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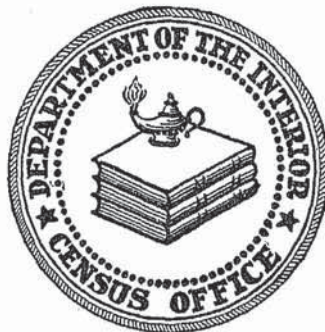
WILLIAM R. MERRIAM, DIRECTOR

MANUFACTURES

PART I

UNITED STATES BY INDUSTRIES

PREPARED UNDER THE SUPERVISION OF S. N. D. NORTH,
CHIEF STATISTICIAN FOR MANUFACTURES



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XXXIX.

THE LOCALIZATION OF INDUSTRIES.¹

The geographic distribution of the 354 industries which are separately shown in 1900 is presented in General Table 4 of this volume. Many of these industries, notably the "neighborhood industries," show a distribution which approximates the distribution of population, while others are localized within one state or even within one city or town. Fifteen of the industries where this localization is conspicuous have been selected for separate treatment in this section.

Four tables are presented here for each industry. These show: 1, localization by states; 2, localization by cities; 3, specialization of states; 4, specialization of cities.

In all cases where it is possible, the statistics for 1890 have been given in addition to the statistics for 1900. A few of the industries shown were not carried on to any great extent in cities which reported a population of 20,000 or over in 1900. In some of these cases statistics for towns have been added, and in other cases statistics for counties substituted.

Accompanying the four tables for each industry is an analysis of the figures and a brief mention of the most patent causes which may be assigned for the localization shown. A fuller discussion of this phase of the subject is given at the close of the chapter.²

Caution is needed at several points in interpreting these tables. In the first place, practically all of the statistics given relate solely to the value of products, since this is in most cases the best single index of the relative importance of an industry in several localities. It will be readily seen, however, that even this is a defective unit of measure in so far as the materials used in an industry in one section are more expensive than those used in the same industry in another section. For example, a comparison based on this unit of measure makes a discrimination against Massachusetts as compared with New York state in the jewelry industry, due partly to the more expensive materials used and goods produced in the latter state. The number of wage-earners in this industry in Massachusetts is nearly double the number shown for New York state, but the value of products is about the same. Secondly, the states and cities shown for a given industry are not always the leading states and cities in that industry.

¹This section was prepared by Frederick S. Hall, Ph. D., of the division of manufactures.

²This subject is very fully treated in recent economic literature. See especially "The Location of Industries," by L. A. Ross, in the Quarterly Journal of Economics, April, 1896; "The Evolution of Modern Capitalism," by J. A. Hobson, Chapters II, III, and IV; "Der Grossbetrieb," by G. Schulze-Gävernitz; "The Philosophy of Manufactures," by Andrew Ure, Chapter III; and "The Localization of Industries," by J. J. Menzies, in the Popular Science Monthly, Vol. 36, page 454. A good bibliography is appended to the article on localization of industry in Palgrave's Dictionary of Political Economy.

Wherever there were but one or two establishments reported for an industry in any state or city, it has been necessary for reasons given on page xxix, to omit separate statistics for the industry in such localities, even though the value of products was considerably greater than that shown for other states or cities which are included in the tables.

Two other industrial phenomena closely allied to the localization of industries are shown by the statistics which follow; namely, the industrial specialization of certain localities, and the migration of industrial centers. It is the purpose of the third and fourth tables given for each industry to indicate the extent to which specialization has gone. These tables show by percentages how largely certain states or cities are given over to single industries.

Where there has been a migration since 1890 of any of the industries shown, the extent of the movement may be observed by comparing the statistics for 1890 and 1900 in each case. This phase of the subject, however, which is really changes in the localization of the industry, is commented upon in this section only in cases where the movement has been very marked.

1. *Agricultural Implements.*—Tables LXXVII to LXXX show the localization of the agricultural-implement industry by states and cities and the specialization of states and cities in this industry.

TABLE LXXVII.—Agricultural implements: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$101,207,428	\$81,271,651	100.0	100.0
Illinois.....	42,063,796	24,609,660	41.5	30.3
Ohio.....	13,975,268	14,333,258	13.8	17.6
New York.....	10,637,264	11,690,842	10.4	14.4
Wisconsin.....	7,889,363	5,015,512	8.0	6.2
Indiana.....	6,415,081	5,756,131	6.3	7.1
Michigan.....	6,339,608	3,955,306	6.2	4.8
Pennsylvania.....	3,195,471	2,632,718	3.1	3.3
All other states.....	10,821,687	13,238,224	10.7	16.3

TABLE LXXVIII.—Agricultural implements: Localization by cities, 1890 and 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$101,207,428	\$81,271,651	100.0	100.0
Chicago, Ill.....	24,843,649	11,833,976	24.5	14.6
Springfield, Ohio.....	5,272,636	5,221,008	5.2	6.4
Racine, Wis.....	3,001,009	1,979,613	3.0	2.4
South Bend, Ind.....	2,432,083	2,423,442	2.4	3.0
Peoria, Ill.....	2,372,329	519,611	2.3	0.6
Milwaukee, Wis.....	2,296,888	596,873	2.3	0.8
Auburn, N. Y.....	2,333,191	3,615,572	2.3	4.5
Dayton, Ohio.....	1,281,658	1,352,150	1.3	1.7
All other cities and outside of cities.....	57,363,985	53,679,406	56.7	66.0

SUMMARY AND ANALYSIS OF RESULTS.

CXCI

TABLE LXXIX.—AGRICULTURAL IMPLEMENTS: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH AGRICULTURAL IMPLEMENTS FORM OF ALL IN- DUSTRIES.	
	All industries.		Agricultural implements.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$101,207,428	\$81,271,651	0.8	0.9
Illinois.....	1,259,730,168	908,640,280	42,033,796	24,609,660	3.3	2.7
Wisconsin.....	360,818,942	248,546,164	7,886,868	5,015,512	2.2	2.0
Michigan.....	356,944,082	277,896,706	6,339,508	3,955,306	1.8	1.4
Indiana.....	378,120,140	220,825,082	6,415,081	5,756,131	1.7	2.6
Ohio.....	832,488,113	641,688,064	13,975,268	14,333,258	1.7	2.2
New York.....	2,175,726,900	1,711,577,671	10,557,254	11,680,842	0.5	0.7
Pennsylvania.....	1,834,790,860	1,331,794,901	3,198,471	2,682,718	0.2	0.2
All other states	5,805,830,938	4,025,468,415	10,821,687	13,238,224	0.2	0.3

TABLE LXXX.—AGRICULTURAL IMPLEMENTS: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH AGRICULTURAL IM- PLEMENTS FORM OF ALL INDUSTRIES.	
	All industries.		Agricultural implements.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$101,207,428	\$81,271,651	0.8	0.9
Springfield, Ohio	12,777,173	10,760,905	5,272,636	5,221,008	41.3	43.5
Racine, Wis.	12,502,796	8,462,350	3,001,009	1,979,618	24.0	23.4
Auburn, N. Y.	10,591,109	9,634,785	2,338,191	3,615,672	22.1	37.5
South Bend, Ind.	14,236,331	9,812,513	2,432,083	2,423,442	17.1	24.7
Peoria, Ill.	48,871,596	55,535,023	2,372,329	619,611	4.9	0.9
Dayton, Ohio	35,697,695	22,446,572	1,231,658	1,352,150	3.6	6.0
Chicago, Ill.	888,945,311	664,567,923	24,848,649	11,883,976	2.8	1.3
Milwaukee, Wis.	123,786,449	97,503,951	2,296,883	696,873	1.9	0.6
All other cities and outside of cities	11,856,991,683	8,493,713,192	57,363,985	53,679,406	0.5	0.6

Table LXXVII shows a decided localization of this industry in the states of Illinois, Ohio, and New York. The value of the agricultural implements manufactured in these 3 states in 1900 constituted 65.7 per cent of the total for the United States. Illinois easily led all other states with 41.5 per cent of the total.

A feature of the development of the industry during the last ten years has been its remarkable increase in Illinois and its decline in New York and Ohio. The manufacture is forced to establish itself near its chief market on account of the high freight rates charged on its products, occupying, as so many of them do, a large amount of car space. The industry has therefore localized near the center of agriculture and especially of the grain-producing section of the country, and has moved westward from decade to decade, as grain production has gravitated in that direction. All the leading states, except New York, are further favored by the fact that they contain, or are in close proximity to, the largest body of hard-wood timber in North America. These states are also favorably located with reference to their supply of iron, the other important material used.

Table LXXVIII shows the localization of the industry by cities. The development of the manufacture in Chicago during the last decade is the most striking feature

brought out by this table, the value of its agricultural implement products having more than doubled. The value of these products made in Chicago in 1900 was nearly one-quarter of the total for the United States. The preëminence of this city in the industry is due to the causes mentioned above, and especially to the excellent transportation facilities which have made Chicago the great distributing point of the middle West. Springfield, Ohio, is the other great center for this industry, the value of its products being 5.2 per cent of the total for the United States. In 1880 the value of its manufacture of agricultural implements was double that reported for Chicago, but the industry has not progressed there since that date.

Tables LXXIX and LXXX show the value of agricultural implements manufactured in each of the above states and cities in comparison with the value of products in all industries.

The specialization of particular localities in this industry is striking in a number of cities, notably Springfield, Ohio; Racine, Wis.; Auburn, N. Y.; and South Bend, Ind.

2. *Boots and Shoes, Factory Product.*—Tables LXXXI to LXXXIV show the localization of the boot and shoe industry, by states and cities, and the specialization of states and cities in this industry.

STATISTICS OF MANUFACTURES.

TABLE LXXXI.—Boots and shoes: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$261,028,580	\$220,649,358	100.0	100.0
Massachusetts.....	117,115,243	116,387,900	44.9	52.7
New York.....	25,585,631	23,661,204	9.8	10.7
New Hampshire.....	23,405,558	11,986,003	9.0	5.4
Ohio.....	17,920,854	8,489,728	6.9	3.9
Pennsylvania.....	13,235,933	10,354,850	5.1	4.7
Maine.....	12,295,847	10,335,342	4.7	4.7
Illinois.....	11,434,842	8,756,824	4.4	4.0
Missouri.....	11,253,202	4,841,004	4.1	2.2
All other states.....	28,781,470	25,836,608	11.1	11.7

Table LXXXI indicates a marked localization of the factory manufacture of boots and shoes in Massachusetts, New Hampshire, and Maine, these three states contributing more than half of the total value of products reported for the United States. The relative position of this group of states is, however, somewhat lower than in 1890.

TABLE LXXXII.—Boots and shoes: Localization by cities, 1890 and 1900.

[Cities of 20,000 population and over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$261,028,580	\$220,649,358	100.0	100.0
Brockton, Mass.....	19,844,897	16,171,624	7.6	7.3
Lynn, Mass.....	16,830,733	20,190,695	6.4	9.2
Haverhill, Mass.....	15,231,440	16,137,352	5.8	7.3
Cincinnati, Ohio.....	8,788,424	6,024,454	3.4	2.7
St. Louis, Mo.....	8,286,156	4,250,960	3.2	1.9
Rochester, N. Y.....	6,933,111	6,489,382	2.6	3.0
Philadelphia, Pa.....	5,931,045	6,851,834	2.3	3.1
Brooklyn borough, N. Y.....	5,733,432	2,489,885	2.2	1.1
Chicago, Ill.....	5,723,126	7,257,034	2.2	3.3
Manchester, N. H.....	4,052,204	(1)	1.6	.....
Boston, Mass.....	3,882,655	1,508,697	1.5	0.7
Columbus, Ohio.....	3,505,126	359,000	1.4	0.2
Manhattan and Bronx boroughs, N. Y.....	3,391,063	5,306,411	1.3	2.4
Salem, Mass.....	2,974,631	1,178,724	1.1	0.5
North Adams, Mass.....	2,881,474	(2)	1.1	.....
All other cities and outside of cities.....	147,039,563	126,433,306	56.3	57.3

¹ Not reported separately.

² Under 20,000 population in 1890.

TABLE LXXXIII.—BOOTS AND SHOES: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH BOOTS AND SHOES FORM OF ALL IN- DUSTRIES.	
	All industries.		Boots and shoes, factory product.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$261,028,580	\$220,649,358	2.0	2.4
New Hampshire	118,709,808	85,770,549	23,405,558	11,986,003	19.7	14.0
Massachusetts.....	1,035,198,989	888,160,403	117,115,243	116,387,900	11.3	13.1
Maine.....	127,361,485	95,689,500	12,295,847	10,335,342	9.7	10.8
Missouri.....	385,492,784	324,561,993	11,253,202	4,841,004	2.9	1.5
Ohio.....	832,438,113	641,688,064	17,920,854	8,489,728	2.2	1.3
New York.....	2,175,726,900	1,711,577,671	25,585,631	23,661,204	1.2	1.4
Illinois.....	1,259,730,168	908,640,280	11,434,842	8,756,824	0.9	1.0
Pennsylvania.....	1,834,790,860	1,331,794,901	13,235,933	10,354,850	0.7	0.8
All other states.....	5,234,951,536	3,384,553,922	28,781,470	25,836,603	0.5	0.8

TABLE LXXXIV.—BOOTS AND SHOES: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH BOOTS AND SHOES FORM OF ALL IN- DUSTRIES.	
	All industries.		Boots and shoes, factory product.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$261,028,580	\$220,649,358	2.0	2.4
Brockton, Mass.....	26,384,881	21,070,099	19,844,897	16,171,624	75.2	76.8
Haverhill, Mass.....	24,937,078	25,394,530	15,231,440	16,137,352	61.1	63.5
Lynn, Mass.....	41,633,845	44,223,845	16,830,733	20,190,695	40.4	45.7
North Adams, Mass.....	11,682,663	(1)	2,881,474	(1)	24.7	.....
Salem, Mass.....	12,257,449	8,522,751	2,974,631	1,178,724	23.5	13.8
Manchester, N. H.....	26,607,000	20,187,295	4,052,204	(1)	15.2	.....
Rochester, N. Y.....	69,129,820	65,091,156	6,933,111	6,489,382	10.0	10.0
Columbus, Ohio.....	39,666,848	22,887,586	3,505,126	359,000	8.8	1.6
Cincinnati, Ohio.....	157,806,834	196,063,983	8,788,424	6,024,454	5.6	3.1
St. Louis, Mo.....	233,629,738	229,157,343	8,286,156	4,250,960	3.5	1.9
Boston, Mass.....	206,081,767	210,936,616	3,882,655	1,508,697	1.9	0.7
Brooklyn borough, N. Y.....	342,127,124	269,244,147	5,733,432	2,489,885	1.7	0.9
Philadelphia, Pa.....	603,466,526	577,234,446	5,931,045	6,851,834	1.0	1.2
Chicago, Ill.....	888,945,811	664,567,923	5,723,126	7,257,034	0.6	1.1
Manhattan and Bronx boroughs, N. Y.....	975,168,202	777,222,721	3,391,063	5,306,411	0.3	0.7
All other cities and outside of cities.....	9,344,874,467	6,240,632,842	147,039,563	126,433,306	1.6	2.0

*

¹ Not reported separately.

