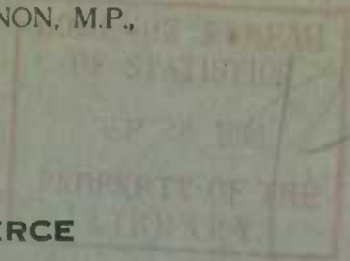


57-D-21 c³

Published by Authority of the Hon. James A. MacKINNON, M.P.,
Minister of Trade and Commerce.



CANADA
DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
PUBLIC UTILITIES BRANCH

USE OF ELECTRIC POWER
IN
MANUFACTURING AND MINING INDUSTRIES
IN
CANADA
1939



OTTAWA
1941

Price 25 cents

Published by Authority of the Hon. James A. MACKINNON, M.P.,
Minister of Trade and Commerce.

DOMINION BUREAU OF STATISTICS
TRANSPORTATION AND PUBLIC UTILITIES BRANCH
OTTAWA

Dominion Statistician, R.H. COATS, LL. D., FR.S.C., F.S.S. (Hon.)

Chief, Transportation and Public Utilities Branch, G.S. Wrong, B.Sc.

USE OF ELECTRIC POWER

IN

MANUFACTURING AND MINING INDUSTRIES

IN CANADA

1 9 3 9

This report, issued during the past ten years, has attempted to show the evolution of power machinery in manufacturing and mining industries in Canada toward electric drive and particularly toward electric motors driven by power generated in central stations. With no coal mined in the chief manufacturing provinces of Ontario and Quebec and with a large supply of water power within economic transmission distance of manufacturing and mining centres in these and in most of the other provinces, this trend has been more pronounced than in many countries. The trend has been measured by the ratio of electric motor capacity to total power equipment installed in these industries, the central electric station industry being excluded as one of the manufacturing industries.

This ratio of electric motor rating to total power equipment indicates this evolution, but the movement towards electric drive is slightly exaggerated because of the practice in mills, factories, etc., of installing motors at each machine or group of machines with a total capacity greater than would be necessary if only one large motor were used or if a steam engine and belts and shafting were used. In the early annual industrial censuses no segregation was made of electric motors operated on power purchased from central electric stations and on power produced within the establishment making the report. Consequently, 1923 is the first year for which total power employed can be compiled without duplication.

During the sixteen years between 1923 and 1939 there has been very little net increase in the use of water power in manufacturing industries outside of the central electric station industry which is not included as a manufacturing industry. Steam engines increased in capacity only 49.4 per cent. Internal combustion engines more than doubled, however they still constitute only a small percentage of the total, but electric motors more than trebled in capacity. Those operated on power purchased from central stations increased by 252.1 per cent, whereas electric motors operated by electricity generated by the industries increased only 94.4 per cent. In 1923 the motors operated by central station power were the major part of all power equipment and consequently, with the greater rate of increase than other modes of power, by 1939 they were more than double the capacity of all water wheels, steam engines and internal combustion engines used by manufacturing industries. The details of the capacities in 1923 and 1939 are as follows:

POWER EQUIPMENT IN MANUFACTURING INDUSTRIES

	Capacity (Horse Power)		Per Cent Increase
	1923	1939	
Water wheels	587,191	731,390	24.6
Steam engines	554,191	827,801	49.4
Internal combustion (gas and oil) engines	46,829	121,997	160.5
Total	1,188,211	1,681,188	41.5
Electric motors on purchased power	958,692	3,375,169	252.1
Total power	2,146,903	5,056,357	135.5
Total Electric Motors	1,315,828	4,069,619	209.3

The ratio of electric motor capacity to total power employed has increased fairly steadily, the recessions being few and small. The saturation point will be reached somewhere below 100 per cent because probably direct hydraulic drive or steam or internal combustion engines always will be used in some plants in preference to electric motors. The increase in the ratio has been considerably less since 1929 than during the preceding six years, the increase being 5.8 points from 1929 to 1939 as against 13.4 points from 1923 to 1929. Commencing with 1935 reports data were gathered on spare or idle equipment. For each of the years 1935-1939 the percentage of total equipment not in regular use was approximately the same, around six per cent. The equipment in regular use is more informative than total figures and when data for several years are available these tables will be compiled on the basis of equipment in regular use. In the meantime, comparisons are possible only for total equipment in the operating plants. Although equipment in idle plants might be considered as idle or spare equipment in the industry or group of industries, it is not included in these tables as reports are received only from plants in operation during the year. With increased business the idle equipment would probably be reduced but the bringing into operation of idle plants will not necessarily affect the proportion of equipment in regular use and the proportion idle.

Table 3 indicates that while the transfer to electric drive from other forms of power has been taking place in all groups of industries, many of them were highly electrified in 1923. The power employed in the pulp and paper industry is by far the greatest of any industry, constituting 35 per cent of the total for all manufacturing industries in 1923 and 40 per cent in 1939, and the growth in the use of electric drive in this industry from 447,847 horse power in 1923 to 1,652,549 horse power in 1939 (including idle or spare equipment) has been an important factor in the increase for the industries as a whole. Deducting this industry from the total shows an increase in electric drive from 62.2 per cent in 1923 to 80.0 per cent in 1939, as against 61.3 per cent to 80.5 per cent with the pulp and paper industry included.

The importance of the pulp and paper industry as a consumer of electricity is even greater than the power equipment data would indicate. This is due to the plants operating more or less continuously throughout each day of the year and to the use of secondary electric power for electric boilers. This industry accounted for 55 per cent of the electricity purchased for power and lighting and also of the power purchased for other purposes, 72 per cent of the electricity produced by the industries and 57 per cent of the total electricity used by all manufacturing industries for all purposes and from all sources.

Table 4 shows the power equipment in regular use in manufacturing plants operating during 1939. The data in this table differ from those shown in reports prior to 1936 in that idle equipment is excluded here except for the group totals where totals including and excluding idle equipment are shown. Under each group are shown only the industries having large power installations. Many other industries not listed use electric drive almost exclusively. The consumption of electricity is also shown for each industry listed. This is broken down into "purchased from central stations" and "generated by the industries". The former is also divided between that used for lighting and

power purposes and for other purposes, which includes electricity used in electric furnaces, electric boilers, electro-chemical processes, etc. Electric boilers, particularly in pulp and paper mills, take the major portion of this class of electricity and in most cases it is surplus or off-peak power that is purchased for this purpose. The total consumption for these other purposes was 9,388,901,000 kilowatt hours of purchased power, or over half of the total quantity purchased. A portion of the power generated in the industries also is used for other than lighting and driving machines but a comprehensive break-down is not available.

The mining industries are almost as highly electrified as the manufacturing industries, the ratio increasing from 57.3 per cent in 1925 to 80.2 per cent in 1939. Data for the mining industries are shown in Tables 2 and 7.

It is not possible to accurately allocate line losses to the various uses of electricity but, ignoring these, manufacturing industries consumed 59 per cent of the total electric energy produced by central electric stations, mining accounted for 5.4 per cent, exports to the United States amounted to 7 per cent and the remaining 28.6 per cent was made up of domestic services, commercial lighting, street lighting, miscellaneous services such as municipal water works, and line losses.

