS.

Are there any allowances or privileges given the employes of your works that would serve to increase the wages or earnings given in the wages tables? Among these may be reckoned free house, use of land for garden, privilege of keeping cow, horse, etc., free coal,

INTRODUCTORY REMARKS.

xiii

board in whole or part, opportunities to purchase necessities of life at reduced rates, bonuses, percentage of profits, etc. If there are such allowances or privileges, please state what they are, and if they have not been considered in making up the wages tables, please state what percentage, in your judgment, such allowances and privileges will increase the wages and earnings given in the wages tables.

Are employes obliged by the nature of their employment to pay out any part of their wages for tools, materials, or assistance, as for powder, tools, under-hands, helpers, etc.? Please state, if such necessity exists, for what the payments are made, and, if these have not been considered in making up wages tables, what percentage, in your judgment, these deductions would decrease the wages and earnings given in the wages tables.

PAYMENTS.

INTERVALS OF PAYMENT.

How often have the employes of your works been paid?

Date.	Interval of payment, as each week, fortnight, month, etc.	Date.	Interval of payment, as each week, fortnight, month, etc.
1830	1860
1835	1865
1840	1870
1845	1875
1850	1880
1855

METHODS OF PAYMENT.

Are employes paid in whole or in part in merchandise or in store-orders, either on stores kept by yourself or others? If so, please state what proportion, on the average, is paid in cash: ———. What proportion in merchandise or orders: ———.

If in the past you have paid in store-orders but do not now, please state when this custom was discontinued, ———, and the reason for the discontinuance, ———.

HOURS OF LABOR.

What have been the regular hours of labor per day of several of the most important classes of employes during the time covered by the wages tables?

Date.	CLASSES OF EMPLOYÉS.						
1830
1835
1840
1845
1850
1855
1860
1865
1870
1875
1880

Please add any information relative to changes in the hours of labor that may occur to you as being of interest or value, especially with regard to increase or decrease of hours of labor, what the effect of any decrease has been upon production, character, and habits of employes, healthfulness, etc.

REGULARITY OF EMPLOYMENT.

What has been the average number of months per year your factory, mill, mine, etc., has been in operation in the periods mentioned below? In answering this question, if you have run at times but part time, please reduce this part time to full time.

Periods.	Average number of months in operation each year of period.
1830
1830 to 1835
1835 to 1840
1840 to 1845
1845 to 1850
1850 to 1855
1855 to 1860
1860 to 1865
1865 to 1870
1870 to 1875
1875 to 1880
Year ending June 1, 1880

STATISTICS OF WAGES.

What has been the cause of the irregularity of employment at your work, if any? Some of the causes that may have operate dare suggested, as follows: Character of business, which can be followed only at certain seasons of the year; irregularity of demand for product, being greater at certain seasons than others; influence of fashions, strikes, lockouts, over-production, etc.

EFFICIENCY OF LABOR.

In the time covered by the rates of wages given in the table, has there been any increase or decrease in the efficiency of labor, otherwise than through the introduction of machinery?

To what do you ascribe this increased or diminished efficiency of labor?

LABOR-SAVING MACHINERY.

If, in the time covered by the rates of wages given in the table, any labor-saving or improved machinery has been introduced into your works, please give a brief description of the same, and its effect as shown in increasing output, lessening cost, increasing or decreasing number of employes, reducing wages, etc.

PRICES OF PRODUCT.

Please give below the average selling prices of some of the principal articles produced at your works, giving prices at works.

Dates.	LIST OF ARTICLES AND PRICES.							
	*	*	*	*	*	*	*	*
	†	†	†	†	†	†	†	†
1830.....								
1835.....								
1840.....								
1845.....								
1850.....								
1855.....								
1860.....								
1865.....								
1870.....								
1875.....								
1880.....								

* In these blanks insert name of articles.

† Give in these blanks the unit by which they are sold, as per ton, yard, 100, etc.

COST OF LABOR TO A UNIT OF PRODUCT.

What is the cost of labor to a unit of product; that is, to a ton of pig-iron, a yard of cloth, a ream of paper of a given grade, a pair of shoes of a certain quality, size, and kind, or of a unit of any article produced you may name? Please name certain of your more important or staple articles, and give entire total cost of labor to each article.

Dates.	ARTICLES, AND COST OF LABOR TO A UNIT OF PRODUCT.							
	*	*	*	*	*	*	*	*
	†	†	†	†	†	†	†	†
	\$	\$	\$	\$	\$	\$	\$	\$
1830.....								
1835.....								
1840.....								
1845.....								
1850.....								
1855.....								
1860.....								
1865.....								
1870.....								
1875.....								
1880.....								

* In these spaces give list of articles.

† In these spaces give the unit of product, as per ton, yard, ream, etc.

\$ In these spaces give the entire cost of labor per unit of product.

INTRODUCTORY REMARKS.

XV

PERCENTAGE OF WAGES TO COST.

Referring to table giving selling prices of product, please state what percentage wages bear to cost of product, including in cost materials, repairs, interest, labor, etc.

Dates.	LIST OF ARTICLES, AND PERCENTAGE WAGES BEAR TO COST.								
	*	*	*	*	*	*	*	*	*
	†	†	†	†	†	†	†	†	†
	\$	\$	\$	\$	\$	\$	\$	\$	\$
1830									
1835									
1840									
1845									
1850									
1855									
1860									
1865									
1870									
1875									
1880									

* In this blank give list of articles.

† In this blank give the unit by which the articles are sold, as per ton, etc.

\$ In these blanks give percentage of wages to cost.

STRIKES AND LOCKOUTS.

Have strikes or lockouts been frequent in your business? If so, please give a brief account of some that have occurred, noticing especially the causes, duration, result, losses in wages.

HEALTHFULNESS AND ACCIDENTS.

Is your trade dangerous or unhealthy? If so, please give nature of risk or disease, their fatality, and any suggestions as to their avoidance.

METHODS PURSUED IN COLLECTING AND VERIFYING THESE STATISTICS.

Prior to sending out these schedules, correspondence was had with persons who were believed to be acquainted with the character and standing of the different establishments in the several industries in various sections of the country. These persons were requested to suggest to the special agent the names of parties to whom it would be advisable to send blanks. When such parties were not known, or when it was impossible to secure from them complete lists, recourse was had to the different trade directories and trade publications in which the capital, extent, and to some degree the standing of the parties in the several industries are given. To names thus obtained schedules were sent, care being taken to include all sections of the country. From many of these establishments returns were received in a short time, some however being exceedingly imperfect. The parties from whom no returns were received were written to and urged to fill out the schedules, which second effort often resulted in very full and satisfactory returns. One of the greatest of the difficulties encountered in this investigation arose from the fact that the returns as first received were found to be incommensurable, especially as to the classes of employes reported, some schedules specifying very few classes, others in the same industry specifying many classes. From the schedules thus received, and through the aid of gentlemen intimately acquainted with the several industries, lists of classes of employes, covering the most prominent ones, and *those which had been least affected by the progressive subdivision of labor during the past thirty years*, were then made out for each industry.

