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CENSUS BULLETIN.

No. 221. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF ST. PAUL, MINNESOTA.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of St. Paul, for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census, account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; druggists' preparations, not including prescriptions; illuminating gas; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	202
Capital invested	$3,596,843
Number of hands employed	1,270
Wages paid	$574,464
Cost of materials used	$580,515
Miscellaneous expenses	$117,709
Value of product at works	$1,551,184

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	105.56
Capital invested	377.21
Number of hands employed	210.04
Wages paid	306.20
Cost of materials used	153.08
Value of product at works	186.95
Population of city	221.07
Assessed valuation of city	406.00
Municipal debt less sinking fund	375.80

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $431 in 1880, to $565 in 1890, or 31.09 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF ST. PAUL, MINNESOTA.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace, not only mills and factories, but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 and 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	89	593	$3,738,791	5,230	$2,254,340	$5,719,067
	1890	116	1,421	21,438,588	17,485	9,731,588	15,054,160

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$10,286,363	41,473	$24,000,000	$1,526,715
	1890	$1,606,652	31,098,200	133,156	121,439,930	7,264,090

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses."
c The amount stated represents the "net debt," or the total amount of municipal debt less sinking fund, and includes $2,300,000 issued for waterworks.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation,

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Baking and yeast powders. (5 establishments.)	Clothing—men's, wholesale. (4 establishments.)	Confectionery. (15 establishments.)	Foundry and machine shop products. (13 establishments.)	Fur goods. (10 establishments.)
CAPITAL EMPLOYED—Aggregate	$408,290	$371,222	$359,950	$523,678	$1,490,152
HIRED PROPERTY—Total	47,750	73,750	203,470	60,330	204,317
PLANT—Total	134,190	18,275	29,785	294,820	24,185
Land	50,000	500		153,000	
Buildings	62,000	400		46,100	
Machinery, tools, and implements	22,190	17,375	29,785	95,720	24,185
LIVE ASSETS—Total	226,350	279,197	126,695	268,528	1,261,650
Raw materials	58,400	45,897	16,970	60,263	415,950
Stock in process and finished product	25,050	76,568	42,000	46,520	556,500
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	142,900	156,732	67,725	161,745	289,200
WAGES PAID—Aggregate	$65,730	$131,970	$83,494	$243,984	$224,205
Average number of hands employed during the year	98	408	175	366	361
Males above 16 years	72	54	103	365	135
Females above 15 years	20	97	61	1	128
Children	4	7	6		3
Piecoworkers		250	5		95
MATERIALS USED—Aggregate cost	$229,188	$337,148	$243,027	$379,046	$608,144
Principal materials	224,573	333,338	216,299	344,427	604,350
Fuel	1,265	810	3,628	15,923	1,294
Mill supplies				3,846	
All other materials	3,350	3,000	20,100	14,850	2,500
MISCELLANEOUS EXPENSES—Aggregate	$14,696	$10,949	$21,324	$19,650	$37,709
Amount paid for contract work					
Rent	3,820	5,900	17,295	6,335	17,367
Power and heat	1,500	212	1,930	1,040	
Taxes	1,311	803	544	3,785	1,433
Insurance	1,015	1,179	1,324	1,506	6,529
Repairs, ordinary, of buildings and machinery	450	1,255	131	2,075	400
Interest on cash used in the business	1,800	1,600	50	502	11,980
All sundries not elsewhere reported	4,800		50	4,407	
GOODS MANUFACTURED—Aggregate value	$373,460	$563,406	$453,020	$739,350	$940,120
Principal product	373,460	553,406	453,020	711,250	934,720
All other products, including receipts from custom work and repairing		10,000		28,100	5,400

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Furniture—factory products. — (5 establishments.)	Liquors—malt. — (9 establishments.)	Lumber, planing mill products. (a) — (8 establishments.)	Printing and publishing. (a) — (52 establishments.)	Slaughtering and meat packing. (a) — (4 establishments.)
CAPITAL EMPLOYED—Aggregate	$258,865	$1,437,950	$1,617,336	$2,169,977	[illegible]
HIRED PROPERTY—Total	14,000		37,045	516,922	[illegible]
PLANT—Total	132,800	921,600	681,336	573,582	[illegible]
Land	70,000	406,000	307,500	1,000	[illegible]
Buildings	33,500	327,000	216,730	90,574	[illegible]
Machinery, tools, and implements	29,300	188,600	157,106	482,008	[illegible]
LIVE ASSETS—Total	112,065	516,350	898,955	1,079,473	[illegible]
Raw materials	31,565	75,350	312,000	98,433	[illegible]
Stock in process and finished product	29,500	77,000	216,273	537,693	[illegible]
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	51,000	364,000	370,682	443,347	[illegible]
WAGES PAID—Aggregate	$132,142	$111,790	$510,777	$715,321	[illegible]
Average number of hands employed during the year	209	174	861	1,094	[illegible]
Males above 16 years	197	170	858	691	[illegible]
Females above 15 years	2	4	1	191	
Children			2	56	
Piecework ers	10			156	
MATERIALS USED—Aggregate cost	$145,924	$227,459	$889,549	$433,019	[illegible]
Principal materials	136,583	187,859	881,616	386,871	[illegible]
Fuel	3,108	25,550	2,960	7,208	[illegible]
Mill supplies	2,600	750	2,773		
All other materials	3,633	13,300	2,200	39,840	[illegible]
MISCELLANEOUS EXPENSES—Aggregate	$14,830	$167,840	$57,321	$451,723	[illegible]
Amount paid for contract work					
Rent	1,680		4,075	46,523	[illegible]
Power and heat				5,352	
Taxes	1,765	b 125,200	4,805	3,933	[illegible]
Insurance	3,100	6,150	9,900	11,380	[illegible]
Repairs, ordinary, of buildings and machinery	1,988	11,300	3,710	3,853	[illegible]
Interest on cash used in the business	3,442	5,100	23,856	9,043	[illegible]
All sundries not elsewhere reported	2,855	20,000	10,975	371,639	[illegible]
GOODS MANUFACTURED—Aggregate value	$351,720	$738,840	$1,727,566	$1,922,011	[illegible]
Principal product	350,520	738,840	1,675,466	1,719,474	[illegible]
All other products, including receipts from custom work and repairing	1,200		52,100	202,537	[illegible]

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

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CENSUS BULLETIN.

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No. 222. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF CHICAGO, ILLINOIS.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Chicago for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

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In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; china and pottery, decorating; druggists' preparations, not including prescriptions; drug grinding; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	971
Capital invested	$7,575,365
Number of hands employed	9,792
Wages paid	$5,267,683
Cost of materials used	$6,107,645
Miscellaneous expenses	$324,567
Value of product at works	$12,550,755

C. O. P.—7m

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	155.41
Capital invested	313.88
Number of hands employed	143.43
Wages paid	228.62
Cost of materials used	112.44
Value of product at works	148.83
Population of city	118.58
Assessed valuation of city	85.58
Municipal debt less sinking fund	3.02

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $436 in 1880 to $589 in 1890, or 35.09 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

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TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	189	3,519	$68,836,885	79,414	$34,653,462	$179,209,610
	1890	255	9,959	202,477,038	203,108	119,146,357	380,814,848

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA. Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	.....	$249,022,948	503,185	$117,970,035	$12,794,271
	1890	$41,550,761	632,184,140	1,099,850	218,932,562	13,180,254

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For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

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MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

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TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Agricultural implements. — (6 establishments.)	Cars—steam railroad. — (7 establishments.)	Clothing—men's, wholesale. — (186 establishments.)	Foundry and machine shop products. — (212 establishments.)	Furniture—factory product. — (157 establishments.)
CAPITAL EMPLOYED—Aggregate	$28,521,543	$9,018,030	$19,564,525	$24,725,275	$10,536,349
HIRED PROPERTY—Total	53,000	177,700	6,822,200	2,492,000	2,441,516
PLANT—Total	3,892,163	4,484,914	429,859	10,640,341	2,991,045
Land	1,078,000	320,322	148,100	2,875,904	1,016,000
Buildings	1,566,087	2,003,685	105,314	2,630,033	1,115,200
Machinery, tools, and implements	1,248,076	2,160,907	176,445	5,134,407	859,845
LIVE ASSETS—Total	24,576,380	4,355,416	12,312,466	11,592,931	5,103,788
Raw materials	1,839,814	1,938,901	1,659,337	1,886,524	1,055,155
Stock in process and finished product	3,285,200	1,293,823	4,777,187	2,516,734	1,756,925
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	19,451,366	1,122,692	5,875,942	7,189,673	2,291,708
WAGES PAID—Aggregate	$1,971,309	$3,839,495	$3,147,822	$7,714,113	$1,766,615
Average number of hands employed during the year	3,945	5,878	6,727	12,995	8,295
Males above 16 years	2,676	3,559	2,508	11,500	6,585
Females above 15 years	49	3	1,885	74	142
Children	.....	20	20	121	118
Pieceworkers	1,220	2,296	2,314	1,300	1,450
MATERIALS USED—Aggregate cost	$4,993,107	$8,589,147	$17,557,792	$13,657,702	$5,577,718
Principal materials	3,615,614	7,831,108	17,058,461	12,454,923	4,800,151
Fuel	93,460	181,032	13,711	464,246	77,359
Mill supplies	.....	67,761	.....	33,028	10,098
All other materials	1,284,033	509,246	485,620	705,505	690,110
MISCELLANEOUS EXPENSES—Aggregate	$2,153,120	$190,294	$5,810,386	$1,866,050	$602,899
Amount paid for contract work	.....	.....	4,682,480	40,000	14,400
Rent	3,970	16,000	409,931	199,370	207,529
Power and heat	770	1,000	3,092	33,608	21,666
Taxes	37,983	15,135	38,264	84,146	37,132
Insurance	13,382	24,736	75,543	69,529	77,838
Repairs, ordinary, of buildings and machinery	45,335	3,250	2,805	142,806	37,823
Interest on cash used in the business	32,264	75	34,182	111,412	57,474
All sundries not elsewhere reported	2,019,422	130,098	564,689	1,185,179	149,037
GOODS MANUFACTURED—Aggregate value	$11,883,976	$14,517,719	$32,517,226	$29,928,816	$13,582,350
Principal product	11,398,127	11,505,248	32,489,021	29,348,777	13,510,188
All other products, including receipts from custom work and repairing.	485,849	3,012,471	28,205	580,039	72,162

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Iron work, architectural and ornamental. (90 establishments.)	Liquors—distilled. (3 establishments.)	Lumber, planing mill products. (a) (116 establishments.)	Slaughtering and meat packing. (a) (68 establishments.)	Soap and candles. (15 establishments.)
CAPITAL EMPLOYED—Aggregate	$3,548,453	$2,290,000	$10,311,036	$40,013,632	$4,322,675
HIRED PROPERTY—Total	295,655	.....	1,151,090	755,100	50,130
PLANT—Total	1,526,875	1,280,000	4,202,967	13,442,650	1,664,898
Land	668,700	710,000	1,581,755	4,567,536	686,793
Buildings	377,200	170,000	1,089,413	5,708,226	433,833
Machinery, tools, and implements	480,975	400,000	1,531,799	3,166,888	544,272
LIVE ASSETS—Total	1,725,923	1,010,000	4,956,979	25,815,882	2,607,647
Raw materials	280,961	70,000	1,594,026	4,826,738	365,264
Stock in process and finished product	222,958	90,000	802,472	16,091,152	469,795
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	1,222,004	850,000	2,560,481	4,897,992	1,772,588
WAGES PAID—Aggregate	$1,613,507	$130,447	$4,820,840	$11,031,366	$532,128
Average number of hands employed during the year	2,427	158	8,056	17,878	978
Males above 16 years	2,382	158	7,665	16,133	804
Females above 15 years	4	.....	27	272	111
Children	33	.....	147	405	27
Pieceworkers	8	.....	217	1,068	36
MATERIALS USED—Aggregate cost	$2,341,879	$952,916	$10,185,612	$173,736,558	$6,033,639
Principal materials	2,204,260	643,431	9,866,723	160,036,625	5,261,048
Fuel	57,746	50,485	44,231	464,924	64,388
Mill supplies	6,498	1,000	32,803	.....	550
All other materials	73,375	258,000	241,852	13,235,009	1,607,653
MISCELLANEOUS EXPENSES—Aggregate	$275,510	$5,984,900	$590,811	$6,222,768	$596,309
Amount paid for contract work	.....	.....	.....	.....	.....
Rent	26,609	.....	103,598	56,638	3,760
Power and heat	3,330	.....	9,934	1,000	.....
Taxes	13,609	55,901,500	46,954	353,988	11,672
Insurance	9,684	17,000	108,475	428,850	9,620
Repairs, ordinary, of buildings and machinery	26,768	38,500	73,717	482,397	30,059
Interest on cash used in the business	10,738	.....	83,109	1,163,941	2,358
All sundries not elsewhere reported	184,772	27,900	165,024	3,735,894	538,840
GOODS MANUFACTURED—Aggregate value	$5,018,159	$8,030,863	$17,604,494	$203,825,092	$8,987,542
Principal product	4,609,409	8,030,863	17,302,994	$197,090,756	8,987,542
All other products, including receipts from custom work and repairing.	408,750	.....	301,500	6,734,336	.....

