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MANUFACTURES.

FLAX, HEMP, AND JUTE PRODUCTS.

HON. WILLIAM R. MERRIAM,

Director of the Census.

SIR: I transmit herewith, for publication in bulletin form, a report on the manufacture of flax, hemp, and jute products for the census year 1900, prepared under my direction by Mr. Edward Stanwood, of Boston, acting in the capacity of an expert special agent of the division of manufactures. This is the first time this manufacture has been made the subject of a special report.

The statistics of the three branches of the industry—cordage and twine, jute and jute goods, and linen goods—are presented separately in the tables under the respective designations, the totals being combined in the first four tables.

Table 1 is a comparative summary of the statistics of the industry for 1890 and 1900; Table 2 is a summary of the industry by states for 1900; Table 3 shows the kind, quantity, and cost of the various materials used in 1900; Table 4 is a summary of the kind, quantity, and value of products in 1900; Table 5 is a comparative summary of the statistics for cordage and twine from 1880 to 1900; Table 6 shows the kind, quantity, and cost of materials used for cordage and twine in 1900; Table 7 shows the kind, quantity, and value of the products for cordage and twine in 1900; Table 8 is a summary of the statistics for jute and jute goods for 1900; Table 9 shows the materials used for jute and jute goods for 1900; Table 10 shows the kind, quantity, and value of the products for jute and jute goods for 1900; Table 11 is a comparative summary of the statistics for linen goods for 1890 and 1900; Table 12 shows the kind, quantity, and cost of principal materials used for linen goods in 1900; Table 13 shows the

kind, quantity, and value of the principal products for linen goods for 1900; and Table 14 is a detailed summary for flax, hemp, and jute products by states for 1900.

In drafting the schedules of inquiry for the census of 1900 care was taken to preserve the basis of comparison with prior censuses. Comparison may be made safely with respect to all the items of inquiry except those relating to capital, salaried officials, clerks, etc., and their salaries, the average number of employees, and the total amount of wages paid. Live capital, that is, cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries, was first called for at the census of 1890. No definite attempt was made, prior to the census of 1890, to secure a return of live capital invested.

Changes were made in the inquiries relating to employees and wages in order to eliminate defects found to exist on the form of inquiry adopted in 1890. At the census of 1890 the average number of persons employed during the entire year was called for, and also the average number employed at stated weekly rates of pay, and the average number was computed for the actual time the establishments were reported as being in operation. At the census of 1900 the greatest and least numbers of employees were reported, and also the average number employed during each month of the year. The average number of wage-earners (men, women, and children) employed during the entire year was ascertained by using 12, the number of calendar months, as a divisor into the total of the average numbers reported for each month. This difference in the method of ascertaining the average number of wage-earners during the

entire year may have resulted in a variation in the number, and should be considered in making comparisons.

At the census of 1890 the number and salaries of proprietors and firm members actively engaged in the business or in supervision were reported, combined with clerks and other officials. In cases where proprietors and firm members were reported without salaries, the amount that would ordinarily be paid for similar services was estimated. At the census of 1900 only the number of proprietors and firm members actively engaged in the industry or in supervision was ascertained, and no salaries were reported for this class. It is therefore impossible to compare the number and salaries of salaried officials of any character for the two censuses.

Furthermore, the schedules for 1890 included in the wage-earning class, overseers, foremen, and superintendents (not general superintendents or managers), while the census of 1900 separates from the wage-earning class such salaried employees as general superintendents, clerks, and salesmen. It is possible and probable that this change in the form of the question has resulted in eliminating from the wage-earners, as reported by the present census, many high-salaried employees included in that group for the census of 1890.

The reports show a capital of \$41,991,762 invested in the manufacture of flax, hemp, and jute products in the 141 establishments reporting for the United States.

This sum represents the value of land, buildings, machinery, tools, and implements, and the live capital utilized, but does not include the capital stock of any of the manufacturing corporations engaged in this industry. The value of the products is returned at \$47,601,607, to produce which involved an outlay of \$957,190 for salaries of officials, clerks, etc.; \$6,331,741 for wages; \$2,678,286 for miscellaneous expenses, including rent, taxes, etc.; and \$32,197,885 for materials used, mill supplies, freight, and fuel. It is not to be assumed, however, that the difference between the aggregate of these sums and the value of the products is, in any sense, indicative of the profits in the manufacture of flax, hemp, and jute products during the census year. The census schedule takes no cognizance of the cost of selling manufactured articles, or of interest on capital invested, or of the mercantile losses incurred in the business, or of depreciation in plant. The value of the product given is the value as obtained or fixed at the works. This statement is necessary in order to avoid erroneous conclusions from the figures presented.

Very respectfully,



Chief Statistician for Manufactures.