Tables 8, 9, 10 show for the years 1925 and 1928 to 1939 for each of the nine groups of manufacturing industries the horse power of equipment installed, the number of employees in these same industries, and the average horse power per employee. This average increased steadily up to 1929 and with the reduction of employees from 1929 to 1933 the average increased more rapidly, due to idle equipment and to increasing use of mechanical power. In 1939, when only seven per cent of the equipment was reported as idle or reserve equipment, the average horse power per employee was 7.7 compared with 4.2 in 1925. The significance of this increase is more apparent when horse power is converted to man power. One horse power hour of work is equivalent to approximately ten man hours of work.

A weakness in these comparisons is that no statistics are available on horse power hours worked by the power equipment nor man hours worked by the employees and undoubtedly there were more idle horse power hours than man hours. In years of approximately the same manufacturing activity the statistics, however, should indicate the relative use of mechanical power and man power.

The index numbers of these two series, using 1925 data as a base, are shown in tables 11 and 12, and table 13 shows the index numbers of volume of production. (2) The volume of production is not affected by the changes in price but is affected directly by the use of man power, mechanical power and improved methods of manufacture. These index numbers have been charted and are shown on pages 14, 15, 16 and 17. For each group the production curve followed closely the employee curve in form but for the majority of the groups it was considerably above the employee curve and the divergence since 1932 and 1933 is quite pronounced. There are probably two factors in this movement for the years 1933 - 1939, first, increase in the work week and second, greater use of mechanical power. The power curves clearly show that greater quantities of power were available and quite evidently they were used. The production index is very complex and should be considered as only approximate and used only to indicate trends. The power and employee data should be coupled with respective hours worked which are not available and consequently these curves should be used also to indicate trends only. The data for 1939 show increases over 1925 as follows: power 135.5 per cent, employees 50.1 per cent, and production 57.4 per cent, and compared with the peak year 1929, power 28.5 per cent, employees a decrease of 5.5 per cent, and production a decrease of 1.1 per cent.

(2) For detailed description of method of computation see "The Quantity of Manufacturing Production in Canada, 1925 - 1929" by A. Cohen, B.Comm., Chief, General Manufacturing Branch, Dominion Bureau of Statistics.

A change in method of computing the number of employees for the years 1925-1930, inclusive, tended to increase the number for these years so that the peaks in 1929 are higher than if this change had not been made and the divergence from the power curves is consequently less. For the years 1923 and 1924 and again 1931 onwards the number of employees was computed by dividing the sum of the monthly counts by 12. Thus it represented the average man year positions. For the years 1925-1930, inclusive, the sum of the monthly counts for each plant was divided by the number of months the plant operated which would give the average monthly employment. This second method produced a much higher figure for seasonal industries, such as fruit, vegetable and fish canneries, and was probably an important factor in raising the employee curve above the power curve for Group 1, "Vegetable Products" and for the sharp rise in 1925 for Group 2, "Animal Products", and for some of the other groups. The change in method of computing employees would only cause breaks in the curves upward in 1925 and downward in 1931 and would not affect the slopes of the curves except at these points. It is impossible, however, to calculate the exact effect of the change.

The 1936 and subsequent data contain some revisions which have not yet been carried back to previous years. "Laundering" was dropped from group 3, "Textiles and Textile Products", and "Shipbuilding and Repairs" and "Aircraft" were transferred from group 9, "Miscellaneous Industries" to group 5, "Iron and its Products", and "Aerated and Mineral Waters" was transferred from group 7, "Non-metallic Products" to group 1, "Vegetable Products." These transfers are undoubtedly the main factors in the decline in group 9, "Miscellaneous Industries" as compared with 1935 data.

Table 1. POWER EQUIPMENT OF ALL MANUFACTURING INDUSTRIES IN CANADA

SUMMARY					
Year	Total Power Employed	Electric Motors Operated			Electric Power Per Cent of Total
		By Central Electric Stn. Power	By Power generated in the Industries	Total Motor Capacity	
	H.P.	H.P.	H.P.	H.P.	P.C.
1923	2,146,903	958,692	357,136	1,315,828	61.3
1924	2,538,535	1,256,183	398,001	1,654,184	65.2
1925	2,888,164	1,547,754	434,678	1,982,432	68.6
1926	3,134,248	1,770,334	392,322	2,162,656	69.0
1927	3,287,582	1,924,687	386,555	2,311,242	70.3
1928	3,592,184	2,139,129	457,565	2,596,694	72.5
1929	3,867,979	2,393,684	496,036	2,889,720	74.7
1930	4,051,744	2,518,853	478,548	2,997,401	74.0
1931	4,114,677	2,587,411	559,800	3,127,211	76.0
1932	4,157,420	2,694,164	516,157	3,210,321	77.2
1933	4,147,831	2,671,440	502,706	3,174,147	76.5
1934	4,244,696	2,779,913	550,500	3,330,413	78.5
1935	4,346,775	2,874,693	512,396	3,387,089	77.9
1936	4,461,867	2,977,714	528,501	3,506,215	78.6
1937	4,712,279	3,129,790	602,955	3,732,745	79.2
1938	4,969,723	3,303,804	659,741	3,963,545	79.8
1939	5,056,357	3,375,169	694,450	4,069,619	80.5

† Excluding central electric stations and including idle and reserve equipment.

Table 2.

POWER EMPLOYED IN THE MINING INDUSTRY IN CANADA

Year	Total Power Employed	Electric Motors			Electric Power Per Cent of Total
		Operated by Central Electric Station Power	Operated by Power Generated in the Industry	Total Motor Capacity	
	H.P.	H.P.	H.P.	H.P.	P.C.
1923	301,316	118,835	53,860	172,695	57.5
1924	514,175	125,725	71,376	197,101	62.7
1925	523,882	147,191	64,126	211,517	65.2
1926	536,880	167,241	64,277	251,518	68.7
1927	380,460	202,702	62,067	264,769	69.6
1928	419,464	223,666	68,121	291,787	69.6
1929	450,261	238,974	75,089	314,043	69.7
1930	509,007	297,826	88,585	386,411	75.9
1931	520,658	313,567	79,259	392,826	75.5
1932	482,344	287,130	76,626	363,756	75.4
1933	533,779	322,361	47,407	369,768	69.3
1934	621,071	400,035	66,647	466,682	75.1
1935	688,470	446,247	74,687	520,934	75.7
1936	724,639	474,000	79,140	553,140	76.5
1937	850,489	577,703	101,526	678,229	79.7
1938	874,943	582,510	89,368	671,878	76.8
1939	1,015,200	712,311	101,740	814,051	80.2

Excluding non-ferrous smelting, salt, cement, clay products and lime, included with "Manufacturing."

Table 3.