The industry in the United States had its origin in Massachusetts during the early colonial days, and its greatest development has also been there. Of the total value of products reported for the industries in the United States in 1900, Massachusetts contributed 44.9 per cent, or four times the value of products reported for any other state. In its inception the industry was stimulated in this state by a large local production of leather. This advantage has been lost in recent years through the migration of a part of the leather industry to other states, but the boot and shoe industry still persists, largely because of the momentum acquired during the early years of its history.

Table LXXXII shows the localization of the industry by cities, and indicates that the manufacture is not strictly confined to the larger cities, 41.8 per cent of the total value of products for the United States in 1900 being reported from places with less than 20,000 population. These factory towns in New England are, however, almost all in those sections of Massachusetts, New Hampshire, and Maine, which include or are adjacent to Brockton, Lynn, and Haverhill, Mass., the three great centers of the industry. The value of the boot and shoe products of these cities in 1900 constituted nearly one-fifth of the total reported for the United States. A refinement in the localization of the industry in these three cities is indicated by the fact that Brockton is almost entirely devoted to the manufacture of men's shoes, Lynn to the manufacture of ladies' shoes, and Haverhill to the manufacture of ladies', misses', and children's shoes and slippers.

Tables LXXXIII and LXXXIV show the value of boots and shoes manufactured in each of the above states and cities in comparison with the value of products in all industries. Specialization in this industry naturally appears most marked in Brockton, where the value of boots and shoes manufactured constituted 75.2 per cent of the value of all products; in Haverhill, 61.1 per cent; and in Lynn, 40.4 per cent. North Adams and Salem, Mass., follow, with much larger percentages than are shown for the cities in other states.

3. *Collars and Cuffs.*—Tables LXXXV to LXXXVIII show the localization of the collar and cuff industry by states and cities, and the specialization of states and cities in this industry.

TABLE LXXXV.—*Collars and Cuffs: Localization by states, 1900.*

STATES.	Value of products.	Per cent of total.
United States	\$15,769,132	100.0
New York	15,703,541	99.6
All other states	65,591	0.4

TABLE LXXXVI.—*Collars and Cuffs: Localization by cities, 1900.*

[Cities of 20,000 population or over.]

CITIES.	Value of products.	Per cent of total.
United States	\$15,769,132	100.0
Troy	13,460,196	85.3
Glens Falls ¹	720,982	4.6
Albany	602,808	3.8
New York	297,415	1.9
All other cities and outside of cities	687,731	4.4

¹ Under 20,000 population.TABLE LXXXVII.—*Collars and cuffs: Specialization of states, 1900.*

STATES.	VALUE OF PRODUCTS.		Per cent which collars and cuffs form of all industries.
	All industries.	Collars and cuffs.	
United States	\$13,004,400,143	\$15,769,132	0.1
New York	2,175,726,900	15,703,541	0.7
All other states	10,828,673,243	65,591	(¹)

¹ Less than one-tenth of 1 per cent.TABLE LXXXVIII.—*Collars and cuffs: Specialization of cities, 1900.*

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		Per cent which collars and cuffs form of all industries.
	All industries.	Collars and cuffs.	
United States	\$13,004,400,143	\$15,769,132	0.1
Troy	28,209,259	13,460,196	47.7
Glens Falls ¹	4,571,253	720,982	15.8
Albany	24,992,021	602,808	2.4
New York	1,371,353,403	297,415	(²)
All other cities and outside of cities	11,575,269,142	687,731	(²)

¹ Under 20,000 population.² Less than one-tenth of 1 per cent.

Table LXXXV shows the very marked localization of the collar and cuff manufacture in the state of New York, the value of this class of goods produced in the state being 99.6 per cent of the total reported for the United States.

Table LXXXVI shows the localization of the industry in the cities of the country, all the cities shown being in New York state. Troy is the great center of the industry, its value of products constituting 85.3 per cent of the total reported for the United States. The chief cause of this very marked localization seems to have been the early start of the industry at Troy, and the consequent development there of a class of operatives skilled in the manual operations which are an important feature of the manufacture. It is claimed that the first detached collars and cuffs ever made were the handiwork of the wife of a Troy blacksmith. The date of the invention is not known, but

the beginning of the manufacture of detached collars and cuffs as a regular industry was made by a Methodist minister in that city nearly three-quarters of a century ago.

Tables LXXXVII and LXXXVIII show the value of collars and cuffs manufactured in each of the above states and cities in comparison with the value of products in all industries. Nearly half of the value of all products manufactured in Troy and 15.8 per cent in Glens Falls is represented by the value of collars and cuffs.

4. *Cotton Goods, Including Cotton Small Wares.*—Tables LXXXIX to XCII show the localization of the cotton industry by states and cities, and the specialization of states and cities in this industry.

TABLE LXXXIX.—*Cotton goods: Localization by states, 1890 and 1900.*

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$339,200,320	\$267,981,724	100.0	100.0
Massachusetts	111,125,175	100,202,882	32.8	37.4
South Carolina	29,723,919	9,800,798	8.8	3.7
North Carolina	28,372,798	9,568,443	8.4	3.6
Rhode Island	26,435,675	27,310,499	7.8	10.2
Pennsylvania	25,447,697	18,431,773	7.5	6.9
New Hampshire	22,998,249	21,958,002	6.8	8.2
Georgia	18,457,645	12,035,629	5.4	4.5
Connecticut	15,489,442	15,409,476	4.5	5.7
Maine	14,631,086	15,316,909	4.3	5.7
New York	10,788,008	9,777,295	3.2	3.6
All other states	35,730,631	28,175,018	10.5	10.5

TABLE XC.—*Cotton goods: Localization by cities, 1890 and 1900.*

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$339,200,320	\$267,981,724	100.0	100.0
Fall River, Mass.	29,286,526	24,925,764	8.6	9.3
Philadelphia, Pa.	17,620,298	11,514,601	5.2	4.3
Lowell, Mass.	17,046,070	19,789,111	5.0	7.4
New Bedford, Mass.	16,748,788	8,185,286	4.9	3.1
Manchester, N. H.	11,723,508	10,957,219	3.4	4.1
Lawrence, Mass.	8,151,194	6,046,914	2.4	2.3
Pawtucket, R. I.	5,635,455	8,954,960	1.7	1.5
Lewiston, Me.	4,638,115	5,013,337	1.4	1.9
Taunton, Mass.	4,593,466	2,747,816	1.4	1.0
Warwick, R. I. ¹	4,413,857	(²)	1.3	.....
Holyoke, Mass.	3,764,848	4,892,722	1.1	1.6
Augusta, Ga.	3,429,348	3,979,042	1.0	1.4
All other cities and outside of cities.	212,149,352	166,474,952	62.6	62.1

¹ Under 20,000 population.

² Not reported separately.

Table LXXXIX shows the decided localization of the cotton manufacture in New England, the value of cotton goods produced in Massachusetts, Rhode Island, New Hampshire, Connecticut, and Maine constituting more than half of the total reported for the United States.

The industry was first established in New England, and was favored there in its inception by the climate, cotton spinning requiring a moist atmosphere, and by abundant waterpower. Each of these advantages has become of less importance in recent years, artificial moisture being now preferred to natural humidity, and steam taking the place of water for the purpose of power. Nevertheless, of the total power used in cotton manufacturing in these states in 1900, waterpower constituted 32.6 per cent. Massachusetts led all other states in 1900, as it has done steadily from the start. The proportion of the total value of products manufactured in this state has declined, however, during the last twenty years, from 37.6 per cent in 1880 to 32.8 per cent in 1900. The striking change in the localization of the industry during the last twenty years is its rapid advance in the Southern states, especially in South Carolina, North Carolina, and Georgia. The value of cotton products in these three states constituted 6.2 per cent of the total in 1880, 11.7 per cent in 1890, and 22.6 per cent in 1900. The industry is favored in this section by the accessibility of raw material, the abundant waterpower, and the low cost of living. In 1900 waterpower constituted 34.8 per cent of the total power used in the cotton industry in South Carolina, North Carolina, and Georgia.

Table xc indicates the localization of the manufacture in the New England cities. Three of these cities have extensive waterpower facilities, Lowell and Lawrence, Mass., and Manchester, N. H.—where 49, 36, and 50.4 per cent, respectively, of the total power used in the industry in 1900 was furnished by water, while in Fall River waterpower was once a very important factor.

The distribution by cities shows, however, but a small part of the industry, nearly half of the total value of products in 1900 being reported for localities having a population of less than 20,000. Most of these manufacturing towns are, however, located in the vicinity of the cities specified in Table 14; namely, in the extreme southwestern part of Maine, in southeastern New Hampshire, in the eastern parts of Massachusetts and Connecticut, and scattered through Rhode Island.

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TABLE XCI.—COTTON GOODS: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH COTTON GOODS, IN- CLUDING COTTON SMALL WARES, FORM OF ALL IN- DUSTRIES.	
	All industries.		Cotton goods, including cotton small wares.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,872,437,283	\$339,200,320	\$267,981,724	2.6	2.9
South Carolina	53,748,781	31,926,681	29,723,019	9,800,798	50.6	30.7
North Carolina	94,919,663	40,375,450	28,872,798	9,563,443	29.9	23.7
New Hampshire	118,709,368	85,770,549	22,998,249	21,958,002	19.4	25.6
Georgia	106,654,527	68,917,020	18,457,645	12,035,629	17.3	17.5
Rhode Island	184,074,378	142,500,025	26,435,676	27,310,499	14.4	19.2
Maine	127,361,485	95,689,500	14,631,086	15,316,909	11.5	16.0
Massachusetts	1,035,198,989	888,160,403	111,125,175	100,262,882	10.7	11.3
Connecticut	352,824,106	248,336,364	15,489,442	15,400,476	4.4	6.2
Pennsylvania	1,834,790,860	1,331,794,901	25,447,697	18,431,773	1.4	1.4
New York	2,175,726,900	1,711,577,671	10,788,003	9,777,295	0.6	0.6
All other states	6,915,391,196	4,727,388,119	35,730,631	23,175,018	0.6	0.6

TABLE XCII.—COTTON GOODS: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,00 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH COTTON GOODS, INCLUDING COTTON SMALL WARES, FORM OF ALL INDUSTRIES.	
	All industries.		Cotton goods, including cotton small wares.		1900	1890
	1900	1890	1900	1890		
United States.....	\$13,004,400,143	\$9,372,437,283	\$389,200,320	\$267,981,724	2.6	2.9
Warwick, R. I. ¹	6,197,506	(²)	4,418,357	(²)	71.2	-----
Fall River, Mass.....	43,071,530	32,519,281	29,286,526	24,925,764	68.0	70.6
New Bedford, Mass.....	25,681,671	17,025,779	16,748,783	8,185,286	65.2	48.1
Lewiston, Me.....	8,581,354	9,073,865	4,638,115	5,013,337	54.0	55.2
Manchester, N. H.....	26,607,600	20,187,295	11,723,508	10,957,219	44.0	54.3
Lowell, Mass.....	44,774,525	42,450,509	17,046,070	19,789,111	38.1	46.6
Taunton, Mass.....	12,594,814	9,936,829	4,593,466	2,747,816	36.5	27.7
Augusta, Ga.....	10,041,900	9,244,850	3,429,343	3,979,042	34.1	43.0
Pawtucket, R. I.....	24,080,328	16,303,729	5,635,455	3,954,960	23.4	24.3
Lawrence, Mass.....	44,703,278	26,550,725	8,151,194	6,040,914	18.2	22.8
Holyoke, Mass.....	26,283,964	26,060,315	3,764,848	4,392,722	14.8	16.9
Philadelphia, Pa.....	603,466,526	577,234,446	17,620,298	11,514,601	2.9	2.0
All other cities and outside of cities.....	12,128,315,147	8,585,849,669	212,149,352	100,474,952	1.7	1.9

¹ Under 20,000 population.² Not reported separately.

Tables xci and xcii show the value of cotton goods manufactured in each of the above states and cities in comparison with the value of products in all industries. These tables indicate that the town of Warwick, R. I., was the most specialized center in the cotton industry in 1900, the value of its cotton goods constituting 71.2 per cent of the value of all products manufactured in the town. In Fall River, Mass., this percentage was 68; in New Bedford, Mass., 65.2; and in Lewiston, Me., 54.

5. *Fur Hats.*—Tables xciii to xcvi show the localization of the fur hat industry by states and cities and the specialization of states and cities in this industry.

TABLE XCIII.—Fur hats: Localization by states, 1900.

STATES.	Value of products.	Per cent of total.
United States	\$27,811,187	100.0
Connecticut	7,546,882	27.2
New Jersey	7,211,229	25.9
New York	5,602,458	20.0
Pennsylvania	4,243,352	15.3
Massachusetts	2,630,964	9.6
All other states	576,302	2.1

TABLE XCIV.—Fur hats: Localization by cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	Value of products.	Per cent of total.
United States	\$27,811,187	100.0
Danbury, Conn. ¹	5,007,095	18.0
Newark, N. J.	3,453,619	12.4
Philadelphia, Pa.	3,075,470	11.1
Orange, N. J.	2,490,404	9.0
New York, N. Y.	2,241,347	8.1
Norwalk, Conn. ¹	1,237,272	4.4
Reading, Pa.	1,133,688	4.1
Bethel, Conn. ¹	979,029	3.5
All other cities and outside of cities	8,186,573	29.4

¹ Under 20,000 population.

TABLE XCV.—Fur hats: Specialization of states, 1900.

STATES.	VALUE OF PRODUCTS.		Per cent which fur hats form of all industries.
	All industries.	Fur hats.	
United States	\$13,004,400,143	\$27,811,187	0.2
Connecticut	352,824,106	7,546,882	2.1
New Jersey	611,748,933	7,211,229	1.2
New York	2,175,726,900	5,602,458	0.3
Massachusetts	1,035,198,989	2,630,964	0.3
Pennsylvania	1,834,790,860	4,243,352	0.2
All other states	6,904,110,855	576,302	-----

TABLE XCVI.—*Fur hats: Specialization of cities, 1900.*

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		Per cent which fur hats form of all industries.
	All industries.	Fur hats.	
United States.....	\$13,004,400,143	\$27,811,187	0.2
Bethel, Conn. ¹	1,229,651	979,629	79.7
Danbury, Conn. ¹	7,213,555	5,007,095	69.4
Orange, N. J.	4,694,335	2,496,494	53.7
Norwalk, Conn. ¹	5,097,720	1,237,272	24.3
Reading, Pa.	36,902,511	1,133,688	3.1
Newark, N. J.	126,954,049	3,453,619	2.7
Philadelphia, Pa.	603,466,526	3,075,470	0.5
New York, N. Y.	1,371,358,468	2,241,347	0.2
All other cities and outside of cities..	10,847,483,328	8,186,573	0.8

¹ Under 20,000 population.

Table XCIII indicates a decided localization of the fur hat industry in the five Eastern states shown in the table, and especially in the three states, Connecticut, New Jersey, and New York, which together contributed almost three-fourths of the total value of the fur hat products reported for the United States in 1900. Connecticut led all other states in 1900 with 27.2 per cent of the total value of products, closely followed by New Jersey with 25.9 per cent of the total.

Table XCV shows the localization of the industry by

cities and towns. This table indicates that Danbury, Conn., is the greatest fur hat center in the country. Its value of products in 1900 formed 18 per cent of the total reported for the United States. The importance of the industry at this point is due chiefly to the fact that it was established there as early as 1780. Newark, N. J., where the industry was also established at an early date, ranked second in 1900 with 12.4 per cent of the total value of products, while Philadelphia, Pa., Orange, N. J., and New York city followed with 11.1, 9, and 8.1 per cent, respectively.