FLAX, HEMP, AND JUTE PRODUCTS.

By EDWARD STANWOOD, *Expert Special Agent.*

The industries which make use of the three classes of vegetable fibers, flax, hemp, and jute, are closely allied, in that most of them employ more than one of these materials. For example, there is a large consumption of hemp both by jute manufacturers and by those classed as makers of linen goods; and there is a consumption of all three fibers by cordage and twine establishments. If it were possible, it would be more scientific to classify the several industries by the character of the goods produced, but the variety and diversity of products are so great that it is impossible to do so. The plan here adopted is to group all the industries reported at the Eleventh Census under the separate heads of cordage and twine, jute and jute goods, linen goods, and linen thread, in one general survey, and to bring the facts relating to each branch into view by separate treatment.

Table 1 is a comparative summary of the statistics of the industry as a whole in 1890 and 1900.

TABLE 1.—FLAX, HEMP, AND JUTE PRODUCTS; COMPARATIVE SUMMARY, 1890 AND 1900.

	1900	1890
Number of establishments	141	162
Capital	\$41,991,762	\$27,781,649
Salariated officials, clerks, etc., number	641	1,458
Salaries.....	\$957,190	\$609,170
Wage-earners, average number	20,908	15,519
Total wages.....	\$6,331,741	\$4,872,389
Men, 16 years and over.....	9,996	7,367
Wages.....	\$3,824,555	\$2,952,270
Women, 16 years and over	8,648	6,923
Wages.....	\$2,174,152	\$1,788,289
Children, under 16 years.....	2,259	1,229
Wages.....	\$333,034	\$186,830
Miscellaneous expenses.....	\$2,078,286	\$1,481,932
Cost of materials used.....	\$82,197,885	\$20,148,544
Value of products.....	\$47,601,607	\$37,813,021

¹Includes proprietors and firm members, with their salaries; number only reported in 1900. (See Table 14.)

The only inference that may fairly be drawn from Table 1 is that, upon the whole, there has been an increase in these industries. It would be a statistical absurdity to place reliance upon the percentages of increase of masses, which include things widely different in their nature, and sums made up of great numbers and small.

Table 2 is a summary of the industry by states for 1900.

TABLE 2.—FLAX, HEMP, AND JUTE PRODUCTS; SUMMARY BY STATES: 1900.

	United States.	Alabama.	Connecticut.	Kentucky.	Massachusetts.	New Jersey.
Number of establishments	141	4	8	6	28	6
Capital	\$41,991,762	\$298,448	\$297,962	\$459,295	\$10,223,490	\$3,413,163
Salariated officials, clerks, etc., number	641	10	5	23	136	57
Salaries.....	\$957,190	\$10,980	\$3,500	\$26,024	\$203,943	\$80,551
Wage-earners, average number	20,908	282	265	492	4,693	2,127
Total wages.....	\$6,331,741	\$47,643	\$69,544	\$149,937	\$1,562,862	\$624,988
Miscellaneous expenses.....	\$2,078,286	\$14,654	\$6,443	\$39,847	\$601,542	\$223,118
Cost of materials used.....	\$82,197,885	\$166,145	\$196,332	\$341,515	\$7,539,433	\$1,700,426
Value of products.....	\$47,601,607	\$253,560	\$312,446	\$602,701	\$11,338,933	\$2,955,844

	New York.	Ohio.	Pennsylvania.	Rhode Island.	Wisconsin.	All other states. ¹
Number of establishments	22	9	21	5	5	27
Capital	\$10,311,768	\$2,147,077	\$6,162,509	\$95,947	\$213,565	\$3,367,938
Salariated officials, clerks, etc., number	148	47	90	4	11	110
Salaries.....	\$306,331	\$54,205	\$103,783	\$2,670	\$8,840	\$156,358
Wage-earners, average number	5,450	1,052	2,683	84	128	3,847
Total wages.....	\$1,713,614	\$817,909	\$761,582	\$22,175	\$35,085	\$1,026,402
Miscellaneous expenses.....	\$782,719	\$96,471	\$147,125	\$3,052	\$7,574	\$750,749
Cost of materials used.....	\$7,516,240	\$2,325,907	\$5,448,323	\$63,954	\$109,016	\$6,730,594
Value of products.....	\$11,674,689	\$2,957,874	\$7,256,548	\$103,715	\$135,163	\$90,905,351

¹Includes states having less than 3 establishments, in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Arkansas, 1; California, 2; Delaware, 1; Georgia, 1; Illinois, 2; Indiana, 1; Iowa, 1; Kansas, 1; Maine, 2; Maryland, 1; Michigan, 1; Minnesota, 1; Mississippi, 1; Missouri, 2; New Hampshire, 1; North Carolina, 2; Oregon, 1; South Carolina, 1; Tennessee, 2; Texas, 2.