SUMMARY OF POWER EMPLOYED IN MANUFACTURING INDUSTRIES

Manufacturing Industries	1923		1929		1938		1939	
	Power		Power		Power		Power	
	Total H.P.	Per Cent Electric Motor	Total H.P.	Per Cent Electric Motor	Total H.P.	Per Cent Electric Motor	Total H.P.	Per Cent Electric Motor
1. Vegetable Products	257,176	65	326,346	74	356,933	79	364,195	80
2. Animal Products	80,895	72	101,268	72	139,899	76	145,951	78
5. Textile Products	107,850	83	168,614	81	217,081	93	234,597	94
4. Wood and Paper Products	1,146,571	50	2,022,839	69	2,529,793	73	2,579,463	74
5. Iron and its Products	213,705	89	529,162	100	751,614	89	730,594	87
6. Non-ferrous Metal Products	99,963	47	351,752	82	535,971	88	549,120	89
7. Non-metallic Mineral Products	131,780	83	210,804	88	258,682	82	257,731	85
8. Chemical & Allied Products	62,447	72	83,935	77	152,567	89	158,300	89
9. Miscellaneous	46,516	86	73,259	86	27,183	97	27,361	98
TOTAL	2,146,903	61	3,867,979	75	4,969,723	80	5,056,357	81

Table 4.

POWER EQUIPMENT OF MANUFACTURING INDUSTRIES IN CANADA, 1939

(Equipment in Regular Use)

	Total Power Employed	Electric Motors Operated			Electric Power Per Cent of Total 100D±A	Consumption of Electricity			
		By Central Electric Station Power	By Power Generated in the Industries	Total Motor Capacity		Purchased from		Generated by the Industries	Total
						Central Electric Stations for			
						Power and Lighting	Other Purposes		
A	B	C	D	E	F	G	H	I	
H.P.	H.P.	H.P.	H.P.	P.C.	(Thousands of Kilowatt Hours)				
GROUP 1. VEGETABLE PRODUCTS	(x 364,195 (341,704	257,965 242,041	52,008 30,629	289,973 272,670	79.6 79.8	372,841	46,921	27,582	447,144
Biscuits, confectionery, etc.	23,069	20,530	459	20,989	91.0	24,090	...	228	24,318
Bread and bakery products	17,834	16,327	195	16,522	92.6	30,150	61	...	30,231
Breweries	23,537	18,589	812	19,401	82.4	21,488	4,532	175	26,196
Flour and feed mills	110,056	58,298	3,502	61,800	56.2	111,496	...	57	111,553
Fruit & vegetable products	18,286	10,393	1,308	11,701	64.0	7,758	4	210	7,972
Rubber goods, footwear, etc.	68,801	66,289	845	67,114	97.5	101,674	42,300	1,786	145,760
Sugar refineries	21,914	7,304	16,325	23,629	100.0	13,917	4	11,319	25,240
GROUP 2. ANIMAL PRODUCTS	(x 145,931 (157,145	111,131 106,628	2,267 2,227	113,398 108,855	77.7 79.4	209,900	435	2,787	213,022
Butter and cheese	43,239	31,908	...	31,908	73.8	45,990	166	...	46,156
Fish curing and packing	13,442	4,005	728	4,731	35.2	6,954	...	1,277	8,231
Leather tanneries	16,198	15,937	548	14,485	89.4	15,303	7	...	15,310
Slaughtering & meat packing	41,760	58,311	150	38,461	92.1	112,528	13	396	112,937
GROUP 3. TEXTILES	(x 234,597 (218,458	182,295 173,272	37,838 37,416	220,133 210,688	93.8 96.4	429,143	90,515	70,619	590,277
Cotton yarn and cloth	103,154	79,572	24,078	103,648	100.0	261,750	46,717	37,838	346,305
Hosiery and knitted goods	18,578	12,008	4,730	16,738	80.1	23,139	...	5,355	28,494
Silk and artificial silk	24,516	20,976	3,606	24,582	100.0	67,618	43,765	12,413	123,796
GROUP 4. WOOD AND PAPER PRODUCTS	(x 2,579,463 (2,437,497	1,438,786 1,381,542	458,950 442,526	1,897,736 1,824,068	73.6 74.8	4,381,936	5,164,551	1,794,312	11,340,799
Furniture	21,171	15,406	2,635	16,041	75.8	11,047	...	2,167	13,214
Planing mills, sash & door	48,391	28,243	3,247	31,490	65.1	19,743	...	2,064	21,807
Printing and publishing	28,309	27,499	...	27,499	97.1	34,667	424	40	35,131
Pulp and paper	1,912,547	1,208,496	375,650	1,584,146	82.8	4,224,738	5,152,790	1,707,248	11,084,776
Saw mills	327,646	28,335	54,016	82,351	25.1	20,527	36	74,048	94,611

<u>GROUP 5. IRON AND STEEL</u>	(x	789,334	547,773	134,140	571,913	92.0					
<u>PRODUCTS</u>	(	684,580	327,912	112,951	548,263	97.3	549,322	308,791	87,712	947,431	
Agricultural implements		19,741	17,103	...	17,103	86.6	14,922	...	28	14,950	
Automobiles		51,229	21,070	25,072	46,142	90.0	17,571	...	33,480	51,051	
Automobile supplies		42,451	40,772	...	40,772	96.0	45,434	...	...	45,434	
Bridge & structural steel		27,912	25,569	3,502	28,871	100.0	9,283	...	...	9,283	
Castings and forgings		43,840	41,687	720	42,407	96.7	32,386	...	156	32,542	
Machinery		46,524	41,485	3,319	44,804	96.3	25,204	71	2,394	27,669	
Primary iron and steel		196,411	128,115	74,347	202,462	100.0	219,843	288,655	40,823	529,319	
Railway rolling stock		108,015	96,160	5,892	102,052	94.5	62,961	34,622	5,844	103,427	
Shipbuilding and repairs		36,822	28,986	...	28,986	78.7	11,469	...	105	11,574	
<u>GROUP 6. NON FERROUS METAL</u>	(x	549,120	473,558	17,014	490,572	89.3					
<u>PRODUCTS</u>	(	511,659	438,293	16,558	454,651	88.9	817,628	2,544,005	264,243	3,625,875	
Brass and copper products		26,645	25,720	238	25,958	97.4	20,975	7,557	...	28,512	
Electrical apparatus & supplies		79,772	67,942	12,090	80,032	100.0	68,839	...	10,206	79,045	
Non-ferrous metal, smelting and refining		387,992	327,381	4,030	331,411	85.4	705,033	2,533,752	254,037	3,492,822	
<u>GROUP 7. NON METALLIC</u>	(x	257,731	209,983	8,073	218,056	84.6					
<u>MINERAL PRODUCTS</u>	(	232,062	184,314	8,053	192,367	82.9	293,213	370,091	12,718	676,022	
Cement		73,158	70,342	796	71,138	97.2	105,938	...	...	105,938	
Clay products from domestic clays		22,102	14,818	437	15,255	69.0	9,772	...	508	10,280	
Coke and gas products		23,891	15,337	3,731	19,068	79.8	37,855	3,496	5,778	47,129	
Petroleum products		49,204	25,731	75	25,806	52.4	61,884	...	280	62,164	
<u>GROUP 8. CHEMICALS AND</u>	(x	158,300	129,537	11,563	141,100	89.1					
<u>CHEMICAL PRODUCTS</u>	(	144,770	119,949	9,600	129,549	89.5	589,625	862,601	94,846	1,547,072	
Acids, alkalies and salts		74,695	55,009	9,024	64,033	85.7	100,361	805,815	95,938	1,000,114	
Fertilizers		24,679	24,637	...	24,637	100.0	429,830	3	...	429,833	
<u>GROUP 9. MISCELLANEOUS</u>	(x	27,361	24,141	2,597	26,738	97.7					
<u>INDUSTRIES</u>	(	25,116	23,056	2,181	25,237	100.0	39,741	...	3,050	42,791	
Ice, manufactured		10,915	10,865	...	10,865	99.5	26,298	...	...	26,298	
<u>TOTAL ALL INDUSTRIES 1939</u>	(x	5,056,357	3,375,169	694,450	4,069,619	80.5					
	(	4,712,991	3,196,107	668,941	3,865,048	82.0	7,672,186	9,388,910	2,369,338	19,430,434	
	(x	4,969,723	3,303,804	659,741	3,963,545	79.8					
	(	4,649,882	3,147,352	633,184	3,780,336	81.3	7,598,543	7,695,251	2,198,732	17,492,526	