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

[7-010]

148497
OCT 19 1892

CENSUS BULLETIN

No. 223. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF NEWARK, NEW JERSEY.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Newark for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: china and pottery, decorating; druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	113
Capital invested	$146,646
Number of hands employed	438
Wages paid	$141,390
Cost of materials used	$149,149
Miscellaneous expenses	$21,437
Value of product at works	$367,631

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	74.37
Capital invested	109.12
Number of hands employed	42.66
Wages paid	85.46
Value of product at works	17.01
Population of city	33.20
Assessed valuation of city	34.96

Decrease in cost of materials used, 14.97 per cent.

Decrease of municipal debt less sinking fund, 6.55 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $438 in 1880 to $570 in 1890, or 30.14 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF NEWARK, NEW JERSEY.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual perscriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	127	1,319	$25,679,885	30,046	$13,171,339	$44,604,335
	1890	185	2,413	53,847,452	43,302	24,598,961	38,074,115

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$69,252,705	136,508	$83,364,410	$9,070,032
	1890	$5,161,156	81,399,137	181,830	112,512,530	8,476,080

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Boots and shoes—factory product. (17 establishments.)	Celluloid and celluloid goods. (4 establishments.)	Clothing—men's, wholesale. (93 establishments.)	Foundry and machine shop products. (73 establishments.)	Hardware. (b) (53 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,190,083	$2,028,268	$1,251,287	$3,601,983	$2,055,450
HIRED PROPERTY—Total	179,460	251,650	450,913	385,910	400,340
PLANT—Total	251,828	964,514	382,665	1,578,614	609,693
Land	19,000	100,000	146,200	333,548	93,525
Buildings	69,000	188,793	203,000	365,225	101,939
Machinery, tools, and implements	163,828	675,721	33,465	879,841	414,229
LIVE ASSETS—Total	758,795	812,104	417,709	1,637,459	1,045,417
Raw materials	111,834	156,187	83,380	171,792	253,142
Stock in process and finished product	170,489	408,729	287,475	402,225	410,078
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	476,472	247,188	46,854	1,063,442	382,197
WAGES PAID—Aggregate	$899,797	$414,909	$850,945	$1,378,540	$835,272
Average number of hands employed during the year	1,765	693	2,286	2,225	1,579
Males above 16 years	451	373	684	1,977	973
Females above 16 years	175	63	660	17	79
Children	43		18	36	18
Pieceworkers	1,096	257	924	195	509
MATERIALS USED—Aggregate cost	$894,897	$457,009	$774,831	$1,172,264	$775,453
Principal materials	815,664	374,594	766,514	944,981	682,444
Fuel	3,783	18,340	3,717	61,261	22,415
Mill supplies		7,051	500	9,820	11,302
All other materials	76,050	57,024	4,100	156,196	59,292
MISCELLANEOUS EXPENSES—Aggregate	$58,308	$401,541	$213,578	$206,032	$142,898
Amount paid for contract work			156,000		
Rent	11,665	20,400	27,480	32,180	31,942
Power and heat	2,190	200	41	5,702	5,059
Taxes	3,199	13,871	7,277	12,852	10,756
Insurance	2,874	11,321	3,516	10,157	6,843
Repairs, ordinary, of buildings and machinery	2,975	20,800	1,902	18,209	14,045
Interest on cash used in the business	7,870	1,202	3,250	14,440	12,268
All sundries not elsewhere reported	27,535	327,087	14,052	113,092	61,385
GOODS MANUFACTURED—Aggregate value	$2,210,120	$1,781,273	$2,485,395	$3,173,848	$2,154,085
Principal product	2,141,191	1,780,773	2,341,555	3,068,393	2,137,485
All other products, including receipts from custom work and repairing	74,938	500	143,840	105,455	16,600

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of the industry, which will be specifically stated in final reports.

TABLE 2.— DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Hats and caps, not including wool hats. (49 establishments.)	Jewelry. (68 establishments.)	Leather. (a) (50 establishments.)	Liquors—malt. (17 establishments.)	Trunks and valises. (14 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,499,409	$3,853,115	$5,052,687	$5,490,473	$1,339,050
HIRED PROPERTY—Total	534,720	728,800	792,267		298,262
PLANT—Total	414,136	359,122	1,617,128	4,139,056	317,950
Land	80,900	20,500	503,300	689,500	91,100
Buildings	107,900	39,500	678,307	2,283,000	125,400
Machinery, tools, and implements	225,336	299,122	435,521	1,166,556	98,450
LIVE ASSETS—Total	550,553	2,765,193	2,643,292	1,351,417	722,838
Raw materials	145,848	382,360	539,106	213,876	201,950
Stock in process and finished product	156,055	1,054,045	1,268,680	464,702	249,050
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	248,650	1,328,788	835,506	672,839	271,838
WAGES PAID—Aggregate	$1,367,954	$1,347,033	$1,534,779	$955,395	$666,730
Average number of hands employed during the year	2,721	1,905	2,303	927	1,263
Males above 16 years	764	1,258	1,754	927	483
Females above 15 years	168	300	2		22
Children	13	36	4		21
Pieceworkers	1,776	311	543		737
MATERIALS USED—Aggregate cost	$1,280,712	$2,262,072	$4,712,662	$2,496,796	$828,082
Principal materials	1,054,153	2,175,367	4,503,157	2,299,313	730,798
Fuel	59,545	15,369	57,137	101,939	4,860
Mill supplies	3,826	8,677		23,730	5,000
All other materials	163,188	62,659	152,368	101,814	87,424
MISCELLANEOUS EXPENSES—Aggregate	$112,644	$179,747	$230,104	$1,547,925	$62,280
Amount paid for contract work					
Rent	32,380	47,872	29,240		19,387
Power and heat	4,610	8,831	600		
Taxes	5,665	8,837	27,948	b990,101	5,932
Insurance	10,034	5,555	25,173	34,665	7,244
Repairs, ordinary, of buildings and machinery	22,836	12,901	35,599	143,686	5,445
Interest on cash used in the business	9,413	40,683	35,621	12,450	11,522
All sundries not elsewhere reported	28,316	55,568	75,923	367,023	12,750
GOODS MANUFACTURED—Aggregate value	$3,266,976	$4,510,521	$7,619,667	$6,901,297	$1,774,113
Principal product	3,261,476	4,504,346	6,907,948	6,901,297	1,736,613
All other products, including receipts from custom work and repairing	5,500	6,175	711,719		37,500

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue tax.

[7-010]

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SMITHSONIAN

CENSUS BULLETIN.

No. 224. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF DES MOINES, IOWA.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Des Moines for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	25
Capital invested	$257,275
Number of hands employed	421
Wages paid	$208,169
Cost of materials used	$189,390
Miscellaneous expenses	$10,010
Value of product at works	$439,567

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	75.48
Capital invested	73.29
Number of hands employed	97.97
Wages paid	117.58
Value of product at works	13.81
Population of city	123.55
Assessed valuation of city	219.46

Decrease in cost of materials used, 20.42 per cent.

Decrease of municipal debt less sinking fund, 29.61 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $485 in 1880 to $533 in 1890, or 9.90 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children, and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF DES MOINES, IOWA.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	50	155	$1,463,250	1,378	$667,690	$2,810,396
	1890	79	297	2,792,979	3,149	1,660,969	2,425,706

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$4,220,709	22,408	$4,361,090	$578,000
	1890	$339,460	5,242,992	50,093	13,931,760	406,841

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically reported for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Clay and pottery products. (b) — (11 establishments.)	Confectionery. — (3 establishments.)	Flouring and grist mill products. — (7 establishments.)	Foundry and machine shop products. — (10 establishments.)	Ironwork—architectural and ornamental. — (3 establishments.)
CAPITAL EMPLOYED—Aggregate	$124,615	$73,190	$127,822	$190,490	$76,435
HIRED PROPERTY—Total	27,945	27,640	12,890	12,210	4,835
PLANT—Total	71,700	12,600	83,950	127,300	45,500
Land	35,400	5,000	20,500	44,000	1,000
Buildings	17,900	5,000	24,500	21,250	30,000
Machinery, tools, and implements	18,400	2,600	38,950	62,050	14,500
LIVE ASSETS—Total	24,970	32,950	30,982	50,980	26,100
Raw materials	4,550	2,050	9,592	13,050	4,100
Stock in process and finished product	12,250	20,200	7,240	17,150	10,500
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	8,170	10,700	14,150	20,780	11,500
WAGES PAID—Aggregate	$64,736	$25,520	$20,416	$85,081	$23,760
Average number of hands employed during the year:	157	73	32	132	42
Males above 16 years	154	44	32	131	42
Females above 16 years		29			
Children				1	
Pieceworkers	3				
MATERIALS USED—Aggregate cost	$22,435	$65,174	$179,213	$74,182	$25,370
Principal materials	5,580	63,384	170,672	59,000	24,370
Fuel	15,580	1,190	2,389	4,947	800
Mill supplies			102	2,820	
All other materials	1,275	600	5,990	7,415	200
MISCELLANEOUS EXPENSES—Aggregate	$5,469	$2,938	$4,340	$8,631	$2,455
Amount paid for contract work					
Rent	2,240	2,200	1,080	1,136	480
Power and heat		124		900	
Taxes	597	291	630	1,443	860
Insurance	280	323	795	802	375
Repairs, ordinary, of buildings and machinery	977		1,097	1,900	190
Interest on cash used in the business	425		302	450	300
All sundries not elsewhere reported	950		436		250
GOODS MANUFACTURED—Aggregate value	$113,649	$105,940	$223,660	$207,575	$72,550
Principal product	81,149	105,940	147,000	207,575	72,550
All other products, including receipts from custom work and repairing	32,500		76,660		

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of this industry, which will be specifically stated in final reports.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Lumber—planing mill products. (a) (5 establishments.)	Marble and stone work. (3 establishments.)	Patent medicines and compounds. (7 establishments.)	Printing and publishing. (a) (27 establishments.)	Saddlery and harness. (12 establishments.)
CAPITAL EMPLOYED—Aggregate	$117,710	$21,740	$142,882	$598,757	$64,755
HIRED PROPERTY—Total	25,010	18,190	25,340	173,215	46,990
PLANT—Total	49,500	1,300	8,297	281,913	3,165
Land	15,000			43,883	
Buildings	11,000	300		61,000	
Machinery, tools, and implements	23,500	1,000	8,297	177,030	3,165
LIVE ASSETS—Total	43,200	2,250	109,245	143,629	14,600
Raw materials	12,200	400	14,080	29,571	2,800
Stock in process and finished product	9,700	1,350	7,494	11,450	7,975
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	21,300	500	87,671	102,608	3,825
WAGES PAID—Aggregate	$56,540	$14,256	$29,524	$235,712	$23,818
Average number of hands employed during the year	87	22	72	425	42
Males above 16 years	87	21	41	353	41
Females above 15 years		1	31	41	
Children				5	
Piecework ers				26	1
MATERIALS USED—Aggregate cost	$70,030	$19,640	$59,220	$159,654	$27,535
Principal materials	68,600	18,500	58,790	146,349	27,420
Fuel	630	90	155	1,815	65
Mill supplies	300				
All other materials	500	1,050	275	11,490	50
MISCELLANEOUS EXPENSES—Aggregate	$6,465	$3,246	$29,322	$118,458	$4,439
Amount paid for contract work					
Rent	2,400	1,475	2,015	14,762	3,941
Power and heat			480	2,532	33
Taxes	1,055	465	211	4,243	184
Insurance	1,150	156	284	2,583	173
Repairs, ordinary, of buildings and machinery	650	350	135	2,629	108
Interest on cash used in the business	710	300		2,471	
All sundries not elsewhere reported	500	500	26,197	89,238	
GOODS MANUFACTURED—Aggregate value	$161,500	$61,800	$226,318	$612,695	$64,744
Principal product	160,000	59,300	226,318	604,895	64,344
All other products, including receipts from custom work and repairing	1,500	2,500		7,800	400

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 225. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF GRAND RAPIDS, MICHIGAN.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Grand Rapids for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	143
Capital invested	$103,826
Number of hands employed	551
Wages paid	$157,429
Cost of materials used	$264,108
Miscellaneous expenses	$23,312
Value of product at works	$517,492

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	103.10
Capital invested	205.78
Number of hands employed	137.10
Wages paid	222.01
Cost of materials used	125.12
Value of product at works	153.08
Population of city	88.27
Assessed valuation of city	120.59
Municipal debt less sinking fund	61.78

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $366 in 1880 to $498 in 1890, or 36.07 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF GRAND RAPIDS, MICHIGAN.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operations of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	78	355	$4,864,298	5,172	$1,805,072	$3,956,663
	1890	114	864	14,978,015	12,814	6,259,758	9,171,347

