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APPENDIX A

MACHINE SALES AND OTHER  
MEASURES OF MECHANIZATION,  
BY YEARS

(For similar data, see also text tables 5, 6, 7, 8 and 13)

TABLE 36

IRON AND STEEL: 1911-31

MACHINE CASTING OF PIG IRON

YEAR	NUMBER OF MACHINES INSTALLED BY LEADING MANU- FACTURERS <sup>1</sup>	PERCENTAGE OF OUT- PUT MACHINE CAST			PERCENTAGE OF STACKS MECHANI- CALLY CHARGED <sup>4</sup>	NEW IN- STALLATIONS OF ELECTRIC MAIN ROLL DRIVES (HORSE- POWER) <sup>5</sup>	GROWTH OF THE CONTINUOUS PROCESS <sup>6</sup>
		MERCHANT BLAST FURNACES <sup>2</sup>	IRON NOT DELIVERED MOLTEN <sup>3</sup>	ALL PIG IRON NOT MECHANI- CALLY CHARGED <sup>4</sup>			
1911	5	45	7	57	3,100	7	
1912	6	50	47	57	27,700	7	
1913	3	42	47	56	37,650	79.7	
1914	1	31	51	64	42,775	76.7	
1915	13	31	54	75	96,980	81.5	
1916	8	50	51	73	158,660	83.5	
1917	7	50	50	49	98,525	87.9	
1918	5	56	54	54	37,900	85.8	
1919	4	58	62	56	107,750	83.3	
1920	9	63	63	56	102,420	87.1	
1921	2	71	83	68	31,300	78.4	
1922	3	75	73	73	80,555	88.0	
1923	5	72	74	71	94,800	86.1	
1924	3	75	79	84	120,350	85.2	
1925	7	82	81	88	243,975	88.8	
1926	1	85	83	87	198,440	87.9	

## MECHANIZATION IN INDUSTRY

TABLE 36 (cont.)  
IRON AND STEEL: 1911-31

YEAR	MACHINE CASTING OF PIG IRON						
	NUMBER OF MACHINES INSTALLED BY LEADING MANU- FACTURERS <sup>1</sup>	PERCENTAGE OF OUT- PUT MACHINE CAST			PERCENTAGE OF STACKS MECHANI- CALLY CHARGED <sup>4</sup>	NEW IN- STALLATIONS OF ELECTRIC MAIN ROLL DRIVES (HORSE- POWER) <sup>5</sup>	GROWTH OF THE CONTINUOUS PROCESS <sup>6</sup>
		BLAST FURNACES <sup>2</sup>	ALL PIG IRON NOT DELIVERED MOLTEN <sup>3</sup>				
			MERCHANT FURNACES <sup>2</sup>	DELIVERED MOLTEN <sup>3</sup>			
1927	7	81	85	91	134,150	87.8	
1928	7	7	85	7	188,150	89.5	
1929	7	7	89	7	890,600	91.1	
1930	7	7	91	7	146,740	87.5	
1931	7	7	93	7	95,325	91.7	

<sup>1</sup> Based on U. S. *Census of Manufactures* for 1914 and 1919, and lists of installations by manufacturers. The installations in the successive years 1895-1910 were: 1, 1, 3, 3, 4, 13, 7, 6, 12, 3, 4, 10, 6, 7, 10, 7. The average number of strands per listed installation varied from 2.0 to 2.4 in the period 1898-1916, and from 1.7 to 1.9 in the period 1917-26.

<sup>2</sup> Based upon survey reported in Bul. 474 (Ref. 37). The list of plants included is not completely identical from year to year. In 1890 no pig machines were used.

<sup>3</sup> Computed from data in *Statistical Reports* of the American Iron and Steel Institute. The percentage was zero in 1890; 40 in 1904.

<sup>4</sup> Same source of information as 2.

<sup>5</sup> Computed from lists published in January issues, 1926-32, of *Iron and Steel Engineer*. Corresponding figures for the successive years 1905-10 are: 10,600, 25,640, 26,600, 8,050, 27,450, 30,700.

<sup>6</sup> The measure of growth utilized is the percentage of steel-making pig iron used by makers which is cast in molten condition. Computed from *Statistical Reports* of the American Iron and Steel Institute.

<sup>7</sup> No data available.