Tables xcv and xcvi show the value of fur hats manufactured in each of the above states and cities in comparison with the value of products in all industries.

Table xcvi indicates that Danbury, Conn., and the adjoining town of Bethel have specialized in this industry to a greater extent than the other cities and towns named. The value of fur hats manufactured in Bethel constituted 79.7 per cent of the value of all goods manufactured in the town. In Danbury the value of hat products formed 69.4 per cent of the total. Orange, N. J., ranked third as a specialized center, with a percentage of 53.7.

6. *Glass.*—Tables xcvi to c show the localization of the glass industry, by states and cities, and the specialization of states and cities in this industry.

TABLE XCVII.—*Glass: Localization by states, 1890 and 1900.*

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$56,539,712	\$41,051,004	100.0	100.0
Pennsylvania.....	22,011,130	17,179,137	38.9	41.8
Indiana.....	14,757,883	2,995,409	26.1	7.3
New Jersey.....	5,093,822	5,218,152	9.0	12.7
Ohio.....	4,547,088	5,649,182	8.1	13.8
All other states	10,129,794	10,009,124	17.9	24.4

TABLE XCVIII.—*Glass: Localization by cities, 1900.*

[Cities of 20,000 population or over.]

CITIES.	Value of products.	Per cent of total.
United States.....	\$56,539,712	100.0
Pittsburg, Pa.	2,429,686	4.3
Muncie, Ind.	2,381,025	4.2
Millville, N. J. ¹	1,617,373	2.9
Marion, Ind. ¹	1,399,317	2.5
Philadelphia, Pa.	1,347,011	2.4
Washington, Pa. ¹	1,308,029	2.3
Tarentum, Pa. ¹	1,142,311	2.0
Gas City, Ind. ¹	1,021,280	1.8
Alexandria, Ind. ¹	1,015,689	1.8
Elwood, Ind. ¹	1,011,803	1.7
Charleroi, Pa. ¹	1,010,189	1.8
All other cities and outside of cities	40,856,049	72.3

¹ Under 20,000 population.

TABLE XCIX.—GLASS: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH GLASS FORMS OF ALL INDUSTRIES.	
	All industries.		Glass.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$56,539,712	\$41,051,004	0.4	0.4
Indiana.....	378,120,140	226,825,082	14,757,883	2,995,409	3.9	1.3
Pennsylvania.....	1,834,790,860	1,331,794,901	22,011,130	17,179,137	1.2	1.3
New Jersey.....	611,748,933	354,573,571	5,093,822	5,218,152	0.8	1.5
Ohio.....	832,438,118	641,688,064	4,547,088	5,649,182	0.5	0.9
All other states	9,347,302,097	6,817,555,665	10,129,794	10,009,124	0.1	0.1

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TABLE C.—Glass: Specialization of cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		Per cent which glass forms of all industries.
	All industries.	Glass.	
United States.....	\$13,004,400,143	\$56,589,712	0.4
Millville, N. J. ¹	2,810,332	1,617,373	62.0
Tarentum, Pa. ¹	1,980,947	1,142,311	57.7
Charleroi, Pa. ¹	1,871,505	1,010,139	54.0
Alexandria, Ind. ¹	2,929,596	1,015,689	34.7
Gas City, Ind. ¹	2,959,187	1,021,260	34.5
Washington, Pa. ¹	4,667,330	1,308,029	28.0
Marion, Ind. ¹	5,170,435	1,399,317	27.1
Muncie, Ind. ¹	12,106,648	2,381,025	19.7
Elwood, Ind. ¹	9,929,311	1,011,803	10.2
Pittsburg, Pa. ¹	203,261,251	2,429,686	1.2
Philadelphia, Pa. ¹	603,465,826	1,347,011	0.2
All other cities and outside cities.....	12,153,447,075	40,856,049	0.3

¹ Under 20,000 population.

Table xcvi shows a decided localization of the glass industry in Pennsylvania and Indiana, the value of glass manufactured in these states constituting nearly two-thirds of the total for the United States. The localization of the industry has been changed during the last decade by the decline in Ohio and New Jersey and the remarkable increase in Indiana. The value of the combined glass product of Ohio and New Jersey decreased \$1,226,429 during the decade, while the value of the product of Indiana increased about fourfold. This change has been due chiefly to the discovery of new supplies of natural gas in this state. In addition to its cheapness, natural gas is especially adapted for use in glass furnaces. Fuel is the most important item in the cost of materials in the glass industry, the localization of which has always been determined chiefly by this factor.

For this reason there has been a continual shifting of the industry during the last twenty years, factories being hastily built, in a locality, upon the discovery of new gas supplies, only to be torn down in a few years when these supplies became exhausted. Pennsylvania has held first rank in glass manufacturing since the beginning of the industry in the United States, due chiefly to its abundant fuel supply, both coal and gas.

Table cxviii shows the localization of the industry by cities. The most important centers in the manufacture of glass are Pittsburg, Pa., and Muncie, Ind. The value of the combined glass product of these two cities, however, was only 8.5 per cent of the total for the United States. Nearly three-fourths of the total product of the United States was manufactured in small towns and rural districts. This is especially true in Indiana, where the existence of the industry has been due to the supply of gas rather than to general economic conditions.

Tables xcix and c show the value of glass manufactured in each of the above states and cities in comparison with the value of products in all industries. The specialization of particular localities in this industry is marked. The value of glass products constitutes more than one-half of the value of all manufactured products in Millville, N. J., and Tarentum and Charleroi, Pa. Other cities showing a decided specialization are Alexandria, Ind.; Gas City, Ind.; Washington, Pa.; and Marion, Ind.

7. *Hosiery and Knit Goods.*—Tables ci to civ show the localization of the hosiery and knit-goods industry, by states and cities and the specialization of states and cities in this industry.

TABLE CI.—Hosiery and knit goods: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States.....	\$95,482,566	\$67,241,013	100.0	100.0
New York.....	35,886,048	24,776,582	37.6	36.8
Pennsylvania.....	21,896,063	16,944,237	23.0	25.2
Massachusetts.....	6,620,257	5,082,087	6.9	7.6
Connecticut.....	4,043,977	3,771,567	4.2	5.6
All other states.....	27,086,221	16,666,540	28.3	24.8

TABLE CII.—Hosiery and knit goods: Localization by cities, 1890 and 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States.....	\$95,482,566	\$67,241,013	100.0	100.0
Philadelphia, Pa.....	13,040,905	14,932,981	13.7	22.2
Cohoes, N. Y.....	5,026,374	5,058,882	5.3	7.5
Amsterdam, N. Y.....	4,250,138	(¹)	4.5	.....
Lowell, Mass.....	3,148,110	731,413	3.3	1.1
Utica, N. Y.....	2,514,073	715,178	2.6	1.1
Brooklyn borough, N. Y.....	2,112,510	887,986	2.2	1.3
All other cities and outside of cities.....	65,381,456	44,915,173	68.4	66.8

¹ Not reported separately.

TABLE CIII.—HOSIERY AND KNIT GOODS: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH HOSIERY AND KNIT GOODS FORM OF ALL INDUSTRIES.	
	All industries.		Hosiery and knit goods.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$95,482,566	\$67,241,013	0.7	0.7
New York.....	2,176,726,900	1,711,577,671	35,886,048	24,776,582	1.6	1.4
Pennsylvania.....	1,834,790,860	1,331,794,901	21,896,068	16,944,237	1.2	1.3
Connecticut.....	352,824,106	248,836,364	4,043,977	3,771,567	1.1	1.5
Massachusetts.....	1,035,198,989	888,160,403	6,620,257	5,082,087	0.6	0.6
All other states.....	7,605,859,288	5,192,567,944	27,036,221	16,666,540	0.4	0.3

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TABLE CIV.—HOSIERY AND KNIT GOODS: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH HOSIERY AND KNIT GOODS FORM OF ALL INDUSTRIES.	
	All industries.		Hosiery and knit goods.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$95,482,566	\$67,241,013	0.7	0.7
Cohoes, N. Y.	11,636,130	10,836,260	5,026,374	5,058,882	43.2	46.7
Amsterdam, N. Y.	11,502,316	(1)	4,259,138	(1)	37.0	.....
Utica, N. Y.	19,550,850	15,615,715	2,514,073	715,178	12.9	4.6
Lowell, Mass.	44,774,525	42,450,509	8,148,110	731,413	7.0	1.7
Philadelphia, Pa.	603,466,526	577,234,446	13,040,905	14,932,981	2.2	2.6
Brooklyn borough, N. Y.	342,127,124	269,244,147	2,112,510	887,886	0.6	0.3
All other cities and outside of cities	11,971,342,672	8,457,056,206	65,381,456	44,915,173	0.5	0.6

¹Not reported separately.

Table CI shows that the hosiery and knit goods industry is localized in the states of New York and Pennsylvania, the value of products for these states constituting 60.6 per cent of the total for the United States. New York state led with 37.6 per cent of the total in 1900, followed by Pennsylvania with 23 per cent.

Table CII shows the localization of the industry by cities. Philadelphia, Pa., Cohoes, N. Y., and Amsterdam, N. Y., led all other cities in 1900, the value of their combined products constituting 23.5 per cent of the total for the United States. The distribution by cities shows, however, but a small part of the total value of products. The industry in New York state is carried on largely in scattered cities and towns, most of them, however, near Cohoes, Amsterdam, and Utica, and the same is true to a less extent in Pennsylvania. More than 42 per cent of the total value of products reported for the United States was made outside of cities with a population of 20,000 or over. During the last decade there has been a slight movement of the industry from the larger and older to certain of the newer centers. This is indicated by the decrease of \$1,892,076 in the value of products reported for Philadelphia, and of \$32,508 in the value of products reported for Cohoes, accompanied by large increases in the value of products for each of the states in which these cities are located.

The hosiery and knit goods manufacture was established in Philadelphia about 1698 and in Cohoes in 1832. The industry in Philadelphia, especially in Germantown, was given its start in 1698, when a large number of skilled hand knitters from the German Palatinate settled in that city.

A great stimulus was given to the industry in Cohoes by the invention of the first power knitting machine used in the world. This was put into operation in 1832 by Egbert Egherts, a manufacturer of that place. Cohoes is favored with abundant waterpower, which is profitably used in this industry. Of the total amount of power used in the knitting mills of this city 75.3 per cent was waterpower. Amsterdam is but 45 miles from Cohoes, and its recent development as a knit-goods center is to be attributed to that fact. The same must be said, moreover, of the growth of the industry in other small towns in the central part of New York state. It is interesting to note a refinement of the

localization which is quite marked. Hosiery is manufactured in Philadelphia almost exclusively, while underwear and other knit goods are the chief products of Cohoes.

Tables CIII and CIV show the value of hosiery and knit goods manufactured in each of the above states and cities in comparison with the value of products in all industries. Cohoes and Amsterdam, N. Y., are the most striking instances of specialization in this industry. In 1900 the value of hosiery and knit goods products constituted 43.2 per cent of the value of all manufactured products in Cohoes and 37 per cent in Amsterdam.

8. *Iron and Steel.*—Tables CV to CVIII show the localization of the iron and steel industry by states and cities, and the specialization of states and cities in this industry.

TABLE CV.—Iron and steel: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$803,968,273	\$430,954,348	100.0	100.0
Pennsylvania	434,445,200	248,809,071	54.0	57.7
Ohio	138,935,256	57,134,110	17.3	13.3
Illinois	60,303,144	37,173,405	7.5	8.7
New Jersey	24,381,699	8,139,821	3.0	1.9
Indiana	19,338,481	3,063,853	2.4	0.7
Alabama	17,392,483	12,544,227	2.2	2.9
West Virginia	16,514,212	7,490,034	2.1	1.7
New York	13,858,553	16,099,637	1.7	3.6
All other states	78,799,245	40,899,890	9.8	9.5

TABLE CVI.—Iron and steel: Localization by cities, 1890 and 1900.

[Cities of 20,000 population, or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$803,968,273	\$430,954,348	100.0	100.0
Pittsburg, Pa.	90,798,086	49,718,729	11.3	11.5
McKeesport, Pa.	34,339,612	(¹)	4.3	.....
Chicago, Ill.	31,620,174	24,317,831	3.9	5.6
Youngstown, Ohio	23,203,866	9,070,050	3.5	2.3
Cleveland, Ohio	24,276,197	15,472,199	3.0	3.6
Johnstown, Pa.	17,834,705	(¹)	2.2	.....
Newcastle, Pa.	15,123,463	(¹)	1.9	.....
Joliet, Ill.	13,380,090	(¹)	1.7	.....
Trenton, N. J.	13,260,787	(¹)	1.6	.....
Scranton, Pa.	10,231,139	13,278,299	1.3	3.1
All other cities and outside of cities	524,900,164	318,491,240	65.3	73.9

¹Not reported separately.

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TABLE CVII.—IRON AND STEEL: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH IRON AND STEEL FORM OF ALL IN- DUSTRIES.	
	All industries.		Iron and steel.			
	1900	1890	1900	1890	1900	1890
	United States	\$13, 004, 400, 143	\$9, 372, 437, 283	\$803, 968, 273	\$430, 954, 348	6. 2	4. 6
Pennsylvania	1, 834, 790, 860	1, 331, 794, 901	434, 445, 200	248, 809, 071	23. 7	18. 7
West Virginia.....	74, 833, 330	38, 702, 125	16, 514, 212	7, 490, 934	22. 1	19. 4
Alabama.....	80, 741, 449	51, 226, 005	17, 892, 483	12, 644, 227	21. 5	24. 5
Ohio.....	832, 438, 113	641, 685, 061	138, 935, 256	67, 134, 110	16. 7	8. 9
Indiana.....	878, 120, 140	226, 825, 082	19, 838, 481	8, 063, 853	4. 1	1. 4
Illinois.....	1, 259, 730, 168	603, 640, 290	60, 303, 144	37, 173, 405	4. 8	4. 1
New Jersey.....	611, 748, 933	354, 573, 571	24, 331, 099	8, 139, 321	4. 0	2. 3
New York.....	2, 175, 726, 900	1, 711, 577, 671	13, 858, 553	16, 699, 637	0. 6	0. 9
All other states	5, 756, 265, 250	4, 107, 408, 984	78, 799, 245	40, 899, 890	1. 4	1. 0

TABLE CVIII.—IRON AND STEEL: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH IRON AND STEEL FORM OF ALL IN- DUSTRIES.	
	All industries.		Iron and steel.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$803,968,273	\$430,954,348	6.2	4.6
McKeesport, Pa.....	37,074,136	17,432,721	34,339,612	(1)	92.6	.....
Youngstown, Ohio.....	34,801,101	14,667,260	28,203,856	9,676,050	81.0	66.0
Johnstown, Pa.....	22,559,890	18,422,989	17,834,705	(1)	79.1	.....
Newcastle, Pa.....	21,046,842	(1)	15,123,468	(1)	71.9	.....
Joliet, Ill.....	27,765,104	12,732,933	13,380,090	(1)	48.2	.....
Pittsburg, Pa.....	203,261,251	126,859,657	90,798,086	49,718,720	44.7	39.2
Trenton, N. J.....	31,615,695	25,628,223	13,290,787	(1)	41.9	.....
Scranton, Pa.....	27,646,418	24,341,745	10,231,139	13,278,299	37.0	54.6
Cleveland, Ohio.....	139,849,806	113,240,115	24,276,197	15,472,199	17.4	13.7
Chicago, Ill.....	888,945,311	664,667,923	31,620,174	24,817,831	3.6	3.7
All other cities and outside of cities	11,569,804,589	8,854,643,717	524,909,164	318,491,240	4.5	3.8

(1) Not reported separately.