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$7,405,007	32,016	$8,692,571	$471,000
	1890	$1,286,532	19,258,347	60,278	19,175,000	702,000

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Boxes—wooden, packing. (3 establishments.)	Carriages and wagons. (b) (20 establishments.)	Confectionery. (11 establishments.)	Flouring and grist mill products. (10 establishments.)	Foundry and machine shop products. (18 establishments.)
CAPITAL EMPLOYED—Aggregate	$63,320	$304,729	$165,325	$751,514	$944,157
HIRED PROPERTY—Total	9,412	39,541	74,337	8,240	58,970
PLANT—Total	24,280	127,049	9,925	418,750	401,218
Land	3,500	54,550	2,500	85,000	104,755
Buildings	3,600	46,324	700	111,300	84,204
Machinery, tools, and implements	17,180	26,775	6,725	222,450	212,259
LIVE ASSETS—Total	29,628	137,539	81,063	324,524	483,969
Raw materials	11,460	28,636	8,648	91,734	51,134
Stock in process and finished product	800	48,899	21,816	41,768	154,631
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	17,368	60,004	50,599	191,022	278,204
WAGES PAID—Aggregate	$36,155	$108,262	$54,602	$82,819	$322,106
Average number of hands employed during the year	68	177	147	136	558
Males above 16 years	60	167	122	134	535
Females above 15 years		3	24	2	5
Children	7	1	1		3
Piecoworkers	1	6			15
MATERIALS USED—Aggregate cost	$85,245	$165,831	$129,441	$1,384,162	$214,275
Principal materials	83,760	141,673	126,744	1,301,857	177,239
Fuel	60	2,888	1,406	9,595	13,121
Mill supplies	115			3,529	4,570
All other materials	1,310	21,270	1,291	69,181	19,345
MISCELLANEOUS EXPENSES—Aggregate	$4,114	$16,410	$24,770	$61,485	$39,445
Amount paid for contract work					
Rent	800	3,361	5,947	658	5,305
Power and heat		392	70	2,750	500
Taxes	168	1,798	546	4,634	4,193
Insurance	955	2,373	874	8,749	3,301
Repairs, ordinary, of buildings and machinery	1,075	1,503	35	6,350	6,723
Interest on cash used in the business	50	2,263	1,600	23,862	9,788
All sundries not elsewhere reported	1,060	4,720	15,698	14,482	9,635
GOODS MANUFACTURED—Aggregate value	$152,980	$327,532	$243,783	$1,558,845	$753,490
Principal product	131,080	206,587	243,783	1,538,220	580,251
All other products, including receipts from custom work and repairing	21,900	120,945		20,625	173,239

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of this industry, which will be specifically stated in final reports.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Furniture—factory products. (31 establishments.)	Liquors—malt. (7 establishments.)	Lumber. (a) (26 establishments.)	Patent medicines and compounds. (8 establishments.)	Printing and publishing. (a) (28 establishments.)
CAPITAL EMPLOYED—Aggregate	$5,640,649	$413,802	$2,573,971	$258,650	[illegible]
HIRED PROPERTY—Total	214,725		33,244	7,510	[illegible]
PLANT—Total	1,957,165	285,812	1,585,410	[illegible]	[illegible]
Land	412,689	106,100	1,086,696	34,000	
Buildings	922,993	111,375	157,460	61,400	
Machinery, tools, and implements	621,483	68,337	341,254	27,435	[illegible]
LIVE ASSETS—Total	3,468,759	127,990	955,317	[illegible]	[illegible]
Raw materials	779,917	22,427	208,646	[illegible]	[illegible]
Stock in process and finished product	1,115,499	37,134	463,089	[illegible]	[illegible]
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	1,573,343	68,429	283,582	67,925	[illegible]
WAGES PAID—Aggregate	$2,145,467	$68,491	$519,598	$65,487	[illegible]
Average number of hands employed during the year	4,347	100	1,079	[illegible]	[illegible]
Males above 16 years	3,792	96	983	80	[illegible]
Females above 16 years	23		5	3	[illegible]
Children	129	4			[illegible]
Pieceworkers	473		91	19	[illegible]
MATERIALS USED—Aggregate cost	$2,269,474	$87,419	$1,395,263	$176,663	[illegible]
Principal materials	1,756,110	74,048	1,329,928	137,911	[illegible]
Fuel	31,197	6,782	2,540	5,246	[illegible]
Mill supplies	17,206	425	27,339	59	
All other materials	464,952	5,264	35,456	32,856	[illegible]
MISCELLANEOUS EXPENSES—Aggregate	$463,331	$59,849	$124,688	$9,479	[illegible]
Amount paid for contract work	13,555				
Rent	19,346		2,992	561	[illegible]
Power and heat	770		800		[illegible]
Taxes	30,307	539,884	40,421	202	[illegible]
Insurance	41,574	2,254	20,702	1,364	[illegible]
Repairs, ordinary, of buildings and machinery	35,447	6,641	20,633	1,700	[illegible]
Interest on cash used in the business	82,327	2,219	25,524	50	[illegible]
All sundries not elsewhere reported	240,005	8,851	14,123	5,580	[illegible]
GOODS MANUFACTURED—Aggregate value	$5,638,016	$247,795	$2,319,495	$281,373	[illegible]
Principal product	5,633,461	247,795	2,050,360	281,373	[illegible]
All other products, including receipts from custom work and repairing	5,455		269,135		1,[illegible]

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

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CENSUS BULLETIN.

No. 226. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF WORCESTER, MASSACHUSETTS.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Worcester for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, general shop construction and repairs by steam railroad companies; druggists' preparations, not including prescriptions; illuminating gas; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	113
Capital invested	$715,799
Number of hands employed	606
Wages paid	$241,339
Cost of materials used	$164,720
Miscellaneous expenses	$71,080
Value of product at works	$670,189

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	34.32
Capital invested	116.40
Number of hands employed	26.05
Wages paid	63.52
Cost of materials used	25.61
Value of product at works	41.14
Population of city	45.23
Assessed valuation of city	79.04
Municipal debt less sinking fund	14.81

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $417 in 1880 to $541 in 1890, or 29.74 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children, and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF WORCESTER, MASSACHUSETTS.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	120	664	$11,378,604	16,559	$6,910,817	$16,582,750
	1890	144	978	25,339,203	21,478	11,541,703	20,994,852

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$27,292,793	58,291	$41,005,112	$2,447,543
	1890	$1,884,728	39,190,817	84,655	73,417,400	2,809,927

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Belting and hose—leather. (3 establishments.)	Boots and shoes—factory product. (b) (22 establishments.)	Cotton goods. (7 establishments.)	Envelopes. (4 establishments.)	Firearms. (4 establishments.)
CAPITAL EMPLOYED—Aggregate	$500,503	$2,042,743	$478,514	$581,342	$459,706
HIRED PROPERTY—Total	60,000	325,130	133,385	117,275	27,500
PLANT—Total	14,665	309,801	150,202	132,041	292,838
Land		65,700	6,867		45,000
Buildings		96,759	29,396		72,000
Machinery, tools, and implements	14,665	147,342	113,939	132,041	175,838
LIVE ASSETS—Total	425,898	1,407,812	194,927	331,426	139,368
Raw materials	79,523	252,425	42,490	126,036	17,670
Stock in process and finished product	140,814	275,682	64,158	52,575	95,569
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	205,561	879,705	88,279	152,815	26,129
WAGES PAID—Aggregate	$54,393	$927,084	$101,502	$182,348	$259,302
Average number of hands employed during the year	79	1,075	259	425	507
Males above 16 years	77	711	56	118	450
Females above 15 years	2	250	144	61	
Children		26			6
Pieceworkers		988	59	246	51
MATERIALS USED—Aggregate cost	$649,372	$2,125,358	$399,297	$536,112	$94,539
Principal materials	642,990	2,052,220	335,342	502,032	73,160
Fuel	925	9,539	7,331	2,059	4,015
Mill supplies			42,414	5,390	
All other materials	5,457	63,593	14,210	26,631	16,764
MISCELLANEOUS EXPENSES—Aggregate	$23,342	$200,962	$25,346	$66,121	$22,430
Amount paid for contract work					
Rent	3,900	19,508	9,337	9,382	2,400
Power and heat	600	4,200	1,000	3,080	636
Taxes	2,661	11,389	1,981	5,194	3,465
Insurance	3,339	11,418	2,887	3,750	2,630
Repairs, ordinary, of buildings and machinery	876	7,293	979	7,760	1,250
Interest on cash used in the business	6,966	37,191	1,016	5,234	5,400
All sundries not elsewhere reported	6,000	109,963	7,546	26,721	7,249
GOODS MANUFACTURED—Aggregate value	$757,632	$3,503,877	$578,853	$901,202	$451,002
Principal product	757,633	3,417,568	578,853	885,254	451,002
All other products, including receipts from custom work and repairing		86,309		16,008	

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of this industry, which will be specifically stated in final reports.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Foundry and machine shop products. — (78 establishments.)	Iron and steel. (a) — (10 establishments.)	Musical instruments—organs and materials. — (6 establishments.)	Wirework, including rope and cable. — (9 establishments.)	Woolens. — (14 establishments.)
CAPITAL EMPLOYED—Aggregate	$5,116,256	$6,528,055	$538,134	$623,658	$1,477,727
HIRED PROPERTY—Total	614,465	39,400	122,900	204,115	208,328
PLANT—Total	1,991,455	2,618,513	82,892	125,657	624,483
Land	354,671	387,000	10,000	1,000	115,000
Buildings	485,219	581,264	31,500	1,000	250,482
Machinery, tools, and implements	1,151,565	1,650,249	41,392	123,657	259,001
LIVE ASSETS—Total	2,510,336	3,870,142	332,342	293,886	644,916
Raw materials	481,307	1,464,449	34,948	64,837	150,539
Stock in process and finished product	753,138	1,217,465	89,880	128,786	353,833
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	1,275,891	1,188,228	207,514	100,263	140,544
WAGES PAID—Aggregate	$2,200,179	$2,085,837	$173,978	$161,373	$356,367
Average number of hands employed during the year	3,575	4,142	268	476	933
Males above 16 years	2,615	4,083	165	149	525
Females above 15 years	640	43	26	110	402
Children	2	4	1	24	6
Pieceworkers	318	12	76	193	----------
MATERIALS USED—Aggregate cost	$2,314,452	$5,358,651	$172,933	$289,868	$834,829
Principal materials	1,954,475	3,210,855	151,675	254,675	728,984
Fuel	70,402	495,044	2,909	3,400	28,478
Mill supplies	25,323	3,850	----------	100	35,224
All other materials	264,252	1,648,902	18,349	31,693	42,143
MISCELLANEOUS EXPENSES—Aggregate	$282,872	$115,834	$48,108	$48,213	$107,156
Amount paid for contract work	----------	----------	----------	----------	----------
Rent	55,302	3,545	9,831	14,288	14,583
Power and heat	18,841	4,455	2,450	2,205	720
Taxes	39,524	18,816	2,831	3,882	9,067
Insurance	16,637	46,751	2,482	1,706	5,758
Repairs, ordinary, of buildings and machinery	21,928	3,352	1,448	2,250	12,481
Interest on cash used in the business	19,706	33,550	9,135	162	23,278
All sundries not elsewhere reported	110,934	5,365	19,931	23,630	41,269
GOODS MANUFACTURED—Aggregate value	$5,472,417	$8,984,067	$468,309	$596,978	$1,374,857
Principal product	5,021,145	7,040,386	467,809	551,217	1,346,073
All other products, including receipts from custom work and repairing.	451,272	1,943,681	500	45,761	28,784

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 227. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF DAYTON, OHIO.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Dayton for the year ended May 31, 1890, prepared under direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	124
Capital invested	$177,172
Number of hands employed	524
Wages paid	$181,548
Cost of materials used	$295,025
Miscellaneous expenses	$18,353
Value of product at works	$562,495

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	60.81
Capital invested	108.27
Number of hands employed	86.80
Wages paid	143.75
Cost of materials used	73.81
Value of product at works	79.28
Population of city	58.28
Assessed valuation of city	62.66
Municipal debt less sinking fund	45.91

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $381 in 1880 to $497 in 1890, or 30.45 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children, and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF DAYTON, OHIO.