These classes were next written out upon new blank forms, a unit of payment for each one was adopted, the figures in the schedules received were carefully reduced to this unit of payment and to these classes of employes as nearly as possible, and the schedules thus revised were returned with a request that they be examined as to the rates of wages paid, the classification of employes, and that a report be added for those classes concerning which no rates had been stated in the previous report. Not infrequently schedules were passed backward and forward several times before a final adjustment was reached. In this way the schedules in the same industry were made commensurable, so that comparisons could be made in the rates of wages paid in the different establishments. The labor expended upon this part of the work can scarcely be imagined by one who never has undertaken it, but it is believed that the result has fully warranted the labor and time expended. In many cases, it will be noticed, the parties making the returns have consented to allow their names to be used.

Many of these firms and corporations are known throughout the country and even throughout the commercial world. In other cases, however, the parties, while freely giving the information, declined to allow it to be published over their names. In such cases it can only be said that, almost without exception, the parties making the returns are manufacturers exceptionally prominent in their respective branches of industry.

STATISTICS OF WAGES.

INDUSTRIES INCLUDED IN THIS REPORT.

The industries for which rates of wages are given, as classified in this report, number fifty-three, and, with the number of tabulations under each industry, are as follows:

Industries for which rates of wages are given, with number of tabulations under each.

Industry.	Number of tabulations.	Industry.	Number of tabulations.	Industry.	Number of tabulations.
All Industries.....	627	Iron and steel:		Paper manufacture.....	36
Agricultural implements.....	11	Blast-furnaces—		Pianos and organs.....	5
Bells.....	1	Anthracite.....	10	Pins.....	2
Belting.....	4	Bituminous.....	11	Pork-packing.....	4
Boots and shoes.....	13	Charcoal.....	10	Pottery and earthen-ware ..	6
Breweries and distilleries.....	9	Founderies—		Powder.....	2
Brick-making.....	10	Car-wheel.....	7	Sugar refining.....	1
Bridge-building.....	2	Stove.....	11	Tanneries.....	22
Canning industry, the.....	2	General.....	6	Textiles:	
Cigars and tobacco.....	22	Hardware, cutlery, and edge tools.....	17	Carpets.....	3
Clothing.....	5	Machinery.....	40	Cotton manufacture.....	36
Flour- and grist-mills.....	47	Rolling-mills and nail factories.....	25	Hemp and jute manufacture.....	1
Gas and gas coke.....	6	Tin and sheet-iron works.....	3	Silk manufacture.....	4
Glass:		Marble works.....	3	Woolen industry, the.....	36
Flint.....	10	Mining:		Wood working:	
Green.....	3	Coal.....	8	Carriage and wagon works.....	26
Window.....	4	Copper.....	4	Car-works.....	4
Hats.....	2	Iron.....	6	Cooperage.....	4
Ice industry, the.....	2	Silver.....	2	Furniture.....	41
		Stone quarrying and working.....	8	Saw- and planing-mills.....	52
		Paints and white lead.....	5	Ship-carpentry.....	4

In a number of instances, what is reported as one industry really includes several, it having been found most convenient, by reason of their close relation to each other, so to tabulate them. No confusion, however, can arise from the classification adopted, the more general term used readily suggesting the species included in it, while in most cases the subindustry is either mentioned or the classes of employes given indicate it. Under "agricultural implements", for example, are included the manufactures of plows, of cornshellers, of hay-tedders, of hay-rakes, of cultivators, of grain-drills, of seeders, of mowing and reaping machines, of thrashers, etc. On the other hand, certain industries that appear in the classes reported upon are also subordinate industries to others also reported upon. It will therefore happen that some of the classes of employes in these latter will be the same as those of the former.

An example of this is plow-making, under "agricultural implements". Foundry work is a part of plow-making, and many of the classes of employes reported upon under the head of "founderies" will also be found under the head of "agricultural implements".

An attempt was made to collect the statistics of wages in the building trades, but the number and character of the returns received were not such as to justify their tabulation.

It should also be stated that without exception the rates of wages given in the tables have been furnished by employers. Although, in connection with the investigation into trades societies, schedules were sent to employes, very few returns were received, and those generally only for one class of employment. It has been impossible to construct a single table from the statements made by employes. This is to be regretted, as it would have been of value to compare returns of employers and employed in the same industry.

While it is a subject for congratulation that so many excellent returns in so many industries have been received, it is to be regretted that some industries are not better represented. In C. C. China and in Rockingham and yellow ware but one complete return was received in each case, and this from East Liverpool, Ohio. It would have been better had it been possible to secure a return from the other center of the manufacture of these goods—Trenton, N. J.—but repeated requests failed to secure them. The same is in a measure true of some other industries. On the other hand, the chief industries of this country are very well represented—boots and shoes by 13 tables from 9 states, from Maine to California; cigars and tobacco by 22 tables from 12 states; flour by 47 tables from 26 states; glass by 17 tables; the iron blast-furnace industry by 40 tables from 15 states; founderies by 24 tables from 13 states; machinery by 40 tables from 14 states; rolling-mills and nail factories by 25 tables from 11 states; paper by 36 tables from 15 states; tanneries by 22 tables from 9 states; cotton goods by 36 tables from 15 states; and woolen industry by 36 tables from 23 states; while furniture has 41, saw- and planing-mills 52, and carriage and wagon works 26, from 15, 21, and 15 states, respectively.

Number of returns which have for their earliest date, for which wages are given, the years named herein—Continued.

Industry.	Total No.	1801.	1810.	1820.	1830.	1840.	1850.	1860.	1870.	1880.	1890.	1900.	1910.	1920.	1930.	1940.	1950.	1960.	1970.	1980.	1990.	2000.
Sugar-refining	1																					
Tanneries	22																					
Textiles:																						
Carpets	3																					
Cotton manufacture	36			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hemp and jute manufacture	1																					
Silk manufacture	4																					
Woolen industry, the	36																					
Wood-working:																						
Carriage and wagon works	26																					
Car-works	4																					
Cooperage	4																					
Furniture	41																					
Saw- and planing-mills	52																					
Ship-carpentry	4																					

In one case rates of wages are given as early as 1801; four tables, in four industries, give rates of wages from before 1830; while ten tables, representing six industries, give rates beginning between 1830 and 1840, both years inclusive. From 1843 to 1849 rates begin for eleven tables. In 1850, however, forty-seven tables begin, representing sixteen industries; among them the important ones of boots and shoes, cigars and tobacco, flour, glass, iron blast-furnaces, foundries, paper, tanneries, cotton fabrics, woolen goods, furniture, saw-mills, and wagons and carriages.