Table cv shows a decided localization of the industry in Pennsylvania and Ohio, the value of the iron and steel products of these states constituting 71.3 per cent of the total for the United States. More than one-half of the iron and steel of the country, measured by its value, was manufactured in Pennsylvania.

Pennsylvania took first rank in the industry soon after its establishment in that state and has held it continuously since that time. The localization of the iron and steel industry is governed almost entirely by natural advantages in the way of deposits of iron ore, coal, and limestone. At first the industry depended upon wood for fuel, and its localization was affected by the distribution of forests, but with the use of coal as fuel this factor was eliminated.

As a result of the introduction of coke as a fuel in blast furnaces and the increased use of the Lake Superior ores as compared with those of Pennsylvania, the center of the iron and steel industry has been transferred from eastern to western Pennsylvania. The excellence of the Connellsville coal for cokeing purposes attracted the blast furnaces from eastern Pennsylvania, where the principal fuel supply is anthracite coal. The rolling mills and steel works naturally followed the blast furnaces, and Allegheny

county, which includes the cities of Pittsburg, McKeesport, and Duquesne, became the most important iron and steel center in the United States. This section is also favored by a large production of natural gas, which constituted 22.3 per cent of the total cost of fuel used in rolling mills and steel works in Pennsylvania in 1900.

The iron and steel industry in Ohio may be considered a continuation of the industry in western Pennsylvania. The Ohio furnaces and mills draw their fuel supply from the Connellsville district of Pennsylvania and from West Virginia. Eastern and northeastern Ohio, where the greater portion of the iron product of the state is manufactured, has the advantage of being between the coal fields of Pennsylvania and the iron mines of the Lake Superior region. None of the consuming points in other states, except Pittsburg and the Shenango Valley, in Pennsylvania, receive Connellsville coke so cheaply, and none of the eastern iron centers are so favorably located in relation to the Lake Superior mines.

The industry has developed in Illinois largely on account of the excellent market for iron products in Chicago and the West. This state has the advantage, moreover, of close proximity to the ore supplies of the

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Lake Superior region and cheap lake transportation of the ore to the mills, which are located principally in and near Chicago. The supply of fuel for the blast furnaces comes largely from the Connellsville region of Pennsylvania, and the Pocahontas and Flat Top regions of West Virginia.

The iron and steel manufacture in Alabama is entirely separate from the industry in other sections of the country, and its development has been due to purely natural causes—the adjoining supplies of iron ore and coal. Some mills in this state get both their ore and coal from within a half mile of the plant, and in such cases they are able to produce iron at a very low cost.

Table cvi shows the localization of the industry by cities. Pittsburg led all other cities in the manufacture of iron and steel in 1900, with a value of products which was 11.3 per cent of the total for the United States. The distribution by cities, however, shows but slightly more than one-third of the total value of the iron and steel products of the United States, the industry being

scattered among a large number of cities and towns in the coal and iron districts.

Tables cvii and cviii show the value of iron and steel manufactured in each of the above states and cities in comparison with the value of products in all industries. The value of the iron and steel products reported for the states of Pennsylvania, West Virginia, and Alabama was between one-fourth and one-fifth of the value of all the manufactured products of these states. The specialization of particular localities in this industry appears very strikingly in a number of cities, notably McKeesport, Pa., Youngstown, Ohio, and Johnstown, Pa. More than three-quarters of the value of all manufactured products of each of these cities in 1900 was iron and steel. Other cities showing a decided specialization are Newcastle, Pa., Joliet, Ill., Pittsburg, Pa., and Trenton, N. J.

9. *Jewelry*.—Tables cix to cxii show the localization of the manufacture of jewelry, by states and cities, and the specialization of states and cities in the industry.

TABLE CIX.—*Jewelry: Localization by states, 1890 and 1900.*

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$46,501,181	\$34,761,458	100.0	100.0
Rhode Island	13,320,620	8,011,067	28.6	23.0
Massachusetts	10,315,334	5,507,415	22.2	15.9
New York	10,244,624	7,385,139	22.0	21.3
New Jersey	7,379,777	4,724,500	15.9	13.6
Illinois	1,601,308	932,000	3.5	2.6
All other states	8,639,518	8,201,337	7.8	23.6

TABLE CX.—*Jewelry: Localization by cities, 1890 and 1900.*

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$46,501,181	\$34,761,458	100.0	100.0
Providence, R. I.	12,719,124	7,801,003	27.4	22.4
Manhattan and Bronx boroughs, N. Y.	9,172,849	5,646,734	19.7	16.3
Newark, N. J.	7,384,247	4,631,500	15.8	13.3
Attleboro, Mass. ¹	5,701,802	(2)	12.3	.....
North Attleboro, Mass. ¹	2,785,567	(2)	6.0	.....
Chicago, Ill.	1,601,308	873,000	3.4	2.5
All other cities and outside of cities.	7,156,284	15,809,221	15.4	45.5

¹ Under 20,000 population.² Not reported separately.TABLE CXI.—*JEWELRY: SPECIALIZATION OF STATES, 1890 AND 1900.*

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH JEWELRY FORMS OF ALL INDUSTRIES.	
	All industries.		Jewelry.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$46,501,181	\$34,761,458	0.4	0.4
Rhode Island	184,074,378	142,500,625	13,320,620	8,011,067	7.2	5.6
New Jersey	611,748,933	354,573,571	7,379,777	4,724,500	1.2	1.3
Massachusetts	1,035,198,989	888,160,403	10,315,334	5,507,415	1.0	0.6
New York	2,175,726,900	1,711,577,671	10,244,624	7,385,139	0.5	0.4
Illinois	1,259,730,168	908,640,280	1,601,308	832,000	0.1	0.1
All other states	7,737,920,776	5,366,984,733	3,639,518	8,201,337	0.0	0.2

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TABLE CXII.—JEWELRY: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH JEWELRY FORMS OF ALL INDUSTRIES.	
	All industries.		Jewelry.		1900	1890
	1900	1890	1900	1890	1900	1890
United States.....	\$13,004,400,143	\$9,372,437,283	\$46,501,181	\$34,761,458	0.4	0.4
North Attleboro, Mass. ¹	8,990,781	(²)	2,785,507	(²)	69.8	.....
Attleboro, Mass. ¹	9,442,752	(²)	5,701,802	(²)	60.4	.....
Providence, R. I.....	88,168,897	77,467,283	12,719,124	7,801,008	14.4	10.1
Newark, N. J.....	126,954,049	93,476,652	7,364,247	4,681,500	5.8	5.0
New York, N. Y. (Manhattan and Bronx boroughs).....	975,168,202	777,222,721	9,172,849	5,646,734	0.9	0.7
Chicago, Ill.....	888,945,311	664,567,923	1,601,308	873,000	0.2	0.1
All other cities and outside of cities.....	10,911,780,201	7,759,702,704	7,156,284	15,809,221	0.1	0.2

¹ Under 20,000 population.² Not reported separately.

Table CIX indicates that the manufacture of jewelry is almost entirely confined to the 4 states, Massachusetts, Rhode Island, New York, and New Jersey. The value of the jewelry manufactured in these states in 1900 constituted 88.7 per cent of the total reported for the United States. In 1890 this percentage was but 73.8. There has thus been a marked increase in the localization of the industry in the 4 states named. Rhode Island was the leading state in the manufacture in 1900, the value of its products constituting 28.6 per cent of the total value reported for the United States.

The localization of the industry in the 4 states mentioned, was principally due to the fact that the first goldsmiths of the colonies located in these states, to be near their best market, the wealthy population of the cities in the Middle and New England states.

Table CX shows the localization of the industry by cities. Attleboro and North Attleboro, Mass., adjoin the city of Providence, R. I., and the three places constitute practically one center for the industry. Table 38 shows that the value of products reported for this group in 1900 constituted 45.7 per cent of the total value reported for the country. New York city ranked second, with 19.7 per cent, and Newark, N. J., third, with 15.8 per cent of the total. A great stimulus was given to the industry in Providence about 1794, when the process of "filling" gold jewelry with cheaper metal was discovered. At about the same time also machinery was applied to the manufacture.

New York city is noted for expensive handmade jewelry, while in Providence, Attleboro, and North Attleboro the products are principally less expensive goods, in the manufacture of which machinery largely takes the place of hand work. Thus the average value of products per wage-earner in New York state in 1900 was \$3,390, as compared with an average of \$1,838 for Massachusetts and Rhode Island combined.

Tables CXI and CXII show the value of jewelry manufactured in each of the above states and cities in comparison with the value of products in all industries. Table CXII indicates that North Attleboro and Attleboro, Mass., were the most specialized centers of this

industry in 1900. The value of the jewelry manufactured in these towns formed 69.8 and 60.4 per cent, respectively, of the value of all manufactured products.

10. *Leather Gloves and Mittens.*—Tables CXIII to CXVI show the localization of the leather glove and mitten industry, by states and cities, in 1900, and the specialization of states and cities in this industry. Statistics for this industry were not published separately in 1890.

TABLE CXIII.—Leather Gloves: Localization by states, 1900.

STATES.	Value of products.	Per cent of total.
United States.....	\$16,721,234	100.0
New York.....	10,854,221	64.9
Illinois.....	2,454,252	14.7
California.....	920,624	5.5
Wisconsin.....	507,495	3.0
All other states.....	1,984,642	11.9

TABLE CXIV.—Leather Gloves: Localization by cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	Value of products.	Per cent of total.
United States.....	\$16,721,234	100.0
Gloversville, N. Y. ¹	6,487,227	38.8
Johnstown, N. Y.....	2,576,048	15.4
Chicago, Ill.....	2,209,529	13.2
All other cities and outside of cities.....	5,448,480	32.6

¹ Under 20,000 population.

TABLE CXV.—Leather Gloves: Specialization of states, 1900.

STATES	VALUE OF PRODUCTS.		Per cent which gloves form of all industries.
	All industries.	Gloves.	
United States.....	\$13,004,400,143	\$16,721,234	0.1
New York.....	2,175,726,900	10,854,221	0.5
California.....	302,874,761	920,624	0.3
Illinois.....	1,259,730,168	2,454,252	0.2
Wisconsin.....	360,818,942	507,495	0.1
All other states.....	8,905,249,872	1,984,642	0.2

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TABLE CXVI.—Leather Gloves: Specialization of cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		Per cent which gloves form of all industries.
	All industries.	Gloves.	
United States.....	\$13,004,400,143	\$16,721,234	0.1
Gloversville, N. Y. ¹	9,647,167	6,487,227	67.2
Johnstown, N. Y. ¹	5,480,072	2,576,048	47.0
Chicago, Ill.....	888,945,311	2,209,629	0.2
All other cities and outside of cities..	12,100,827,593	5,448,430	(²)

¹ Under 20,000 population.² Less than one-tenth of 1 per cent.

Table CXIII shows a remarkable localization of the industry in New York, the value of the gloves and mittens manufactured in this state constituting nearly two-thirds of the total for the country.

Table CXIV shows the localization of the industry by cities. More than half of the gloves and mittens manufactured in the United States, measured by their value, were made in Gloversville and Johnstown, which are adjoining cities in the east central part of New York state. Chicago was the only other center of importance, its value of products constituting 13.2 per cent of the total for the country.

The preeminence of Gloversville and Johnstown in the manufacture of gloves and mittens is due chiefly to an industrial momentum gathered during the one hundred and forty years in which the industry has been carried on in this locality, and to the fact that the process of manufacture demands a manual dexterity acquired only by years of training. It is claimed

that the first gloves made in the United States were made at this point about 1760, by families brought from Scotland by Sir William Johnson and settled on his grant. Many of these settlers had been glove makers and members of the glove guilds of Scotland, and brought with them the patterns, needles, and threads needed in their industry. It was not, however, until about 1809 that gloves were manufactured in commercial quantities. At that time an enterprising glove maker of Johnstown began to carry his product to Albany on horseback. Since then Gloversville and Johnstown have become the recognized centers of the industry in the United States, many skilled glove makers from England, France, and Germany having established themselves there. These localities have thus had the advantage of an abundant supply of skilled labor, the most important factor in the localization of the industry, the cost of transportation on both raw materials and finished products being insignificant in comparison.

Tables CXV and CXVI show the value of leather gloves manufactured in each of the above states and cities in comparison with the value of products in all industries. The specialization of particular localities in this industry is naturally most striking in Gloversville and Johnstown. The value of gloves and mittens manufactured in Gloversville constituted more than two-thirds and in Johnstown nearly one-half of the value of all manufactures in those cities.

11. *Leather, Tanned, Curried, and Finished.*—Tables CXVII to CXX show the localization of the industry known as leather, tanned, curried, and finished, by states and cities, and the specialization of states and cities in this industry.

TABLE CXVII.—Leather: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States.....	\$204,038,127	\$172,136,092	100.0	100.0
Pennsylvania.....	55,615,009	49,931,716	27.3	29.0
Massachusetts.....	26,067,714	28,044,815	12.8	16.3
New York.....	23,205,991	23,454,853	11.3	13.6
Wisconsin.....	20,074,373	11,161,850	9.8	6.5
New Jersey.....	13,747,155	11,069,467	6.7	6.4
Delaware.....	9,400,504	4,106,894	4.6	2.4
Illinois.....	7,847,835	8,240,803	3.9	4.8
California.....	7,405,981	5,729,278	3.6	3.3
All other states.....	40,673,565	30,396,416	20.0	17.7

TABLE CXVIII.—Leather: Localization by cities, 1890 and 1900.

[Cities of 20,000 population or over.]

CITIES	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States.....	\$204,038,127	\$172,136,092	100.0	100.0
Philadelphia, Pa.....	18,187,231	12,682,297	8.9	7.4
Newark, N. J.....	10,857,192	8,309,667	5.3	4.8
Milwaukee, Wis.....	10,267,835	8,429,814	5.0	4.9
Wilmington, Del.....	9,379,504	4,015,694	4.6	2.3
Chicago, Ill.....	6,979,289	7,395,371	3.4	4.3
All other cities and outside of cities..	148,367,076	131,303,249	72.8	76.8

TABLE CXIX.—LEATHER: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH LEATHER, TANNED, CURRIED, AND FIN- ISHED FORMS OF ALL INDUSTRIES.	
	All industries.		Leather, tanned, curried, and finished.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$204,038,127	\$172,136,092	1.6	1.8
Delaware	45,387,630	37,571,848	9,400,504	4,106,894	20.7	10.9
Wisconsin	360,818,942	248,546,164	20,074,373	11,161,850	5.6	4.5
Pennsylvania	1,834,790,860	1,331,794,901	55,615,009	49,931,716	3.0	3.7
Massachusetts	1,035,198,989	888,160,403	26,067,714	28,044,815	2.5	3.2
California	302,874,761	213,403,996	7,405,981	5,729,278	2.4	2.7
New Jersey	611,748,933	354,573,571	13,747,155	11,069,467	2.2	3.1
New York	2,175,736,900	1,711,577,671	23,205,991	23,454,853	1.1	1.4
Illinois	1,259,730,108	908,640,280	7,847,835	8,240,803	0.6	0.9
All other states	5,378,122,960	3,678,168,449	40,673,565	30,396,416	0.3	0.8

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TABLE CXX.—LEATHER: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population and over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT, WHICH LEATHER TANNED, CURRIED, AND FIN- ISHED FORMS OF ALL INDUSTRIES.	
	All industries.		Leather, tanned, curried, and finished.			
	1900	1890	1900	1890	1900	1890
United States.....	\$13,004,400,143	\$9,372,437,283	\$204,038,127	\$172,136,092	1.6	1.8
Wilmington, Del.....	34,053,324	24,568,125	9,379,504	\$4,015,694	27.5	16.3
Newark, N. J.....	126,954,049	93,476,652	10,857,192	8,309,667	8.6	8.9
Milwaukee, Wis.....	123,786,449	97,603,951	10,267,835	8,429,814	8.3	8.6
Philadelphia, Pa.....	603,466,526	577,234,446	18,187,231	12,682,297	3.0	2.2
Chicago, Ill.....	888,945,811	664,567,923	6,979,289	7,386,371	0.8	1.1
All other cities and outside of cities.....	11,227,194,484	7,915,086,186	148,367,076	131,303,249	1.3	1.7

¹Not reported separately.