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The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	87	495	$6,063,334	6,025	$2,293,030	$6,434,225
	1890	100	920	12,805,231	11,779	5,772,371	11,478,411

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$11,985,483	38,678	$18,838,270	$1,101,521
	1890	$1,426,304	22,049,906	61,220	30,723,730	1,607,188

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b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

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In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

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First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

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MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Agricultural implements. (8 establishments.)	Carriages and wagons. (b) (15 establishments.)	Coffee and spices—roasting and grinding. (4 establishments.)	Flouring and grist mill products. (5 establishments.)	Foundry and machine shop products. (24 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,868,414	$459,447	$217,117	$272,050	$1,565,758
HIRED PROPERTY—Total	32,588	66,224	77,067	9,450	71,160
PLANT—Total	399,200	181,980	21,200	128,100	682,600
Land	153,700	77,000	800	30,600	139,577
Buildings	152,000	59,080	2,000	42,000	166,000
Machinery, tools, and implements	93,500	45,000	18,400	55,500	377,023
LIVE ASSETS—Total	1,436,626	211,243	118,850	134,500	811,998
Raw materials	158,097	54,267	18,850	28,500	133,498
Stock in process and finished product	223,786	86,310	14,000	41,500	257,536
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	1,054,143	70,676	86,000	64,500	420,964
WAGES PAID—Aggregate	$344,390	$146,562	$41,419	$62,466	$745,784
Average number of hands employed during the year	774	268	81	87	1,170
Males above 16 years	753	251	37	87	1,128
Females above 15 years	8		1		9
Children		10			6
Pieceworkers	13	7	43		27
MATERIALS USED—Aggregate cost	$472,900	$242,673	$803,638	$1,032,176	$656,698
Principal materials	316,219	231,034	800,000	949,000	600,761
Fuel	6,677	3,084	1,138	7,086	28,335
Mill supplies		3,589			6,440
All other materials	150,004	4,966	2,500	76,090	21,162
MISCELLANEOUS EXPENSES—Aggregate	$293,064	$34,107	$13,893	$24,901	$90,276
Amount paid for contract work					2,954
Rent	2,770	5,629	4,280	750	6,060
Power and heat	570	100	600	3,590	4,380
Taxes	8,789	2,408	1,508	2,856	5,863
Insurance	4,636	3,186	675	5,180	4,740
Repairs, ordinary, of buildings and machinery	8,250	4,050	200	4,050	11,975
Interest on cash used in the business	20,537	4,183	130	2,950	1,282
All sundries not elsewhere reported	247,512	14,551	6,500	5,825	53,022
GOODS MANUFACTURED—Aggregate value	$1,352,150	$482,369	$921,500	$1,185,250	$1,756,278
Principal product	1,334,650	304,367	921,500	1,185,250	1,648,213
All other products, including receipts from custom work and repairing	17,500	178,002			108,065

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of this industry, which will be specifically stated in final reports.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Iron work—architectural and ornamental. — (7 establishments.)	Liquors—malt. — (9 establishments.)	Lumber and other mill products from logs or bolts. — (5 establishments.)	Paper. — (5 establishments.)	Tobacco. (a) — (46 establishments.)
CAPITAL EMPLOYED—Aggregate	$255,905	$909,375	$403,928	$897,008	$370,183
HIRED PROPERTY—Total	28,860	47,250	35,170	12,000	84,330
PLANT—Total	83,050	556,001	143,718	728,300	59,116
Land	15,800	87,500	48,525	79,500	[illegible]
Buildings	20,500	266,455	43,618	162,000	[illegible]
Machinery, tools, and implements	46,750	202,046	51,575	486,800	19,[illegible]
LIVE ASSETS—Total	143,995	306,124	225,040	156,708	226,747
Raw materials	11,865	21,992	12,949	36,996	87,[illegible]
Stock in process and finished product	61,000	162,182	83,560	19,380	31,[illegible]
Cash, bills, and accounts receivable, and all sundries not elsewhere reported.	71,130	121,950	128,531	100,332	107,[illegible]
WAGES PAID—Aggregate	$91,857	$123,019	$124,146	$172,263	$326,[illegible]
Average number of hands employed during the year	187	158	275	355	[illegible]
Males above 16 years	182	158	248	269	[illegible]
Females above 15 years	3			55	[illegible]
Children	2		12	19	[illegible]
Pieceworkers			15	12	[illegible]
MATERIALS USED—Aggregate cost	$198,030	$248,815	$152,410	$480,213	$390,[illegible]
Principal materials	194,900	221,248	120,420	376,995	337,[illegible]
Fuel	1,919	11,242	500	47,227	[illegible]
Mill supplies	1,000	440	4,205		
All other materials	220	15,885	27,285	55,991	57,[illegible]
MISCELLANEOUS EXPENSES—Aggregate	$10,205	$140,397	$40,147	$41,512	$178,[illegible]
Amount paid for contract work					
Rent	2,300	3,525	3,000	900	[illegible]
Power and heat	300	125		3,338	[illegible]
Taxes	1,071	569,477	2,540	3,624	152,[illegible]
Insurance	1,110	1,010	2,892	4,474	[illegible]
Repairs, ordinary, of buildings and machinery	145	5,595	9,133	10,914	[illegible]
Interest on cash used in the business		14,669	2,421	3,608	[illegible]
All sundries not elsewhere reported	5,369	45,156	29,161	14,654	13,[illegible]
GOODS MANUFACTURED—Aggregate value	$322,650	$619,148	$392,291	$1,017,257	$1,017,[illegible]
Principal product	319,300	618,212	389,291	1,017,257	1,017,[illegible]
All other products, including receipts from custom work and repairing.	3,350	936	3,000		

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

[7-010]

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CENSUS BULLETIN.

No. 228. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF EVANSVILLE, INDIANA.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Evansville for the year ended May 31, 1890, prepared under direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	18
Capital invested	$237,891
Number of hands employed	340
Wages paid	$166,167
Cost of materials used	$147,106
Miscellaneous expenses	$6,540
Value of product at works	$332,987

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	14.06
Capital invested	73.11
Number of hands employed	75.14
Wages paid	98.55
Cost of materials used	25.47
Value of product at works	41.57
Population of city	73.35
Assessed valuation of city	28.45
Municipal debt less sinking fund	8.11

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $372 in 1880 to $422 in 1890, or 13.44 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children, and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF EVANSVILLE, INDIANA.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	60	313	$4,733,815	3,669	$1,365,606	$4,972,690
	1890	74	375	8,432,384	6,766	2,876,398	6,380,368

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$8,091,914	29,280	$17,307,725	$1,984,000
	1890	$707,722	11,788,672	50,756	22,231,740	2,145,000

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Agricultural implements. (4 establishments.)	Brooms and brushes. (5 establishments.)	Carriages and wagons. (11 establishments.)	Clothing—men's, wholesale. (3 establishments.)	Cooperage. (7 establishments.)
CAPITAL EMPLOYED—Aggregate	$315,816	$37,955	$300,805	$393,462	$48,110
HIRED PROPERTY—Total	46,600	7,500	67,375	19,200	6,325
PLANT—Total	83,350	9,735	54,525	35,923	24,200
Land	10,250	2,050	20,700	15,000	13,900
Buildings	35,500	2,400	17,800	12,000	7,050
Machinery, tools, and implements	37,600	5,285	16,025	8,923	3,250
LIVE ASSETS—Total	185,866	20,720	178,905	338,939	17,585
Raw materials	47,893	10,570	36,150	32,192	8,860
Stock in process and finished product	54,330	1,475	53,300	57,549	4,375
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	83,643	8,675	89,455	249,198	4,350
WAGES PAID—Aggregate	$72,604	$24,492	$71,875	$112,532	$33,982
Average number of hands employed during the year	157	76	138	369	110
Males above 16 years	153	39	129	41	6
Females above 15 years	1	12	3	3	
Children		25	5		
Pieceworkers	3		1	325	104
MATERIALS USED—Aggregate cost	$91,281	$62,386	$100,322	$368,238	$54,832
Principal materials	68,105	58,408	95,800	367,500	53,932
Fuel	3,626	208	1,322	414	250
Mill supplies	150			324	
All other materials	19,400	3,680	3,200		650
MISCELLANEOUS EXPENSES—Aggregate	$27,159	$2,822	$14,321	$84,652	$2,542
Amount paid for contract work				50,000	
Rent	3,500	600	5,390	1,152	560
Power and heat					
Taxes	3,224	367	1,000	2,350	886
Insurance	951	460	1,495	1,800	484
Repairs, ordinary, of buildings and machinery	2,250	225	475	600	25
Interest on cash used in the business	3,420	1,000	3,845	3,750	310
All sundries not elsewhere reported	13,814	170	1,210	25,000	268
GOODS MANUFACTURED—Aggregate value	$257,445	$103,000	$215,775	$658,350	$102,150
Principal product	257,395	103,000	184,075	658,000	102,150
All other products, including receipts from custom work and repairing	50		31,700	350	

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Flouring and grist mill products. (11 establishments.)	Foundry and machine shop products. (13 establishments.)	Furniture—factory product. (9 establishments.)	Lumber—sawed. (a) (10 establishments.)	Saddlery and harness. (16 establishments.)
CAPITAL EMPLOYED—Aggregate	$494,200	$991,351	$667,145	$1,620,100	$330,170
HIRED PROPERTY—Total	20,000	40,430	72,200	82,000	89,650
PLANT—Total	320,700	458,020	186,219	391,300	71,734
Land	42,950	145,300	55,525	183,650	6,600
Buildings	87,400	158,350	57,856	56,300	4,000
Machinery, tools, and implements	190,350	154,370	72,838	151,350	61,134
LIVE ASSETS—Total	153,500	492,901	408,726	1,146,800	168,786
Raw materials	41,600	69,491	79,910	145,900	41,561
Stock in process and finished product	39,062	141,646	183,949	301,150	54,150
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	72,838	281,764	144,867	699,750	73,075
WAGES PAID—Aggregate	$85,652	$359,432	$273,263	$300,234	$113,722
Average number of hands employed during the year	166	662	656	623	238
Males above 16 years	165	495	603	566	178
Females above 15 years		1			
Children	1	2	4	37	
Pieceworkers		164	49	20	60
MATERIALS USED—Aggregate cost	$1,603,656	$286,802	$350,374	$957,927	$288,565
Principal materials	1,475,946	226,057	331,364	938,540	280,150
Fuel	8,784	20,080	1,753		275
Mill supplies	440	17,553	650	12,585	
All other materials	118,486	23,202	16,607	6,802	8,140
MISCELLANEOUS EXPENSES—Aggregate	$49,366	$34,829	$30,123	$62,764	$13,533
Amount paid for contract work					
Rent	1,700	3,235	6,500	6,950	6,276
Power and heat					
Taxes	4,617	13,426	7,139	15,029	1,802
Insurance	10,098	5,738	9,449	11,215	1,659
Repairs, ordinary, of buildings and machinery	9,335	3,470	868	14,260	1,200
Interest on cash used in the business	15,327	4,214	7,295	9,300	1,850
All sundries not elsewhere reported	8,289	4,746	7,881	6,010	746
GOODS MANUFACTURED—Aggregate value	$1,841,629	$930,989	$700,386	$1,585,186	$471,150
Principal product	1,840,779	924,989	700,386	1,577,685	465,900
All other products, including receipts from custom work and repairing	850	15,000		7,500	5,250

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 229. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

KANSAS CITY, MISSOURI.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Kansas city for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	141
Capital invested	$198,668
Number of hands employed	1,075
Wages paid	$510,103
Cost of materials used	$477,377
Miscellaneous expenses	$49,652
Value of product at works	$1,135,880

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	494.64
Capital invested	482.61
Number of hands employed	434.42
Wages paid	522.94
Cost of materials used	324.25
Value of product at works	376.85
Population of city	137.91
Assessed valuation of city	679.84

Decrease of municipal debt less sinking fund, 47.72 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $558 in 1880 to $650 in 1890, or 16.49 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

KANSAS CITY, MISSOURI.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	57	224	$2,147,305	2,548	$1,420,713	$3,723,916
	1890	123	1,473	12,708,000	14,692	9,360,323	16,276,004

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (d)
All industries	1880	.....	$6,382,681	55,785	$10,577,260	$1,339,224
	1890	$1,824,447	31,571,559	c132,716	82,485,557	700,121

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c Includes 13,048 population which, by recent decision of the supreme court of Missouri, is now outside the municipal limits of Kansas city, Missouri.
d The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full

amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amount of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Clothing—men's, wholesale. (3 establishments.)	Confectionery. (10 establishments.)	Flouring and grist mill products. (6 establishments.)	Foundry and machine shop products. (21 establishments.)	Furniture—factory products. (7 establishments.)
CAPITAL EMPLOYED—Aggregate	$110,169	$377,910	$579,173	$659,370	$273,265
HIRED PROPERTY—Total	36,875	78,575	.....	87,085	42,190
PLANT—Total	15,500	114,300	305,940	386,900	157,925
Land	.....	2,500	107,000	163,000	75,000
Buildings	.....	33,500	81,800	57,000	70,000
Machinery, tools, and implements	15,500	78,300	117,140	164,900	12,925
LIVE ASSETS—Total	57,794	185,035	273,233	185,385	73,150
Raw materials	26,600	46,328	37,280	59,760	22,600
Stock in process and finished product	13,600	51,957	24,632	44,800	18,900
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	17,594	86,750	211,321	80,825	31,650
WAGES PAID—Aggregate	$68,900	$119,800	$73,941	$272,448	$98,480
Average number of hands employed during the year	311	252	129	374	158
Males above 16 years	20	85	103	349	148
Females above 15 years	8	34	1	4	2
Children	.....	.....	.....	5	6
Piecework ers	283	133	25	16	2
MATERIALS USED—Aggregate cost	$147,221	$587,260	$1,052,657	$207,485	$168,100
Principal materials	130,000	512,770	964,962	180,455	167,400
Fuel	205	1,810	9,260	13,070	650
Mill supplies	6	.....	770	3,220	100
All other materials	17,010	72,680	77,665	10,740	50
MISCELLANEOUS EXPENSES—Aggregate	$8,258	$29,061	$65,875	$38,051	$13,168
Amount paid for contract work	.....	.....	.....	.....	.....
Rent	2,950	7,072	.....	9,144	4,430
Power and heat	525	150	.....	.....	530
Taxes	100	912	1,733	2,160	333
Insurance	325	2,952	7,628	2,084	2,014
Repairs, ordinary, of buildings and machinery	470	3,800	11,410	3,795	525
Interest on cash used in the business	600	.....	9,995	4,855	50
All sundries not elsewhere reported	3,288	14,175	35,109	16,016	5,286
GOODS MANUFACTURED—Aggregate value	$277,500	$860,001	$1,323,028	$629,960	$350,000
Principal product	232,500	860,004	1,101,443	581,360	318,000
All other products, including receipts from custom work and repairing.	45,000	.....	221,585	45,600	32,000

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES--Continued.