Between 1851 and 1859 seventy-five tables begin; in 1860, thirty-one; in 1870, sixty-six; and in 1871, seventy.

CLASSES OF EMPLOYÉS.

As has already been explained, the classes of employés in each industry include, so far as returns could be procured, the chief classes in the several industries. From the incomplete returns first made, a list was formed of the classes that appeared most frequently in the returns, and this, after amendments and changes made at the suggestion of persons connected with these industries, was adopted as a typical list. In some cases some employers would no doubt have included classes that are omitted, and left out some that appear, but sufficient is given in most industries to indicate the wages of the chief classes.

In some instances a note in the column of remarks gives some difference in the classification of labor at the several works.

RATES OF WAGES AND UNIT OF PAYMENT.

The rates of wages as given in the tables are, unless otherwise noted, the average rates paid per the unit of payment adopted for the years named to the individuals of the class of employés. The unit of payment adopted is not always the unit in accordance with which the workmen are paid. In the manufacture of flint-glass, for example, at some works the employés are paid by the turn or by the piece, while others are paid by the day. In tabulating the returns, however, all have in the same industry been reduced, so far as possible, to the same unit of payment. In cases where the piece unit has been reduced to a time unit the rate given is to be regarded as the earnings at the piece rate for the unit of time adopted.

Whenever explanations are necessary to the proper understanding of the tables they are given under the head of "remarks". A study of the explanatory and supplemental statements is, however, often necessary to a correct estimate of the value of the rates of wages given.

FLUCTUATION IN RATES OF WAGES.

It will be observed in general, that from 1853 to 1857 there was an advance in wages, but after the latter year, which witnessed a financial convulsion, wages declined. From 1857 to 1863 was an era of low wages, with occasional slight advances, but from 1863 to 1867 currency wages rose considerably, to decline after the latter date, with a rise again in 1872-73, to be followed by a decline in consequence of the commercial disaster in 1873. It will also be noted that the fluctuations in some industries and in certain sections of the country have been greater than in others. In those sections of the country and in those industries which manufacture goods for the great centers of trade, or for consumption in industries which are easily affected by changes in the financial condition of the country, fluctuations are frequent, while in industries or sections not so affected fluctuations are infrequent. In the tables concerning woolen goods, for example, the wages of certain classes of employés in the mills of Massachusetts and New Hampshire, which send their goods to Boston and New York, vary with each year; while in the mills of Michigan, Ohio, Oregon, Virginia, and Wisconsin, which supply mainly a local market, a rate once adopted often

remains unchanged for years. An inspection of the tables in other industries will show a similar condition of change. It will also be noted that the fluctuations in the wages of skilled labor are greater than in those of unskilled, probably because the margin for fluctuations above the cost of subsistence is greater in the rates of the former than in those of the latter.

EXTRA EARNINGS.

The rates of wages given in these tables do not in all cases represent the actual daily earnings or rates of earnings of the several classes of employés. The money rates, or the rates of nominal wages, may be regarded as increased or decreased by reason of various additions to these rates or deductions from them.^(a) The first of these considered in the "explanatory and supplemental statements" is extra earnings. In many instances, especially in certain portions of the year when "seasonable" goods are in great demand, the opportunities for extra earnings are frequent, and such earnings would add a percentage to the rates of wages given in the tables. These extra earnings come chiefly from working over-time, night-time, and holiday and Sunday work. The opportunities for such work differ so greatly, even in the same industry, that it is difficult to arrive at any general statement. In some works the capacity for production relative to demand is so nearly equal that there is little or no opportunity for over-time. In others, at certain seasons of the year, the demand is so great that the works are taxed beyond their capacity in the ordinary working-hours, and over-time is freely made. In many establishments certain classes of labor are employed nights, Sundays, and holidays, making repairs to machinery, and these would have extra earnings, while most of the workmen would be idle.

So far as it has been possible to ascertain the opportunities for over-time and extra earnings, and the value of such earnings, this has been done.

The rates paid for this over-time and holiday work vary at the different establishments. Sometimes the regular rates paid are all that are allowed. This is generally true of those classes of work which are paid for by the piece. No more, as a rule, is paid for a yard of cloth or a ton of iron produced out of the regular work-hours, if the custom of the works is to pay by the yard or ton, than is paid for producing the same in the regular day. For work paid for by a short-time unit, as per day or week, or even occasionally by the month, an extra rate is often paid, as "a time and a quarter" or "a time and a half" or "double time"; that is, for an hour's over-time an hour and a quarter, an hour and a half, or even in some cases two hours, are paid for. Sometimes, at the same works, there is a difference in rates for night-work and for Sunday and holiday work, time and a quarter or time and a half being paid for night-work, but double time for Sunday and holiday work.

As a rule, however, nothing extra is paid for over-time to those classes of employés that are paid by a long-time unit, as by the month, or by the year, or, in other words, to salary-earners.

ADVANTAGES AND DISADVANTAGES OF OVER-TIME.

A question of some importance to the employer is as to the advantages or disadvantages of over-time, or the relative character and efficiency of the work done by employés during regular hours and during over-time.

In the tables in connection with the remarks on "hours of labor", in the supplementary statements, are frequent notes giving the opinions of various manufacturers as to the influence of over-time upon the employé and upon the character of his work. The general opinion of those making statements on this point seems to be that for a short time there may be some given amount of product or work done by employing the regular force extra hours. When this over-time work is continued for any length of time, however, its injurious influence is marked, decreasing the effectiveness of the workman and deteriorating the quality of his work. Some manufacturers, indeed, express the opinion that all over-time, even for a short period, is injurious to the workman and not economically advantageous to the employer, their experience being that the employé comes to his work the next day weary and not fitted to give either the amount or the quality of work that he would have given had he not been employed over-time the day before.

ALLOWANCES.

In many cases there are certain allowances made or privileges given to the employés, having a money value, which should be added to the rates of wages stated in the tables in order that we may arrive at the real rates. Among these allowances are free house, free coal, free garden, free pasture, and in some cases free tobacco. In many cases these, when not given gratuitously, are furnished at a low rate or a merely nominal one.

At many works board at reduced rates has been furnished, or opportunities to purchase coal and other necessities of life at wholesale prices offered. Manufacturers in purchasing their own supplies of fuel arrange either to supply their workmen at the prices they themselves pay, or contract with the parties from whom they purchase to furnish it to their employés at the same rate as to the works. At many works manufacturing articles which are necessities of life the employés are allowed to purchase small quantities for their own consumption at

^a In this statement I ignore the questions of real wages, or that which relates to the amount of the necessities, comforts, or luxuries which nominal wages will bring, and consider only those conditions which increase the amount of money received for labor, regarding privileges or perquisites as of so much money value.

the lowest wholesale rates, a privilege of some value to an employé with a large family, at a woollen-mill or a boot and shoe factory. It is impossible, except in special instances, to ascertain the money value of these allowances. In many cases, however, the tables show the character of the allowances when any are given, and in some instances give an estimate as to their value.