Tables 3 and 4 present, in accordance with trade classifications, the several fiber materials entering into the manufacture of flax, hemp, and jute goods, both the quantity and the cost, respectively; also the quantity and value of the goods produced therefrom.

TABLE 3.—FLAX, HEMP, AND JUTE PRODUCTS; KIND, QUANTITY, AND COST OF MATERIALS USED: 1900.

	Pounds.	Cost.
Total	545,449,566	\$32,197,885
Fibers:		
Hard:		
Hemp:		
Manila	123,241,820	8,916,493
Sisal	146,352,858	8,827,131
New Zealand	6,344,371	352,528
Soft:		
Hemp:		
Russian:		
Rough	1,175,005	73,105
Tow	118,090	5,809
Line	349,558	25,063
Italian:		
Rough	7,329,346	533,922
Tow	305,917	20,969
Line	335,858	31,730
American:		
Rough	11,497,068	536,076
Tow	3,201,011	112,134
Line	1,276,262	65,676
Flax:		
European:		
Rough	5,580,911	668,446
Tow	3,727,163	252,759
Line	3,388,641	806,693
Canadian:		
Rough	1,972,820	155,751
Tow	247,350	18,908
Line	131,736	20,643
Domestic:		
Rough	700,000	25,750
Tow	744,045	66,665
Line	487,980	65,247
Jute	87,443,201	2,431,429
Jute butts	118,806,625	1,795,653
Yarns:		
Flax or hemp:		
Domestic tow:		
Wholly or partly bleached	120,320	14,060
Gray	43,500	6,360
Domestic line:		
Wholly or partly bleached	107,490	45,550
Gray	157,778	32,396
Imported tow:		
Wholly or partly bleached	37,514	9,681
Gray	190,941	35,173
Imported line:		
Wholly or partly bleached	1,000	180
Gray	103,976	43,747
Linen, unspecified	102,622	42,005
Cotton	4,973,080	709,889
Jute	1,009,651	69,504
Silk	4,774	24,414
Spun silk	1,100	3,450
Worsted	682	308
Cotton:		
Raw (26,540 bales)	13,022,755	849,426
Waste	793,132	37,632
All other materials		4,459,796

TABLE 4.—FLAX, HEMP, AND JUTE PRODUCTS; KIND, QUANTITY, AND VALUE OF PRODUCTS: 1900.

	Quantity.	Value.
Total		\$47,601,607
Flax or hemp yarns:		
Tow:		
Dry spun, gray, pounds	1,689,528	248,351
Dry spun, bleached, pounds	13,371	3,478
Wet spun, gray, pounds	6,060,092	804,908
Wet spun, bleached, pounds	49,236	11,361
Line:		
Dry spun, gray, pounds	218,088	46,500
Dry spun, bleached, pounds	23,133	11,073
Wet spun, gray, pounds	1,200	300
Jute yarns, pounds	54,271,860	3,230,336
Twines for sale:		
All flax, pounds	3,845,978	969,469
All hemp, pounds	9,065,024	1,019,530
All jute, pounds	1,879,127	117,539
Flax or hemp, mixed with jute, pounds	12,924,067	1,101,203
Linen thread, pounds	4,021,044	2,332,287

TABLE 4.—FLAX, HEMP, AND JUTE PRODUCTS; KIND, QUANTITY, AND VALUE OF PRODUCTS: 1900—Cont'd.

	Quantity.	Value.
Binder twine:		
All manila, pounds	15,261,174	\$1,546,428
Chiefly manila, pounds	24,976,668	2,316,267
All or chiefly sisal, pounds	125,372,687	10,322,336
Rope:		
Manila, pounds	33,347,459	3,330,113
Sisal, pounds	46,865,604	3,632,670
Jute, pounds	10,012,165	463,413
Cotton, pounds	1,615,824	247,250
Towels and toweling:		
All linen, square yards	4,598,615	471,633
Partly linen, square yards	2,051,247	231,253
Other woven fabrics:		
All linen, square yards	33,000	9,110
Partly linen, square yards	135,000	34,000
Jute burlaps, square yards		336,129
Jute carpets and rugs, square yards	2,953,658	367,563
Gunny bagging, square yards	74,090,760	3,462,479
Other spun or woven goods		1,051,689
Cotton:		
Bagging, square yards	243,204	21,364
Yarn, pounds	946,567	93,923
Twine, pounds	8,691,707	1,133,640
Battings, pounds	193,000	7,125
Waste, pounds	1,254,619	20,146
Other products of cotton		715,613
All other products		2,744,504

CORDAGE AND TWINE.