Table CXVII indicates a marked localization of this industry in the three states, Massachusetts, New York, and Pennsylvania, these states producing in 1900 more than half of the total value of products reported for the United States. They have also led in the production of leather since 1850. Massachusetts reached its greatest production in 1880, when its value of products formed 19.4 per cent of the total reported for the United States. The production of New York was greatest in 1870, when its value of products constituted 23.3 per cent of the total. Both the percentage of the total and the absolute production have decreased in these two states since 1880, until in 1900 the value of their leather products constituted but 12.8 and 11.3 per cent, respectively. In Pennsylvania, however, both the production and the per cent of the total have increased steadily since 1850. In 1880 the state gained first rank, a position it held both in 1890 and 1900. In the latter year the value of the leather products of the state constituted 27.3 per cent of the total for the United States. Wisconsin was the fourth state in rank both in 1890 and 1900, reporting 6.5 and 9.8 per cent, respectively, of the total value of products.

The leather industry in the United States probably had its origin in Lynn, Mass., about 1630, although the Virginia colony also claimed the distinction of being the first to engage in tanning. The migration of the industry from Massachusetts and New York to Pennsylvania and the Central and Western states, which began about 1880, was due to the exhaustion of the tan-bark supply in the two states first named. In almost all sections this industry is dependent upon a local supply of oak or hemlock bark, the principal materials used in the tanning process. As the forests of these trees become exhausted in one locality, the industry moves to centers where supplies of bark are still to be found.

Table CXVIII shows the localization of the tanning industry by cities. It appears from this table that tanning is not an urban industry to any great extent. More than half of the total value of products reported for the United States in 1900 was reported for localities with a population of less than 20,000. Philadelphia, Pa., is the only city which has become an important

center in the industry, and this is due to the fact that tanning is there carried on chiefly by means of chemical tanning materials.

Tables CXIX and CXX show the value of leather tanned, curried, and finished, in each of the above states and cities in comparison with the value of products in all industries. Wilmington, Del., is the only city included in Table CXX which shows a marked specialization in this industry. The value of its leather products in 1900 constituted 27.5 per cent of the value of all goods manufactured in the city during that year.

12. *Paper and Wood Pulp.*—Tables CXXI to CXXIV show the localization of the paper and wood-pulp industry by states and counties.

TABLE CXXI.—Paper and wood pulp: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States.....	\$127,326,162	\$78,937,184	100.0	100.0
New York.....	26,715,628	14,192,240	21.0	18.0
Massachusetts.....	22,141,461	121,524,173	17.4	27.3
Maine.....	13,223,275	8,281,051	10.4	4.2
Pennsylvania.....	12,267,900	17,838,299	9.6	9.9
Wisconsin.....	10,895,576	4,475,368	8.6	5.7
New Hampshire.....	7,244,733	1,282,022	5.7	1.6
Ohio.....	6,543,513	27,209,750	5.1	9.1
Michigan.....	4,217,809	2,919,166	3.3	3.7
All other states.....	24,076,207	16,215,115	18.9	20.5

¹ Does not include the value of products of 2 wood-pulp establishments not reported separately.² Does not include the value of products of 1 wood-pulp establishment not reported separately.

TABLE CXXII.—Paper and wood pulp: Localization by counties, 1900.

COUNTIES.	Value of products.	Per cent of total.
United States.....	\$127,326,162	100.0
Hampden county, Mass.....	10,341,645	8.1
Coos county, N. H.....	4,936,739	3.9
Outagamie county, Wis.....	4,783,750	3.8
Saratoga county, N. Y.....	4,768,278	3.7
Jefferson county, N. Y.....	3,757,577	3.0
Washington county, N. Y.....	3,655,413	2.9
Worcester county, Mass.....	2,971,111	2.3
Niagara county, N. Y.....	2,799,845	2.2
Philadelphia county, Pa.....	2,635,749	2.1
Cumberland county, Me.....	2,586,666	2.0
Berkshire county, Mass.....	2,571,289	2.0
All other counties.....	81,519,200	64.0

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TABLE CXXIII.—PAPER AND WOOD PULP: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH PAPER AND WOOD PULP FORM OF ALL INDUSTRIES.	
	All industries.		Paper and wood pulp.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$127,326,162	\$78,937,184	1.0	0.8
Maine.....	127,361,485	95,689,500	13,223,275	3,281,051	10.4	3.4
New Hampshire.....	118,709,308	85,770,549	7,244,783	1,282,022	6.1	1.5
Wisconsin.....	360,818,942	248,546,164	10,895,576	4,475,868	3.0	1.8
Massachusetts.....	1,035,198,989	888,160,403	22,141,461	121,624,173	2.1	2.4
Michigan.....	356,944,082	277,896,706	4,217,869	2,919,166	1.2	1.1
New York.....	2,175,726,900	1,711,577,671	26,715,628	14,192,240	1.2	0.8
Ohio.....	832,438,113	641,688,064	6,543,513	27,209,750	0.8	1.1
Pennsylvania.....	1,834,790,860	1,331,794,901	12,267,900	17,838,299	0.7	0.6
All other states.....	6,162,411,464	4,091,313,325	24,070,207	16,215,115	0.4	0.4

¹ Does not include the value of products of 2 wood pulp establishments, not reported separately.² Does not include the value of products of 1 wood pulp establishment, not reported separately.

TABLE CXXIV.—Paper and wood pulp: Specialization of counties, 1900.

COUNTIES.	VALUE OF PRODUCTS.		Per cent which paper and wood pulp form of all in- dustries.
	All industries.	Paper and wood pulp.	
United States.....	\$13,004,400,143	\$127,326,162	1.0
Coos county, N. H.....	9,416,296	4,935,739	52.4
Outagamie county, Wis.....	9,127,604	4,783,750	52.4
Washington county, N. Y.....	7,313,307	3,655,413	50.0
Saratoga county, N. Y.....	15,038,794	4,768,278	31.7
Jefferson county, N. Y.....	13,738,196	3,757,577	27.4
Hampden county, Mass.....	73,569,063	10,341,545	14.1
Cumberland county, Me.....	18,947,126	2,586,666	13.7
Niagara county, N. Y.....	23,662,842	2,799,845	11.8
Berkshire county, Mass.....	30,291,305	2,571,289	8.5
Worcester county, Mass.....	188,789,964	2,971,111	2.1
Philadelphia county, Pa.....	603,466,526	2,635,749	0.4
All other counties.....	12,061,039,120	81,519,200	0.7

Table CXXI shows that the industry was localized in 1900 chiefly in New York, Massachusetts, Maine, and New Hampshire, the value of the products in these states constituting more than half of the total reported for the United States. New York led all other states in 1900 with 21 per cent of the total, having taken the lead from Massachusetts during the decade. The value of products reported for New York was nearly doubled during the decade, while the value of the combined products of New Hampshire and Maine in 1900 was nearly six times that of 1890.

The chief causes for the localization of the industry in these sections, and in the northeastern part of New York state, are the supply of spruce and poplar, the timber chiefly used in making wood pulp; the existence of waterpower necessary to operate cheaply the heavy grinding machinery; the quality of the water supply, i. e., its suitability for use in mixing the pulp; and the large adjacent market furnished by the newspaper press of the cities of the New England and Middle states.

The chief spruce supplies of the United States are located in Maine, New Hampshire, Vermont, and New York, and then are supplemented by large quantities

of Canadian wood imported into New Hampshire and New York. The development of the manufacture in Wisconsin is also due largely to an abundance of wood, but the preeminence of Massachusetts in the industry is chiefly due to the abundant waterpower furnished by the Connecticut River at Holyoke, in Hampden county, and to the early start obtained by the manufacture at this point. Having no special advantage in a supply of wood, this center still remains chiefly a producer of high-grade writing and book papers. The dependence of the industry upon waterpower is indicated by the fact that this contributed almost exactly two-thirds of all the power used in the industry in 1900, a larger proportion than is shown for any other industry.

The manufacture of paper and wood pulp is not a city industry, and the narrower localization is therefore shown in this case by counties (table CXXIV). It appears from this table that no one county contains a marked percentage of the total value of products. There is, however, a noteworthy localization of the industry along the Connecticut, Little Androscoggin, Kennebec, and other New England rivers, a localization which is not indicated clearly in table CXXII, because there were often less than three establishments located in one county in 1900, and such counties are necessarily omitted from the table.

Tables CXXIII and CXXIV show the value of paper and wood pulp manufactured in each of the above states and counties in comparison with the value of products in all industries. A number of counties show a marked specialization in this industry, the value of paper and pulp products constituting about one-half of the value of all manufactured products in Coos county, N. H., Washington county, N. Y., and Outagamie county, Wis. Saratoga and Jefferson counties, N. Y., show the same specialization, but in a less degree.

13. *Pottery, Terra Cotta, and Fire-clay Products.*—Tables CXXV to CXXVIII show the localization of the pottery industry, by states and cities, and the specialization of states and cities in this industry.

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TABLE CXXV.—Pottery, terra cotta, and fire-clay products: Localization by states, 1900.

STATES.	Value of products.	Per cent of total.
United States	\$44,263,386	100.0
Ohio	11,851,225	26.8
New Jersey	8,940,723	20.2
Pennsylvania	8,127,429	18.4
New York	2,889,449	5.4
Illinois	2,143,521	4.9
Missouri	1,662,150	3.7
All other states	9,148,889	20.6

TABLE CXXVI.—Pottery, terra cotta, and fire-clay products: Localization by cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	Value of products.	Per cent of total.
United States	\$44,263,386	100.0
Trenton, N. J.	4,785,142	10.8
East Liverpool, Ohio ¹	4,105,200	9.3
Pittsburg, Pa.	2,118,902	4.8
St. Louis, Mo.	1,257,572	2.8
Zanesville, Ohio	1,245,282	2.8
New York, N. Y.	1,144,780	2.6
All other cities and outside of cities	29,606,528	66.9

¹ Under 20,000 population.

TABLE CXXVII.—Pottery, terra cotta, and fire-clay products: Specialization of states, 1900.

STATES.	VALUE OF PRODUCTS.		Per cent which pottery, terra cotta and fire-clay products form of all industries.
	All industries.	Pottery, terra cotta, and fire-clay products.	
United States	\$13,004,400,143	\$44,263,386	0.3
New Jersey	611,748,933	8,940,723	1.5
Ohio	832,438,113	11,851,225	1.4
Pennsylvania	1,834,796,860	8,127,429	0.4
Missouri	385,492,784	1,662,150	0.4
Illinois	1,259,730,168	2,143,521	0.2
New York	2,175,726,900	2,889,449	0.1
All other states	5,904,472,885	9,148,889	0.2

TABLE CXXVIII.—Pottery, terra cotta, and fire-clay products: Specialization of cities, 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		Per cent which pottery, terra cotta, and fire-clay products form of all industries.
	All industries.	Pottery, terra cotta, and fire-clay products.	
United States	\$13,004,400,143	\$44,263,386	0.3
East Liverpool, Ohio ¹	5,459,043	4,105,200	75.2
Zanesville, Ohio	7,468,839	1,245,282	16.7
Trenton, N. J.	31,645,695	4,785,142	15.1
Pittsburg, Pa.	203,261,251	2,118,902	1.0
St. Louis, Mo.	233,629,733	1,257,572	0.5
New York, N. Y.	1,371,858,468	1,144,780	0.1
All other cities and outside of cities	11,151,677,114	29,606,528	0.3

¹ Under 20,000 population.

Table CXXV shows a localization of the industry in New Jersey, Ohio, and Pennsylvania, the value of the pottery products manufactured in these states constituting nearly two-thirds of the total for the United States. Ohio led all other states in 1900, the value of her pottery products constituting more than a quarter of the total reported for the United States.

Table CXXVI shows the localization of the industry by cities. Trenton, N. J., and East Liverpool, Ohio, were the most important centers in 1900. The value of the pottery products of Trenton constituted 10.8 per cent, and of East Liverpool 9.3 per cent of the total reported for the United States. The chief cause of this localization has been the skilled labor from abroad which settled at these points, where a manufacture of coarse pottery from local deposits of clay had already developed. The industry is one in which skilled hand work prevails to an unusual degree, and the special labor supply is therefore an important element in its localization. Both Trenton and East Liverpool, moreover, have facilities for transporting their heavily cased products by water; and both, being near the great coal supply of the country, are able to obtain abundant and cheap fuel for baking their wares.

The manufacture of brick and the coarser grades of earthenware was begun at Trenton at an early date, the products being sold chiefly east of the Alleghenies. Ohio has an abundance of clay suitable for the manufacture of coarse pottery, and the farmers early began the manufacture of such wares to supply the settlements west of the Allegheny Mountains, shipping their products down the Ohio and Mississippi rivers as far as New Orleans. Skilled workmen from Staffordshire, England, and from pottery centers on the Continent, were attracted to both Trenton and East Liverpool, and gradually the manufacture of porcelain and other fine-grade pottery was introduced. These latter have now become the most important products, although the clay used for the purpose in Trenton is brought from Middlesex county, more than 50 miles distant, and none of the fine clay used in East Liverpool is found within hundreds of miles of that city. The demand for sanitary porcelain of all kinds in New York city and Philadelphia has stimulated its manufacture at Trenton, while many of the manufacturers in East Liverpool have made a specialty of fine china ware.

Tables CXXVII and CXXVIII show the value of pottery, terra cotta, and fire-clay products manufactured in each of the above states and cities in comparison with the value of products in all industries. The specialization of particular localities appears most strikingly in the case of East Liverpool, Ohio, where the value of pottery products constituted more than three-quarters of the value of all products manufactured in the city.

14. *Silk and Silk Goods.*—Tables CXXIX to CXXXII show the localization of the silk and silk-goods industry by states and cities, and the specifications of states and cities in this industry.

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TABLE CXXIX.—Silk and silk goods: Localization by states, 1890 and 1900.