DEDUCTIONS.

In some industries the methods of work or the customs of the trade require the payment by the employé of certain sums to under-hands, or for tools, powder, oil, etc. These payments must be considered in connection with the nominal rates of wages, as they serve to reduce these rates precisely as over-time and allowances may increase the nominal rates of wages.

While such deductions must be made in some industries, they are by no means usual, and where they exist the percentage by which they reduce wages is, as a rule, small.

In some foundries the molders working by the piece are obliged to pay their helpers out of the amount received. The same is true of puddlers and rollers in iron-works, and of some other classes of labor in other industries.

Where the rates given are daily rates the necessary deduction has been made, and the rates given represent the net rates after deducting the amount paid to the under-hand, unless it is expressly stated to the contrary.

Where tonnage rates are given, the net rates are in some cases inserted in tables, and in others not; but the explanatory statements will give the information necessary to learn for each table, whether the rates are net or are subject to deductions.

In a number of instances the workmen are obliged to furnish their own tools, and in some to pay for "blacksmithing" these tools, and also for certain supplies. Boot and shoe makers, molders, cigar-makers, carpenters and wood-workers, masons and stone-cutters, glass-blowers, piano-makers, potters, etc., as given in the tables, often furnish their own tools, or a part of them. Miners, also, in some cases, furnish their powder and oil. The percentage by which these supplies would reduce wages is in most cases slight.

With miners the cost of oil, tools, and powder would be much above the average percentage of kindred charges falling on the laborer. In one case this is estimated in coal-mining at 4 per cent., in two at 10 per cent., in another at 1 per cent., and in one at 5 cents a ton.

METHOD OF PAYMENT.

The question of truck payment, or of payment of labor, in whole or in part, in merchandise or by orders on stores, has been a burning question in connection with the employment of labor, not only in this country but in other countries. Laws against payment in truck exist in some of the states of the Union, and in many foreign countries, and strenuous efforts have been made and are still making to secure its total abolition.

There are many objections to truck payment. The necessity it lays upon the employé to purchase at a certain place amounts, in many instances, to a large reduction in wages.

The system is objected to on the part of those manufacturers who do not use "store pay", as creating unfair competition.

Instances are not infrequent in which the entire profit in a manufacturing establishment has been the profit made on the goods sold from the store at which the men were compelled to deal by the system of truck payment in vogue.

On the other hand, there are instances where a truck store at certain works or mines seems a necessity. The men frequently are without credit, and the works may be located at points where the demand is so small as not to justify the keeping of a store by parties whose whole business would be in connection therewith. In such cases truck payment seems to be a necessity, and if the system be not abused it may sometimes be of great benefit to the workingmen. These cases are, however, infrequent; and the truck system as a whole is justly condemned. For the purpose of showing the extent of truck payments, a question was inserted in the schedule asking for the method of payment, whether wholly in cash or wholly in store orders, or in part by store orders and merchandise and in part by cash. The result is given in the two tabulations annexed, the first of which gives the method of payment in all industries by states, and the second in all states by industries.

STATISTICS OF WAGES.

Method of payment.

ALL INDUSTRIES.

State or territory.	Total number.	All cash.	PART STORE ORDERS OR MERCHANDISE.						All store orders.	State or territory.	Total number.	All cash.	PART STORE ORDERS OR MERCHANDISE.						All store orders.
			One-fourth.	One-third.	One-half.	Two-thirds.	Three-fourths.	Proportion not stated.					One-fourth.	One-third.	One-half.	Two-thirds.	Three-fourths.	Proportion not stated.	
All states.....	773	681	18	8	26	2	6	31	1	Michigan.....	30	25			2			3	
Alabama.....	6	3			1	1		1		Minnesota.....	12	12							
Arkansas.....	2	2								Mississippi.....	1						1		
California.....	9	0								Missouri.....	25	23						2	
Colorado.....	2	2								Nebraska.....	1	1							
Connecticut.....	40	38	1					1		New Hampshire.....	21	21							
Delaware.....	10	9	1							New Jersey.....	16	15			1				
District of Columbia.....	1	1								New York.....	83	80			3				
Florida.....	1				1					North Carolina.....	13	4	1		3			5	
Georgia.....	14	8	1	1	2		1	1		Ohio.....	90	89	6	1	2			1	
Illinois.....	40	38	1					1		Oregon.....	2	1			1				
Indiana.....	60	65	1		1			3		Pennsylvania.....	77	70		2	1			3	1
Iowa.....	9	6	1	1				1		Rhode Island.....	5	4			1				
Kansas.....	4	4								Tennessee.....	7	4	2	1					
Kentucky.....	20	25			1	1	1	1		Texas.....	2		1	1					
Louisiana.....	3	2						1		Utah.....	5	2			1		1	1	
Maine.....	17	16			1					Vermont.....	4	2			1			1	
Maryland.....	14	12					1	1		Virginia.....	16	12		1	2			1	
Massachusetts.....	50	58	1							West Virginia.....	11	10					1		
										Wisconsin.....	23	18	1		1			3	

ALL STATES.

All industries.....	773	681	18	8	26	2	6	31	1	Iron and steel—Continued.									
Agricultural implements.....	18	18								Tin and sheet-iron works.....	3	3							
Bells.....	1	1								Marble works.....	3	3							
Belting.....	4	4								Mining:									
Boots and shoes.....	19	10								Coal.....	7	5	1				1		
Breweries and distilleries.....	11	11								Copper.....	3	2						1	
Brick-making.....	10	9						1		Iron.....	5	4						1	
Bridge-building.....	2	2								Silver.....	1	1							
Canning industry, the.....	2	2								Stone quarrying and working.....	7	5	1					1	
Cigars and tobacco.....	30	20	1							Paints and white lead.....	5	5							
Clothing.....										Paper manufacture.....	47	41	2		1		1	1	1
Flour- and grist-mills.....	60	61	4		1		1	2		Pianos and organs.....	5	5							
Gas and gas coke.....	7	7								Pins.....	2	2							
Glass:										Pork-packing.....	5	5							
Flint.....	11	11								Pottery and earthen-ware.....	4	3		1					
Green.....										Powder.....	2	2							
Window.....	5	5								Sugar-refining.....	1	1							
Hats.....	3	3								Tanneries.....	30	25		1	3			1	
Ice industry, the.....	1	1								Textiles:									
Iron and steel:										Carpets.....	7	7							
Blast-furnaces—										Cotton manufacture.....	44	30	1		2			2	
Anthracite.....	7	6						1		Hemp and jute manufacture.....	1	1							
Bituminous.....	10	5	2	1	1			1		Silk manufacture.....	4	4							
Charcoal.....	24	8		1	7	2	2	4		Woolen industry, the.....	53	44		2	3		1	3	
Foundries—										Wood-working:									
Car-wheel.....	7	7								Carriage and wagon works.....	41	38	1		1			1	
Stove.....	12	11			1					Car-works.....	6	6							
General.....	7	6			1					Cooperage.....	3	3							
Hardware, cutlery, and edge tools.....	24	24								Furniture.....	56	53	1					2	
Machinery.....	44	44								Saw- and planing-mills.....	70	55	2	1	4			8	
Rolling-mills and nail factories.....	24	19	2	1	1			1		Ship-carpentry.....	5	5							