x Including equipment held idle or in reserve. These totals are comparable with data in reports prior to 1936.

Table 5.

POWER EMPLOYED IN MANUFACTURING INDUSTRIES, BY PROVINCES, 1959.
(In Regular Use)

Provinces	Total Power Employed	Electric Motors Operated			Electric Power Per Cent of Total	Consumption of Electricity			
		By Central Electric Station Power	By Power Generated in the Industries	Total Motor Capacity		Purchased from Central Electric Stations		Generated by the Industries	Total
						For Power & Lighting	For Other Purposes		
	H.P.	H.P.	H.P.	H.P.	P.C.	(Thousands of Kilowatt Hours)			
Prince Edward Island	3,854	749	22	771	20.1	574	...	5	579
Nova Scotia	146,368	71,643	43,116	114,759	78.4	194,724	...	87,390	282,114
New Brunswick	201,570	105,012	42,790	147,802	73.3	304,441	36,754	149,436	490,611
Quebec	1,775,312	1,274,436	164,829	1,439,265	81.1	3,563,116	6,027,149	960,063	10,550,328
Ontario	1,807,272	1,275,178	287,408	1,562,586	86.5	2,555,833	2,560,447	753,581	5,869,861
Manitoba	147,924	134,095	1,444	135,539	91.6	278,776	181,984	1,838	462,598
Saskatchewan	54,431	40,366	94	40,460	74.3	51,929	77,436	242	129,607
Alberta	72,782	42,811	4,269	46,070	63.3	57,609	300	4,414	62,323
B.C. and Yukon	503,523	251,817	124,969	376,786	74.8	665,184	504,860	412,369	1,582,413
TOTAL	4,712,991	3,196,107	668,941	3,865,048	82.0	7,672,186	9,388,910	2,369,338	19,430,434
<u>INCLUDING IDLE AND RESERVE EQUIPMENT</u>									
Prince Edward Island	4,094	829	22	851	20.8				
Nova Scotia	152,934	78,238	43,161	116,399	76.1				
New Brunswick	233,245	112,232	44,697	156,929	67.3				
Quebec	1,884,241	1,342,361	171,521	1,513,882	80.3				
Ontario	1,959,709	1,348,017	303,249	1,651,266	84.3				
Manitoba	152,622	137,839	1,466	139,305	91.3				
Saskatchewan	57,471	41,997	104	42,101	73.3				
Alberta	79,566	47,481	4,269	51,750	65.0				
B.C. and Yukon	532,475	271,175	126,161	397,336	74.6				
TOTAL	5,056,357	3,375,169	694,450	4,069,619	80.5				

Table 6

POWER EQUIPMENT - IN REGULAR USE AND INCLUDING IDLE AND RESERVE EQUIPMENT, 1939.

MANUFACTURING INDUSTRIES

	TOTAL POWER EMPLOYED		ELECTRIC MOTORS OPERATED BY						ELECTRIC POWER		CONSUMPTION OF ELECTRICITY			
	In Regular Use	Incl. Idle & Reserve Equipment	Central Station Power		Power Generated in the Industries		Total		Per Cent of Total		Purchased from Central Electric Stations		Generated By The Industries	Total
			In Regular Use	Incl. Idle & Reserve Equipment	In Regular Use	Incl. Idle & Reserve Equipment	In Regular Use	Incl. Idle & Reserve Equipment	In Regular Use	Incl. Idle & Reserve Equipment	For Power & Lighting	For Other Purposes		
	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.	P.C.	P.C.	(Thousands of Kilowatt Hours)			
1. Vegetable Products	341,704	364,195	242,041	257,965	30,629	32,008	272,670	289,973	79.8	79.6	372,841	46,921	27,382	447,144
2. Animal Products	137,145	145,931	106,628	111,131	2,227	2,267	108,855	113,398	79.4	77.7	209,800	435	2,787	213,022
3. Textiles and Textile Products	218,458	234,597	173,272	182,295	37,416	37,838	210,688	220,133	96.4	93.8	429,143	90,515	70,619	590,277
4. Wood and Paper Products	2,437,497	2,579,463	1,381,542	1,438,786	442,526	458,950	1,824,068	1,897,736	74.8	73.6	4,381,936	5,164,551	1,794,312	11,340,799
5. Iron and its Products	664,580	730,594	527,012	547,773	119,951	124,140	646,963	671,913	97.3	86.6	549,928	309,791	87,712	947,431
6. Non-ferrous Metal Products	511,659	549,120	438,293	473,558	16,358	17,014	454,651	490,572	88.9	89.3	817,628	2,544,005	264,243	3,625,876
7. Non-metallic Mineral Products	232,062	257,731	184,314	209,983	8,053	8,073	192,367	218,056	82.9	84.6	293,213	370,091	12,718	676,022
8. Chemicals and Chemical Products	144,770	158,300	119,949	129,537	9,600	11,563	129,549	141,100	89.5	89.1	589,625	862,601	94,846	1,547,072
9. Miscellaneous Industries	25,116	27,361	23,056	24,141	2,181	2,597	25,237	26,738	100.0	97.7	39,741	...	3,050	42,791
TOTAL	4,712,991	5,056,357	3,196,107	3,375,169	668,941	694,450	3,865,048	4,069,619	82.0	80.5	7,672,186	9,388,910	2,369,338	19,430,434
Table 7. MINING INDUSTRIES														
Metal Mining	588,771	638,677	483,167	511,177	54,874	68,286	538,041	579,463	91.4	90.7	1,194,456	16,236	206,996	1,417,688
Non-metal mining	73,984	80,015	62,412	66,464	2,632	2,657	65,044	69,121	87.9	86.4	131,520	...	3,200	134,720
Sand, Gravel & Stone	50,138	54,613	31,165	33,634	2,613	3,113	33,778	36,747	67.4	67.2	24,509	...	1,551	26,060
Fuels	228,442	241,995	99,230	101,036	25,759	27,684	124,989	128,720	54.7	53.2	132,457	...	50,414	182,871
TOTAL	941,335	1,015,200	675,974	712,311	85,878	101,740	761,852	814,051	80.9	80.2	1,482,942	16,236	262,161	1,761,339
Total Tables 6 and 7														
1939	5,654,326	6,071,557	3,872,081	4,087,480	754,819	796,190	4,626,900	4,883,670	81.8	80.4	9,155,128	9,405,146	2,631,499	21,191,773
1938	5,445,149	5,844,666	3,690,702	3,886,314	717,592	749,109	4,408,294	4,635,423	81.0	79.3	8,989,540	7,700,064	2,438,810	19,128,414

Table 8.

