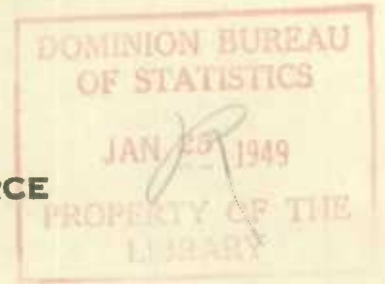


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IN
MANUFACTURING AND MINING INDUSTRIES
IN
CANADA
1946



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IN CANADA
1 9 4 6

This report endeavours to show the evolution since 1925 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 distances 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. Also there are some industries which require steam in their manufacturing processes, and consequently use steam engines as their primary power equipment. Some of these are a hundred per cent electrified and some are not. Other industries use direct hydraulic drive such as ground wood pulp mills. In such industries it is probable that electric motors will never supplant other forms of power requirement.

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, 1925 is the first year for which total power employed can be compiled without duplication.

During the twenty-three years from 1925 to 1946 there has been a steady increase in total capacity of power equipment in manufacturing and mining industries, and electric motors driven by central station power, which constitute about 70 per cent of the total power capacity, rose by 400 per cent. The capacity of water wheels increased only 29 per cent, the majority of new installations being in central electric stations. Steam engines also showed a relatively small increase compared to the advance in total power and although internal combustion engines increased in capacity by 811 per cent, they still constitute only 6.3 per cent of the total capacity. These include both diesel or compression ignition engines and electric ignition engines.

Electric motors driven by current generated in the manufacturing industries showed a small improvement in 1946 from the 1945 capacity while in the mining industries a decrease of 5 per cent was recorded.

The following table shows the rated capacity in horse power of all power equipment in manufacturing and mining industries in 1925 and 1946. These include equipment in regular use and idle or reserve equipment in operating industries.

	Capacity (Horse Power)		Increase	
	1 9 2 5	1 9 4 6	H. P.	P. C.
<u>Manufacturing Industries</u>				
Water Wheels	587,191	733,678	146,487	24.9
Steam Engines	554,191	1,032,639	478,448	86.3
Internal Combustion Engines	46,829	367,639	320,810	685.1
Total	1,188,211	2,133,956	945,745	79.6
Electric Motors on Purchased Power	958,692	4,649,993	3,691,301	385.0
Total Power	2,146,903	6,783,949	4,637,046	216.0
Electric Motors on Power Generated in the Industries	357,136	820,371	463,235	129.7
Total Electric Motors	1,515,828	5,470,364	4,154,536	315.7
<u>Mining Industries</u>				
Water Wheels	27,528	54,235	26,707	97.2
Steam Engines	148,039	87,144	- 60,895	- 41.1
Internal Combustion Engines	6,914	121,965	115,051	1,664.0
Total	182,481	263,344	80,863	44.3
Electric Motors on Purchased Power	118,835	746,669	627,834	528.3
Total Power	301,516	1,010,013	708,697	235.2
Electric Motors on Power Generated in the Industries	53,860	85,427	31,567	58.6
Total Electric Motors	172,695	832,096	659,401	381.8
<u>Manufacturing and Mining Industries</u>				
Water Wheels	614,719	787,913	173,194	28.7
Steam Engines	702,230	1,119,783	417,553	59.5
Internal Combustion Engines	55,743	489,604	435,861	811.0
Total	1,370,692	2,397,300	1,026,608	74.9
Electric Motors on Purchased Power	1,077,527	5,396,662	4,319,135	400.8
Total Power	2,448,219	7,793,962	4,345,743	177.5
Electric Motors on Power Generated in the Industries	410,996	905,798	494,802	120.4
Total Electric Motors	1,488,525	6,302,460	4,813,957	323.4

The ratio of electric motor capacity to total power employed in manufacturing industries has increased fairly steadily, the few recessions being less than one point up to 1945 when the decline was from 81.7 to 80.7 per cent. Commencing with 1935, data were gathered on spare or idle equipment. For each of the years 1935-1945, the percentage of total equipment not in regular use was around 6 to 8 per cent but in 1946 there was considerable idle equipment in aluminum plants and plants producing explosives and other munitions of war, and consequently the idle equipment increased to 8.8 per cent for all manufacturing industries, and as high as 25.5 per cent for the non-ferrous metal products group.