Three general classes of establishments are included in the following statistics under the head of cordage and twine. The first and smallest, having regard to the items of capital, number of wage-earners, wages, and value of products, consists of those whose chief business is the manufacture of yarn—cotton, for the most part, but also linen and silk—into the finer varieties of twine and into cotton rope; the second, of those which produce binder twine on a large scale; the third, of those which manufacture hempen rope. Since no useful purpose would be served by separating the returns of these several classes they are reported together; but the important facts regarding the several industries, so far as they are distinct, are easily ascertained from the statistics of the quantity and value of the fibers consumed, and of the quantity and value of the several products. At previous censuses no special inquiry was made concerning any of the characteristic features of the industries grouped under this head, and no facts were reported other than those which appear in the following comparative summary:

TABLE 5.—CORDAGE AND TWINE; COMPARATIVE SUMMARY, 1880 TO 1900.

	1900	1890	1880
Number of establishments	105	150	105
Capital	\$29,275,470	\$23,851,583	\$7,140,475
Salaried officials, clerks, etc., number	436	1,414	(²)
Salaries	\$666,936	\$560,639	(²)
Wage-earners, average number	13,114	12,385	5,485
Total wages	\$4,113,112	\$3,976,232	\$1,558,676
Men, 16 years and over	7,341	6,412	2,926
Wages	\$2,751,787	\$2,547,985	(²)
Women, 16 years and over	4,797	5,010	1,480
Wages	\$1,212,823	\$1,280,065	(²)
Children, under 16 years	976	963	1,029
Wages	\$143,502	\$143,132	(²)
Miscellaneous expenses	\$1,716,205	\$1,020,697	(²)
Cost of materials used	\$26,632,006	\$24,051,666	\$9,330,261
Value of products	\$37,949,651	\$33,312,559	\$12,492,171

¹ Includes proprietors and firm members, with their salaries; number only reported in 1900.

² Not reported separately.

³ Not reported.

The tendency toward a consolidation of small establishments and the transaction of business on a larger scale was observable ten years ago, when a decreased number of establishments reported a capital more than threefold greater than in 1880, and a value of products nearly threefold greater. At the census of 1900 the number of separate establishments declined, as compared with 1890, almost one-third, yet the value of products was larger. The statistics of capital are not strictly comparable, since the method of ascertaining the amount has been different at each census. The fact of an increase may be inferred, but the rate of increase can not properly be deduced from the figures given. This is also true respecting the returns of the average number of persons employed, the method of ascertaining such average having been changed. In general, it appears that the number of wage-earners has not increased greatly, if at all, within the last decade.

The kind, quantity, and cost of the materials used in the production of cordage and twine, and the quantity and value of the several products are presented in Tables 6 and 7.

TABLE 6.—CORDAGE AND TWINE; KIND, QUANTITY, AND COST OF MATERIALS USED: 1900.

	Pounds.	Cost.
Total	418,416,811	\$26,632,006
Cotton:		
Raw (26,540 bales)	13,022,755	849,426
Yarn	3,860,235	505,041
Waste	798,182	37,692
Flax fiber:		
European:		
Rough	757,672	76,615
Tow	345,959	23,191
Line	54,592	7,248
Canadian:		
Rough	768,021	56,688
Tow	49,457	3,188
Domestic:		
Rough	200,000	24,000
Tow	703,943	61,186
Line	487,980	65,247
Linen yarn	299,135	88,625
Hemp:		
Manila	123,241,820	8,916,493
Sisal	146,352,858	8,827,131
New Zealand	6,344,371	352,528
Russian:		
Rough	1,175,605	73,165
Tow	44,090	1,969
Line	349,558	25,063
Italian:		
Rough	3,422,104	256,582
Tow	305,917	20,969
Line	296,920	27,752
American:		
Rough	10,871,865	506,767
Tow	3,011,004	104,660
Line	1,258,266	63,965
Jute	25,767,800	786,967
Butts	74,281,100	1,107,899
Yarns:		
Jute	389,051	21,070
Silk	4,774	24,414
Spun	1,100	3,450
Worsted	682	308
All other materials		3,714,812

TABLE 7.—CORDAGE AND TWINE; KIND, QUANTITY, AND VALUE OF PRODUCTS: 1900.