CLASSIFICATION OF INQUIRIES.	Lumber—Planing mill products. (a) — (10 establishments.)	Printing and publishing. (a) — (83 establishments.)	Coffee and spices—roasting and grinding. — (3 establishments.)	Iron work—architectural and ornamental. — (9 establishments.)
CAPITAL EMPLOYED—Aggregate	$929,206	$1,705,997	$253,500	$274,660
HIRED PROPERTY—Total	56,181	672,652	105,000	69,710
PLANT—Total	242,675	707,905	38,000	127,650
Land	111,500	1,400	.....	40,900
Buildings	52,550	3,750	.....	30,300
Machinery, tools, and implements	78,625	702,755	38,000	56,450
LIVE ASSETS—Total	630,350	325,440	110,500	77,300
Raw materials	177,900	48,707	32,000	15,125
Stock in process and finished product	239,750	23,615	28,500	18,800
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	212,700	253,118	50,000	43,375
WAGES PAID—Aggregate	$284,119	$970,826	$44,296	$115,585
Average number of hands employed during the year	353	1,310	73	184
Males above 16 years	351	920	63	182
Females above 15 years	1	133	8	1
Children	1	49	2	1
Pieceworkers	.....	208	.....	.....
MATERIALS USED—Aggregate cost	$667,550	$527,029	$526,885	$123,221
Principal materials	661,550	449,462	500,065	115,090
Fuel	2,750	12,182	1,660	4,326
Mill supplies	350	.....	100	490
All other materials	2,900	65,385	25,060	3,315
MISCELLANEOUS EXPENSES—Aggregate	$41,809	$364,868	$22,612	$16,159
Amount paid for contract work	.....	200	.....	.....
Rent	6,180	64,506	8,400	6,184
Power and heat	240	8,707	.....	288
Taxes	2,540	6,735	447	743
Insurance	9,034	9,729	695	977
Repairs, ordinary, of buildings and machinery	3,385	11,651	1,000	745
Interest on cash used in the business	2,400	6,856	.....	100
All sundries not elsewhere reported	18,030	256,484	12,070	7,152
GOODS MANUFACTURED—Aggregate value	$1,151,280	$2,257,507	$655,200	$336,500
Principal product	1,116,180	2,221,687	655,200	330,500
All other products, including receipts from custom work and repairing	35,100	35,820	.....	6,000

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 230. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF MILWAUKEE, WISCONSIN.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Milwaukee for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; china and pottery, decorating; druggists' preparations, not including prescriptions; illuminating gas; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	490
Capital invested	$2,912,660
Number of hands employed	2,644
Wages paid	$1,141,161
Cost of materials used	$1,644,125
Miscellaneous expenses	$154,573
Value of product at works	$3,541,003

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	181.61
Capital invested	227.03
Number of hands employed	81.25
Wages paid	161.41
Cost of materials used	72.81
Value of product at works	101.99
Population of city	76.90
Assessed valuation of city	88.78
Municipal debt less sinking fund	34.98

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $333 in 1880 to $472 in 1890, or 41.74 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF MILWAUKEE, WISCONSIN.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	113	844	$18,766,914	20,886	$6,946,105	$28,975,872
	1890	174	2,867	64,285,595	41,127	19,208,998	51,717,457

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA. Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	.....	$43,473,812	115,587	$55,875,960	$2,160,289
	1890	$7,999,973	91,354,933	204,468	105,484,055	2,915,900

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full

amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amount of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Boots and shoes—factory product. (17 establishments.)	Clothing—men's, wholesale. (20 establishments.)	Flouring and grist mill products. (11 establishments.)	Foundry and machine shop products. (44 establishments.)	Furniture—factory product. (16 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,909,255	$3,587,458	$2,027,237	$6,599,525	$1,068,666
HIRED PROPERTY—Total	116,940	718,930	154,500	376,625	170,730
PLANT—Total	417,387	36,608	935,000	2,586,252	325,108
Land	146,800	.....	169,000	874,050	102,889
Buildings	96,076	.....	197,500	633,433	91,189
Machinery, tools, and implements	174,511	36,608	568,500	1,078,769	131,030
LIVE ASSETS—Total	1,374,928	2,831,920	937,737	3,636,648	572,828
Raw materials	179,134	357,538	252,370	551,299	172,598
Stock in process and finished product	451,947	1,275,458	328,419	662,928	163,195
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	743,847	1,198,924	356,948	2,422,421	237,035
WAGES PAID—Aggregate	$483,472	$632,237	$253,651	$1,736,352	$430,498
Average number of hands employed during the year	1,140	2,488	384	3,263	893
Males above 16 years	472	340	345	2,935	773
Females above 15 years	194	157	.....	10	3
Children	28	.....	.....	15	33
Pieceworkers	446	1,991	39	303	84
MATERIALS USED—Aggregate cost	$818,070	$2,099,612	$1,029,457	$2,552,867	$625,054
Principal materials	769,193	2,074,323	3,746,832	1,556,578	601,771
Fuel	7,255	934	44,511	105,735	8,953
Mill supplies	.....	.....	20	69,890	650
All other materials	41,622	24,355	238,094	820,664	13,680
MISCELLANEOUS EXPENSES—Aggregate	$61,876	$169,386	$155,614	$659,712	$128,964
Amount paid for contract work	.....	.....	3,734	217	.....
Rent	8,186	43,136	10,815	28,247	15,366
Power and heat	2,100	.....	720	1,608	.....
Taxes	7,155	10,410	10,638	23,652	4,200
Insurance	8,482	15,671	18,154	38,268	12,262
Repairs, ordinary, of buildings and machinery	3,755	300	18,523	83,485	4,012
Interest on cash used in the business	1,882	34,546	31,592	23,909	9,979
All sundries not elsewhere reported	30,316	65,323	61,438	460,326	83,145
GOODS MANUFACTURED—Aggregate value	$1,617,534	$3,541,369	$1,563,983	$5,568,445	$1,313,489
Principal product	1,612,154	3,541,369	1,561,983	5,372,554	1,305,230
All other products, including receipts from custom work and repairing.	5,380	.....	2,000	195,891	8,250

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Leather—tanned and curried. (14 establishments.)	Liquors—malt. (a) (18 establishments.)	Lumber—planing mill product. (a) (17 establishments.)	Oil—lubricating. (5 establishments.)	Slaughtering and meat packing. (a) (14 establishments.)
CAPITAL EMPLOYED—Aggregate	$4,957,094	$15,193,020	$1,518,081	$210,150	$2,563,438
HIRED PROPERTY—Total	37,175	96,880	30,000	40,000	126,615
PLANT—Total	1,491,558	7,102,285	655,857	39,500	942,527
Land	629,112	1,396,034	199,559	7,000	203,284
Buildings	603,400	3,034,423	211,543	8,000	490,526
Machinery, tools, and implements	259,046	2,671,828	244,755	24,500	248,717
LIVE ASSETS—Total	3,428,361	7,993,855	832,224	130,650	1,494,296
Raw materials	661,780	1,560,499	312,984	57,500	120,778
Stock in process and finished product	1,733,691	1,591,245	101,643	31,000	648,807
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	1,032,940	4,872,111	417,597	42,150	724,711
WAGES PAID—Aggregate	$1,001,915	$1,489,762	$652,933	$24,709	$449,973
Average number of hands employed during the year	1,767	2,458	1,393	28	858
Males above 16 years	1,440	1,751	1,374	26	843
Females above 15 years	16	134	1	1	.....
Children	.....	191	3	1	15
Pieceworkers	311	382	15	.....	.....
MATERIALS USED—Aggregate cost	$6,712,113	$5,123,652	$1,434,246	$138,403	$8,864,750
Principal materials	6,640,509	4,274,836	1,374,818	123,780	8,259,921
Fuel	7,113	301,600	14,019	496	39,648
Mill supplies	.....	500	5,893	500	241
All other materials	64,491	546,716	39,516	13,627	564,940
MISCELLANEOUS EXPENSES—Aggregate	$300,322	$3,048,844	$120,082	$10,693	$105,300
Amount paid for contract work	.....	.....	.....	.....	.....
Rent	2,974	6,641	2,400	2,600	11,401
Power and heat	.....	.....	.....	.....	.....
Taxes	19,219	51,572,999	9,682	687	6,960
Insurance	31,178	70,211	21,685	2,816	17,272
Repairs, ordinary, of buildings and machinery	53,157	292,412	18,274	1,800	19,738
Interest on cash used in the business	54,606	66,306	15,255	640	11,007
All sundries not elsewhere reported	139,188	1,040,275	52,786	2,200	38,922
GOODS MANUFACTURED—Aggregate value	$8,429,814	$12,860,525	$2,360,659	$230,625	$9,996,581
Principal product	8,090,436	12,860,525	2,351,059	230,625	9,856,610
All other products, including receipts from custom work and repairing.	339,378	.....	6,600	.....	139,971

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

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CENSUS BULLETIN.

No. 231. WASHINGTON, D. C. October 12, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF CLEVELAND, OHIO.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 8, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Cleveland for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	147
Capital invested	$696,955
Number of hands employed	1,347
Wages paid	$630,336
Cost of materials used	$532,764
Miscellaneous expenses	$38,163
Value of product at works	$1,330,083

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	104.08
Capital invested	188.87
Number of hands employed	118.30
Wages paid	217.14
Cost of materials used	84.10
Value of product at works	111.65
Population of city	63.20
Assessed valuation of city	41.20

Decrease of municipal debt less sinking fund, 5.01 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $391 in 1880 to $569 in 1890, or 45.52 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in ten years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF CLEVELAND, OHIO.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	136	1,055	$19,430,089	21,724	$8,502,935	$31,629,737
	1890	181	2,300	50,826,496	48,771	27,596,408	58,763,062

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880		$48,604,050	160,146	$70,548,104	$6,467,046
	1890	$4,690,406	104,199,169	261,353	99,614,055	6,143,206

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

inst the caption "Materials used" is presented the reported cost at the place of consumption
nd against "Goods manufactured" is the reported market value at the
uct, not including any allowance for commissions or expenses of selling.
must be considered that the difference between apparent cost and value
t as presented can not be taken as a correct indication of manufacturers'
y other items of expense enter into the mercantile portion of the business
the census inquiry.
g are excluded, because the reported value of product is its selling value
y". The cost of depreciation of plant in excess of the expense for ordinary
l, because the information obtained by the inquiry is not sufficient to form
omputation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Clothing—wholesale. (b) (24 establishments.)	Flouring and grist mill products. (6 establishments.)	Foundry and machine shop products. (b) (104 establishments.)	Iron and steel. (b) (21 establishments.)	Liquors—malt. (16 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,618,178	$448,582	$7,997,233	$13,738,850	$3,708,045
HIRED PROPERTY—Total	395,633	20,655	582,655	207,877	127,500
PLANT—Total	41,155	298,500	3,517,615	7,391,744	2,308,102
Land		36,000	579,975	1,414,068	342,500
Buildings		93,000	945,936	1,833,610	1,273,114
Machinery, tools, and implements	41,155	169,500	1,791,704	4,144,066	692,488
LIVE ASSETS—Total	1,181,390	120,427	4,096,963	6,130,229	1,272,443
Raw materials	307,779	33,027	551,471	768,411	263,649
Stock in process and finished product	304,057	24,600	1,107,636	2,038,057	363,394
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	569,554	62,800	2,437,856	3,332,761	645,400
WAGES PAID—Aggregate	$868,170	$80,476	$4,533,223	$5,702,116	$446,372
Average number of hands employed during the year	1,833	126	8,155	9,310	516
Males above 16 years	338	123	6,589	8,495	516
Females above 15 years	49	3	93	31	
Children			124	142	
Pieceworkers	1,446		1,349	642	
MATERIALS USED—Aggregate cost	$2,431,169	$1,975,565	$6,217,660	$16,338,515	$897,791
Principal materials	2,420,834	1,850,110	5,583,222	13,590,316	837,527
Fuel	3,035	10,500	211,290	2,130,696	44,164
Mill supplies		13,100	59,933	48,536	
All other materials	7,300	101,855	363,224	568,937	16,100
MISCELLANEOUS EXPENSES—Aggregate	$124,425	$34,502	$873,247	$850,822	$710,384
Amount paid for contract work	18,606				
Rent	51,418	2,076	52,439	13,596	10,200
Power and heat	1,258	2,000	9,090	600	
Taxes	5,841	4,855	41,402	58,024	c116,069
Insurance	6,529	10,281	39,767	33,252	23,919
Repairs, ordinary, of buildings and machinery	3,900	5,930	91,316	414,389	51,616
Interest on cash used in the business	9,129	7,035	88,119	37,943	3,040
All sundries not elsewhere reported	27,744	1,425	550,514	293,118	205,540
GOODS MANUFACTURED—Aggregate value	$3,972,392	$2,345,588	$13,432,334	$23,932,430	$3,011,555
Principal product	3,972,392	2,203,978	13,064,012	23,837,435	2,841,955
All other products, including receipts from custom work and repairing		141,610	368,322	94,995	169,600