MANUFACTURING INDUSTRIES

POWER EMPLOYED

H.P.

	1925	1928	1929	1930	1931	1932
1. Vegetable Products	257,176	309,611	326,546	313,527	322,401	326,829
2. Animal Products	80,895	104,166	101,268	105,833	98,892	100,069
3. Textiles & textile products	107,850	163,779	168,614	171,324	186,952	189,915
4. Wood and paper products	1,146,571	1,908,738	2,022,839	2,126,515	2,126,598	2,094,010
5. Iron and its products	213,705	488,521	529,162	576,609	589,261	623,888
6. Non-ferrous metal products	99,963	294,642	351,752	401,817	424,738	450,271
7. Non-metallic Mineral "	131,780	181,666	210,804	213,917	212,179	209,484
8. Chemical & allied products	62,447	71,401	83,935	87,382	96,893	105,671
9. Miscellaneous Industries	46,516	69,660	73,259	54,820	56,963	57,283
TOTAL	2,146,903	3,592,184	3,867,979	4,051,744	4,114,677	4,157,420

Table 9.

EMPLOYEES

No.

	1925	1928	1929	1930	1931	1932
1. Vegetable Products	65,395	83,764	88,858	84,182	77,706	72,390
2. Animal Products	61,517	67,777	67,670	57,657	51,297	49,953
3. Textiles & Textile products	92,669	113,724	115,620	109,576	105,473	102,116
4. Wood and paper products	128,404	158,005	164,800	156,724	121,672	107,834
5. Iron and its products	88,071	119,199	132,281	119,987	96,927	74,214
6. Non-ferrous metal products	21,409	35,568	39,867	38,756	34,414	26,704
7. Non-metallic mineral "	24,978	28,650	31,431	29,868	24,895	20,342
8. Chemical & allied products	15,149	16,130	16,694	15,503	15,207	15,295
9. Miscellaneous Industries	16,581	19,351	21,049	14,328	12,821	11,155
TOTAL	514,173	642,168	678,270	626,581	540,412	480,003

Table 10

AVERAGE HORSE POWER OF EQUIPMENT PER EMPLOYEE IN MANUFACTURING INDUSTRIES

	1925	1928	1929	1930	1931	1932
1. Vegetable Products	3.9	3.7	3.7	3.7	4.1	4.5
2. Animal Products	1.3	1.5	1.5	1.8	1.9	2.0
3. Textiles & Textile products	1.2	1.4	1.5	1.6	1.8	1.9
4. Wood and Paper Products	8.9	12.1	12.3	13.6	17.5	19.4
5. Iron and its products	2.4	4.1	4.0	4.8	6.1	8.4
6. Non-ferrous metal products	4.7	8.3	8.8	10.4	12.3	16.9
7. Non-metallic mineral pdts.	5.3	6.4	6.7	7.2	8.5	10.3
8. Chemical & allied products	4.1	4.4	5.0	5.6	6.4	6.9
9. Miscellaneous Industries	2.8	3.6	3.5	3.8	4.4	5.1
TOTAL	4.2	5.6	5.7	6.5	7.6	8.7

MANUFACTURING INDUSTRIES

POWER EMPLOYED

H.P.

	1933	1934	1935	1936	1937	1938	1939
	326,666	332,052	331,361	342,123	347,002	356,933	364,195
	112,035	117,843	122,560	126,807	133,647	139,899	145,931
	215,907	219,938	240,549	221,830	211,729	217,081	234,597
	2,035,112	2,115,205	2,160,083	2,227,328	2,420,436	2,529,795	2,579,463
	626,730	637,718	660,491	681,038	719,265	751,614	730,594
	434,581	405,248	416,927	461,129	472,031	535,971	549,120
	219,612	231,586	222,555	237,163	239,898	258,682	257,731
	110,873	115,082	130,464	137,442	141,755	152,567	158,300
	66,315	70,024	61,785	27,007	26,520	27,183	27,361
	4,147,831	4,244,696	4,346,775	4,461,867	4,712,279	4,969,723	5,056,357

EMPLOYEES

No.

	73,095	77,464	79,285	87,071	94,258	95,541	99,447
	53,111	57,199	60,124	63,609	67,996	66,660	69,358
	106,235	115,695	120,699	114,966	121,677	115,745	121,022
	105,471	116,691	123,724	132,374	147,254	141,974	144,782
	70,947	81,782	95,426	107,203	127,148	121,235	121,041
	25,273	30,177	35,613	36,935	44,614	44,440	44,583
	19,296	21,959	23,342	21,974	23,837	22,799	23,026
	15,397	17,130	18,933	19,910	21,968	21,896	22,595
	10,361	12,091	12,270	10,317	11,699	11,726	12,280
	479,186	530,188	567,416	594,359	660,451	642,016	658,114

AVERAGE HORSE POWER OF EQUIPMENT PER EMPLOYEE IN MANUFACTURING INDUSTRIES

	4.5	4.3	4.2	3.9	3.7	3.7	3.7
	2.1	2.1	2.0	2.0	2.0	2.1	2.1
	2.0	1.9	2.0	1.9	1.7	1.9	1.9
	19.3	18.1	17.4	16.8	16.4	17.8	17.6
	8.8	7.8	6.9	6.3	5.7	6.2	6.0
	17.2	13.4	12.4	12.5	10.6	12.1	12.3
	11.4	10.5	9.6	10.8	10.1	11.3	11.2
	7.2	6.5	6.9	6.9	6.5	7.0	7.0
	6.4	5.8	5.0	2.6	2.3	2.3	2.2
	8.7	8.0	7.7	7.5	7.1	7.7	7.7

Table 11.

MANUFACTURING INDUSTRIES

INDEX NUMBERS

(1923 = 100)

POWER EMPLOYED

	1926	1927	1928	1929	1930	1931
1. Vegetable Products	104.1	108.9	120.4	126.9	121.9	125.4
2. Animal Products	118.9	125.7	128.8	125.2	130.8	122.2
3. Textiles and textile products	142.1	145.6	151.9	156.3	158.8	173.3
4. Wood and paper products	135.4	154.5	166.5	176.4	185.5	185.5
5. Iron and its products	197.6	211.3	228.6	247.6	269.8	275.7
6. Non-ferrous metal products	229.0	237.6	294.7	351.9	402.0	424.9
7. Non-metallic mineral products	114.5	121.6	137.9	160.0	162.3	161.0
8. Chemical and allied products	101.9	105.5	114.3	134.4	139.9	155.2
9. Miscellaneous industries	94.9	134.6	149.7	157.5	117.9	122.4
TOTAL	138.8	153.1	167.3	180.2	188.7	191.7

Table 12.