	Quantity.	Value.
Total		\$37,849,651
Twine:		
Cotton, pounds	8,691,707	1,133,640
Flax, pounds	2,187,540	602,471
Hemp, pounds	8,299,902	895,074
Jute, pounds	1,589,127	111,239
Flax or hemp, mixed with jute, pounds	12,924,067	1,101,203
Binder twine:		
Manila, pounds	16,261,174	1,546,428
Chiefly manila, pounds	24,975,568	2,316,257
All or chiefly sisal, pounds	125,372,687	10,322,896
Rope:		
Cotton, pounds	1,615,324	247,250
Manila, pounds	83,347,459	8,330,113
Sisal, pounds	46,865,604	3,632,670
Jute, pounds	5,717,817	250,780
Gunny bagging, square yards	41,310,695	2,085,636
Jute burlap		150,000
Yarn:		
Cotton, pounds	946,567	98,923
Flax and hemp, tow, pounds	2,552,955	345,913
Flax and hemp, line, pounds	10,000	4,800
Jute, pounds	9,554,188	621,687
Linen thread, pounds	100,000	17,000
Waste, pounds	1,254,619	20,146
Batting and wadding, pounds	198,000	7,125
Other spun or woven goods	6,241,449	534,265
All other products, cotton		715,613
All other products		2,758,537

JUTE AND JUTE GOODS.

The jute manufacture was represented at the Tenth Census by 4 establishments only, having a total capital of \$415,000, and products valued at \$696,982. Seven establishments were reported at the Eleventh Census under the head of jute and jute goods. It is probable, however, that some which were classed as "bagging, flax, hemp, and jute" are, in the reports for 1900, included in the class of jute and jute goods, since it appears that only 2 of the 18 establishments now making returns have come into existence during the decade. Under these circumstances a comparison of the statistics for 1900 with those of former census years would be misleading. The principal facts relating to the industry for 1900 are presented in the following summary:

TABLE 8.—JUTE AND JUTE GOODS: 1900.

Number of establishments	18
Capital	\$7,027,293
Salaries officials, clerks, etc., number	88
Salaries	\$147,813
Wage-earners, average number	4,506
Total wages	\$1,181,790
Men, 16 years and over	1,611
Wages	\$579,877
Women, 16 years and over	2,064
Wages	\$480,782
Children, under 16 years	881
Wages	\$121,181
Miscellaneous expenses	\$574,986
Cost of materials used	\$3,015,362
Value of products	\$5,883,797

Table 9 shows the kind, quantity, and cost of the materials employed in the manufacture.

TABLE 9.—JUTE AND JUTE GOODS; KIND, QUANTITY, AND COST OF MATERIALS USED: 1900.

	Pounds.	Cost.
Total	109,049,701	\$3,015,362
Jute	61,603,920	1,612,318
Butts	44,525,525	687,754
Yarns	670,600	48,434
Hemp:		
Italian	1,363,431	83,303
American	684,328	27,354
Cotton yarn	301,838	33,834
All other materials		492,865

Table 10 presents a classification of the principal products of the establishments reporting.

TABLE 10.—JUTE AND JUTE GOODS; KIND, QUANTITY, AND VALUE OF PRODUCTS: 1900.

	Quantity.	Value.
Total		\$5,383,797
Jute yarn	pounds.. 44,717,672	2,609,148
Twine	do. 90,000	6,300
Rope	do. 4,294,848	212,053
Burlaps	square yards.. 4,361,635	236,129
Gunny bagging	do. 32,780,065	1,426,843
Carpets and rugs	do. 2,953,658	357,568
Flax or hemp yarns	pounds.. 1,286,155	165,788
Other spun or woven goods		364,821
All other products		4,517

LINEN MANUFACTURE.

The report upon the linen industry at the census of 1890 was most meager. Three establishments only producing linen goods were included in the general summary of manufactures; 2 others which made linen thread came under the rule which forbids the separate tabulation of less than 3 establishments, and were placed under "all other industries." Inasmuch as both classes of establishments are reported together in the following tables, the facts relating to the 5 establishments reporting in 1890 are now published for the first time for purposes of comparison.

TABLE 11.—LINEN GOODS; COMPARATIVE SUMMARY: 1890 AND 1900.

	1900.	1890.
Number of establishments	18	5
Capital	\$5,638,999	\$2,734,130
Salaries of officials, clerks, etc., number	117	126
Salaries	\$142,941	\$25,580
Wage-earners, average number	3,233	1,940
Total wages	\$1,086,839	\$527,572
Men, 16 years and over	1,044	648
Wages	\$492,891	\$255,409
Women, 16 years and over	1,787	1,193
Wages	\$480,597	\$256,187
Children, under 16 years	452	99
Wages	\$83,351	\$15,976
Miscellaneous expenses	\$387,095	\$242,977
Cost of materials used	\$2,550,517	\$1,594,769
Value of products	\$4,368,159	\$2,380,841

¹Includes proprietors and firm members, with their salaries; number only reported in 1900.

Inasmuch as the tables deal with so small a number of establishments, many of them still in the period of experiment, no deduction is justified or would be safe, further than that the industry has expanded greatly.

The materials used, consisting of hemp, flax, jute, and cotton, in great variety and in various stages of manufacture, are summarized in Table 12.

TABLE 12.—LINEN GOODS; KIND, QUANTITY, AND COST OF MATERIALS USED: 1900.