## SALES BY YEARS

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TABLE 37  
COMMERCIAL PRINTING: 1913-28<sup>1</sup>

YEAR	NUMBER SOLD		RATIO OF CUMULATIVE SALES OF MACHINE- FED PRESSES TO TOTAL PRESSES SOLD, 1913-28 <sup>4</sup>
	JOB- AUTOMATICS <sup>2</sup>	AUTOMATIC FEEDING ATTACHMENTS <sup>3</sup>	
1913	. . .	328	8.7
1914	14	490	11.8
1915	82	555	14.9
1916	209	938	19.6
1917	271	1,924	28.2
1918	259	2,857	41.3
1919	277	3,948	53.6
1920	499	5,163	64.6
1921	325	2,021	64.7
1922	685	2,060	62.8
1923	1,199	2,238	62.5
1924	1,133	1,915	63.2
1925	1,738	1,348	63.7
1926	1,542	1,215	64.5
1927	1,461	1,217	65.7
1928	1,439	1,048	66.8

<sup>1</sup> Baker (Ref. 4), pp. 201, 204.

<sup>2</sup> Computed from cumulative annual sales as compiled by Dr. Baker, pp. 201, 204.

<sup>3</sup> Automatic feeding attachments for platen and flat-bed cylinder presses.

<sup>4</sup> Includes platens, job-automatics, small and large cylinders, and two-color and perfecting presses. For cumulative annual sales of each type see Ref. 4, p. 201.

This computation does not cover presses sold prior to 1913.

TABLE 38  
SELECTED MANUFACTURING EQUIPMENT: 1914-1929

YEAR	FOUNDRY EQUIPMENT				WOOD-WORKING MACHINERY (SHIPMENTS) 4		YARN-WORKING MACHINES (NUMBER SOLD) 5			
	ALL TYPES 1 (SHIPMENTS, VALUE IN 1925: 100)		MOLDING MACHINES 2 (NUMBER)		MACHINE TOOLS 3 (NUMBER IN 1925: 100)	VALUE (THOUSAND DOLLARS)	NUMBER	WARP TYING	AUTOMATIC SPOOLERS	HIGH SPEED WARPERS
	VALUE IN 1925: 100	TYPE	HAND TYPE	POWER TYPE						
1914	6	364	6	6	81	6	6	43	7	7
1915	6	435	6	6	167	6	6	50	...	...
1916	6	886	6	6	209	6	6	71	...	...
1917	6	640	6	6	233	6	6	66	1	1
1918	6	380	200	200	219	6	6	67	1	1
1919	6	567	710	710	174	14,798	6	67	2	1
1920	6	707	625	625	135	21,320	6	38	8	4
1921	27	112	65	65	25	10,595	6	26	16	8
1922	70	180	304	304	51	15,644	6	18	5	3
1923	100	282	351	351	89	19,913	18,173	43	14	7
1924	79	136	119	119	63	18,179	13,725	22	22	15
1925	100	142	107	107	100	19,213	13,697	23	33	23
1926	106	127	79	79	108	19,004	14,521	24	53	45
1927	94	53	24	24	92	15,504	12,243	35	63	56
1928	131	89	31	31	158	16,212	12,022	22	75	69
1929	148	112	52	52	187	19,316	13,488	20	101	99

## SALES BY YEARS

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<sup>1</sup> Obtained by converting to 1925 base an index on 1922-24 base given in the *1932 Annual Supplement, Survey of Current Business*, p. 218. The series is said to represent from 65 to 70 per cent of the industry.

<sup>2</sup> The foundry molding machine data represent sales of single manufacturers, the hand series being of the plain squeezer type, for use on the lighter classes of work; the power series, the squeezer and jolt-squeezer types operated by compressed air.

<sup>3</sup> Index of number of machines, based on shipments, 1914-19, and new orders, 1919-28. The data were compiled by the National Machine Tool Builders' Association, and are published in the *Survey of Current Business*. The shipments were "reported by 29 firms representing about 20 per cent of the membership and believed to be fairly typical of the industry, as standard machines and the larger firms are represented". The data on 'new orders' include quantity reports "from between 50 and 60 firms, said to represent about one-third of the industry". We have spliced the two index numbers at 1919 and converted the resulting series to a 1925 base.

<sup>4</sup> From *1932 Annual Supplement, Survey of Current Business*, pp. 222-3; originally compiled by the Association of Manufacturers of Wood Working Machinery from reports of its members, averaging about 23 each month and varying from 20 to 27. The total shipments for 1925 represented 48 per cent of the value of wood-working machinery produced that year, according to the *Census of Manufactures*.

<sup>5</sup> Data from Barber-Colman Company, the sole manufacturers of these three types. Sales of the warp-tying machine in the successive years 1904-13 were: 24, 31, 64, 72, 21, 35, 27, 21, 44 and 40.

<sup>6</sup> No data for these years.

<sup>7</sup> No sales prior to 1917.

## MECHANIZATION IN INDUSTRY

TABLE 38 (cont.)