Of the 773 establishments which made reports concerning the method of payment, 681, or 88 per cent., paid all cash, leaving but 92, or 12 per cent., paying in store orders in whole or in part. Of these, only 1 paid wholly in store orders; 18 paid one-fourth in store orders; 8, one-third; 26, one-half; 2, two-thirds; 6, three-fourths; and of 31 the proportion between cash and store orders or merchandise is not stated. The states in which the largest

proportion of the works paid in store orders are North Carolina and Ohio, the number in the latter state being in connection with the mining and blast-furnace industries.

The establishment paying wholly in store orders was a paper factory in Pennsylvania.

The small proportion of works paying in truck probably arises from the fact that the establishments from which wages schedules were received were selected establishments. If reports had been received from all establishments in the states named, it is probable that a larger proportion of truck payment would have been shown in some industries than appears in the reports.

INTERVAL OF PAYMENT.

The question of the frequency of payment, as well as of the day of the week on which payment should be made, is one of considerable importance in connection with the wages of labor, and is one that has also an important moral and social bearing.

In the following two tables the intervals of payment at 804 establishments are given. The first table shows the interval of payment in all industries by states, and the second the interval of payment in all states by industries:

STATISTICS OF WAGES.

Interval of payment.

ALL INDUSTRIES.

State or territory.	Total number of state- ments.	1830.					1835.					1840.					1845.					1850.									
		Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.						
All states.....	804	87	0	2	15	5	7	45	14	2	18	5	7	61	22	2	25	5	8	92	37	4	37	7	9	141	64	7	56	7	11
Alabama.....	6																														
Arkansas.....	2																														
California.....	9																														
Colorado.....	2																														
Connecticut.....	40	3	1		2			4	2		2			6	3		3			9	3		5	1		10	3		6	1	
Delaware.....	11							1	1					1	1					2	1		1			4	1		3		
District of Columbia.....	1																														
Florida.....	1																			1			1			1			1		
Georgia.....	15																						1			4	3		2		
Illinois.....	42													1			1			1			1			4	4		1		
Indiana.....	60																			1	1		1			4	4		1		
Iowa.....	9																														
Kansas.....	4																														
Kentucky.....	32	1	1					1	1					1	1					1	1					2	2				
Louisiana.....	3																														
Maine.....	17	1				1		1				1		1				1		2			1	1		2			1	1	
Maryland.....	15	2			2			2			2			2			2			4	1		3			6	3		3		
Massachusetts.....	90	11	1	1	6	1	3	12	1	1	7	1	3	13	1	1	8	1	3	16	1	1	11	2	2	20	2	1	12	3	3
Michigan.....	32																			1						1	2			1	1
Minnesota.....	12																														
Mississippi.....	1																														
Missouri.....	25																										2	2			
Nebraska.....	1																														
New Hampshire.....	20	4			3	1		4			3	1		5			3	1	1	5			3	1	1	8			6	1	1
New Jersey.....	20	4	2	1	1			4	2	1	1			5	3	1	1			6	3	2	1			8	3	4	1		
New York.....	80	4	1			1	2	7	3		1	1	2	9	5		1	1	2	15	9	1	1	1	3	29	18	2	7		3
North Carolina.....	13													3	1		2			3	1		2			3	1		2		
Ohio.....	103	1					1	1					1	2	1				1	8	7					16	11		3		2
Oregon.....	3																														
Pennsylvania.....	81	4	3				1	5	4				1	8	5		2		1	12	7		4		1	15	9		5		1
Rhode Island.....	5	2			1	1		2			1	1		2			1	1		2			1	1		2			1	1	
Tennessee.....	7													0																	
Texas.....	2																														
Utah.....	5																														
Vermont.....	4							1			1			1			1			1			1			1			1		
Virginia.....	16													1	1					1	1					1	1				
West Virginia.....	12																			1	1					1	1				
Wisconsin.....	24																														

NOTE.—"On application" indicates those cases in which the amount of wages due was paid whenever the employé applied for it.

INTRODUCTORY REMARKS.

XXV

Interval of payment.

ALL INDUSTRIES.

1855.						1860.						1865.						1870.						1875.						1880.						
Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	
107	04	0	77	8	14	283	137	24	103	8	18	304	102	30	151	0	21	580	273	50	234	4	24	713	331	87	280	1	30	803	373	08	321	1	33	
2	2					4	4					5	4		1			1	1		4			3			3			6	1		5			
17	4		12	1		22	7		13	2		27	0	1	10	1		35	11	1	23	1		2			2			2			2			
4	1		3			4	1		3			8	3		5			9	4		5			30	10	3	24			40	13	2	27			
1	1					1	1					1	1					1	1					10	4		6			11	5		0			
1			1			1			1			3	1		2			1	1					1	1					1			1			
6	4		2		1	0	7		2		1	12	0		4			20	13	2	0			8	2	1	5			15	4	1	10		1	
0	8		2		1	15	11		5		1	27	20	3	5		1	42	30	4	8		2	37	23	3	12			42	20	5	12			
						1	1					3	1				2	7	4				3	8	3	1	1		3	0	4	5	12		2	
3	3					5	5					10	0		1	1		23	17		4	1	2	4	3		1		4	3		1		3		
												1			1			2			1			2			1			3		1		2		
0	1	1	3	1		8	2	1	4	1		10	3	1	5	1		14	3	2	0			17	5	2	10			17	5	2	10			
6	3		8			8	4		4			11	5		0			14	7		0		1	14	7		0		1	15	8		0		1	
27	0	1	18	4	4	30	7	2	10	3	0	41	0	2	27	2	2	53	12	4	35	1	2	50	15	4	40		1	00	18	4	30		1	
4			8		1	7	1	1	4	9	1	10	2	1	0		1	20	6	2	11		1	28	8	3	14		3	32	7	5	17		4	
						1			1			1			1			2	1		1			7	5		1		1	12	7		4		2	
2	2					10	0	2	1	1		12	8	2	1	1		16	10	4	1	1		18	11	5	2			25	14	0	5		1	
11			0	1	1	12			11		1	14			13		1	18			18			20			20			1					1	
0	4	4	1			11	5	5	1			17	10	5	2			17	10	5	2			18	0	7	2			10	0	8	2			
37	22	3	10		3	53	30	6	14		4	61	34	7	10		4	77	43	10	20		1	80	47	13	28		1	80	48	15	30		1	
5	3		2			5	3		2			7	3	1	3			11	5	3	3			12	0	3	3			13	7	3	3			
20	14		4		2	33	20	4	6		4	40	20	0	8		5	68	38	8	10		5	80	50	13	23		5	103	56	13	31		5	
																		1	1					3	1		1			1	3	1		1		
10	12		6		1	27	14	2	10		1	37	17	0	18		1	63	20	9	24		1	75	33	12	28		2	81	36	14	30		2	
2			1	1		2			1	1		4	1		3			5	2		3			5	2		3			5	2		3			
1	1					1	1					4	2				2	6	2		2		2	7	2	1	2		2	7	2	1	2		2	
																		1			1			2			2			2			2			
																		2	1		1			4	2	1	2			5	2	1	3			
1			1			1			1			1			1			3	1		1			1	4	2		1		4	2		1		1	
2	1		1			8	1	1	1			5	2	1	3			12	5	1	7			13	0	2	0			10	0	1	7			
1	1					2	2					4	3		1			6	3	1	2			11	4	4	3			12	5	5	2			
1	1					0	8		2		2	8	4		3		2	13	4	1	0		3	17	4	2	0		3	24	5	2	14		3	