	Pounds.	Cost.
Total	17,983,084	\$2,550,517
Hemp:		
Russian:		
Tow	74,000	3,900
Italian:		
Rough	2,543,811	194,037
Line	38,938	4,028
American:		
Rough	40,875	1,955
Tow	190,007	7,474
Line	17,996	1,710
Flax:		
European:		
Rough	4,823,239	591,331
Tow	3,381,204	229,568
Line	3,334,049	799,450
Canadian:		
Rough	1,204,799	99,063
Tow	197,893	15,720
Line	131,736	20,643
Domestic:		
Rough	500,000	1,750
Tow	40,102	2,470
Flax or hemp yarn	582,006	151,132
Cotton yarn	810,957	171,014
Jute	71,472	2,144
All other materials		252,619

Table 13 shows the kind, quantity, and value of the principal products during the census year of the establishments reporting.

TABLE 13.—LINEN GOODS; KIND, QUANTITY, AND VALUE OF PRODUCTS: 1900.

	Quantity.	Value.
Total		\$4,368,159
Flax or hemp yarn, tow	pounds.. 4,178,117	556,392
Flax or hemp yarn, line	do. 232,426	53,078
Twine, all flax	do. 1,653,438	366,998
Twine, all hemp	do. 765,122	124,516
Linen thread	do. 3,921,044	2,315,287
Towels and toweling, all linen	square yards.. 4,598,615	471,633
Towels and toweling, partly linen	do. 2,051,247	281,258
Other woven fabrics, all linen	do. 83,000	9,110
Other woven fabrics, partly linen	do. 135,000	34,000
Other spun or woven goods		152,603
All other products		3,234

The linen industry has never obtained a firm foothold in the United States. In colonial times efforts were made to promote the growth of flax, and to introduce the spinning and weaving of the fiber. It was the policy of the mother country to repress manufactures in the colonies, but the production of linen goods was a domestic industry, which England could not and did not try to prevent. The cultivation of flax was undertaken on a small scale, and the spinning wheel and the handloom were the only available machinery for working it into cloth. It is probable that there was in America

scarcely any manufacture of linen for sale. That which was made was a home product intended solely for consumption in the families of the weavers. The factory system had not been generally established even on the other side of the Atlantic. Nevertheless flax was already cultivated on a generous scale in many districts of Ireland, France, Germany, and other countries, and large numbers of persons were employed in preparation of the fiber and manufacture of linen for the market.

It is extremely probable that the desire of the American people to introduce manufactures, thus supplementing their political with industrial and commercial independence, would have led them to engage largely in the production of linen fabrics had not the invention of the cotton gin by Eli Whitney (patented in 1793) placed in their hands a fiber cheaper than flax, more tractable, requiring less care in preparation, more easily spun and woven, superior for many purposes and decidedly inferior for very few. At all events, the effort to introduce the linen manufacture was practically abandoned for the time being, and, until recently, the attempts to establish it in the United States have been spasmodic and unsuccessful. The difficulties in the path of manufacturers are many. There is, to speak broadly, no American production of fiber suitable for spinning. Flax is grown in great quantities, but it is cultivated chiefly for the seed and not for the fiber.

The process of retting involves the expenditure of too much time and labor to be profitable to American farmers. Consequently it is necessary to rely almost wholly upon foreign importations for the raw material. Moreover, the intermediate processes of manufacture, as well as the spinning and weaving of a fiber greatly lacking in elasticity, require so much skill and care that the margin of profit is precarious. And finally, the demand for the finished product is far from being so broad and imperative as is that for articles of cotton,

wool, and silk. Linen is indispensable for fine fabrics for the dining table, for thread and twine where great strength is required, and for the best quality of towel-ing; but for the thousand and one uses to which ordinary cloth is put, cotton would be generally preferred by consumers, even if the cost were the same.

It will be inferred from these statements that the linen industry in the United States at the present time is not extensive, nor does the prospect seem bright. Nevertheless, measured by percentages, the increase during the last ten years has been great. There are certain fields which American manufacturers can occupy to advantage. There is a large demand for linen carpet-yarns; our immense shoe manufacturing industry requires a great quantity of linen thread; and the market for towels and toweling is practically unlimited. The first two of these fields our manufacturers have occupied for many years. The third they have entered more generally during the past ten years than ever before. This was rendered possible by a readjustment of tariff rates in the act of 1897. The duty on the yarns required for such branches of the manufacture as Americans now think it expedient to engage in, was reduced to a revenue basis, and the duty on manufactured goods was raised.

The manufacture of linen toweling, which shows the largest extension of any branch of linen manufacture during the decade, is not fully reported in the general tables. Several large cotton manufacturing establishments have engaged in this industry; and although their use of nearly one and a half million pounds of linen yarn is reported among the materials consumed, the schedules issued to them made no provision for a separate report of the character, quantity, or value of their linen products.