SELECTED MANUFACTURING EQUIPMENT: 1914-1929

II 8

(number sold in 1925: 100)

YEAR	CLOTH AND GARMENT- WORKING MACHINES <sup>9</sup>				CRUSHING, MIXING, AND FILTERING EQUIPMENT <sup>10</sup>				PACKING AND FILLING MACHINES <sup>11</sup>			
	SERIES		SERIES		SERIES		SERIES		SERIES		SERIES	
	A	B	C	D	E	F	G	H				
1914	17	...	4	31	13	13	13	...				
1915	29	...	15	46	13	13	13	...				
1916	39	...	54	62	13	13	13	...				
1917	53	<sup>12</sup>	80	100	17	126	13	...				
1918	46	14	96	116	34	130	13	...				
1919	66	0	104	58	45	126	13	...				
1920	74	43	174	112	44	122	13	...				
1921	70	0	39	38	43	56	13	...				
1922	89	43	73	44	62	52	151	<sup>12</sup>				
1923	90	100	127	72	62	108	127	16				
1924	95	57	83	52	82	80	105	32				
1925	100	100	100	100	100	100	100	100				
1926	109	114	130	121	112	104	122	100				
1927	116 <sup>15</sup>	100	125	118	160	<sup>14</sup>	100	111				
1928	<sup>14</sup>	86	144	116	212	<sup>14</sup>	100	<sup>14</sup>				
1929	88 <sup>15</sup>	29	158	134	191	<sup>14</sup>	102	<sup>14</sup>				

<sup>8</sup> Each series in this division is based on the sales of only one or two establishments.

<sup>9</sup> The comparable figures for 1908-13 for Series A are: 3, 5, 7, 7, 10 and 15.

<sup>10</sup> Series B, C and D represent, respectively, a type of heavy crushing machinery, sand mixers, and continuous filtering systems.

<sup>11</sup> Series E, F, G and H represent, respectively, filling and capping machines for milk bottles, labeling and casing machines for cylindrical containers, bag-filling machines, and butter-wrapping and cartoning machines.

<sup>12</sup> No sales made prior to the first year for which data are given.

<sup>13</sup> Sales began before 1914 but data for the early years are not available.

<sup>14</sup> Data not available for these years.

<sup>15</sup> Estimated from value of machines of this type as reported in *Census of Manufactures*.

## SALES BY YEARS

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TABLE 38 (cont.)

## SELECTED MANUFACTURING EQUIPMENT: 1914-1929

## III

YEAR	NUMBER SOLD IN 1925: 100			GLASS BOTTLE MACHINES	
	PERCENTAGE RATIO OF MACHINE- MADE CIGARS TO TOTAL <sup>16</sup>	TOBACCO- PREPARING MACHINERY <sup>18</sup>	AUTOMATIC PAPER-STOCK PROPORTIONING AND METER- ING SYSTEM	SEMI- AUTOMATICS IN USE <sup>20</sup>	ESTIMATED PERCENTAGE OF JARS AND BOTTLES MADE ON AUTOMATICS <sup>21</sup>
1914	...	84	...	22	22
1915	...	119	...	22	22
1916	...	94	...	459	22
1917	<sup>17</sup>	135	...	428	50
1918	0.1	287	...	417	22
1919	2.6	387	...	22	22
1920	4.6	219	...	315	22
1921	6.0	132	<sup>19</sup>	288	22
1922	7.1	177	74	164	80
1923	9.1	155	105	130	22
1924	10.9	152	95	72	90
1925	14.8	100	100	98	22
1926	22.3	181	89	22	22
1927	28.0	171	121	26	22
1928	32.0	123	53	22	22
1929	35.1	126	42	22	22

<sup>16</sup> Computed from total production of cigars weighing more than 3 pounds per thousand and estimated production of machine-made cigars (Ref. 47). The ratio was 47.0 in 1930.

<sup>17</sup> Less than one-tenth of one per cent.

<sup>18</sup> Five series. Sales of these types began before 1914.

<sup>19</sup> Few or no sales made prior to 1922.

<sup>20</sup> The number of machines in use as reported by the union, which had practically complete control over these machines. Data for 1897-1924 from Barnett (Ref. 3, p. 110); for 1925 and 1927 from annual proceedings of the Glass Bottle Blowers Association. We are informed by the secretary of the Association that by 1929 there were none in use (letter to the writer, January 23, 1934). See Ch. III, especially Table 5, for other data pertaining to machines in the glass industries.

<sup>21</sup> Barnett (Ref. 3), p. 85. Estimates are for production years 1917, 1922-23 and 1924-25, respectively.

<sup>22</sup> Data not available for these years.