STATISTICS OF WAGES.

Interval of payment.

ALL STATES.

Industry.	Total number of statements.	1830.					1835.					1840.					1845.					1850.									
		Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.	Number.	Weekly.	Fortnightly.	Monthly.	Quarterly.	On application.						
All industries.....	801	37	9	2	15	5	7	45	14	2	18	5	7	61	22	2	25	5	8	92	37	4	37	7	9	141	64	7	50	7	11
Agricultural implements.....	13	2	2					2	2					2	2					3	3					3	3				
Bells.....	1																														
Belting.....	4																														
Boots and shoes.....	10																			1	1					1	1				
Breweries and distilleries.....	12																														
Brick-making.....	10																														
Bridge-building.....	2																														
Canning industry, the.....	2																														
Cigars and tobacco.....	30	1		1				1		1				2	1	1				2	1	1				5	4	1			
Clothing.....																															
Flour- and grist-mills.....	70																			1	1		1			4	3		2		1
Gas and gas coke.....	7																			1			1			3		1	2		
Glass:																															
Flint.....	10	2	1	1				2	1	1				2	1	1				3	2	1				4	3	1			
Green.....																															
Window.....	5																														
Hats.....	3																									1		1	1		
Ice industry, the.....	2																														
Iron and steel:																															
Blast-furnaces—																															
Anthracite.....	9	1			1			1				1		2			2			2			2			2			2		
Bituminous.....	11																														
Charcoal.....	26	4			1		3	4			1		3	4			1		3	4			1		3	4			1		3
Founderies—																															
Car-wheel.....	7																										1	1			
Stove.....	13																			1	1					3	3				
General.....	7																										1	1			
Hardware, cutlery, &c.....	25	3	1		2			4	1		3			5	1		4			3	3		5			8	3		5		
Machinery.....	51	3	2			1		4	3			1		4	3			1		6	4	1		1		10	6	2	1	1	
Rolling-mills & nailfactories.....	25	1				1		1				1		2			1	1		4		1	2	1		4		1	3		
Tin and sheet-iron works.....	4													1	1					1	1					2	2				
Marble works.....	3																														
Mining:																															
Coal.....	7																														
Copper.....	4																										1			1	
Iron.....	5																														
Silver.....	1																														
Stone quarrying, &c.....	8																										1			1	
Paints and white lead.....	5																														
Paper manufacture.....	47	1					1	1					1	2	1			1	5	2		2	1			9	3		5	1	
Pianos and organs.....	5	1	1					1	1					2	1			1	3	1		1				3	1		1		1
Pins.....	2																										1			1	
Pork-packing.....	5																														
Pottery and earthen-ware.....	5																			1	1					1	1				
Powder.....	2																														
Sugar-refining.....	1																														
Tanneries.....	33	1					1	1					1	2	1			1	3	1					2	7	4		1		2
Textiles:																															
Carpets.....	7																			1			1			2			2		
Cotton manufacture.....	45	10			10			11	1		10			12	1		11			17	2		14	1		22	3		18	1	
Hemp, jute manufacture.....	1																														
Silk manufacture.....	4																														
Woolen industry, the.....	54	5			1	3	2	6			2	3	2	8			4	3	2	9			5	3	2	12	1		6	4	2
Wood-working:																															
Carriage and wagon works.....	42	1	1					4	3		1		1	4	3		1			4	3		1			8	7		1		
Car-works.....	6																									1			1		
Cooperage.....	4																														
Furniture.....	57	1	1					2	2					4	4					7	7					10	10				
Saw- and planing-mills.....	72													2	2					3	2					1	4	3			1
Ship-carpentry.....	5													1						2	1		1			2	1		1		

NOTE.—"On application" indicating those cases in which the amount of wages due was paid whenever the employé applied for it.

The most common intervals of payment at the present time are weekly and monthly. In the earlier years, it will be noted, the monthly payment was the most frequent. This is true up to 1845, when of the returns, 37 showed weekly and the same number monthly payments, while but 4 paid every two weeks, and not less than 16 paid quarterly or annually. From that time onward, the proportion of shorter intervals between payments has increased. In 1880, of the 803 establishments reporting the intervals of payment, 321, or 40 per cent., paid monthly, while 373, or 48 per cent., paid weekly, and 98, or 12 per cent., paid every two weeks, 1 paying quarterly and 33 on application.

The greater relative frequency of monthly payments in some industries and of weekly payments in others will be noticed. In textile industries, for example, weekly payments are comparatively rare, there being but 17 of the establishments paying weekly out of a total of 111, while 75 paid monthly. In the wood-working industries, on the contrary, the rule is weekly payments. The relative frequency in the different periods of payment, in the different states and industries, may be ascertained by an inspection of the tables.

HOURS OF LABOR.

The total number of reports received containing information regarding hours of labor, which were thought worthy of tabulation, was 772. Thirty-two of these had reference to the hours of labor in 1830, the number of statements regarding separate classes of employes being 34. For each period of five years between this date and 1880 there was an increasing number of statements up to 1880. For this year there were 769 returns which contained 1,039 statements concerning hours of labor, some schedules containing the "hours of labor" of more than one class of employes.