Table 14 is a detailed statement of the statistics for flax, hemp, and jute products, by states, for 1900.

TABLE 14.—FLAX, HEMP, AND JUTE PRODUCTS, BY STATES: 1900.

	United States.	Alabama.	Connecticut.	Kentucky.	Massachusetts.	New Jersey.
Number of establishments.....	141	4	8	6	28	6
Established during the decade.....	40	4	1	2	9	2
Established during the census year.....	5				1	
Capital:						
Total.....	\$41,001,702	\$295,448	\$297,002	\$456,295	\$10,226,400	\$3,413,163
Land.....	\$2,457,349	\$37,026	\$8,000	\$1,500	\$191,074	\$252,421
Buildings.....	\$5,146,574	\$45,951	\$25,800	\$10,200	\$1,298,786	\$794,820
Machinery, tools, and implements.....	\$9,789,556	\$169,676	\$35,400	\$202,789	\$1,589,725	\$351,805
Cash and sundries.....	\$24,598,280	\$55,495	\$170,262	\$214,806	\$6,968,005	\$1,514,617
Proprietors and firm members.....	100		7	7	16	1
Salaried officials, clerks, etc.:						
Total number.....	641	10	5	23	136	57
Total salaries.....	\$957,190	\$10,980	\$3,500	\$26,024	\$208,948	\$80,551
Officers of corporations:						
Number.....	145	7	2	5	25	5
Salaries.....	\$422,046	\$8,040	\$1,950	\$10,000	\$92,741	\$15,700
General superintendents, managers, clerks, and salesmen:						
Total number.....	496	3	3	18	111	52
Total salaries.....	\$535,144	\$2,940	\$1,550	\$10,024	\$111,207	\$64,851
Men:						
Number.....	442	3	2	16	95	51
Salaries.....	\$509,158	\$2,940	\$1,050	\$15,244	\$102,630	\$64,212
Women:						
Number.....	54		1	2	16	1
Salaries.....	\$25,986		\$500	\$780	\$8,572	\$699

TABLE 14.—FLAX, HEMP, AND JUTE PRODUCTS, BY STATES: 1900—Continued.

	United States.	Alabama.	Connecticut.	Kentucky.	Massachusetts.	New Jersey.
Wage-earners, including pieceworkers, and total wages:						
Greatest number employed at any one time during the year.....	24,947	306	274	588	5,195	2,332
Least number employed at any one time during the year.....	17,588	258	251	389	4,075	1,963
Average number.....	20,903	282	265	492	4,693	2,127
Wages.....	\$6,331,741	\$47,643	\$69,544	\$149,937	\$1,562,862	\$624,988
Men, 16 years and over:						
Average number.....	9,996	89	142	285	2,649	656
Wages.....	\$3,824,555	\$25,771	\$43,016	\$109,746	\$1,020,085	\$295,008
Women, 16 years and over:						
Average number.....	8,648	105	120	162	1,770	1,009
Wages.....	\$2,174,152	\$13,525	\$25,988	\$34,176	\$490,991	\$271,744
Children, under 16 years:						
Average number.....	2,259	88	3	45	274	462
Wages.....	\$333,034	\$3,347	\$540	\$6,015	\$51,786	\$58,236
Miscellaneous expenses:						
Total.....	\$2,678,286	\$14,654	\$6,443	\$39,847	\$601,542	\$223,118
Rent of works.....	\$158,753	\$775	\$887	\$3,530	\$7,170	\$900
Taxes, not including internal revenue.....	\$222,670	\$1,749	\$1,782	\$1,633	\$85,334	\$34,569
Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$2,270,745	\$12,130	\$4,274	\$34,684	\$506,884	\$187,949
Contract work.....	\$26,118				\$2,154	
Materials used:						
Total cost.....	\$82,197,885	\$166,145	\$196,332	\$341,515	\$7,539,433	\$1,760,426
Principal materials.....	\$27,746,312	\$151,668	\$179,168	\$309,278	\$6,782,696	\$1,616,764
Fuel.....	\$390,746	\$5,557	\$2,212	\$6,145	\$106,986	\$28,645
Rent of power and heat.....	\$19,343		\$306		\$4,965	\$1,568
Mill supplies.....	\$736,820	\$3,877	\$6,208	\$7,169	\$278,951	\$54,766
All other materials.....	\$3,001,923	\$2,300	\$209	\$10,190	\$343,642	\$45,219
Freight.....	\$302,741	\$2,743	\$8,229	\$8,733	\$22,193	\$10,489
Products:						
Total value.....	\$47,601,607	\$253,560	\$312,446	\$302,701	\$11,388,933	\$2,955,844