Table 5 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 1925.

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 1925 and 36 per cent in 1946.

In previous years the consumption of electricity by the pulp and paper mills was an even larger percentage of the total consumption, but with the increasing requirement of primary power for the aluminum industry and other electro-metallurgical and electro-chemical industries the pulp and paper's percentage dropped from 39.8 in 1941 to 27 in 1943 but rose to 41 p.c. in 1945 and to 48 p.c. in 1946.

Table 4 shows the power equipment in regular use in manufacturing plants operating during 1946. 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 both 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, took the major portion of this class of electricity in years prior to 1940, and in most cases it was surplus or off-peak power that was purchased for this purpose. The total consumption for these other purposes in 1946 was 13,442,598,000 kw.hrs. of purchased power, or 53 per cent 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 breakdown is not available.

The mining industries are practically as highly electrified as the manufacturing industries, the ratio increasing from 57.3 per cent in 1925 to 81.1 per cent in 1945. Data for the mining industries are shown in Tables 2 and 7.

The fuels group showed an increase in capacity of motors operated on purchased power from 10,055 h.p. in 1925 to 136,346 h.p. in 1946 as compared with a decrease from 37,508 to 24,874 h.p. in motors operated by power generated by the coal mines and gas and oil wells. These industries apparently have found it more economical to purchase electricity than produce it themselves and also more advantageous than to use steam engines.

Table 8 brings together, by groups of manufacturing industries, the number of employees on salaries and on wages, and the h.p. ratings of all power equipment, including both active and idle, and from these data the average horse power equipment per employee have been computed.

The rising averages up to 1939 indicate in a general way a substitution of mechanical power for manpower or, in other words, they indicate an increasing productive capacity per employees. The number of employees fluctuate more quickly than installed power equipment capacities. Thus, the reduction of employees in 1933 did not have a corresponding reduction in power equipment, and consequently the average horse power per employee showed an increase out of line with the trend.

The downward trend of these averages during the war years was undoubtedly due to the increased employment of night shifts resulting in a greater use per 24 hours of the power equipment. This is indicated by an increased consumption of electricity for power and lighting per horse power of electric motors. On an employee basis most of the industries consumed slightly less electricity. However, with the closing down of many war plants in the last half of 1945, peacetime patterns were restored in several industrial groups, and in 1946 the average consumption of electricity per employee increased.

A survey of the average power equipment capacity per employee indicates the caution which should be taken when using these averages. The average for all industries during the industrial depression was 8.7 h.p., whereas for 1946 when industrial activity was on a very high level it was only 6.4 h.p., and when idle equipment is eliminated it was only 5.8 h.p., despite an increase in the total capacity of 64 per cent. Of course, the hours use per day or per year of the power equipment is a very important factor. Thus, doubling the shifts without any change in equipment would reduce the average about 50 per cent. This large amount of mechanical power for each employee or per 100 of population is undoubtedly one of the most important factors contributing to the high standard of living in Canada.

According to the latest data available, in the United Kingdom for each 100 population there was 2.53 h.p. in manufacturing industries, 0.83 h.p. in mines and quarries, or a total of 3.36 h.p. in both classes of industries in 1950. For the United States the corresponding averages were 3.85 h.p., 1.00 h.p., and 4.85 h.p. respectively in 1959. In Canada the average for manufacturing and mining was 5.59 h.p. in 1959 and 5.77 h.p. in 1946.