The object sought in the questions asked concerning the hours of labor was not only to ascertain the number of hours constituting a day's work at the present time, and the changes which have taken place in these hours, but also to learn what has been the effect of these changes, especially on the amount and quality of the work produced, and also on the character of the employé himself.

The following table shows, in a condensed form, the total number of statements regarding hours of labor for each of the years named, and the number of statements for each of the several periods of hours from 8 to 14, together with the percentage which the number of each period bears to the whole number of reports for each year:

Dates.	Total number of statements concerning hours of labor.	Working 8 hours and less than 9 hours a day.		Working 9 hours and less than 10 hours a day.		Working 10 hours and less than 11 hours a day.		Working 11 hours and less than 12 hours a day.		Working 12 hours and less than 13 hours a day.		Working 13 hours and less than 14 hours a day.	
		Number of statements.	Percentage to whole.	Number of statements.	Percentage to whole.	Number of statements.	Percentage to whole.	Number of statements.	Percentage to whole.	Number of statements.	Percentage to whole.	Number of statements.	Percentage to whole.
1830	34	2	5.4	5	13.5	11	29.7	2	5.4	12	32.5	5	13.5
1835	48	2	4.1	5	10.4	17	35.4	4	8.3	14	29.2	0	12.6
1840	69	2	2.9	6	8.7	28	40.6	5	7.3	20	28.9	8	11.6
1845	103	4	3.9	7	6.8	49	47.5	9	8.7	24	23.3	10	9.7
1850	178	7	4.0	10	5.8	87	50.3	23	13.3	40	23.1	6	3.5
1855	250	11	4.4	17	6.8	133	53.2	26	14.4	48	19.2	5	2.0
1860	350	13	3.7	22	6.3	200	57.1	49	14.0	58	16.6	8	2.3
1865	466	20	4.0	34	6.9	290	58.5	64	13.0	77	15.0	11	2.0
1870	744	37	5.0	58	7.8	447	60.1	89	10.8	105	14.1	17	2.2
1875	930	49	5.3	77	8.3	561	60.3	88	9.5	186	14.6	19	2.0
1880	1,039	58	5.1	91	8.8	619	59.6	100	9.6	152	14.6	24	2.3

This table shows that the most common number of hours constituting a day's labor at the present time is 10, 59.6 per cent. of the total number of statements on this subject for 1880 reporting this as the number of hours in a day's work. Next to this is not the 11-hour but the 12-hour period, 14.6 per cent. of the reports giving this period. The comparatively large number of establishments working 12 to 13 hours grows out of the necessity, in some industries, of operating the works continuously, two sets or gangs of workmen being employed, each working "shifts" or "turns" of 12 hours each—"double turn", as it is called in some industries. Examples of some of these industries are charcoal pig-iron, in which 21 out of the 24 reports give the hours of labor as 12; flour, 37 of the classes out of 69 working 12 hours; and paper, with 36 out of 46. In some cases three sets of men, working 8 hours each, are employed. When the work is paid for by the piece and the output is large, this can be done with good results.

The small percentage reported under the 8-hour period will be noticed. Notwithstanding the agitation in favor of 8 hours as a day's work, the percentage of the total number reporting this as the period of daily labor in 1880 is even less, by a small fraction, than in 1830. This does not indicate that the hours of labor have not decreased since 1830. Indeed, the table shows the contrary, there having been a marked increase in the 10-hour period, and

a marked decrease in the 12 to 13 and 13 to 14 hour periods between 1830 and 1880, as will be seen by the following tabulation of the percentages of the different hours of labor for the years 1830 and 1880:

Hours of labor.	Percentage in 1830.	Percentage in 1880.
8 to 9	5.4	5.1
9 to 10	13.5	8.8
10 to 11	29.7	59.6
11 to 12	5.4	9.6
12 to 13	32.5	14.6
13 to 14	13.5	2.3

The number reporting the hours of labor as 10 to 11 increased from 29.7 per cent. in 1830 to 59.6 per cent. in 1880, more than double; while those reporting 12 to 13 decreased from 32.5 per cent. to 14.6 per cent., and those reporting 13 to 14 decreased from 13.5 per cent. to 2.3 per cent.

The number of hours constituting a regular day's work varies from 8 hours in a number of industries to as many as 15½ hours in breweries. This number of hours is rarely, if ever, exceeded in the manufacturing, mechanical, and mining occupations. Indeed, in but very few cases are the hours of labor so many, though in other occupations, especially in those of the personal and professional classes, in those having to do with trade and transportation, and during certain seasons of the year in agriculture also, the number of hours in a day's work is frequently 12 to 15. In agriculture it is not uncommon in the summer-time for work to be continued from sunrise until late in the evening, while many clerks, hostlers, street-car and railway employes, and other similar classes frequently work 15 to 18 hours a day.

In some occupations constant work is not performed during the whole number of hours reported as a day's labor. The workman may be at his place of work the number of hours specified, but during a portion of the time he may be idle, in some cases there being intervals in which there is no employment, while in others the character of the work done is such that between different portions of the process of manufacture there are "waiting-spells". Clerks, for example, in a store, are frequently unoccupied. The puddler in the rolling-mill has but little to do at certain stages of the process of puddling iron; while in the manufacture of hardware, where blacksmiths' fires are used, there is frequently waiting-time while the fire is getting hot, or iron is being heated to the required temperature.

In many instances, also, there is a difference in the hours of labor between summer and winter. In some cases this is due to the length of the day, the character of the work being such as to require daylight for its performance; in others the severity of the winter weather or the extreme heat of summer precludes work; in others still, the difference in the length of employment comes from a difference in the demand for goods at different seasons of the year.

At many establishments it is customary to work a less number of hours Saturday than on other days of the week. When the regular hours of labor, for example, are 60 or 66 hours a week the employes will work a quarter, a half, or even three-quarters of an hour longer than the average of 10 or 11 hours for 5 days in the week, in order that they may stop work earlier on Saturday.

In some cases it will be noticed that there has been an increase in the number of hours of labor at some establishments. This is contrary to the general tendency, which is to shorter instead of to longer hours.

As to the number of hours that should constitute a day's work and the effect that reduction in the number of hours of labor has had on the amount and quality of the work produced and the character and efficiency of the employe, the opinions given in the tabulations differ greatly. As a rule, the parties reporting are in favor of a continuance of the *status quo*.

As to the effect of reduction in hours of labor in the past, opinions also differ greatly. Some manufacturers are of the opinion that a decrease in the number of hours is equivalent to a decrease, in the same proportion, of the amount of work performed, especially where machinery is used, and hold that the amount performed in a less number of hours can not be the same, or nearly the same, as that performed in a longer day, unless the machinery is to be run at a higher speed. On the other hand, in some industries it will be noted that the manufacturers assert that a reduction in the hours of labor, while it may temporarily have reduced the output, has in the end not only made the amount equal to that produced in the longer hours, but has improved the character of the work. It is also claimed that by a reduction in the hours of labor a better class of employes has been secured.