	New York.	Ohio.	Pennsylvania.	Rhode Island.	Wisconsin.	All other States. ¹
Number of establishments.....	22	9	21	5	5	27
Established during the decade.....	4	3	5		1	9
Established during the census year.....			1			3
Capital:						
Total.....	\$10,311,768	\$2,147,677	\$6,162,599	\$95,947	\$213,565	\$8,367,988
Land.....	\$422,704	\$65,415	\$441,671	\$3,000	\$25,000	\$718,638
Buildings.....	\$925,858	\$272,751	\$686,950	\$15,000	\$26,370	\$1,064,583
Machinery, tools, and implements.....	\$2,734,491	\$624,270	\$1,233,540	\$39,226	\$102,310	\$1,906,027
Cash and sundries.....	\$6,228,715	\$1,185,241	\$3,850,348	\$38,721	\$59,385	\$4,678,635
Proprietors and firm members.....	15	2	26	7	6	14
Salaries of officials, clerks, etc.:						
Total number.....	148	47	90	4	11	110
Total salaries.....	\$306,331	\$54,205	\$103,788	\$2,670	\$8,840	\$156,358
Officers of corporations:						
Number.....	30	11	8		4	43
Salaries.....	\$156,755	\$17,250	\$31,700		\$2,760	\$85,150
General superintendents, managers, clerks, and salesmen:						
Total number.....	118	36	82	4	7	62
Total salaries.....	\$149,576	\$36,955	\$72,088	\$2,670	\$6,080	\$71,208
Men:						
Number.....	104	32	72	4	7	56
Salaries.....	\$142,627	\$34,999	\$67,960	\$2,670	\$6,080	\$68,746
Women:						
Number.....	14	4	10			6
Salaries.....	\$6,949	\$1,956	\$4,128			\$2,462
Wage-earners, including pieceworkers, and total wages:						
Greatest number employed at any one time during the year.....	6,439	1,574	2,919	112	142	5,066
Least number employed at any one time during the year.....	4,428	784	2,331	57	115	2,957
Average number.....	5,450	1,052	2,633	84	128	3,847
Wages.....	\$1,713,614	\$317,909	\$761,582	\$22,175	\$35,085	\$1,026,402
Men, 16 years and over:						
Average number.....	2,657	725	1,089	38	46	1,620
Wages.....	\$1,039,333	\$255,095	\$449,927	\$11,694	\$17,291	\$557,589
Women, 16 years and over:						
Average number.....	2,312	315	1,083	46	61	1,665
Wages.....	\$592,893	\$60,766	\$238,628	\$10,481	\$15,779	\$419,181
Children, under 16 years:						
Average number.....	481	12	511		21	362
Wages.....	\$81,388	\$2,048	\$73,027		\$2,015	\$49,632
Miscellaneous expenses:						
Total.....	\$782,719	\$96,471	\$147,126	\$8,052	\$7,574	\$750,740
Rent of works.....	\$125,234	\$1,151	\$2,600	\$2,150	\$44	\$15,112
Taxes, not including internal revenue.....	\$40,915	\$10,174	\$7,526	\$246	\$1,103	\$37,639
Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$616,570	\$85,146	\$114,603	\$4,089	\$6,427	\$697,989
Contract work.....			\$22,397	\$1,567		
Materials used:						
Total cost.....	\$7,516,240	\$2,325,907	\$5,448,323	\$63,954	\$109,016	\$6,780,594
Principal materials.....	\$6,781,255	\$2,170,059	\$3,295,823	\$57,428	\$103,050	\$6,296,138
Fuel.....	\$116,905	\$20,915	\$29,091	\$707	\$2,136	\$71,447
Rent of power and heat.....	\$8,012		\$60		\$750	\$687
Mill supplies.....	\$164,676	\$23,709	\$95,079	\$656	\$1,757	\$94,982
All other materials.....	\$412,079	\$46,923	\$1,950,491	\$4,131	\$700	\$186,039
Freight.....	\$33,313	\$59,301	\$74,779	\$287	\$1,373	\$81,301
Products:						
Total value.....	\$11,674,669	\$2,957,674	\$7,256,548	\$108,715	\$185,166	\$9,905,351

¹ Includes states having less than 3 establishments in order that the operations of individual establishments may not be disclosed. These establishments are distributed as follows: Arkansas, 1; California, 2; Delaware, 1; Georgia, 1; Illinois, 2; Indiana, 1; Iowa, 1; Kansas, 1; Maine, 2; Maryland, 1; Michigan, 1; Minnesota, 1; Mississippi, 1; Missouri, 2; New Hampshire, 1; North Carolina, 2; Oregon, 1; South Carolina, 1; Tennessee, 2; Texas, 2.