## MECHANIZATION IN INDUSTRY

TABLE 39  
DOMESTIC SALES OF SELECTED TYPES OF FARM EQUIPMENT:  
1920-1929<sup>1</sup>

	<i>(number in thousands)</i>									
	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
<i>Tractors</i>	163.0	4	101.2 <sup>6</sup>	117.7 <sup>6</sup>	99.0 <sup>6</sup>	122.0 <sup>6</sup>	126.7 <sup>7</sup>	160.7 <sup>7</sup>	103.9 <sup>7</sup>	160.0 <sup>7</sup>
Wheel <sup>2</sup>	4	4	96.4	110.7	92.2	114.2	116.9	147.1	86.9	136.3
Tracklaying <sup>3</sup>	4	4	3.7	4.4	4.4	4.6	6.0	8.8	12.9	19.0
<i>Tractor-drawn equipment</i>										
Moldboard plows	122.0	24.7	52.4	54.1	40.7	53.9	66.2	70.7	79.8	90.9
Disk plows	22.6	6.2	7.5	7.4	7.3	10.7	11.2	11.8	15.9	26.1
Listers	2.2	.7	1.3	1.0	2.5	2.7	6.5	8.0	8.9	4
Grain drills	3.2	.9	.9	.4	.2	.7	2.4	5.9	9.2	15.8
Disk harrows	59.7	28.6	27.3	30.3	26.0	29.8	39.8	39.8	44.3	46.0
<i>Other power equipment</i>										
Internal-combustion engines	216.1	116.6 <sup>6</sup>	90.6	129.0	104.1	147.8	141.7	106.8	105.7	111.8
Corn shellers	6.5	3.3	5.3	5.5	3.3	3.4	3.	3.7	3.5	3.7
Hay presses	4.3	1.6	2.5	2.0	2.2	1.7	1.8	1.8	1.2	1.7
Feed grinders and crushers	52.3	15.4	46.0	49.5	32.5	35.3	41.8	37.4	44.4	46.8
Spraying outfits	10.7	2.2	10.7	10.4	8.0	8.8	10.0	11.3	11.9	10.7
Water systems	4	4	29.5	20.7	58.5	98.2	91.2	101.2	126.0	130.7
Milking machines	28.1	8	9.4	11.1	11.2	14.3	14.5	15.3	19.9	21.3
<i>Other equipment<sup>3</sup></i>										
Combines (harvester-thresher)	2.7	2.3	1.6	1.1	1.6	3.6	6.3	11.2	18.0	19.7
Corn huskers and shredders	5.1	3.0	3.3	3.5	1.6	3.8	2.8	1.5	1.7	1.0
Potato diggers, plow type	6.8	3.2	5.1	2.6	2.5	2.6	2.7	3.4	3.5	3.0

## SALES BY YEARS

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Potato diggers, elevator type	10.5	7.4	14.2	8.1	5.8	4.9	7.8	10.9	13.7	7.9
Farm elevators, portable and stationary	10.3	.6	4.3	7.5	4.6	7.0	6.6	7.0	11.3	11.0
Ensilage and fodder cutters	23.9	10.6	13.8	13.9	12.1	13.0	13.5	13.9	12.7	10.8
Overhead feed and litter carriers	14.3	.9	6.8	9.9	8.4	9.9	8.3	9.7	9.6	9.8

<sup>1</sup> Based upon data contained in (1) U. S. Bureau of Public Roads, Circular 212, *The Manufacture and Sale of Farm Equipment in 1920*; (2) U. S. Bureau of the Census, *Census of Manufactures, 1927*, and annual bulletins entitled *Manufacture and Sale of Farm Equipment, 1922-29*, inclusive. Although the number of reporting concerns varies somewhat, it is believed that each year all but a small part of the total production is included.

<sup>2</sup> Not including garden tractors and motor cultivators.

<sup>3</sup> Not including tracklaying attachments (used to convert the wheel type to the tracklaying type). In 1926, 2,234 were sold in the United States.

<sup>4</sup> No data available.

<sup>5</sup> These figures are the number manufactured, rather than sold, and probably exceed the domestic sales.

<sup>6</sup> Includes the garden type tractor.

<sup>7</sup> Includes the garden type tractor and motor cultivators.

<sup>8</sup> Data for domestic sales not available.

<sup>9</sup> All power driven.