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$107,256,258	\$87,298,454	100.0	100.0
New Jersey	39,966,662	30,760,371	37.3	35.2
Pennsylvania	31,072,926	19,857,546	29.0	22.2
New York	12,706,246	19,417,796	11.9	22.2
Connecticut	12,378,981	9,788,951	11.5	11.2
Massachusetts	5,957,532	5,557,569	5.5	6.4
All other states	5,173,911	2,416,221	4.8	2.8

Table CXXIX shows a decided localization of the silk industry in New Jersey and Pennsylvania, the value of the silk and silk goods manufactured in these two states in 1900 constituting almost exactly two-thirds of the total reported for the United States. A marked feature in the development of the industry during the last decade is the large reduction in the value of products for the state of New York. The value of the silk product of this state constituted 22.2 per cent of the total in 1890,

and only 11.9 per cent in 1900. A great many silk manufacturers of New York city have moved their machinery to New Jersey and Pennsylvania, on account of cheaper rents and the larger supply of specially skilled labor in these sections.

TABLE CXXX.—Silk and silk goods: Localization by cities, 1890 and 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$107,256,258	\$87,298,454	100.0	100.0
Paterson, N. J.	26,006,156	22,058,624	24.2	25.3
New York, N. Y. ¹	6,757,544	13,579,462	6.3	15.6
Philadelphia, Pa.	4,531,794	8,059,604	4.2	9.2
West Hoboken, N. J.	3,961,054	(2)	3.7	.....
Scranton, Pa.	3,616,885	2,055,200	3.4	2.4
Allentown, Pa.	3,467,792	1,694,342	3.2	1.9
Jersey City, N. J.	1,274,550	1,066,000	1.2	1.2
Brooklyn borough, N. Y.	1,042,199	1,049,475	1.0	1.2
All other cities and outside of cities	56,598,284	37,735,747	52.8	43.2

¹ Manhattan and Bronx boroughs.² Not reported separately.

TABLE CXXXI.—SILK AND SILK GOODS: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH SILK AND SILK GOODS FORM OF ALL INDUSTRIES.	
	All industries.		Silk and silk goods.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$107,256,258	\$87,298,454	0.8	0.9
New Jersey	611,748,933	354,573,571	39,966,662	30,760,371	6.5	8.7
Connecticut	352,824,106	245,836,264	12,378,981	9,788,951	3.8	3.9
Pennsylvania	1,834,790,660	1,831,794,901	31,072,926	19,857,546	1.7	1.5
New York	2,175,726,900	1,711,577,671	12,706,246	19,417,796	0.6	1.1
Massachusetts	1,085,198,989	888,160,408	5,957,532	5,557,569	0.6	0.6
All other states	6,994,110,355	4,837,994,378	5,173,911	2,416,221	0.1	0.3

TABLE CXXXII.—SILK AND SILK GOODS: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH SILK AND SILK GOODS FORM OF ALL INDUSTRIES.	
	All industries.		Silk and silk goods.		1900	1890
	1900	1890	1900	1890		
United States	\$13,004,400,143	\$9,372,437,283	\$107,256,258	\$87,298,454	0.8	0.9
West Hoboken, N. J.	5,491,760	(1)	3,961,054	(1)	72.1	.....
Paterson, N. J.	52,287,975	42,263,531	26,006,156	22,058,624	49.7	52.2
Allentown, Pa.	16,947,722	8,576,565	3,467,792	1,694,342	20.5	19.1
Scranton, Pa.	27,646,418	24,341,745	3,616,885	2,055,200	13.1	8.4
Jersey City, N. J.	77,225,116	37,376,322	1,274,550	1,066,000	1.7	2.8
New York, N. Y. (Manhattan and Bronx boroughs)	975,168,202	777,222,721	6,757,544	13,579,462	0.7	1.7
Philadelphia, Pa.	603,466,526	577,234,446	4,531,794	8,059,604	0.7	1.4
Brooklyn borough, N. Y.	842,127,124	269,244,147	1,042,199	1,049,475	0.8	0.4
All other cities and outside of cities	10,904,039,300	7,635,877,806	56,598,284	37,735,747	0.5	0.5

*

¹ Not reported separately.

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Table cxxx shows the localization of the silk industry by cities. Paterson, N. J., is preeminently the silk manufacturing center of the United States, though the tendency of the industry to spread is shown by the reduction in the percentage of the total value of silk products manufactured in Paterson from 25.3 per cent in 1890 to 24.2 per cent in 1900, and by a corresponding increase which has occurred in the percentage of the total value of products manufactured in cities and towns of minor importance in the industry. Paterson owes its supremacy in the silk manufacture to its proximity to New York city, the principal market for the sale of silk goods; to the early start of the power manufacture at this point; to the abundant waterpower furnished by the Passaic River; and to the large supply of labor skilled in the hand processes of silk manufacturing, which was attracted thither from Italy and other European countries. Moreover, the machine shops which

were early established in Paterson employed large numbers of laboring men whose wives and children were glad to take employment in silk mills.

Tables cxxxI and cxxxII show the value of silk goods manufactured in each of the above states and cities in comparison with the value of products in all industries. The specialization of particular localities in this industry appears most strikingly in the cities of Paterson and West Hoboken, N. J., in which the value of silk and silk goods constituted about one-half and three-fourths, respectively, of the value of all manufactured products in those cities.

15. *Slaughtering and Meat Packing, Wholesale.*—Tables cxxxIII to cxxxVI show the localization of the slaughtering and meat-packing industry, by states and cities and the specification of states and cities in this industry.

TABLE CXXXIII.—*Slaughtering and meat packing, wholesale: Localization by states, 1890 and 1900.*

STATES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$698,206,548	\$433,252,315	100.0	100.0
Illinois.....	279,842,885	200,414,531	40.1	46.8
Kansas.....	76,829,139	44,592,671	11.0	10.8
Nebraska.....	71,018,339	24,026,876	10.2	5.5
Indiana.....	42,891,243	6,924,801	6.2	1.6
Missouri.....	42,229,127	14,789,012	6.0	3.4
Massachusetts.....	27,505,698	16,692,851	3.9	3.9
Iowa.....	25,296,518	19,615,386	3.6	4.5
New York.....	19,624,187	34,848,582	2.8	8.0
Ohio.....	19,609,304	13,280,649	2.8	3.1
Pennsylvania.....	17,826,697	14,110,303	2.6	3.3
Wisconsin.....	13,601,125	8,393,754	1.9	1.9
Maryland.....	6,209,857	4,311,412	0.9	1.0
All other states.....	55,722,479	31,261,487	8.0	7.2

TABLE CXXXIV.—*Slaughtering and meat packing, wholesale: Localization by cities, 1890 and 1900.*

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.		PER CENT OF TOTAL.	
	1900	1890	1900	1890
United States	\$698,206,548	\$433,252,315	100.0	100.0
Chicago, Ill.....	248,811,997	194,119,148	35.6	44.9
Kansas City, Kans.....	73,205,027	39,927,192	10.5	9.2
South Omaha, Nebr.....	67,716,724	(¹)	9.7	.....
St. Joseph, Mo.....	19,009,332	(¹)	2.7	.....
Indianapolis, Ind.....	18,382,679	5,403,018	2.6	1.2
St. Louis, Mo.....	12,267,532	8,562,430	1.8	2.0
Buffalo, N. Y.....	9,631,187	7,719,970	1.4	1.7
Cincinnati, Ohio.....	9,532,057	6,903,303	1.4	1.6
Cleveland, Ohio.....	7,514,470	4,810,993	1.1	1.1
Milwaukee, Wis.....	5,980,340	7,890,117	0.8	1.8
Baltimore, Md.....	5,368,354	4,311,412	0.8	1.0
Philadelphia, Pa.....	5,128,823	9,146,513	0.7	2.1
Manhattan and Bronx boroughs, N. Y.....	4,855,076	19,122,072	0.7	4.4
All other cities, and outside of cities.....	210,862,970	125,336,147	30.2	29.0

¹ Not reported separately.

TABLE CXXXV.—SLAUGHTERING AND MEAT PACKING, WHOLESALE: SPECIALIZATION OF STATES, 1890 AND 1900.

STATES.	VALUE OF PRODUCTS.				PER CENT WHICH SLAUGHTERING AND MEAT PACK- ING, WHOLESALE, FORM OF ALL INDUSTRIES.	
	All Industries.		Slaughtering and meat pack- ing, wholesale.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$698,206,548	\$433,252,315	5.4	4.6
Nebraska	143,990,102	93,037,794	71,018,339	24,026,876	49.3	25.8
Kansas	172,129,398	110,219,805	76,829,139	44,592,671	44.6	40.5
Illinois	1,259,730,168	908,640,280	279,842,885	200,414,531	22.2	22.1
Iowa	164,617,877	125,049,183	25,296,518	19,615,386	15.4	15.7
Indiana	378,120,140	226,825,082	42,891,243	6,924,801	11.3	3.1
Missouri	385,492,784	324,561,993	42,229,127	14,789,012	11.0	4.6
Wisconsin	360,818,942	248,546,104	13,601,125	8,393,754	8.7	3.4
Massachusetts	1,035,198,989	888,160,403	27,505,698	16,692,851	2.7	1.9
Maryland	242,552,990	171,842,598	6,209,857	4,311,412	2.6	2.5
Ohio	832,488,113	641,688,064	19,604,304	13,280,040	2.8	2.1
Pennsylvania	1,834,790,860	1,331,794,901	17,826,697	14,110,303	1.0	1.1
New York	2,175,726,900	1,711,577,671	19,624,187	34,848,582	0.9	2.0
All other states	4,018,792,880	2,690,493,350	59,722,479	31,251,487	1.4	1.2

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TABLE CXXXVI.—SLAUGHTERING AND MEAT PACKING, WHOLESALE: SPECIALIZATION OF CITIES, 1890 AND 1900.

[Cities of 20,000 population or over.]

CITIES.	VALUE OF PRODUCTS.				PER CENT WHICH SLAUGHTERING AND MEAT PACK- ING, WHOLESALE, FORM OF ALL INDUSTRIES.	
	All industries.		Slaughtering and meat pack- ing, wholesale.			
	1900	1890	1900	1890	1900	1890
United States	\$13,004,400,143	\$9,372,437,283	\$698,206,548	\$433,252,315	5.4	4.6
South Omaha, Nebr.....	70,080,941	(¹)	67,716,724	(¹)	96.3	-----
Kansas City, Kans.....	82,768,943	44,079,389	73,205,027	39,927,192	88.4	90.6
St. Joseph, Mo.....	31,690,736	11,916,141	19,009,332	(¹)	60.0	-----
Chicago, Ill.....	888,945,311	664,567,925	248,811,997	194,119,148	28.0	29.2
Indianapolis, Ind.....	68,607,579	36,426,974	18,382,679	5,403,018	26.8	14.8
Buffalo, N. Y.....	122,230,061	100,052,208	9,631,187	7,719,970	7.9	7.7
Cincinnati, Ohio.....	157,806,834	196,063,983	9,532,057	6,903,303	6.0	3.5
Cleveland, Ohio.....	139,849,806	118,240,115	7,514,470	4,810,993	5.4	4.3
St. Louis, Mo.....	233,629,738	229,157,343	12,267,532	8,562,430	5.3	3.7
Milwaukee, Wis.....	123,786,449	97,503,951	5,980,340	7,890,117	4.8	8.1
Baltimore, Md.....	161,249,240	141,723,599	5,308,334	4,311,412	3.2	3.0
Philadelphia, Pa.....	603,466,526	577,234,446	5,128,823	9,146,513	0.9	1.6
Manhattan and Bronx boroughs, N. Y.....	976,168,202	777,222,721	4,855,076	19,122,072	0.5	2.5
All other cities and outside of cities	9,845,119,782	6,383,218,490	210,862,970	125,336,147	2.3	2.0

¹ Not reported separately.

Table CXXXIII shows a decided localization of slaughtering and meat packing in the middle West, the value of products for Illinois, Kansas, Nebraska, Indiana, and Missouri being 73.5 per cent of the total for the United States. Illinois easily led all other states in 1900, with 40.1 per cent of the total.

Slaughtering and meat packing, as the industry is now understood, had its beginning at Cincinnati, Ohio, about 1818. Since that time the center of the industry has moved gradually westward, following the development of new cattle and swine producing sections. This tendency has been intensified by the perfection of artificial refrigeration and refrigerator cars, which has made the difference between the cost of transporting live stock, and meat as a finished product, sufficient to induce packers to establish plants near the stock-raising or stock-fattening sections. These sections, in turn, are determined by the production of grain, principally corn and hay, so that the localization of the packing industry is influenced in a large degree by the production of these agricultural staples. All of the five states mentioned above, whose value of meat products constituted nearly three-quarters of the total for the country, are located in the great corn belt of the middle West.

A distinguishing feature of this industry is its dependence upon good railroad facilities. Hence the localization by cities, as shown in table CXXXIV is natural. The value of the slaughtering and meat packing products of Chicago, Ill., constituted more than a third of the total for the United States; of Kansas City, Kans., 10.5 per cent; and of South Omaha, Nebr., 9.7 per cent. The combined value of these products for the three cities was more than half of the total for the United States.

Tables CXXXV and CXXXVI show the value of slaughtering and meat packing in each of the above states and cities in comparison with the value of products in all industries. In 1900 slaughtering and meat packing constituted nearly half the value of all products in Nebraska, 44.6 per cent in Kansas, and 22.2 per cent in Illinois.

The specialization of particular localities in this industry appears most strikingly in the case of South Omaha, Nebr., where the value of slaughtering and meat packing products in 1900 constituted 96.3 per cent of the value of all manufactured products. The per cent was 88.4 for Kansas City, Kans.; 60 for St. Joseph, Mo.; and 28 for Chicago, Illinois.

16. *Summary of Localized Industries.*—For the sake of comparison, the most marked instances of localization shown in the preceding tables are combined in tables CXXXVII and CXXXVIII. These tables include also several additional industries which show a marked localization.

TABLE CXXXVII.—Localization of specified industries by states: Summary, 1900.

SPECIFIED INDUSTRIES.	Value of products in the United States.	States.	Value of products in the state named.	Per cent of the United States in the state named.
Collars and cuffs	\$15,769,132	New York	\$15,703,541	99.6
Plated and britannia ware	12,608,770	Connecticut	9,538,397	75.7
Oysters, canning and preserving	3,670,134	Maryland	2,417,381	65.9
Leather gloves and mittens	16,721,234	New York	10,854,221	64.9
Clocks	7,157,856	Connecticut	4,545,047	63.5
Coke	35,585,445	Pennsylvania	22,282,358	62.6
Safes and vaults	3,927,867	Ohio	2,407,655	61.3
Whips	2,734,471	Massachusetts	1,651,221	60.4
Liquors, vinous	6,547,310	California	3,937,871	60.1
Brassware	17,140,076	Connecticut	9,269,159	54.1
Iron and steel	803,968,278	Pennsylvania	344,445,200	54.0
Carpets and rugs, other than rag	48,192,351	Pennsylvania	23,118,058	48.0
Corsets	14,878,116	Connecticut	6,846,964	46.0
Boots and shoes, factory product	261,028,580	Massachusetts	117,115,243	44.9
Agricultural implements	101,207,428	Illinois	42,033,796	41.5
Slaughtering and meat packing, wholesale	698,206,548	Illinois	279,842,835	40.1
Turpentine and rosin	20,344,888	Georgia	8,110,468	39.9
Cotton, ginning	14,748,270	Texas	5,886,923	39.9
Liquors, distilled	96,788,443	Illinois	38,208,076	39.5
Glass	55,539,712	Pennsylvania	22,011,130	38.9
Hosiery and knit goods	95,482,566	New York	35,886,048	37.6
Silk and silk goods	107,256,258	New Jersey	39,966,662	37.3
Silverware	10,569,121	Rhode Island	3,834,408	36.3
Salt	7,966,897	New York	2,698,691	33.9
Cotton goods	339,200,320	Massachusetts	111,125,175	32.8
Jewelry	46,501,181	Rhode Island	13,320,620	28.6
Leather, tanned, curried, and finished	204,038,127	Pennsylvania	55,615,009	27.3
Fur hats	27,811,187	Connecticut	7,548,882	27.2
Pottery, terra cotta, and fire-clay products	44,263,886	Ohio	11,851,225	26.3
Paper and wood pulp	127,326,162	New York	26,715,628	21.0

SUMMARY AND ANALYSIS OF RESULTS.