Table 1 POWER EQUIPMENT OF ALL MANUFACTURING INDUSTRIES IN CANADA

Year	S U M M A R Y				Electric Power Per Cent of Total
	Total Power Employed	Electric Motors Operated			
		By Central Electric Stn. Power	By Power Generated in the Industries	Total Motor Capacity	
H.P.	H.P.	H.P.	H.P.	P.C.	
1925	2,146,903	958,692	357,136	1,315,828	61.3
1929	3,867,979	2,593,684	496,036	2,889,720	74.7
1931	4,114,677	2,587,411	539,800	3,127,211	76.0
1933	4,147,831	2,671,440	502,706	3,174,147	76.5
1935	4,346,775	2,874,693	512,336	3,387,089	77.9
1937	4,712,279	3,129,790	602,955	3,732,745	79.2
1939	5,056,357	3,375,169	694,450	4,069,619	80.5
1940	5,290,935	3,563,048	724,769	4,287,817	81.1
1941	5,850,076	4,028,942	740,112	4,769,054	81.6
1942	5,969,895	4,076,277	800,917	4,877,194	81.7
1943	6,415,851	4,420,105	760,630	5,180,735	80.7
1944	6,468,439	4,457,296	779,717	5,217,013	80.7
1945	6,606,651	4,586,636	787,930	5,374,566	81.4
1946	6,783,949	4,649,993	820,371	5,470,364	80.6

^ Excluding central electric stations and including idle & reserve equipment.

Table 2

POWER EMPLOYED IN THE MINING INDUSTRY IN CANADA

Year	Total Power Employed	Electric Motors			Electric Power P. C. 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	314,173	125,725	71,376	197,101	62.7
1925	323,882	147,191	64,126	211,317	65.2
1926	356,880	167,241	64,277	231,518	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	75,069	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	482,544	287,130	76,626	363,756	75.4
1933	533,779	322,361	47,407	369,768	69.3
1934	621,071	400,055	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	78.8
1939	1,015,200	712,311	101,740	814,051	80.2
1940	1,061,840	746,777	101,606	848,383	79.9
1941	1,113,042	749,126	106,501	855,627	76.9
1942	1,008,777	672,097	118,748	790,845	78.4
1943	988,457	695,109	105,436	800,545	81.0
1944	975,185	687,652	86,558	774,210	79.4
1945	987,595	708,775	90,142	798,917	80.9
1946	1,010,013	746,669	85,427	832,096	82.4

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

Table 3

SUMMARY OF POWER EMPLOYED IN MANUFACTURING INDUSTRIES

(Including Idle and Reserve Equipment)

Manufacturing Industries	1923		1944		1945		1946	
	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	508,073	74	528,605	75	554,499	76
2. Animal Products	80,895	72	189,159	80	197,221	81	212,654	82
3. Textile Products	107,850	83	277,304	91	285,862	91	301,585	92
4. Wood & Paper Products	1,146,571	50	2,845,242	73	2,987,435	74	3,313,788	74
5. Iron and its "	213,705	89	1,260,802	91	1,244,225	91	1,192,471	91
6. Non-ferrous Metal "	99,963	47	656,664	90	636,900	92	555,693	89
7. Non-metallic Mineral Products	131,780	83	316,177	80	318,121	81	332,016	81
8. Chemical & Allied "	62,447	72	377,448	91	371,535	92	284,990	91
9. Miscellaneous	46,516	86	37,570	98	36,747	99	36,273	98
TOTAL	2,146,903	61	6,468,439	81	6,606,651	81	6,785,949	81

Table 4

POWER EQUIPMENT OF MANUFACTURING INDUSTRIES IN CANADA, 1946
(Equipment in Regular Use)