## MECHANIZATION IN INDUSTRY

TABLE 40

## COAL MINING: 1914-1929

YEAR	UNDERCUTTING MACHINES <sup>1</sup>				PERCENTAGE OF TONNAGE MINED BY STRIPPING WITH POWER SHOVELS <sup>1</sup>		PERCENTAGE OF BITUMINOUS COAL LOADED WITH SELF-FEEDING DEVICES <sup>2</sup>
	NUMBER IN USE		PERCENTAGE UNDERCUT BY MACHINE		ANTHRA-CITE	BITUMI-NOUS	
	BITUMI-NOUS	ANTHRA-CITE	BITUMI-NOUS	ANTHRA-CITE <sup>3</sup>			
1914	16,507	<sup>4</sup>	51.7	<sup>4</sup>	<sup>4</sup>	0.3	...
1915	15,692	<sup>4</sup>	55.0	<sup>4</sup>	<sup>4</sup>	0.6	...
1916	16,198	<sup>4</sup>	56.5	<sup>4</sup>	1.4	0.8	...
1917	17,235	<sup>4</sup>	55.5	<sup>4</sup>	2.5	1.0	...
1918	18,463	176	55.9	2.1	2.6	1.4	...
1919	18,959	<sup>4</sup>	59.2	1.9	2.4	1.2	...
1920	19,103	139	59.8	1.1	2.5	1.5	...
1921	19,618	114	65.6	1.1	2.3	1.2	...
1922	20,436	82	63.2	1.0	1.9	2.4	...
1923	21,229	162	66.9	1.4	2.7	2.1	0.3
1924	18,660	212	69.5	1.7	2.2	2.8	0.7
1925	17,551	159	70.6	1.6	2.7	3.2	1.2
1926	17,466	90	71.7	1.2	3.0	3.0	1.8
1927	17,388	138	72.2	1.5	2.8	3.6	<sup>4</sup>
1928	15,261	193	73.8	1.8	3.4	4.0	2.9
1929	14,731	137	75.4	1.6	2.7	3.8	3.6

<sup>1</sup> Data for undercutting machines and stripping operations from *Mineral Resources* (Ref. 32), Pt. II: 1923, p. 582; 1927, pp. 374-5; 1929, pp. 751-5.

<sup>2</sup> Computed from coal production and tonnage of coal mechanically loaded as reported in *Mineral Resources of the United States* (Ref. 32) 1929, II, 701, 758-9. In 1930 the percentage mechanically loaded was 5.0; in 1931, 5.9 (computed from data in U. S. Bureau of Mines *Coal in 1931*), pp. 427, 451.

Mechanically loaded coal includes that "loaded by mobile machines, scrapers, and duckbills and other self-loading conveyors" but not coal loaded by hand-fed pit-car loaders and other hand-loaded conveyors or by power shovels in strip pits.

<sup>3</sup> Percentage of fresh mined coal.

<sup>4</sup> No data available.

# SALES BY YEARS

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TABLE 41

## SELECTED NON-MANUFACTURING EQUIPMENT: 1914-1929

I

YEAR	PRODUCTION OF POWER AND HEAT					
	HEAVY					
	EXCAVATING AND GRADING		INDUSTRIAL STOKERS <sup>3</sup> (NEW ORDERS)		LOCOMOTIVE	SPECIAL
	POWER SHOVELS <sup>1</sup> (number sold)	NARROW TRENCHERS <sup>2</sup> (number sold in 1925: 100)	NUMBER	TOTAL HORSE- POWER (thousands)	STOKERS <sup>4</sup> (number sold in 1925: 100)	ANNEALING AND DRYING SYSTEMS <sup>5</sup> (number sold)
1914	181	...	...	...	23	...
1915	197	...	...	...	36	2
1916	366	...	...	...	86	3
1917	431	...	...	...	100	9
1918	392	...	...	...	171	8
1919	536	...	2,809	633	19	20
1920	641	...	2,195	791	122	22
1921	465	...	871	327	9	4
1922	876	...	1,563	725	130	12
1923	1,147	14	1,464	730	179	16
1924	1,105	33	1,128	514	100	15
1925	6	100	1,348	553	100	16
1926	6	114	1,361	546	164	19
1927	6	109	1,374	484	6	14
1928	6	82	1,490	509	6	7
1929	6	94	1,716	600	6	9

<sup>1</sup> Power shovels of contractors' sizes, 1/2 to 1 3/4 yd., of steam, gasoline and electric types, sold by a group of manufacturers including 3 firms in 1914; 5 in 1915; 6 in 1921; 8 in 1922; and 10 in 1924. In each instance the increase in numbers represents establishments just beginning the manufacture of this type of shovels in the given year. The sales in earlier years are:

1900	14	1904	45	1908	69	1912	195
1901	16	1905	49	1909	95	1913	165
1902	27	1906	45	1910	105		
1903	35	1907	90	1911	147		

<sup>2</sup> Data from manufacturers of narrow trenchers.