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TABLE CXXXVIII. *Localization of specified industries, by cities: Summary, 1900.*

[Cities of 20,000 population or over.]

INDUSTRIES.	Value of products in the United States.	Cities.	Value of products in the city named.	Per cent of the United States in the city named.
Collars and cuffs.....	\$15,789,132	Troy, N. Y.....	\$13,460,196	85.3
Oysters, canning and preserving.	3,670,134	Baltimore, Md...	2,804,968	64.4
Coke.....	35,585,445	Connellsville, Pa. ¹	17,128,112	48.1
Brassware.....	17,140,075	Waterbury, Conn.	8,188,492	47.8
Carpets and rugs, other than rag.	48,192,351	Philadelphia, Pa.	21,986,062	45.6
Gloves.....	16,721,234	Gloversville, N. Y. ²	6,487,227	38.8
	16,721,234	Johnstown, N. Y. ²	2,576,048	15.4
Silverware.....	16,721,234	Chicago, Ill.....	2,209,529	13.2
	10,569,121	Providence, R. I.	3,834,408	36.3
	10,569,121	Manhattan and Bronx boroughs, N. Y.	2,741,994	25.9
Slaughtering and meat packing, wholesale.	698,206,548	Chicago, Ill.....	248,811,997	35.6
Plated and britannia ware	698,206,548	Kansas City, Kans.	73,205,027	10.5
Jewelry.....	12,608,770	Meriden, Conn.	4,129,896	32.8
	46,501,181	Providence, R. I.	12,719,124	27.4
	46,501,181	Manhattan and Bronx boroughs, N. Y.	9,172,849	19.7
	46,501,181	Newark, N. J.....	7,364,247	15.8
Agricultural implements.	46,501,181	Attleboro, Mass. ²	5,701,802	12.3
Silk and silk goods.....	101,207,428	Chicago, Ill.....	24,848,049	24.5
Tobacco, chewing, smoking, and snuff.	107,256,258	Paterson, N. J.....	26,006,158	24.2
Corsets.....	103,754,302	St. Louis, Mo.....	24,411,307	22.7
Worsteds goods.....	14,878,116	Bridgeport, Conn.	3,224,188	21.7
	14,878,116	New Haven, Conn.	1,893,956	12.7
Fur hats.....	120,314,344	Lawrence, Mass.	24,678,138	20.5
	120,314,344	Providence, R. I.	16,603,252	13.8
	120,314,344	Philadelphia, Pa.	16,242,250	13.5
	27,811,187	Danbury, Conn. ²	5,007,095	18.0
	27,811,187	Newark, N. J.....	3,453,619	12.4
	27,811,187	Philadelphia, Pa.	3,075,470	11.1
	30,348,044	Waterbury, Conn.	5,050,539	16.6
Brass castings and brass finishing.	118,480,158	Philadelphia, Pa.	18,340,012	15.5
Woolen goods.....	56,608,313	Baltimore, Md.....	8,477,178	15.0
Fruits and vegetables, canning and preserving.	95,482,566	Philadelphia, Pa.	13,040,905	13.7
Hosiery and knit goods.....	803,968,273	Pittsburg, Pa.....	90,798,086	11.3
Iron and steel.....	44,293,386	Trenton, N. J.....	4,785,142	10.8
Pottery, terra cotta, and fire-clay products.	204,038,127	Philadelphia, Pa.	18,187,231	8.9
Leather, tanned, curried, and finished.	330,200,320	Fall River, Mass...	29,286,526	8.6
Cotton goods.....	261,028,580	Brockton, Mass...	19,844,397	7.6
Boots and shoes, factory product.	56,539,712	Pittsburg, Pa.....	2,429,686	4.3
Glass.....				

¹ Connellsville district.
² Under 20,000 population.

It appears from table cxxxviii that the manufacture of collars and cuffs is the most extremely localized industry in the country, 85.3 per cent of the value of the products being reported for Troy, N. Y. Other industries which show extreme localization are oysters, canning and preserving, with 64.4 per cent in Baltimore, Md.; gloves, with 54.2 per cent in the adjoining cities of Gloversville and Johnstown, N. Y.; coke, with 48.1 per cent in the Connellsville district, Pa.; brassware, with 47.8 per cent in Waterbury, Conn.; and carpets, with 45.6 per cent in Philadelphia, Pa.

17. *Summary of Specialized Centers.*—Table cxxxix shows the statistics of the most specialized centers mentioned above. In this table the specialization of each city or town is shown upon the basis of wage-earners employed, since this is much more accurate than the value of products as a basis for comparison between industries, such as slaughtering and meat packing or jewelry, which use expensive materials, and pottery or glass, in which comparatively cheap materials are used.

TABLE CXXXIX.—*Specialization of cities, by specified industries: Summary, 1900.*

[Cities of 20,000 population or over.]

SPECIFIED INDUSTRIES. ¹	SPECIALIZED CENTERS.	AVERAGE NUMBER OF WAGE-EARNERS IN SPECIALIZED CENTERS.		
		All industries.	Specified industry.	Per cent of specialization.
Slaughtering and meat packing, wholesale.	South Omaha, Nebr..	6,606	5,938	89.9
Iron and steel.....	Kansas City, Kans....	10,544	7,664	72.7
	McKeesport, Pa.....	7,605	6,753	88.8
	Youngstown, Ohio....	9,150	6,644	72.6
	Newcastle, Pa.....	4,992	3,320	66.5
	Johnstown, Pa.....	6,116	3,871	63.3
	East Liverpool, Ohio ²	4,478	3,908	87.4
Pottery, terra cotta, and fire-clay products.	Bethel, Conn. ²	780	671	86.0
Fur hats.....	Danbury, Conn. ²	4,296	3,113	72.5
	Orange, N. J.....	2,712	1,497	55.2
Glass.....	Tarentum, Pa. ²	1,420	1,152	81.1
	Charleroi, Pa. ²	1,270	983	79.1
	Millville, N. J. ²	2,290	1,463	63.9
	Gas City, Ind. ²	1,427	890	62.4
	Alexandria, Ind. ²	1,903	985	51.8
Cotton goods.....	Fall River, Mass....	32,780	26,371	80.4
	Weymouth, R. I. ²	5,544	4,861	78.7
	N. W. Bedford, Mass....	16,409	12,286	74.9
	Lewistown, Me.....	7,159	4,604	64.3
	Manchester, N. H.....	19,032	10,616	55.8
Boots and shoes.....	Brockton, Mass.....	10,986	8,498	77.4
	Haverhill, Mass.....	10,600	7,376	69.6
Silk and silk goods.....	West Hoboken, N. J..	3,028	2,306	76.2
	Paterson, N. J.....	30,190	15,948	52.8
Gloves, leather.....	Gloversville, N. Y. ²	8,111	6,075	74.9
	Johnstown, N. Y. ²	3,884	2,316	59.6
Jewelry.....	North Attleboro, Mass. ²	2,162	1,550	71.7
	Attleboro, Mass. ²	5,106	2,886	56.5
Collars and cuffs.....	Troy, N. Y.....	21,564	14,822	68.7
Worsteds goods.....	Lawrence, Mass.....	22,358	10,998	49.2
Hosiery and knit goods.....	Cohoes, N. Y.....	8,673	3,685	42.6
Agricultural implements.	Springfield, Ohio....	6,638	2,359	35.6
Plated and britannia ware	Meriden, Conn.....	7,531	2,048	27.2
Brassware.....	Waterbury, Conn.....	14,914	2,616	17.5
Corsets.....	Bridgeport, Conn.....	19,301	2,984	15.5
Leather, tanned, curried, and finished.	Wilmington, Del.....	16,055	2,454	15.3

¹ Statistics for paper and wood pulp and coke not shown by cities.
² Under 20,000 population.

It appears from table cxxxix that South Omaha, Nebr., was the most specialized industrial center in the United States in the year 1900. The number of wage-earners engaged in slaughtering and meat packing constituted 89.9 per cent of the total number employed in all industries in the city during that year.

18. *The Universal Character of the Localization of Industries.*—The tables presented in this chapter indicate statistically the localization of the industries selected. In some of these cases the causes are apparent, while in others there is a variety and complexity of causes which makes an explanation of the phenomenon a very difficult matter. Most of these causes are not local or even national in their character, for they operate in all industrial nations to bring about the same results. Nearly all of the industries shown above have a localization in England which is quite as marked as that in this country. In Russia there are over 500 villages devoted to the various branches of wood work, in one village practically nothing being made except spokes for the wheels of vehicles, in another nothing but the bodies, etc. Moreover the phenomenon is not a modern one.

for it has appeared in every manufacturing country as soon as local communities have developed trade with each other. A lawyer's handy book written about 1250, and quoted by J. E. Thorold Rogers in his "Six Centuries of Work and Wages," tells of the localization of scarlet cloth in Lincoln, burnet at Beverly, russet at Colchester, needles at Wilton, razors at Leicester, etc.

19. *The Localization of Business Houses in Cities.*—Before discussing the various causes which explain the localization of manufactures, it is necessary to mention an analogy which is sometimes suggested by way of explanation, i. e., the localization of wholesale and retail houses within cities. Every large city has its leather, its dry goods, and its tea and coffee district, and the reason is not hard to find. Leather store number two establishes itself near leather store number one chiefly in order to catch the eye and hence the trade of those purchasers of leather who pass that way as customers of the older establishment. But buyers of manufactured products do not go to the factory towns and cities in any such manner to make their purchases.¹ These are accomplished through jobbers and selling agents scattered over the country. There is thus only a superficial similarity between the localization of commercial houses within a city and the localization of special forms of manufacturing in certain cities and towns.

20. *The Causes of Localization.*—Seven of the various advantages which give rise to the localization of industries may be stated as follows: 1, nearness to materials; 2, nearness to markets; 3, waterpower; 4, a favorable climate; 5, a supply of labor; 6, capital available for investment in manufactures; 7, the momentum of an early start.

All of these advantages except the last operate to prescribe the broad area within which an industry is economically possible. The exact point within this area at which it shall be actual—i. e., the center of localization—is usually the result of a more or less chance decision made in the early days of the region's settlement by some pioneer in the industry. Once successfully started, the manufacture gains a momentum which enables it to persist in the original locality long after the earlier general advantages it possessed have disappeared. The industries shown in tables LXXVII to CXXXVI were selected partly because their localization illustrates the advantages here mentioned. It should be noticed, however, that in almost every case, several of the above causes may be assigned, the actual locali-

¹The modern effort to eliminate the middleman leads to dealing direct with the factory towns and cities, and may seem to contradict this last statement. But the achievements in this direction thus far are too small to have any effect upon the localization of industries, and are, therefore, disregarded here.

There are certain other advantages attaching to business centers within a city, especially to wholesale centers, which are directly analogous to the advantages of a specialized manufacturing city or town, as these latter are explained later in this chapter. Access to the point where buyers congregate is, however, the important factor in the localization of business houses; and since this is practically absent in the localization of manufacturing establishments, no satisfactory explanation of the latter can be based upon the analogy.

zation being thus often a resultant of forces which act in nearly opposite directions.

21. *Nearness to Materials.*—The localization of several of the industries included in the above tables illustrates this advantage—the paper industry near the spruce and poplar forests; the tanning industry near the chief tanning materials; slaughtering and meat packing near the stock-raising centers; the manufacture of agricultural implements near the great hard-wood forests and the iron-producing centers; the pottery industry near its clay; the recent growth of cotton manufacturing near the cotton fields; and the beginnings of shoe manufacturing in Massachusetts near the supply of leather. Other striking illustrations of the effect of materials upon localization are shown in tables CXXXVII and CXXXVIII, from which it appears that, measured by the value of products, 64.4 per cent of the oyster canning and preserving was carried on in Baltimore; 48.1 per cent of the coke was manufactured in the Connellsville district; 22.7 per cent of the chewing and smoking tobacco and snuff was manufactured in St. Louis; and 15 per cent of the fruit and vegetable canning and preserving was done in Baltimore.

Fuel is regarded, for census purposes, as a material of manufacture, and the influence of its supply is very marked in the localization of the glass industry near the natural gas wells, and in the iron industry in Pennsylvania and Alabama.

22. *Nearness to Markets.*—This is an important factor in the localization of all industries, its influence upon the localization of manufacturing in general being especially apparent. Nearly 48 per cent of the manufacturing of the country is in Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania—not so much because there is better waterpower or more abundant material for manufactures in these states, but very largely because the greatest population was there when the manufacturing developments of the country began. The influence of the market in causing a migration of manufacturing in general may be observed by comparing the movement of the center of manufactures and of the center of population since 1850, as shown on page CLXXI. The center of manufactures has moved steadily westward, following roughly the movement of the center of population.

Eight of the above 15 selected industries are localized east of the Alleghenies chiefly because they became established in this section at a time when it was the only important market in the country. In certain of these industries the influence of the market upon the localization has been especially marked, i. e., the iron and steel industry in Illinois, the manufacture of agricultural implements, the paper and pulp manufacture, and the jewelry and silk industries.

Nearness to materials and nearness to markets, in so far as these expressions are used with reference to an effect upon localization, mean more than mere geographical distance. They include the general accessi-

bility to materials or markets, affected as this is by the supply or lack of good and cheap means of communication. Waterways have thus had a tremendous influence upon the localization of industries, for they have allowed localities through which they passed to make an early start in manufacturing, and by the momentum thus acquired to retain their prominence in many cases, even after the building of railroads has removed the special advantages which they at first possessed.

It is evident, moreover, that the importance of the two advantages just explained varies greatly among the several industries according as their products are easily and cheaply transportable or are transported only with great difficulty and at a great expense. In all industries where the product is not transportable, such, for example, as the construction of houses, the market controls the localization absolutely. It is plain, also, that the power of materials and market over industry is less, just in proportion as the materials and products are more easily and more cheaply shipped. From the manufacturer's standpoint it is always a counting of the costs of shipment. If these are heavy, the industry tends to locate where the amount of transportation will be least, but if they are light, the influence of materials and market is so slight that it often disappears altogether. The words "heavy" and "light," as used in this connection, are not to be understood in an absolute sense, but relative to the value of the material or product transported. A cheap and heavy raw material, such as clay, will be carried only a very short distance. Transportation charges, after a few hundred miles, would constitute too large a part of the cost of manufacture. But an equal weight of this same clay after its value has been trebled by being converted into pottery might be carried a long distance before the shipping costs would become prohibitory.