Below are appended two tables relating to the hours of labor, the first showing the hours of labor in all industries in the different states by 5-year periods, and the second showing the hours of labor in all states by industries for each period of 5 years:

STATISTICS OF WAGES.

Hours of labor.

ALL INDUSTRIES.

[illegible]

xxxi

ALL INDUSTRIES.

1855.										1860.										1865.										1870.										1875.										1880.									
Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.	Number.	8 to 9.	9 to 10.	10 to 11.	11 to 12.	12 to 13.	13 to 14.																		
250	11	17	133	36	48	5	350	13	22	200	40	58	8	406	20	34	290	04	77	11	744	37	58	447	80	105	17	930	40	77	501	88	130	10	1,030	53	91	610	100	152	24																		
3	1	1		1			0	1	3		2			8	1		4		3		11	1		6	1	3		12	1		7	1	3		12	1		7	1	3																			
21	1	12	3	5			23	1	13	0	3			28	1		10	0	5		35	1		23	0	5		80	1		24	0	5		80	1		24	0	5																			
5		3		2			5		2	1	2			10			5	1	4		11			7		4		12			7		5		13			8		5																			
1				1			2							5			1	1	3		6			1	1	4		1			1	1	5		15			1	1	6																			
8		4	3	1			10		7	2	1			14	1		10	2	1		28	1	1	20	2	4		45	2	3	33	3	4		55	2	5	38	3	6	1																		
14	1	0	1	2	1		10	1	13	1	3	1		32	2	2	22	2	3	1	51	2	6	34	2	5	2	67	4	0	40	2	0	0	78	4	0	48	2	11	4																		
2	1		1	1			3	1	1		1			6	1	1	1	1	1	1	11	1	1	5	1	2	1	14	1	1	7	1	3	1	14	1	1	7	1	3	1																		
5	1	4					7	1	6					13	1	11		1			27	2	20	3	2			30	5	24	3	3	1		40	6	20	4	3	1																			
7		4	1	2			7		4	2	1			1			1				2	1	1	1				2		2					3		2	1																					
6		2	1	2	1		10		4	1	4	1		13	1	1	5	4	2	1	18	1	1	0	6	3	1	22	1	1	8	0	5	1	22	1	1	8	0	5	1																		
28	3	14	7	3	1		35	5	10	0	1	1		50	6	20	11	4	1		60	1	8	41	11	6		73	1	7	54	4	7		76	1	9	55	4	7																			
4		2	1	1			7		3	1	3			11		6	2	3			20	2	3	15	5	4		42	5	3	22	6	0		40	5	3	23	7	7	2																		
0	1	3	1	1			12	1	8	1	2			16	1		11	1	3		18	1		14	1	2		22	1		17	1	3		20	1	1	21	2	4																			
12		5	6																																																								

REGULARITY OF EMPLOYMENT.

The average number of months in the year that workmen are employed is an element of considerable importance in all investigations of this character, not only because of its influence in determining the rate of wages that should be received, but also from its bearing on the effectiveness of labor.

It is evident that in comparisons between rates of wages for short periods, as per day, per week, or even per month, in different establishments, or in different industries, or in different countries in the same industry, the number of months in the year for which employment is offered should be taken into consideration before any final result can be reached. An establishment working but half the year, though paying the same rate per day as one working the whole year, really pays very much less. The nominal wages are the same, but the real wages are much smaller.

It is also evident that regularity of employment has a marked influence upon the effectiveness of labor. Workmen idle for as short a time even as a week in some industries are apt to lose part of that cunning of hand and quickness of manipulation that constitute skill, and hence their effectiveness, not only as to amount of work, but as to quality of product, is decreased by irregularity of employment. In some industries, also, work is such that the body must become inured or hardened to certain species of fatigue and wear before the greatest effectiveness is obtained, and in such industries, upon resumption of employment after stoppage, some days are frequently necessary to recover what has been lost by idleness.

So far as it has been possible to ascertain the regularity of employment in the different establishments, it is given in the tabulations, together with the cause of the irregularity. The causes of irregularity vary greatly. In all of the establishments connected with agriculture, as in agricultural implements, etc., the regularity of employment depends largely upon the harvest, the length of the seasons, and the consequent purchasing power of agriculturists. Some industries can, from their very nature, be carried on only at certain seasons of the year, and then for a very brief period, as the canning of fruits and vegetables and the gathering of ice. Other industries are also affected by the season of the year, but in these work continues for a longer period than in those just mentioned, as in brick-making, the building trades, and hat-making.

In some industries the heat of summer is too great to allow of constant labor in this season, as in some of the glass industries, while in other cases advantage has to be taken of the winter to procure raw material which is consumed at other seasons of the year, as at charcoal blast-furnaces, where the wood is cut and the charcoal burned and drawn to the furnace in the winter time, when the furnace is generally idle.

PRICES OF PRODUCT AND LABOR COST.

Three questions were asked in the schedules relative to prices of product and the relation of wages to the same. The first was as to the selling prices of the product at the works; the second, as to the labor cost of the product; and the third, the percentage which this labor cost bore to the entire cost of the product.

To only the first of the questions were many answers received. It was comparatively easy to arrive at the prices received for product during a series of years, as this is an item that always appears in any set of books. The answers to the other two questions are much less full and satisfactory. However, the figures given will amply repay study, though no general statement can be made as to the results of all tabulations.

In comparing the tables, great care should be taken to notice whether the tabulations refer to the same article and the same grade of article, and include in the cost of labor the same items. This is not always the case. For example, under "pig-iron", some furnace proprietors mine their own ore, cut the wood, burn the charcoal, quarry the limestone, and make the pig-iron. At these furnaces the entire cost of labor involved in taking the materials from the ground, preparing them for use, transporting them to the furnace, and making the pig and stacking it on the bank is included. At other furnaces all the raw materials are purchased, and hence the labor cost includes only the cost after the materials are delivered at the furnace. It is evident that in cases like these the cost of labor to a unit of product will vary greatly, and hence it is necessary to make comparisons only between those establishments which include in their cost of labor the same items.

The percentage which wages bear to the cost of product is an extremely variable one. This is true not only as between the different industries, but also between different establishments in the same industries. In many occupations the work done is simply to make some slight change in form, and the cost of labor constitutes but a small proportion of the cost of product, the cost of material being the greatest, while in other industries the material used is of but little moment, labor being the chief element of cost.

It will also be noticed that in the same industry the relations of labor to product vary. This arises in some cases from difference in methods, the greater use of machinery, and cheaper raw materials; but in many cases it is due to more or less efficient management. It is impossible to make any general statement as to the results of the investigation on these points; each tabulation must be studied by itself.