TABLE 41 (cont.)

## SELECTED NON-MANUFACTURING EQUIPMENT: 1914-1929

## II

YEAR	AUTOMATIC TELEPHONE SWITCHBOARDS <sup>7</sup>		MOTORIZED RAILWAY SECTION-CREW CARS <sup>8</sup>	STREET AND CATCH-BASIN CLEANING MACHINES <sup>9</sup>
	NUMBER OF STATIONS SERVED	PERCENTAGE OF TOTAL STATIONS	(number sold by reporting manufacturers)	
	(thousands)			
1914	10	10	3,103	4
1915	10	10	2,971	7
1916	10	10	2,706	19
1917	10	10	2,885	22
1918	10	10	2,447	33
1919	130	1.7	2,735	49
1920	157	1.9	3,634	53
1921	236	2.7	1,808	47
1922	338	3.6	2,541	33
1923	575	5.5	3,227	68
1924	969	8.6	2,429	68
1925	1,496	12.4	2,596	74
1926	1,975	15.4	2,954	107
1927	2,550	18.6	2,941	104
1928	3,147	21.7	3,776	106
1929	4,014	26.0	4,119	10

<sup>8</sup> From 1919 through 1922 compiled by the Stoker Manufacturers' Association; thereafter by the Bureau of the Census, U. S. Department of Commerce, and published in the *Survey of Current Business* and mimeographed press releases. In the latter the data are classified as installed under fire-tube or water-tube boilers. The series represents practically the entire industry, changes in the number of plants being due, apparently, to consolidations. The 1929 compilations cover ten plants.

<sup>4</sup> Data from two manufacturers.

<sup>5</sup> Six series covering metal annealing furnaces and clay-burning kilns of the continuous tunnel type and automatic drying systems for clay products.

<sup>6</sup> Comparable data not available for these years.

<sup>7</sup> The telephone data cover Bell-owned stations, as of the close of the specified year, and are furnished by the American Telephone and Telegraph Company.

<sup>8</sup> From three manufacturers. The exact distribution by years of about 600

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cars sold, 1914-17, is an estimate. A relatively small number of cars used for inspection purposes is included. Comparable data for 1911, 1912 and 1913 are 600, 900 and 2,294 respectively.

<sup>9</sup> Two types.

<sup>10</sup> No data available.

TABLE 42

EQUIPMENT FOR THE COMMERCIAL PREPARATION OF FOOD AND DRINK: 1914-1929<sup>1</sup>

(number sold by reporting establishments in 1925: 100)

YEAR	BOTTLE- WASHING MACHINES	BREAD- AND CAKE-MIXING MACHINES	DISH- WASHING MACHINES	VEGETABLE- PARING MACHINES
1914	92	<sup>8</sup>	<sup>2</sup>	22
1915	102	...	...	19
1916	81	...	...	37
1917	66	...	...	51
1918	87	...	58	74
1919	121	79	63	61
1920	129	82	67	70
1921	71	86	65	53
1922	66	97	76	60
1923	76	98	85	82
1924	88	93	79	93
1925	100	100	100	100
1926	80	109	111	90
1927	<sup>4</sup>	114	111	86
1928	<sup>4</sup>	112	138	<sup>4</sup>
1929	<sup>4</sup>	102	143	<sup>4</sup>

<sup>1</sup> The index for bottle-washing machines covers five models sold by three manufacturers, the total number in 1925 being 548; the index for bread- and cake-mixing machines covers the sales of two manufacturers; for dish-washing machines, one manufacturer; for vegetable-paring machines, six models sold by two manufacturers.

<sup>2</sup> On market prior to 1918, but data not available.

<sup>3</sup> Sales in this series began before 1914 but are available only for 1919-29.

<sup>4</sup> No data available for these years.

## MECHANIZATION IN INDUSTRY

TABLE 43

NUMBER OF ELECTRIC HOUSEHOLD APPLIANCES SOLD, BY  
SELECTED TYPES: 1923-1930<sup>1</sup>

ELECTRIC APPLIANCE	(thousands)							
	1923	1924	1925	1926	1927	1928	1929	1930
Irons	2,250	<sup>3</sup> 2,750	3,000	3,000	3,000	3,000	3,150	2,363
Vacuum cleaners	1,016	904	958	1,065	1,195	1,219	1,253	978
Washing machines <sup>2</sup>	554	612	733	844	790	810	956	802
Ironing machines	50	<sup>3</sup>	40	60	68	92	126	100
Sewing machines	625	<sup>3</sup>	170	200	350	380	399	319
Floor polishers	<sup>3</sup>	<sup>3</sup>	50	90	47	49	53	33
Dishwashers	<sup>3</sup>	<sup>3</sup>	4	7	9	10	12	15

<sup>1</sup> Except where otherwise stated, the estimates in this table are compiled from the issues of *Electrical World* for March 1, 1924, p. 461, and April 2, 1927, p. 736, and of *Electrical Merchandising* for January 1927, p. 77; 1928, p. 70; 1929, p. 62; 1930, p. 52; and 1931, p. 22. The data for vacuum cleaners were originally compiled by the Vacuum Cleaner Manufacturers' Association.