The industries mentioned above as influenced largely by their market and the source of materials used—paper, iron and steel, slaughtering, pottery, and leather—are those in which the materials or products have a great weight or bulk in comparison with their value, and in which, therefore, freight charges are a very important element of costs.

23. *Waterpower*.—This has been in the past a very important advantage, but to-day its influence upon localization of industries is not very apparent. Naturally, this influence was greatest before the days of steam. All industries requiring power grouped themselves along those waterways which had a good natural fall. This early impetus, combined with forces to be described later, has tended to perpetuate such industries in their original locations, even when steam has become more important, as a source of power, than water.

It is interesting in this connection to compare the manufacture of cotton goods with the manufacture of shoes. Power has been applied to some branches of the

cotton manufacture for more than a hundred years, while shoe manufacturing has been a power industry less than half that time. Largely as a result of this fact, water supplies 31 per cent of the power used in the cotton industry to-day and but 4.6 per cent of that used in the manufacture of shoes. That is to say, the localization of both industries began in the early days, but the manufacture of shoes, being for years a hand industry, was independent of waterpower, while the cotton manufacture, of necessity, sought the waterways. When the necessity for power in the shoe manufacture arose, the industry was too thoroughly established away from the sources of waterpower, and recourse was had to steam. Waterpower has been an important factor in the localization of 3 of the other industries specified above—silk goods, hosiery and knit goods, and the pulp manufacture.

24. *A Favorable Climate*.—This has also an influence which is discernible in the localization of industries. The influence of a moist climate, which is also even throughout the day, upon cotton spinning in New Bedford and Fall River, Mass., has been mentioned above. More often, however, the advantage of a favorable climate makes itself felt through its invigorating effect on labor.

25. *A Supply of Labor*.—Two other advantages must be mentioned, for there are times when they have considerable weight. These are the supply of labor and the supply of capital and credit facilities. The "supply of labor" is something far from mobile. It is very human, with all the attachments of home and friends. It can be easily lured into a new industry which is established "at home" or near by, but the wages paid must be considerably greater to attract it into other sections. Manufacturing industries tend, therefore, to become established in a section where there is a good supply of labor. The New England towns have been preeminently of this type. All about them were farms which had reached the point of exhaustion, and could therefore employ profitably only a small part of the rising generation. The surplus labor thus created gravitated naturally to the nearest town in search of employment, and the early development of numerous manufactures was thus made easy. For a similar reason there can be no extensive manufacture in those parts of the West where the increasing population is mostly absorbed in agriculture which is still incompletely developed.

26. *A Supply of Capital*.—It is almost equally important to have a supply of local capital. Although most large enterprises are now financed from the great financial centers, the plants are located usually in places which have already become industrial centers in a smaller way through the efforts of the people there, and by means of their money. The cotton mills which are springing up through the South just now illustrate the tendency of a town to own itself in the

early stages of its industrial life, and Fall River affords a most remarkable illustration of the perseverance of this tendency. A prosperous town, therefore, where the people are "making money," is, in so far, a favorable locality for the establishment of manufacturing industries of some sort. Outside capital will undoubtedly be solicited, but it will be obtained more easily and more surely after the people themselves "have taken largely of the stock." Banking facilities exert a similar influence, making the community's capital more available for investment than it would otherwise be. All of these considerations have operated to favor the early development of manufacturing centers in New England and the Middle Atlantic states, agriculture absorbing a large share of the available local capital in the Southern and Western states. One of the causes which led to the establishment of the cotton manufacture in New Bedford about 1850 was the supply of local capital set free about that time by the decline in the whaling industry.¹

27. *The Momentum of an Early Start.*—The various advantages which have been described thus far can be expressed in dollars and cents. The places possessing these advantages attract manufacturers on account of the comparatively low cost there of producing and marketing goods. But these advantages in almost all cases account for localization only in its broader sense. They prescribe an industry's possible area, but they fail to explain the most marked form of localization—that within a single city or town, or group of cities and towns.

Somewhere within the possible area—made such because of the advantages just described—an enterprising man started the pioneer establishment of a certain industry. Why was this place chosen rather than any other within the possible area? Or why was this industry chosen rather than any other for which this place was suited? This is the first problem, and the second follows naturally: Why, after the first factory had become established, was it to the advantage of competitors to choose the same spot for their establishments, rather than other localities within the possible area? The solution of the first problem in the case of any industry is to be found by reference to its early history in this country.

In most cases it will be found that the original establishment of an industry in a locality was largely a matter of chance. The shoe industry in Lynn, Mass., is a case in point. In the early colonial days this settlement had its quota of cobblers, who made as well as repaired the shoes for the region thereabout, but did not attempt a broader market. In 1750, however, John Adams Dagyr, a Welshman, and a skilled shoemaker, settled in Lynn, and began to teach his apprentices the art of fine shoemaking. It soon became known that shoes were being made in Lynn nearly as good as the

best made abroad, and as early as 1764 Dagyr was spoken of in a Boston newspaper as "the celebrated shoemaker of Essex."² Had this man settled in Roxbury, Mass., rather than Lynn, the bias toward shoe manufacturing might have become established in that quarter, and Roxbury instead of Lynn might to-day be one of the three great shoe centers of the United States.

The nature of many a city's industry has been shaped in just this way in the early days of its history by the decision of one man. Instances of this have been cited in the preceding paragraphs, in connection with the localization of collars and cuffs, hosiery and knit goods, jewelry, gloves, and fur hats.

The decision of the pioneer in an industry at a given point rests on various grounds. He establishes usually an industry with which he is familiar because of experience obtained elsewhere. Several of the above selected industries have been established in their respective localities by the emigration from Europe of individual skilled workmen or groups of skilled workmen. The town where such a man chances to settle is taken for a location of the industry in most cases without much questioning whether or not it is better adapted for it than any other town. But if he searches for a suitable place, his chance acquaintance with one locality, or the offer of a friend to assist him if he establishes there, often influences his decision at the expense of another and perhaps more suitable locality where he has never visited, or where no acquaintance appeared to offer inducements. In many instances towns offer inducements to manufacturers, such as exemption from taxation for a period of years, and such efforts have often been successful in building up an entirely new industry in the town.

But if the industry is to be perpetuated and to increase in the locality, the original establishment must succeed, for it is the influence of its success which causes other establishments to spring up around it. In the early history of every industry numerous enterprises fail, not so much because of the unfitness of the locality chosen, as because of the unfitness of the man who attempts to carry on the industry at that point.

28. *The Habit of Industrial Imitation.*—It is only after the first enterprise has succeeded in any locality, that the real localizing process begins. The mainspring of this process is the habit of industrial imitation—a habit as powerful as it is universal, and so important in this connection that it warrants a somewhat closer analysis.

It has been shown above that one of the normal requisites of an industrial locality is a good supply of local labor and local capital. Suppose the enterprising man establishes himself in such a community and succeeds there. His success proves that the economic conditions are favorable—that he is within the possible area of that industry. But it does more, it creates a

¹ Report of the Industrial Commission. Vol. XIV, page 535.

² Lynn, Fifty Years a City, page 66.

local bias toward this particular industry. This bias affects all three classes necessary to its expansion; entrepreneurs, capitalists, and laborers.

In the first place entrepreneurs naturally choose the existing industry rather than establish a new one. On the assumption of a prosperous and growing town, there is continually arising a class of enterprising men who wish to embark in manufacturing for themselves, and they naturally choose an industry with which they are familiar—one which they have actually seen succeed. It requires courage to be an industrial pioneer; more courage, in fact, than most men possess. They have read, perhaps, of much larger profits being made in branches of manufacturing not carried on in their neighborhood; they may have visited towns in another part of the country where some such industry has been very successful, and they are tempted to establish this industry in their town, rather than to imitate the establishment which has been operating there successfully. The chances are great, however, that they will resist the temptation of larger profits, in favor of what they regard as surer profits, and will choose the local industry. The other industry may be just as safe, but the probability of success if they follow the beaten path has been emphasized to them each day as they have watched the smoking chimney of the local factory, and have noticed the rise of the proprietor from moderate circumstances to comparative affluence. Their choice of this industry becomes, therefore, almost inevitable. Moreover, it is probable that the men who thus launch out for themselves have been employees or foremen in the local factory. They are relatives, perhaps, of the proprietor, and are familiar with all the details of this industry, while in any other they would have all to learn. This last feature has been illustrated in fully half of the industries specified above.

In the second place, the capital needed to finance the new establishment—in addition to that supplied by the new entrepreneur himself—is much more easily obtained if the new establishment is to produce the same line of goods as the one already in existence. If a loan is desired for the establishment of an outside and less familiar industry, there is naturally a raising of the interest rate as a means of insurance; or the stock, if offered for sale, will for the same reason sell at a lower figure.¹

In the third place, the best grade of local labor prefers to have employment in an industry which seems to offer a future rather than in one which seems in the nature of an experiment. This influence is comparatively slight, however, for all ordinary labor takes such employment as is offered without much questioning.

¹ The opposition of the manufacturer or the manufacturers already established in the industry must, however, be counted on in many cases, especially if the products made are for sale in a comparatively limited market. As far as such opposition seems likely to develop, the advantage above described is counteracted, local investors becoming doubtful regarding the safety of their money under such circumstances.

29. *Economic Advantages of Specialized Centers.*—All the above decisions—the decision of the pioneer in the industry, and the decisions of the few who follow immediately in his steps—seem to be made with but little consideration of the economic advantages which the locality chosen may possess for carrying on the industry in question—i. e., the possibility of producing cheaper at this point than elsewhere, or being better able there to market the products. Very quickly, however, certain decided economic advantages emerge. Workmen, skilled in the specialty for which the center begins to be known, flock there and wait their chance “to be taken on at one of the mills.” In many cases an immigration of skilled labor from corresponding centers abroad sets in. East Liverpool, Ohio, was at one time chiefly an English town as the result of such immigration. A pool of specially skilled labor is thus formed which acts as a powerful inducement to the expansion of the industry from within, while at the same time it draws prospective manufacturers to this center from without.

The use of machinery has, however, tended to lessen the importance of a specially skilled labor supply. In proportion as an industry becomes automatic, its localization becomes independent of its supply of special labor. It is interesting to note in this connection that 6 of the 15 industries shown in tables LXXVII to CXXXVI, on account of their marked localization, are industries in which hand work constituted for many years the most important part of the operations. In some instances, such as the glove, collar, and hat manufacturing, hand work is still an important factor, while in the manufacture of boots and shoes hand work persisted to a large extent as late as 1870.

In a specialized community of this sort the contact of workmen and employers with each other results in a mutual improvement in manufacturing methods. Laborers “talk shop” more or less when not at work, and the devices adopted in one establishment for making the work easier are soon adopted in all. Similarly, it is easy for a manufacturer in such a place to note the experiments with patented improvements carried on in another establishment, and to adopt such improvements just as soon as their value is demonstrated, by paying the royalty demanded.

In the course of time another advantage arises in such a specialized center—the possibility of subdividing the processes of manufacture among several establishments—a division of labor among employers. In the Massachusetts shoe cities, for example, there are establishments which make only uppers, and others which make only “findings” (counters, shanks, heel stiffeners, etc.). Soon, also, subsidiary industries spring up for the supply of the special machinery and tools required. As a result, new and up-to-date tools and machinery may be had in such centers with the least possible delay, and existing machinery may be kept continually in repair.

Thus a town's specialization increases its supply of specialized labor and specialized machinery. These in turn react to increase the specialization of the town. Success breeds success in an almost geometrical ratio. Cause and effect propel each other in a continually expanding circle, the self-created local advantages becoming in time so powerful that they entirely neutralize the greater general advantages of location which other localities may have come to possess.

30. *Conclusion.*—In conclusion, it should be noted that in proportion as a country develops industrially and upon a larger scale; in proportion, moreover, as there is a mobility of labor and freedom from the influence of inherited and over-conservative ideas, the localization of industries tends to be governed increasingly by purely economic considerations and less by the fortuitous considerations which accounted in many cases for localization in earlier years. The influence of industrial combination in this direction has already become marked. The system of uniform bookkeeping, introduced in many such combinations, enables managers to know accurately the comparative advantages of several localities for the industry in question, and to redistribute their production accordingly.

XL.

LIMITATIONS UPON THE USE OF CENSUS STATISTICS.

Of the very many limitations upon the use of census figures which accumulating experience has disclosed, some have already been adverted to in connection with different topics elsewhere discussed; but as there are many others which have nowhere been definitely recognized or discussed in the reports of earlier censuses, it seems desirable to include in the present report the following definite statement regarding these limitations.

The census statistics of manufactures are useful in determining the relative importance of states, cities, and other communities in manufacturing, together with their relative growth in this branch of production. They are also useful in determining the progress made in different branches of manufacturing in the country as a whole and in its various subdivisions. The comparative tables, as presented in the censuses of 1880, 1890, and 1900, enable the rate of growth to be determined in all these instances with a degree of accuracy sufficient for all practical purposes. They make it possible to ascertain the gross value of manufactured products, the average number of persons employed, and the total amount paid in wages, at the several periods; with sufficient accuracy to be of value in economic and sociological discussions. They show the general industrial condition of the country at the time of census taking, reflecting both national and local prosperity or depression, and to this extent they can be safely used as a basis for legislative and administrative action.

But when it comes to the secondary analyses of the census statistics of manufactures, and the basing of

conclusions upon the exact relations which exist between two groups of figures, extreme caution is necessary; for unless there is a thorough understanding of the conditions under which the statistics of manufactures are gathered and aggregated, these analyses will result in conclusions altogether misleading, and often at direct variance with the facts as determined by the individual experience of single manufacturing establishments or groups of such establishments. It is never safe to generalize from a great mass of figures such as the Census Office presents, and then apply such generalizations to particular cases, and expect thereby to deduce either a uniform rule or uniform ratio. Certain of the analyses which have been made by those who undertake the study of census figures for the purpose of arriving at fixed conclusions regarding the conditions prevailing in industrial operations may be referred to for the purpose of warning the public against the impropriety of attempting such analyses.

1. *Profits of Manufacturing.*—At the censuses of 1890 and 1900 the Census Office has attempted to obtain a full account of the more important items which together make up the cost of the products; but there still remain many items of expense of which it is impossible to obtain a record, and for this and for other reasons the census figures throw no light whatever upon the profits of manufacturing or upon the relative shares of the increment from manufacturing which fall to capital and to labor respectively. The items of expense, which the census reports separately, are salaries, wages, miscellaneous expenses, and materials used. Combining these several items as a total cost of products and deducting this sum from the gross value of products returned, we have a figure which is sometimes assumed to represent the profit of the entrepreneur. At the census of 1890 these figures were as follows:

TABLE CXL.—Cost and value of products: 1890.

Gross value of products		\$9,372,437,283
Cost of materials used	\$5,162,044,076	
Total salaries and wages paid	2,288,216,529	
Miscellaneous expenses	631,225,035	
Total cost		8,076,485,640
Excess of gross value of products over total cost		1,295,951,643

At the census of 1900 the corresponding figures were as follows:

TABLE CXLI.—Cost and value of products: 1900.

Gross value of products		\$13,004,400,148
Cost of materials used	\$7,345,413,651	
Total salaries and wages paid	2,726,045,110	
Miscellaneous expenses	1,027,755,778	
Total cost		11,099,214,539
Excess of gross value of products over total cost		1,905,185,609

Such a calculation would make it appear that the profit of manufacturing was nearly \$1,300,000,000 in