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.
b Includes several branches of this industry, which will be specifically stated in final reports.
c Includes internal revenue taxes.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Lumber—planing mill products. (a) — 15 establishments.	Paints. — (16 establishments.)	Printing and publishing. (a) — (93 establishments.)	Shipbuilding — (8 establishments.)	Slaughtering and meat packing. (a) — (21 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,346,648	$1,664,003	$2,527,435	$2,587,775	$810,957
HIRED PROPERTY—Total	114,166	106,163	681,650	6,000	57,277
PLANT—Total	487,655	581,517	1,184,496	1,335,375	360,860
Land	73,700	128,250	54,600	514,500	155,700
Buildings	143,800	187,500	177,370	359,075	86,150
Machinery, tools, and implements	270,155	265,767	952,526	461,800	119,010
LIVE ASSETS—Total	744,827	976,323	661,289	1,246,400	392,820
Raw materials	290,439	183,131	126,454	45,500	21,470
Stock in process and finished product	67,900	377,503	68,181	556,300	193,275
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	386,488	415,689	466,654	644,600	178,075
WAGES PAID—Aggregate	$500,265	$243,830	$1,191,230	$1,188,662	$288,673
Average number of hands employed during the year	883	365	1,789	2,083	474
Males above 16 years	864	298	1,336	1,876	473
Females above 15 years	2	22	158		1
Children	13	4	10		
Piecework ers	4	41	285	207	
MATERIALS USED—Aggregate cost	$1,386,030	$1,186,100	$791,637	$1,442,045	$5,013,570
Principal materials	1,353,784	1,162,274	755,056	1,278,995	4,881,174
Fuel	3,255	11,301	12,091	26,080	15,106
Mill supplies	20,000	12,025			
All other materials	9,000	500	24,390	136,970	117,290
MISCELLANEOUS EXPENSES—Aggregate	$25,730	$59,676	$231,303	$73,921	$31,028
Amount paid for contract work			3,400		
Rent	11,500	8,493	54,632	300	5,155
Power and heat		605	8,899		
Taxes	3,130	5,562	6,615	8,169	4,405
Insurance	6,075	6,376	12,730	5,397	4,278
Repairs, ordinary, of buildings and machinery	3,500	15,851	10,008	44,740	5,775
Interest on cash used in the business	1,500	9,638	7,951	575	7,735
All sundries not elsewhere reported	25	13,151	127,168	14,650	3,590
GOODS MANUFACTURED—Aggregate value	$2,208,997	$2,008,086	$3,147,426	$3,091,300	$8,673,9[illegible]
Principal product	2,164,497	2,005,338	3,145,601	2,888,000	8,436,2[illegible]
All other products, including receipts from custom work and repairing	44,500	3,648	1,825	203,300	237,71[illegible]

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 232. WASHINGTON, D. C. October 13, 1892.

STATISTICS OF MANUFACTURES: 1890.

BOSTON, MASSACHUSETTS.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Boston for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry, were omitted in the census reports of 1880: cars, and general shop construction and repairs by steam railroad companies; china, decorating; druggists' preparations, not including prescriptions; drug grinding; illuminating gas; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	946
Capital invested	$16,328,187
Number of hands employed	4,722
Wages paid	$2,178,952
Cost of materials used	$2,868,018
Miscellaneous expenses	$772,408
Value of product at works	$7,745,382

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	90.15
Capital invested	111.87
Number of hands employed	44.35
Wages paid	110.47
Cost of materials used	24.58
Value of product at works	53.49
Population of city	23.60
Assessed valuation of city	28.55

Decrease of municipal debt less sinking fund, 0.24 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $421 in 1880 to $614 in 1890, or 45.84 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason required more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

BOSTON, MASSACHUSETTS.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a.)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	220	3,665	$47,348,384	50,213	$24,924,009	$81,088,160
	1890	252	7,915	116,044,490	90,198	54,636,695	104,631,879

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	.....	$130,531,903	362,839	$639,462,495	$28,244,018
	1890	$21,399,162	208,104,683	448,477	822,041,800	28,175,496

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Clothing—men's, wholesale. (191 establishments.)	Coffee and spices—roasting and grinding. (15 establishments.)	Confectionery. (85 establishments.)	Cordage and twine. (7 establishments.)	Foundry and machine shop products. (179 establishments.)
CAPITAL EMPLOYED—Aggregate	$15,792,768	$1,724,425	$2,746,029	$3,488,419	$9,060,211
HIRED PROPERTY—Total	5,163,700	464,550	1,769,830	169,001	2,307,385
PLANT—Total	177,534	128,800	329,717	1,452,213	2,630,874
Land	20,200		46,500	207,321	364,475
Buildings	40,100		18,600	536,217	431,957
Machinery, tools, and implements	117,234	128,800	265,217	708,675	1,834,442
LIVE ASSETS—Total	10,451,534	1,131,075	646,482	1,876,206	4,121,952
Raw materials	1,843,373	356,275	137,151	390,179	562,788
Stock in process and finished product	5,335,619	81,050	174,116	652,274	1,170,182
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	3,272,542	693,750	335,215	833,753	2,388,982
WAGES PAID—Aggregate	$3,311,837	$161,355	$621,885	$610,498	$3,315,242
Average number of hands employed during the year	6,528	228	1,519	1,755	4,723
Males above 16 years	2,227	192	635	875	4,527
Females above 15 years	1,465	34	794	852	31
Children	1	1	7	25	3
Pieceworkers	2,835	1	83	3	162
MATERIALS USED—Aggregate cost	$10,916,407	$2,821,526	$2,242,552	$3,634,904	$3,122,167
Principal materials	10,864,630	2,468,036	1,950,210	3,548,357	2,383,743
Fuel	15,839	9,715	19,542	41,748	101,562
Mill supplies	379	1,225	876	13,784	31,764
All other materials	35,559	342,550	271,925	31,015	605,098
MISCELLANEOUS EXPENSES—Aggregate	$2,450,381	$108,471	$192,013	$150,551	$672,944
Amount paid for contract work	1,730,547				144
Rent	309,822	30,190	106,190	7,500	161,617
Power and heat	9,908	6,080	3,000		47,099
Taxes	62,880	6,338	10,907	20,675	38,643
Insurance	54,012	5,501	9,412	14,730	34,044
Repairs, ordinary, of buildings and machinery	7,716	2,827	8,865	29,911	65,780
Interest on cash used in the business	110,257	36,041	2,962	20,341	36,851
All sundries not elsewhere reported	165,239	21,488	51,487	45,394	289,857
GOODS MANUFACTURED—Aggregate value	$19,672,404	$3,345,498	$3,555,831	$5,290,335	$8,636,272
Principal product	18,907,228	2,946,883	3,473,631	5,258,335	7,583,726
All other products, including receipts from custom work and repairing	765,176	398,615	82,200	32,000	952,546

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Furniture—factory products. (96 establishments.)	Musical instruments—pianos and materials. (29 establishments.)	Printing and publishing. (a) (387 establishments.)	Rubber and elastic goods. (15 establishments.)	Steam fittings and heating apparatus. (15 establishments.)
CAPITAL EMPLOYED—Aggregate	$3,602,009	$3,581,714	$12,663,647	$1,473,085	$1,139,709
HIRED PROPERTY—Total	1,364,212	826,705	5,446,015	361,770	268,670
PLANT—Total	588,696	698,053	2,701,201	328,930	256,904
Land	203,000	102,800	23,000	102,500	12,000
Buildings	215,000	101,200	39,450	69,400	16,000
Machinery, tools, and implements	170,696	314,053	2,638,751	157,030	228,904
LIVE ASSETS—Total	1,649,101	2,056,956	4,516,431	782,385	614,135
Raw materials	445,424	313,103	445,198	165,861	76,643
Stock in process and finished product	593,825	765,877	938,694	245,576	127,971
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	609,852	987,976	3,132,539	370,948	409,521
WAGES PAID—Aggregate	$1,405,258	$1,479,337	$4,130,715	$381,957	$612,522
Average number of hands employed during the year	2,240	1,970	5,801	980	950
Males above 16 years	1,811	1,764	3,720	285	943
Females above 15 years	75	64	1,001	295	6
Children			44		
Pieceworkers	363	142	1,036	400	1
MATERIALS USED—Aggregate cost	$1,981,074	$1,742,529	$3,223,053	$974,278	$904,067
Principal materials	1,822,820	1,405,198	2,666,791	901,509	979,197
Fuel	10,472	17,129	35,144	16,432	14,781
Mill supplies	1,452	2,600		1,400	1,354
All other materials	146,330	317,602	521,118	54,937	7,737
MISCELLANEOUS EXPENSES—Aggregate	$261,367	$221,940	$3,280,514	$168,313	$96,601
Amount paid for contract work		16,840			
Rent	109,472	62,003	381,221	23,515	18,807
Power and heat	24,154	8,274	46,217	5,710	2,668
Taxes	16,893	18,834	51,050	5,910	7,657
Insurance	24,632	27,272	47,236	5,352	2,748
Repairs, ordinary, of buildings and machinery	10,160	9,572	48,545	2,200	15,297
Interest on cash used in the business	10,458	36,208	51,541	12,016	600
All sundries not elsewhere reported	66,198	42,937	2,663,704	113,610	48,824
GOODS MANUFACTURED—Aggregate value	$4,193,301	$3,947,948	$13,053,118	$1,784,781	$1,955,765
Principal product	4,173,666	3,929,748	12,917,877	1,768,781	1,857,265
All other products, including receipts from custom work and repairing	19,635	18,200	135,241	16,000	98,500

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 233. WASHINGTON, D. C. October 13, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF OMAHA, NEBRASKA.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Omaha, for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid" "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	77
Capital invested	$79,073
Number of hands employed	300
Wages paid	$122,294
Cost of materials used	$85,343
Miscellaneous expenses	$24,794
Value of product at works	$250,049

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	256.49
Capital invested	746.88
Number of hands employed	328.50
Wages paid	543.15
Cost of materials used	995.72
Value of product at works	804.29
Population of city	360.23
Assessed valuation of city	166.08
Municipal debt less sinking fund	698.01

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $431 in 1880 to $646 in 1890, or 49.88 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; that the percentage of increase in the number of women employed has been less in many industries than in the number of adult males; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF OMAHA, NEBRASKA.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

> It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.
>
> The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.
>
> Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.
>
> Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	49	154	$1,835,800	1,688	$726,918	$2,527,476
	1890	77	626	15,626,169	7,533	4,797,482	27,779,394

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$4,280,896	30,518	$7,512,682	$227,578
	1890	$3,511,456	38,961,523	140,452	19,980,715	1,816,100