<sup>2</sup> According to a letter from the American Washing Machine Manufacturers' Association, February 23, 1928, the sales of the electric washing machine industry in the United States and Canada were 566,000 in 1920; 289,000 in 1921; and 423,000 in 1922. They also report the number of engine-driven washing machines (in thousands) as follows:

1920	58	1922	20	1924	17	1926	67
1921	16	1923	20	1925	36	1927	85

<sup>3</sup> No data available.

TABLE 44

NUMBER OF USERS OF ELECTRIC HOUSEHOLD APPLIANCES, BY  
SELECTED TYPES: 1924-1930<sup>1</sup>

(estimates as of December 31, in thousands)

ELECTRIC APPLIANCE	1924	1926	1927	1928	1929	1930
Irons	10,200	12,800	15,300	17,700	18,538	20,001
Vacuum cleaners	5,000	5,900	6,828	7,700	8,600	9,086
Washing machines	3,500	4,250	5,000	5,735	6,585	7,185
Ranges	268	480	590	725	875	1,000
Cookers	<sup>2</sup>	750	950	1,050	1,175	<sup>2</sup>
Ironing machines	210	280	348	480	580	680

<sup>1</sup> Compiled from the files of *Electrical Merchandising* and supplements, 1925 to 1931.

<sup>2</sup> No data available.

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TABLE 45

PERCENTAGE OF WIRED HOMES EQUIPPED WITH SPECIFIED ELECTRIC APPLIANCES: 1924-30<sup>1</sup>

(estimates as of December 31)

ELECTRIC APPLIANCE	1924	1926 <sup>2</sup>	1927	1928	1929	1930
Irons	77.0	80.0	87.0	93.0	94.0	97.8
Vacuum cleaners	37.7	37.1	38.8	40.7	43.6	44.4
Washing machines	26.4	26.7	28.4	30.2	33.4	35.1
Ranges	2.0	3.0	3.4	3.8	4.4	4.8
Cookers	<sup>3</sup>	4.7	5.4	5.5	5.9	<sup>3</sup>
Ironing machines	1.6	1.7	2.0	2.5	2.9	3.3

<sup>1</sup> Compiled from the files of *Electrical Merchandising*: February 1925 (supplement); January 1928, p. 71; January 1929, p. 63; January 1930, p. 53; and January 1931, p. 24.

<sup>2</sup> The year 1925 is omitted because the available data do not appear to be comparable with the data for the other years.

<sup>3</sup> No data available.

TABLE 46

HANDLING EQUIPMENT, MOBILE TYPES: 1914-1929

YEAR	MOTOR TRUCKS		ELECTRIC			LUMBER
	NUMBER PRODUCED IN THE U. S. <sup>1</sup>	REGISTRATIONS <sup>2</sup>	INDUSTRIAL TRUCKS AND TRACTORS, <sup>3</sup> DOMESTIC SHIPMENTS (NUMBER)	PORTABLE CONVEYORS (NUMBER SOLD BY REPORTING FIRMS IN 1925: 100)	SELF-FEEDING WAGON LOADERS <sup>4</sup> (NUMBER SOLD BY REPORTING FIRMS)	CARRIERS AND PILERS <sup>5</sup> (NUMBER SOLD BY REPORTING FIRMS)
1914	25,375	85,600	200	20	4	3
1915	74,000	136,000	350	23	16	16
1916	92,130	215,000	750	25	31	24
1917	128,157	326,000	1300	46	51	9
1918	227,250	525,000	1800	106	54	18
1919	275,943	794,372	1900	88	73	46
1920	321,789	1,006,082	1914	119	111	47
1921	143,712	1,118,520	351	60	67	23
1922	269,991	1,375,725	793	91	88	54
1923	409,295	1,612,569	1340	100	125	139
1924	416,659	2,134,724	849	103	98	99



## MECHANIZATION IN INDUSTRY

TABLE 46 (cont.)