EMPLOYEES

1. Vegetable products	113.0	119.7	128.1	135.9	128.7	118.8
2. Animal products	110.3	111.1	110.2	110.0	93.7	83.4
3. Textiles and textile products	108.5	116.0	122.7	124.8	118.2	113.8
4. Wood and paper products	104.5	117.2	123.1	128.3	122.1	94.8
5. Iron and its products	117.5	120.7	135.3	150.2	136.2	110.0
6. Non-ferrous metal products	140.6	156.2	166.1	186.2	181.0	160.7
7. Non-metallic mineral products	104.3	106.7	114.7	125.8	119.6	99.7
8. Chemical and allied products	94.7	96.1	106.6	110.2	102.3	100.4
9. Miscellaneous industries	106.3	111.7	116.7	126.9	86.4	77.3
TOTAL	110.5	117.5	124.9	131.9	121.9	105.1

Table 13.

INDEX OF VOLUME OF MANUFACTURING PRODUCTION

1. Vegetable Products	127.7	137.5	151.1	155.3	146.6	133.0
2. Animal Products	122.9	120.0	123.8	117.2	113.6	103.2
3. Textiles and textile products	117.8	126.5	135.3	133.8	124.4	121.6
4. Wood and paper products	119.9	129.1	142.0	152.9	141.5	117.9
5. Iron and its products	121.7	125.2	138.1	157.8	126.9	96.2
6. Non-ferrous metal products	137.2	158.3	176.1	190.3	179.7	171.1
7. Non-metallic mineral products	112.5	122.5	138.9	163.1	149.5	130.4
8. Chemical and allied products	119.0	127.0	139.6	143.3	126.5	116.9
9. Miscellaneous industries	124.8	138.0	136.5	137.3	116.6	101.0
TOTAL	122.2	130.2	141.9	150.2	136.2	118.3

MANUFACTURING INDUSTRIES

INDEX NUMBERS

(1923 = 100)

POWER EMPLOYED

	1932	1933	1934	1935	1936	1937	1938	1939
	127.1	127.0	129.1	128.8	(1) 153.0	134.9	158.8	141.6
	123.7	158.5	145.7	151.5	156.8	165.2	172.9	180.4
	176.1	200.2	203.9	223.0	(1) 205.7	196.3	201.5	217.5
	182.6	177.5	184.5	188.4	194.3	211.1	220.6	225.0
	291.9	293.3	298.4	309.1	318.7	336.6	351.7	341.9
	450.4	434.7	405.4	417.1	(1) 461.3	472.2	556.2	549.3
	159.0	166.7	175.7	168.9	180.0	182.0	196.3	195.6
	169.2	177.6	184.3	208.9	220.1	227.0	244.3	253.5
	123.1	142.6	150.5	132.8	(1) 58.1	57.0	58.4	58.8
	193.6	193.2	197.7	202.5	207.8	219.5	231.5	235.5

EMPLOYEES

	110.7	111.8	118.5	121.2	(1) 129.7	(1) 140.4	(1) 142.3	148.2
	81.2	86.3	93.0	97.7	103.4	110.5	108.4	112.7
	110.2	114.6	124.8	130.2	(1) 135.7	(1) 143.7	(1) 156.7	142.9
	84.0	82.1	90.0	96.4	103.1	114.7	110.8	112.8
	84.3	80.6	92.9	108.4	(1) 114.9	(1) 136.2	(1) 129.9	129.7
	124.7	118.0	141.0	157.0	172.5	208.4	207.6	208.2
	81.4	77.3	87.9	93.5	(1) 94.5	(1) 102.5	(1) 98.0	99.0
	101.0	101.6	113.1	125.0	131.4	145.0	144.5	149.2
	87.3	82.5	72.9	74.0	(1) 95.8	(1) 108.6	(1) 108.9	114.0
	95.4	93.2	103.1	110.4	(1) 117.5	(1) 130.6	(1) 127.0	130.1

INDEX OF VOLUME OF MANUFACTURING PRODUCTION

	118.1	116.1	131.9	138.7	151.0	164.4	161.2	171.6
	102.2	106.1	115.4	121.7	131.6	136.9	133.7	142.9
	116.0	112.9	139.1	147.0	155.4	164.8	146.8	163.2
	104.6	107.1	125.3	137.9	151.4	168.6	123.3	160.7
	65.0	61.4	82.8	102.8	114.7	145.0	126.2	125.2
	137.7	134.8	165.7	190.0	214.1	257.8	179.4	260.0
	94.9	87.5	103.4	111.5	126.8	145.7	133.1	137.7
	111.5	118.1	133.9	147.4	158.1	181.3	173.9	184.0
	82.5	73.5	88.4	95.6	102.0	118.6	117.2	123.1
	100.1	100.2	118.0	130.2	142.5	161.4	121.6	157.4

(1) Revised because of reclassification

MANUFACTURING INDUSTRIES

1923=100

Chart 1
 POWER EMPLOYED.....
 EMPLOYEES.....
 VOLUME OF MANUFACTURING PRODUCTION.....