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation,

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Carriages and wagons. — (8 establishments.)	Clothing—men's, wholesale. — (3 establishments.)	Confectionery. — (6 establishments.)	Foundry and machine shop products. — (10 establishments.)
CAPITAL EMPLOYED—Aggregate	$233,825	$201,086	$234,206	$500,240
HIRED PROPERTY—Total	36,750	69,300	137,545	41,940
PLANT—Total	145,775	10,119	15,903	348,525
Land	100,000			183,000
Buildings	35,450			49,000
Machinery, tools, and implements	10,325	10,119	15,903	116,525
LIVE ASSETS—Total	51,300	121,667	80,848	109,775
Raw materials	15,800	21,667	13,054	24,775
Stock in process and finished product	23,100	40,000	23,445	27,100
Cash, bills and accounts receivable, and all sundries not elsewhere reported	12,400	60,000	44,349	57,900
WAGES PAID—Aggregate	$88,012	$73,138	$96,210	$255,334
Average number of hands employed during the year	132	231	181	321
Males above 16 years	132	28	106	319
Females above 15 years		145	66	2
Children		13	8	
Piecoworkers		45	1	
MATERIALS USED—Aggregate cost	$129,944	$160,380	$241,487	$304,167
Principal materials	126,777	160,000	153,207	378,073
Fuel	1,697	380	5,660	10,044
Mill supplies			100	
All other materials	1,470		82,520	6,050
MISCELLANEOUS EXPENSES—Aggregate	$6,723	$9,560	$14,820	$20,705
Amount paid for contract work				
Rent	2,940	4,850	10,316	3,084
Power and heat		1,470		
Taxes	1,762	600	193	1,959
Insurance	731	543	588	2,067
Repairs, ordinary, of buildings and machinery	575	175	360	8,275
Interest on cash used in the business	535	1,300		2,900
All sundries not elsewhere reported	180	631	3,373	1,520
GOODS MANUFACTURED—Aggregate value	$265,475	$320,350	$397,147	$727,600
Principal product	166,675	320,350	397,147	718,200
All other products, including receipts from custom work and repairing	98,800			9,400

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Ironwork—architectural and ornamental. (5 establishments.)	Liquors—malt. (4 establishments.)	Lumber—planing mill products. (a) (12 establishments.)	Printing and publishing. (a) (33 establishments.)
CAPITAL EMPLOYED—Aggregate	$144,501	$1,221,680	$354,222	$975,514
HIRED PROPERTY—Total	27,635	55,000	14,740	322,560
PLANT—Total	5,645	727,336	220,527	333,054
Land		280,000	94,000	8,000
Buildings		227,000	57,500	17,000
Machinery, tools, and implements	5,645	220,336	69,027	308,054
LIVE ASSETS—Total	111,221	439,344	118,955	319,900
Raw materials	12,386	43,005	33,200	69,350
Stock in process and finished product	47,811	74,769	20,650	13,756
Cash, bills and accounts receivable, and all sundries not elsewhere reported	51,024	321,570	65,105	236,794
WAGES PAID—Aggregate	$82,272	$113,784	$286,612	$430,708
Average number of hands employed during the year	103	123	389	566
Males above 16 years	103	123	384	463
Females above 15 years			2	46
Children			3	44
Piecoworkers				13
MATERIALS USED—Aggregate cost	$99,595	$299,401	$362,758	$263,491
Principal materials	92,740	205,734	348,840	209,989
Fuel	805	33,538	7,401	9,795
Mill supplies			500	
All other materials	6,050	60,129	6,017	43,716
MISCELLANEOUS EXPENSES—Aggregate	$9,430	$176,316	$25,175	$126,272
Amount paid for contract work				
Rent	2,487	5,000	1,400	30,553
Power and heat	132			595
Taxes	945	b114,660	2,614	3,146
Insurance	944	5,298	4,811	4,806
Repairs, ordinary, of buildings and machinery	482	9,276	4,975	5,560
Interest on cash used in the business	1,270	4,375	4,850	10,486
All sundries not elsewhere reported	170	37,707	6,525	71,056
GOODS MANUFACTURED—Aggregate value	$231,240	$865,993	$825,000	$1,013,377
Principal product	231,000	865,993	821,000	967,146
All other products, including receipts from custom work and repairing	240		4,000	46,231

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.

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CENSUS BULLETIN.

LIBRARY U. S. NATIONAL MUSEUM 438 OCT 26 1892 SMITHSONIAN INSTITUTION

No. 234. WASHINGTON, D. C. October 13, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF BROOKLYN, NEW YORK.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Brooklyn for the year ended May 31, 1890, prepared under the direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries, under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: china and pottery, decorating; druggists' preparations, not including prescriptions; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	1,088
Capital invested	$1,074,910
Number of hands employed	3,704
Wages paid	$1,505,515
Cost of materials used	$2,310,375
Miscellaneous expenses	$208,063
Value of product at works	$4,102,761

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To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	82.14
Capital invested	102.40
Number of hands employed	110.10
Wages paid	168.91
Cost of materials used	4.59
Value of product at works	38.04
Population of city	42.30
Assessed valuation of city	91.06

Decrease of municipal debt less sinking fund, 8.94 per cent.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $473 in 1880 to $605 in 1890, or 27.91 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children; and also to the fact that in 10 years many branches of industry have improved the grades of their products, and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

The comparatively small increase in the total value of materials used is principally due to the decreased volume of manufactures reported for the refining of sugar and molasses, an industry in which the cost of materials far exceeds all other elements in the cost of production.

In 1880 the value of product reported for this industry by all establishments was $59,711,168, the value of materials used being $56,423,868, or 94.49 per cent of the value of product. The value of product reported by 8 establishments in 1890 is $16,629,982 and of materials used $13,317,789, or 80.08 per cent of the value of product.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter.

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF BROOKLYN, NEW YORK.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	180	5,201	$61,646,749	47,587	$22,487,457	$129,085,091
	1890	229	10,561	125,849,052	103,683	61,975,702	137,325,749

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	.....	$177,223,142	566,663	$232,925,699	$38,040,000
	1890	$14,824,466	248,750,184	806,343	445,038,201	34,639,542

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full

amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amount of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Boots and shoes—factory product. (b) — (65 establishments.)	Chemicals. (b) — (36 establishments.)	Coffee and spice—roasting and grinding. — (13 establishments.)	Confectionery. — (197 establishments.)	Cordage and twine. — (3 establishments.)
CAPITAL EMPLOYED—Aggregate	$1,327,119	$8,483,835	$2,963,392	$2,923,509	$2,256,400
HIRED PROPERTY—Total	366,230	275,000	306,300	1,047,500	.....
PLANT—Total	385,934	4,888,250	546,696	1,028,053	1,854,300
Land	56,700	1,196,800	198,400	251,085	303,000
Buildings	113,400	1,532,821	194,350	311,225	701,000
Machinery, tools, and implements	215,834	2,158,629	153,946	465,743	850,300
LIVE ASSETS—Total	574,955	3,320,585	2,110,396	847,956	402,100
Raw materials	137,612	1,365,535	721,678	207,660	175,600
Stock in process and finished product	154,802	878,408	930,671	209,041	60,500
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	282,541	1,076,582	458,047	371,255	166,000
WAGES PAID—Aggregate	$1,032,547	$1,140,475	$479,036	$1,096,252	$650,256
Average number of hands employed during the year	2,050	1,848	794	2,237	1,612
Males above 16 years	840	1,295	477	1,387	1,012
Females above 15 years	326	289	10	552	600
Children	24	31	.....	22	.....
Pieceworkers	860	233	307	276	.....
MATERIALS USED—Aggregate cost	$1,432,934	$7,329,134	$11,047,538	$1,833,791	$1,352,638
Principal materials	1,381,752	7,050,313	10,711,647	1,738,998	4,206,138
Fuel	3,888	195,545	14,752	25,621	105,000
Mill supplies	.....	9,206	20,656	3,835	6,000
All other materials	47,294	74,070	300,483	65,337	35,500
MISCELLANEOUS EXPENSES—Aggregate	$73,249	$612,809	$84,334	$194,093	$63,180
Amount paid for contract work	1,450	.....	.....	.....	.....
Rent	25,636	22,110	21,445	73,320	.....
Power and heat	3,720	900	3,800	120	.....
Taxes	4,494	48,950	11,439	9,981	10,140
Insurance	4,420	29,190	11,382	5,050	7,540
Repairs, ordinary, of buildings and machinery	5,842	149,644	6,635	5,730	25,000
Interest on cash used in the business	1,549	43,651	.....	13,462	.....
All sundries not elsewhere reported	26,138	318,364	29,633	87,330	20,500
GOODS MANUFACTURED—Aggregate value	$2,813,209	$10,467,109	$12,247,162	$3,731,202	$5,625,792
Principal product	2,770,689	10,425,949	12,044,967	3,721,071	5,622,912
All other products, including receipts from custom work and repairing.	42,520	41,160	202,195	10,131	2,880

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

b Includes several branches of this industry, which will be specifically stated in final reports.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Foundry and machine shop products. (169 establishments.)	Furnishing goods. (a) (67 establishments.)	Paperhangings. (5 establishments.)	Slaughtering and meat packing. (a) (63 establishments.)	Sugar and molasses refining. (8 establishments.)
CAPITAL EMPLOYED—Aggregate	$13,725,518	$1,507,853	$1,790,121	$2,120,822	$3,999,510
HIRED PROPERTY—Total	1,473,750	377,650	303,482	380,560	255,622
PLANT—Total	6,046,228	427,420	401,946	918,400	1,821,000
Land	1,617,500	110,100	31,500	317,550	399,000
Buildings	1,362,670	142,550	121,584	346,752	527,500
Machinery, tools, and implements	3,066,058	174,770	248,862	254,098	894,500
LIVE ASSETS—Total	6,205,540	702,783	1,084,693	821,862	1,922,888
Raw materials	1,182,099	312,438	61,890	114,907	186,214
Stock in process and finished product	1,525,807	142,902	186,974	197,490	335,016
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	3,497,634	247,443	835,829	509,465	1,401,658
WAGES PAID—Aggregate	$5,641,132	$1,203,461	$445,510	$532,120	$330,558
Average number of hands employed during the year	7,753	2,218	852	623	596
Males above 16 years	6,868	868	660	607	583
Females above 15 years	42	485	146	3	2
Children	2	10	20	.....	.....
Pieceworkers	841	855	26	13	11
MATERIALS USED—Aggregate cost	$5,125,183	$1,443,218	$1,067,697	$11,769,741	$14,816,112
Principal materials	4,626,489	1,389,325	1,042,362	11,637,737	14,412,045
Fuel	210,767	27,893	18,045	32,256	100,312
Mill supplies	47,386	10,308	290	.....	15,986
All other materials	240,541	15,692	7,000	99,748	287,739
MISCELLANEOUS EXPENSES—Aggregate	$799,912	$84,811	$300,754	$130,096	$227,760
Amount paid for contract work	12,000	.....	.....	.....	.....
Rent	117,888	26,441	22,000	34,252	20,450
Power and heat	14,664	600	.....	.....	900
Taxes	60,267	4,429	15,863	13,902	21,877
Insurance	36,223	10,573	7,343	9,490	21,397
Repairs, ordinary, of buildings and machinery	74,565	9,502	1,700	8,387	29,171
Interest on cash used in the business	22,009	1,895	61,833	3,691	65,449
All sundries not elsewhere reported	462,296	31,371	192,015	60,374	68,516
GOODS MANUFACTURED—Aggregate value	$15,350,776	$3,315,691	$2,143,023	$13,317,789	$16,629,982
Principal product	14,222,090	3,268,994	2,143,023	13,118,381	16,623,134
All other products, including receipts from custom work and repairing.	1,128,686	46,697	.....	199,408	6,848

a Includes several branches of this industry, which will be specifically stated in final reports.

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CENSUS BULLETIN.

No. 235. WASHINGTON, D. C. October 13, 1892.

STATISTICS OF MANUFACTURES: 1890.

CITY OF ALBANY, NEW YORK.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., October 10, 1892.

Herewith is presented a preliminary report on the mechanical and manufacturing industries of the city of Albany for the year ended May 31, 1890, prepared under direction of Mr. FRANK R. WILLIAMS, special agent in charge of statistics of manufactures. The statements contained in this bulletin are preliminary and subject to modification for final report, therefore fair criticism and suggestions are invited, with a view to such revision and correction as may appear necessary.

It is proposed to promptly publish bulletins for all principal cities in a form similar to this, to be followed by final reports containing data in detail respecting all industries for each city at the earliest date practicable. The totals presented in the complete reports will not, however, be less, and may, in a number of cases, be considerably increased. A comparative statement is presented for 1880 and 1890 in Table 1, showing the totals under such general heads of the inquiry as are common to both census periods. Table 2 exhibits for important industries under the general heads of "Capital employed", "Miscellaneous expenses", "Wages paid", "Materials used", and "Goods manufactured", all essential details of the inquiry for 1890, excepting wage statistics for the various classes of labor employed in the respective industries.

In comparing results of the current inquiry with the returns of 1880 it will be observed that the item of "Miscellaneous expenses" is given for 1890 only. No previous census inquiry has embraced the cost incurred in manufacturing operations other than wages paid and materials used. Differences in method of inquiry, as explained in this report, and the inclusion in the Eleventh Census of certain industries omitted in the Tenth Census account in part for the increases shown.

The following classes of industry were omitted in the census reports of 1880: druggists' preparations, not including prescriptions; drug grinding; illuminating gas; millinery, custom work; women's dressmaking, custom work.

The totals stated for 1890, in Table 1, are increased as follows by the inclusion of the industries referred to:

TOTALS FOR INDUSTRIES OMITTED IN 1880, BUT INCLUDED IN 1890.