HANDLING EQUIPMENT, MOBILE TYPES: 1914-1929

YEAR	MOTOR TRUCKS		ELECTRIC INDUSTRIAL TRUCKS AND TRACTORS, <sup>3</sup> DOMESTIC SHIPMENTS (NUMBER)	PORTABLE CON- VEYORS (NUMBER SOLD BY REPORTING FIRMS IN 1925: 100)	SELF-FEED- ING WAGON LOADERS <sup>4</sup> (NUMBER SOLD BY REPORTING FIRMS)	LUMBER CARRIERS AND PILERS <sup>5</sup> (NUMBER SOLD BY REPORTING FIRMS)
	NUMBER PRODUCED IN THE U. S. <sup>1</sup>	REGISTRA- TIONS <sup>2</sup>				
1925	530,659	2,440,854	1312	100	100	109
1926	516,947	2,764,222	1317	107	125	136
1927	464,793	2,914,019	1129	104	113	112
1928	543,342	3,113,999	1321	95	82	160
1929	771,020	3,379,854	1857	101	80	156

<sup>1</sup> *Survey of Current Business*, June 1927, p. 22, and *1932 Annual Supplement*, pp. 274-5. The figures for 1922-29 include foreign assemblies.

<sup>2</sup> Registrations from Ref. 19, 1931, p. 16.

<sup>3</sup> Data for 1914-19 are rough estimates based on reports from establishments producing about 50 per cent of the total number in 1920. It is assumed that the fraction produced by these establishments decreased gradually from 1914 to 1920. Data for 1920-24, from the Industrial Truck Association; for subsequent years, from press releases of the U. S. Department of Commerce, based upon reports from the 9 to 11 leading manufacturers. Similar estimates for the successive years 1906-13 are: 5, 10, 10, 25, 45, 75, 130, 200.

<sup>4</sup> Three models, comprising the major portion of the industry. These machines pick up loose material such as sand, gravel or snow and convey it to the box of wagon or truck.

<sup>5</sup> Four models, gasoline and electric types. The total number sold to 1920, inclusive, was 1,151.

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TABLE 47  
HANDLING EQUIPMENT, FIXED AND SEMIMOBILE TYPES: 1920-1929  
(annual value in thousands of dollars)

YEAR	ELECTRIC HOISTS (NEW ORDERS) <sup>1</sup>		ELECTRIC OVERHEAD CRANES <sup>2</sup>		ELECTRIC INDUSTRIAL LOCOMOTIVES <sup>3</sup>		ELECTRIC MINING LOCOMOTIVES <sup>3</sup>		INSTALLED HANDLING SYSTEMS, SAMPLE <sup>4</sup> (VALUE IN 1925: 100)
	SHIPMENTS	NEW ORDERS	TROLLEY	BATTERY	TROLLEY	BATTERY	TROLLEY	STORAGE BATTERY	
1920	3,194	...	...	...	...	...	...	...	114
1921	1,590	6,893	2,708	...	...	...	...	...	26
1922	1,590	3,796	6,898	...	...	...	...	...	68
1923	2,118	10,567	9,168	...	...	...	...	...	81
1924	1,673	9,420	8,900	...	...	...	...	...	82
1925	2,016	9,742	10,770	...	...	...	...	...	100
1926	1,920	11,722	11,688	286	305	3,210	752	805	119
1927	1,620	9,308	7,976	190	329	2,867	805	518	95
1928	2,448	7,126	7,598	796	436	1,718	518	806	143
1929	3,102	12,290	14,619	1,344	267	2,720	806	...	129

<sup>1</sup> Compiled by the Electric Hoist Manufacturers' Association from the reports of nine firms. Data for 1925-30 in *Survey of Current Business*, August 1929, p. 42, and February 1931, p. 26. Issues of the *Survey* since March 1931 have carried revised and larger figures for this series, without explanation of the revision. We have used the unrevised figures as probably more comparable with the data for the years prior to 1925.

<sup>2</sup> Compiled by the Electric Overhead Crane Institute, from reports of eleven manufacturers, estimated to cover 98 per cent of the output of electric overhead cranes for factories, etc." Published in *Survey of Current Business*, 1932 *Annual Supplement*, pp. 218-19.

<sup>3</sup> Shipments as reported to the U. S. Department of Commerce by ten firms, comprising practically the entire industry. Mimeographed press releases, March 2, 1929 and January 17, 1930. Number of locomotives also given. In 1929, there were shipped 56 industrial locomotives of the trolley type and 13 storage battery type; 468 mining locomotives of trolley type and 288 storage battery.

<sup>4</sup> Based on reports from a small number of firms, whose total installations ranged from \$1,500,000 to \$2,000,000 in the peak years. The effect of changes in the list of reporting firms has been eliminated so far as possible by constructing the index from year-to-year percentage changes in installations of identical firms.