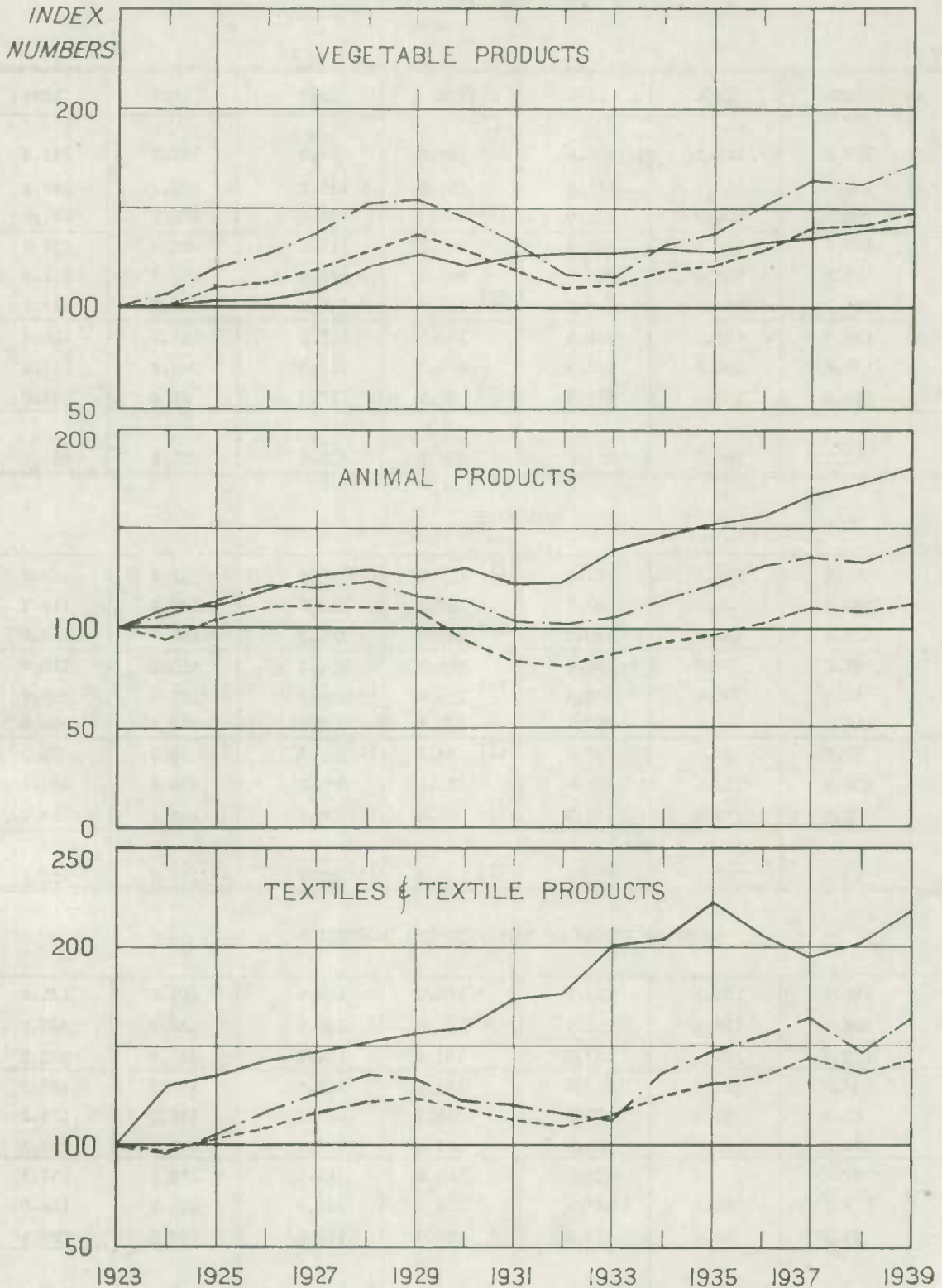


Chart 2

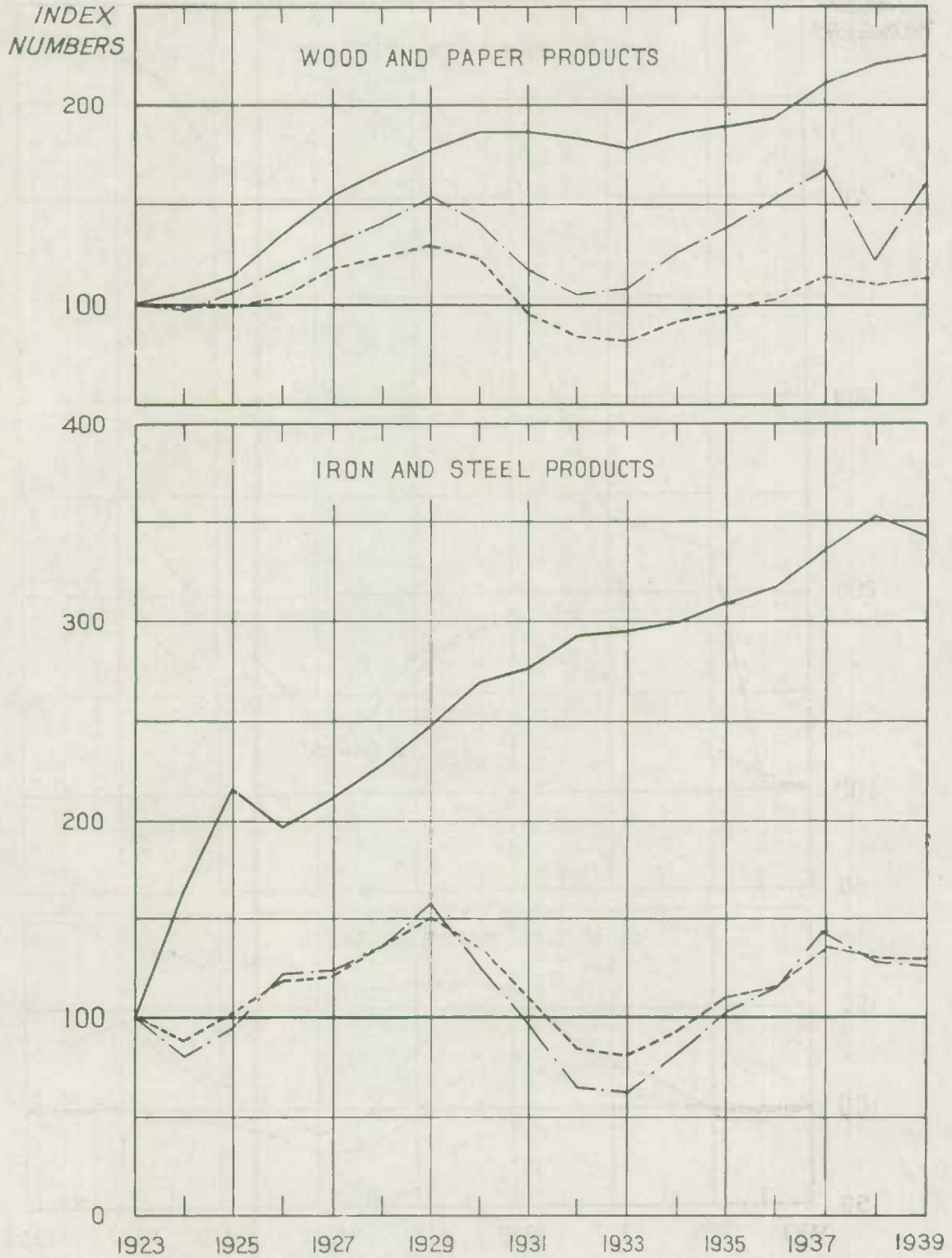


Chart 3

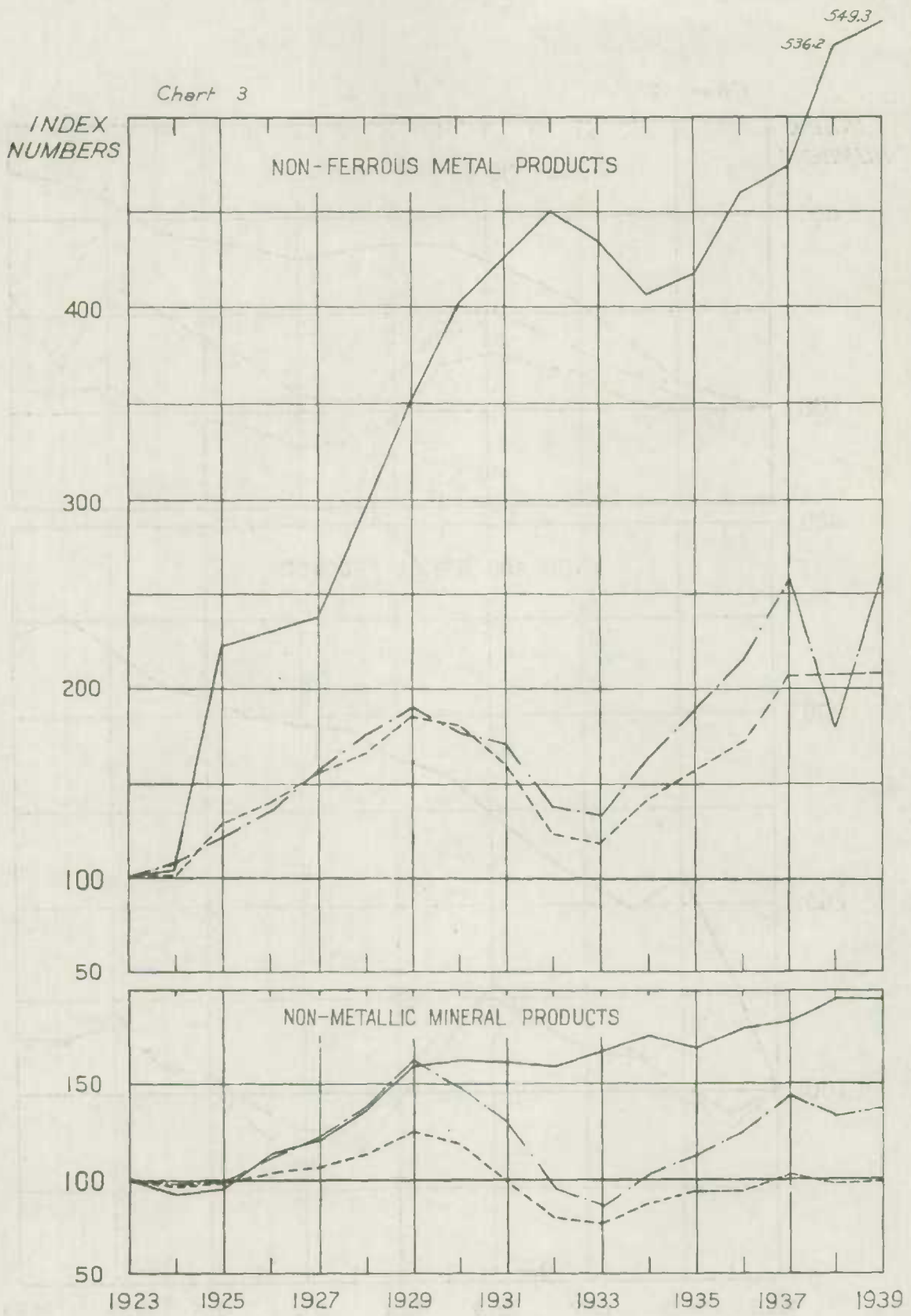
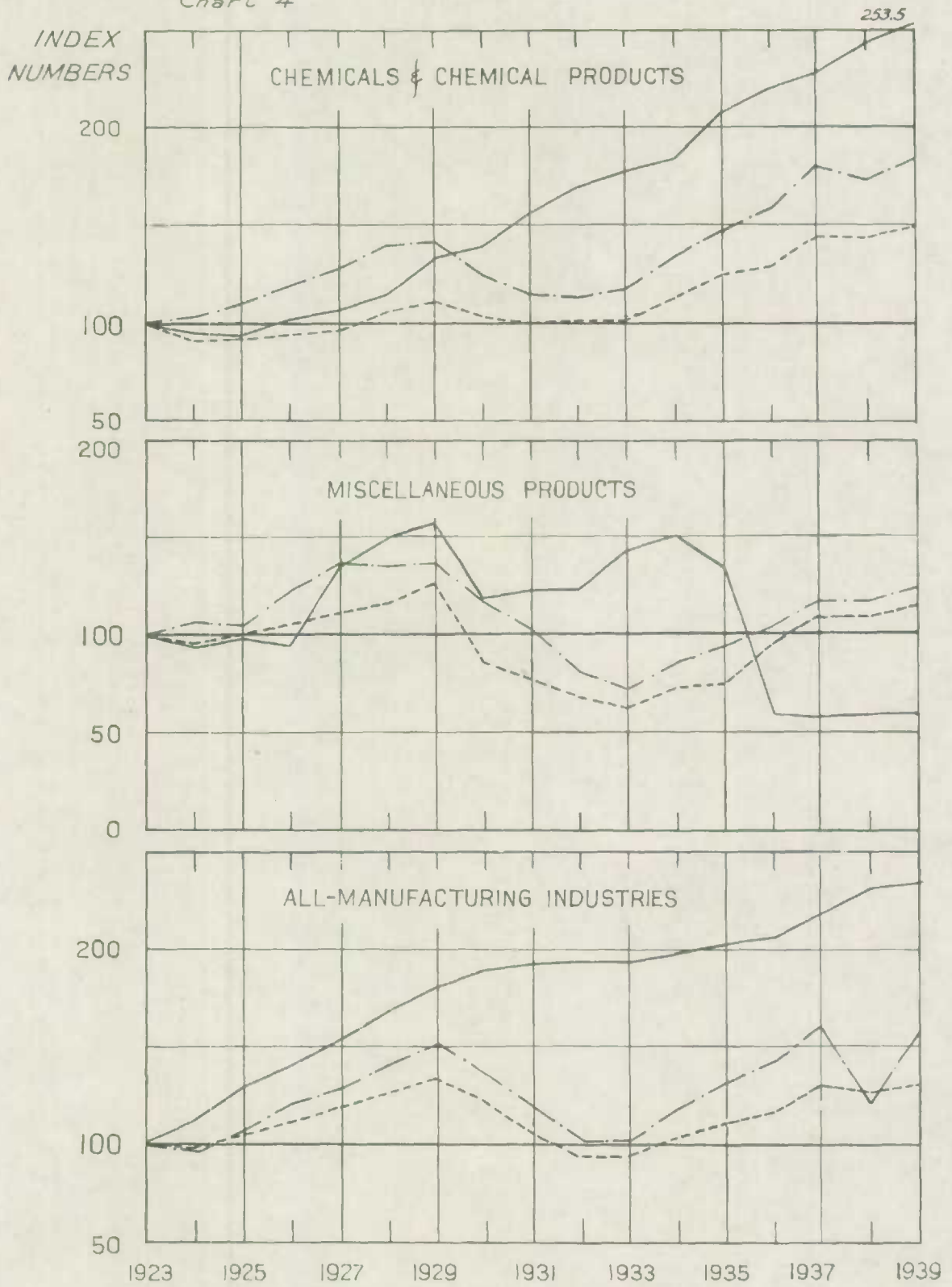


Chart 4



α.3

STATISTICS CANADA LIBRARY
BIBLIOTHÈQUE STATISTIQUE CANADA



1010311056

Ca 005

Faint grid lines are visible across the page, suggesting a table or graph structure, but the content is illegible.