Number of establishments reported	216
Capital invested	$213,790
Number of hands employed	810
Wages paid	$268,639
Cost of materials used	$187,501
Miscellaneous expenses	$48,432
Value of product at works	$567,835

To ascertain the amounts for comparison with the totals for 1880, the foregoing figures should be subtracted from the totals stated in Table 1 for 1890, and the percentages of increase would then appear as follows:

PERCENTAGES OF INCREASE.

Number of establishments reported	34.08
Capital invested	10.51
Number of hands employed	17.61
Wages paid	65.31
Value of product at works	19.71
Population of city	4.59
Assessed valuation of city	85.37
Municipal debt less sinking fund	15.43

Decrease in cost of materials used, 10.67 per cent.

The decrease in total cost of materials used is principally found in the manufacture of foundry and machine shop products, malt liquors, malt, slaughtering and meat packing at wholesale, and tobacco. In 1880 the aggregate cost of materials used in the industries named constituted 60 per cent of the aggregate value of products, while in 1890 such cost constitutes 39 per cent of the value of products.

A striking feature of these returns is the satisfactory increase in the number of establishments reported. Still more gratifying is the increase during the decade in the number of hands employed and the amount of wages paid; the wages have increased not only actually but relatively, the average wages per hand increasing from $387 in 1880 to $545 in 1890, or 40.82 per cent.

Part of this increase is undoubtedly due to the fact that in many industries relatively more men were employed in 1890 and less children, and also to the fact that in 10 years many branches of industry have improved the grades of their products and for this reason require more skilled and higher paid employés. After making all possible allowance for these changes, for the more thorough enumeration of 1890, and for the advance in quantity of manufactured product, we have a decided relative increase in the amount paid in wages between 1880 and 1890.

Attention is called to the presentation of labor and wage statistics. The "average wages" paid to all classes employed has always proved a stumbling block in census reports. It is believed the Eleventh Census, in obtaining data to show the classification of labor employed, the average term of employment, the various rates of wages per week, and the average number of men, women, and children, respectively, employed at each rate in the various classes, has taken a step in advance, which will be shown in detail in final reports, and appreciated by students of these data.

Robert P. Porter

Superintendent of Census.

STATISTICS OF MANUFACTURES: 1890.

CITY OF ALBANY, NEW YORK.

The act of Congress approved March 1, 1889, providing for the Eleventh Census, directs the Superintendent of the Census to investigate and ascertain the statistics of the manufacturing industries of the country. By virtue of the authority conferred by section 18 of the said act, the collection of statistics of all establishments of productive industry located in certain cities and towns was withdrawn from enumerators and assigned to special agents, who were appointed and entered upon their duties as soon after the completion of the work assigned the general enumerators as was practicable.

The instructions issued by this office to enumerators and special agents relating to the collection of statistics of manufactures were as follows:

It shall be their duty personally to visit every establishment of productive industry in their respective districts (except as noted) and to obtain the required information in the case of each manufacturing establishment.

The term "establishment of productive industry" must be understood in its broadest sense to embrace not only mills and factories but also the operation of all small establishments and the mechanical trades.

Restaurants, saloons, barber shops, the compounding of individual prescriptions by druggists and apothecaries, the operations of mercantile establishments, transportation corporations and lines, and professional services (except mechanical dentistry) are not considered as coming within the meaning of the law in this connection.

Great care must be taken by special agents and enumerators to guard against the omission from their returns of any establishment that comes properly within the scope of this investigation. * * * They should have their eyes open to every indication of the presence of productive industry and should supplement personal observation by frequent and persistent inquiry.

The tabulated statements presented herewith include only establishments which reported a product of $500 or more in value during the census year, and, so far as practicable, only those establishments operating works located within the corporate limits of the city.

TABLE 1.—COMPARATIVE STATEMENT OF TOTALS UNDER GENERAL HEADS OF INQUIRY: 1880 AND 1890.

INDUSTRIES.		Number industries reported.	Number establishments, reporting.	Capital. (a)	Hands employed.	Wages paid.	Cost of materials used.
All industries	1880	108	804	$14,084,130	11,785	$4,566,424	$12,509,362
	1890	123	1,204	16,441,365	14,670	7,817,564	11,362,017

INDUSTRIES.		Miscellaneous expenses. (b)	Value of product.	MUNICIPAL DATA.		
				Population.	Assessed valuation.	Municipal debt. (c)
All industries	1880	----------	$21,751,009	90,758	$33,746,992	$3,683,765
	1890	$1,767,707	24,430,396	94,023	62,556,881	4,252,125

a The value of hired property is not included for 1890, because it was not reported in 1880.
b No inquiry in 1880 relating to "Miscellaneous expenses".
c The amount stated represents the "net debt", or the total amount of municipal debt less sinking fund.

For the purpose of ready comparison, Table 1 presents the statistics of 1880 and 1890 in the form of publication used in the reports for 1880. In comparing industrial statistics for 1880 and 1890 it should be borne in mind, as stated by the Superintendent of Census, that radical changes have been made in 1890 as well in the form and scope of inquiry as in the method of presentation.

The form of question respecting capital used at the census of 1880 was as follows: "Capital (real and personal) invested in the business". It became evident from the results then obtained that this question was neither sufficiently comprehensive nor properly understood, and therefore the full amount of capital employed in productive industry was not reported, thus forming an erroneous basis for deductions.

The present census inquiry respecting capital is intended to comprehend all the property or assets strictly pertaining to a manufacturing business, whether such property is owned, borrowed, or hired. The value of hired property is not included in the amount stated for 1890 in Table 1, because it was not reported in 1880, and its inclusion would therefore render the comparison misleading. It will, however, be specifically stated for each industry in final reports.

TABULAR STATEMENTS FOR 1890.

The various subheads into which the inquiry of 1890 is divided, excepting wage statistics by classes, will be found in Table 2 for important industries. The statements for each industry are intended to present the true amount of capital employed, the amount paid in wages, and the number of hands employed in the respective industries, the cost of materials used, miscellaneous expenses, and the value at the works of goods manufactured, as compiled from individual reports of manufacturers.

LABOR EMPLOYED AND WAGES PAID.

In the form of inquiry used in the Eleventh Census respecting labor and wages, the classified occupation and wage system was adopted. Officers or firm members engaged in productive labor or supervision of the business constitute one class, for which the wages reported are those which would be paid to employés performing similar service. Clerical labor is embraced by distinct classification, also piecework.

Wage workers proper are divided into two classes, as follows:

First. Operatives, engineers, and other skilled workmen, overseers, and foremen or superintendents (not general superintendents or managers).

Second. Watchmen, laborers, teamsters, and other unskilled workmen.

It should be noted that the first class includes all operatives, that is, those directly engaged in productive labor as well as skilled mechanics, while the second class includes all unskilled workmen other than operatives. The questions required a statement of the average number of men, women, and children, respectively, employed during the year in each class, also the actual amounts of wages paid to each number.

A statement was requested showing the various rates of wages per week, the average number of men, women, and children, respectively, employed at each rate, exclusive of those reported as employed on piecework, and the actual term of operation for the establishment reporting. The wage statistics compiled from the reports obtained will be stated in detail for each class in the final reports to be published for each city. In this bulletin only the aggregate wages paid is given.

MATERIALS USED AND GOODS MANUFACTURED.

Against the caption "Materials used" is presented the reported cost at the place of consumption of all materials used, and against "Goods manufactured" is the reported market value at the factory of the total product, not including any allowance for commissions or expenses of selling.

In this connection it must be considered that the difference between apparent cost and value of manufactured product as presented can not be taken as a correct indication of manufacturers' net profits, because many other items of expense enter into the mercantile portion of the business not within the scope of the census inquiry.

Expenses of selling are excluded, because the reported value of product is its selling value "at the shop or factory". The cost of depreciation of plant in excess of the expense for ordinary repairs is not included, because the information obtained by the inquiry is not sufficient to form a basis for accurate computation for the respective industries.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES. (a)

CLASSIFICATION OF INQUIRIES.	Agricultural implements. — (3 establishments.)	Boots and shoes—factory product. — (5 establishments.)	Clothing—men's, wholesale. — (5 establishments.)	Clothing—women's, wholesale. — (5 establishments.)	Foundry and machine shop products. — (20 establishments.)
CAPITAL EMPLOYED—Aggregate	$263,741	$424,969	$453,625	$202,746	$1,643,016
HIRED PROPERTY—Total	22,235	27,380	160,825	10,800	91,512
PLANT—Total	53,800	134,730	7,800	44,350	859,735
Land	200	19,000		19,500	151,200
Buildings	800	57,800		14,500	390,135
Machinery, tools, and implements	52,800	57,930	7,800	10,350	318,400
LIVE ASSETS—Total	187,706	262,859	285,000	147,596	691,769
Raw materials	30,228	74,004	31,500	33,056	126,429
Stock in process and finished product	40,182	70,309	129,000	42,740	167,796
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	117,296	118,546	124,500	71,800	397,544
WAGES PAID—Aggregate	$183,647	$233,944	$133,935	$78,248	$644,758
Average number of hands employed during the year	291	493	257	256	1,058
Males above 16 years	288	174	62	29	954
Females above 15 years	3	49	15	39	9
Children					3
Pieceworkers		270	180	188	92
MATERIALS USED—Aggregate cost	$155,746	$339,405	$166,645	$163,259	$640,414
Principal materials	121,170	337,613	166,200	161,791	377,691
Fuel	6,556	1,710	445	468	34,262
Mill supplies					6,360
All other materials	28,020	82		1,000	222,101
MISCELLANEOUS EXPENSES—Aggregate	$6,679	$15,317	$14,777	$3,997	$184,485
Amount paid for contract work					
Rent	2,000	1,880	9,650	600	7,321
Power and heat			600	150	150
Taxes	20	4,128		1,075	15,593
Insurance	2,094	1,340	1,177	897	6,797
Repairs, ordinary, of buildings and machinery		1,675	150	550	9,892
Interest on cash used in the business	300	6,105	1,200	375	14,290
All sundries not elsewhere reported	2,265	183	2,000	350	130,442
GOODS MANUFACTURED—Aggregate value	$382,263	$620,602	$352,252	$314,895	$2,059,102
Principal product	264,163	620,602	352,252	314,895	2,030,534
All other products, including receipts from custom work and repairing	118,100				28,568

a To avoid disclosure of operations of individual establishments, only such industries as have 3 or more establishments engaged therein are included.

TABLE 2.—DETAILED STATEMENT FOR 1890 BY IMPORTANT INDUSTRIES—Continued.

CLASSIFICATION OF INQUIRIES.	Liquors—malt. — (12 establishments.)	Lumber—planing mill products. (a) — (10 establishments.)	Malt. — (9 establishments.)	Printing and publishing. (a) — (34 establishments.)	Tobacco. (a) — (93 establishments.)
CAPITAL EMPLOYED—Aggregate	$2,981,681	$368,086	$753,803	$1,224,352	$870,292
HIRED PROPERTY—Total	23,887	56,215	92,526	296,190	374,115
PLANT—Total	1,802,350	203,706	196,700	785,137	70,061
Land	283,300	23,000	41,700	91,500	20,800
Buildings	746,200	65,447	115,700	155,200	34,500
Machinery, tools, and implements	772,850	114,359	39,300	538,437	15,701
LIVE ASSETS—Total	1,155,444	108,765	464,577	233,025	426,176
Raw materials	242,598	38,150	75,000	62,635	141,148
Stock in process and finished product	210,725	23,000	123,900	61,280	71,131
Cash, bills and accounts receivable, and all sundries not elsewhere reported.	693,121	47,615	265,677	109,110	213,897
WAGES PAID—Aggregate	$422,314	$125,444	$64,836	$603,718	$327,861
Average number of hands employed during the year	432	241	154	1,082	777
Males above 16 years	432	240	154	756	242
Females above 15 years		1		212	165
Children				15	15
Piecoworkers				99	355
MATERIALS USED—Aggregate cost	$709,858	$103,251	$498,492	$271,230	$344,002
Principal materials	650,017	98,981	486,654	255,168	302,221
Fuel	26,746	1,520	11,638	10,841	1,921
Mill supplies		200			
All other materials	32,195	2,550	200	5,221	39,860
MISCELLANEOUS EXPENSES—Aggregate	$587,715	$20,862	$60,785	$125,045	$144,031
Amount paid for contract work					
Rent	2,150	4,446	9,800	14,433	17,617
Power and heat	1,357			2,442	
Taxes	b300,848	2,090	15,047	4,874	b110,281
Insurance	15,822	4,342	4,971	7,407	2,601
Repairs, ordinary, of buildings and machinery	57,084	3,036	1,848	4,255	753
Interest on cash used in the business	8,196	4,583	11,457	8,380	1,783
All sundries not elsewhere reported	201,358	2,365	16,762	83,245	11,056
GOODS MANUFACTURED—Aggregate value	$2,079,617	$283,034	$727,198	$1,189,168	$913,763
Principal product	2,060,968	253,497	715,579	1,185,678	913,763
All other products, including receipts from custom work and repairing	18,649	29,537	11,619	3,490	

a Includes several branches of this industry, which will be specifically stated in final reports.
b Includes internal revenue taxes.