Industry	Total Capacity of Power Equipment	Electric Motors Operated			Ratio of Motor to Total Power	Consumption of Electricity			
		By Central Electric Station Power	By Power Generated in the Industries	Total Motor Capacity		Purchased from Central Electric Stations for		Generated by the Industries for own use	Total Consumption
						Power and Lighting	Other Purposes		
	A H.P.	B H.P.	C H.P.	D H.P.	E P.C.	F	G (Thousands of Kilowatt Hours)	H	I
GROUP 1. VEGETABLE PRODUCTS x	554,499	370,440	52,299	422,739	76.24				
	510,648	341,759	48,490	390,249	76.42	580,561	52,712	90,455	723,728
Biscuits, confectionary, etc.	26,110	23,966	649	24,615	94.27	30,460	-	45	30,505
Bread and bakery products	21,856	20,342	1,090	21,432	98.06	41,978	92	-	42,070
Breweries	27,723	23,431	495	23,926	86.30	43,210	8,028	67	51,305
Flour and feed mills	120,013	73,590	983	74,573	62.14	165,011	-	896	165,907
Food stock and poultry	29,178	26,980	-	26,980	92.47	36,881	5	-	36,886
Fruit and vegetable preparations	36,002	23,912	1,282	25,194	69.98	21,252	19	-	21,271
Rubber goods, footwear, etc.	157,636	84,592	16,244	100,836	63.97	128,278	44,258	54,200	226,736
Sugar refineries	21,612	6,383	18,886	25,269	100.00	10,511	-	18,701	29,212
GROUP 2. ANIMAL PRODUCTS x	212,634	169,797	4,979	174,776	82.20				
	199,111	160,983	4,828	165,811	83.28	272,364	2,523	7,091	281,978
Butter and cheese	50,885	41,005	12	41,017	80.60	53,721	139	12	53,872
Fish curing and packing	27,559	11,185	2,732	13,917	50.50	14,092	2,277	4,067	20,436
Leather tanneries	20,145	17,822	1,126	18,948	94.06	22,815	-	305	23,120
Slaughtering and meat packing	65,287	59,711	45	59,756	91.53	126,887	-	1	126,888
GROUP 3. TEXTILES AND TEXTILE PRODUCTS x	301,585	248,117	28,512	276,629	91.73				
	280,531	233,829	26,183	260,012	92.69	481,501	20,833	60,226	562,560
Cotton yarn and cloth	112,139	92,586	9,218	101,804	90.78	205,440	20,789	17,553	241,782
Hosiery and knitted goods	21,857	16,671	2,651	19,322	88.40	31,105	-	2,348	33,453
Silk and artificial silk	44,413	33,988	8,283	42,271	95.18	115,301	-	24,749	140,050
Woollen cloth	21,468	19,400	622	20,022	93.26	28,513	-	-	28,513
GROUP 4. WOOD & PAPER PRODUCTS x	3,313,788	1,877,930	569,249	2,447,179	73.85				
	3,098,862	1,772,373	538,173	2,310,546	74.56	6,541,506	4,966,153	2,254,239	13,761,898
Furniture	39,786	31,582	3,424	35,006	87.99	25,303	6	3,751	29,060
Planing mills, sash and door	74,434	46,936	4,185	51,121	68.68	34,170	15	3,016	37,201
Printing and publishing	29,786	29,276	747	30,023	100.00	42,032	648	161	42,841
Pulp and paper	2,254,487	1,480,740	450,039	1,930,779	85.64	6,233,218	4,964,528	2,163,387	13,361,133
Saw mills	553,040	65,189	72,120	137,309	24.83	55,417	257	70,974	126,648

<u>GROUP 5. IRON AND ITS PRODUCTS</u>	x	1,192,471	977,382	112,687	1,090,069	91.41				
		1,103,849	931,724	110,990	1,042,714	94.46	1,073,300	825,590	170,293	2,069,183
Agricultural implements		35,954	31,980	75	32,055	89.16	44,382	-	-	44,382
Aircraft		18,204	17,946	-	17,946	98.58	25,319	-	-	25,319
Automobiles		70,131	25,517	36,586	62,103	88.55	28,698	-	69,569	98,267
Automobile supplies		76,396	75,965	-	75,965	99.55	77,789	13,194	-	90,983
Bridge and structural steel		33,735	31,067	-	31,067	92.09	19,897	-	-	19,897
Castings, iron		56,929	54,833	1,170	56,003	98.37	63,918	1,413	88	65,419
Hardware, tools and cutlery		45,664	45,122	200	45,322	99.25	42,636	-	-	42,636
Iron and steel products		37,820	36,211	-	36,211	95.75	46,875	-	-	46,875
Machinery		88,496	83,052	353	83,405	94.25	70,723	934	42	71,699
Primary iron and steel		299,213	227,686	55,088	282,774	94.50	345,448	766,467	88,428	1,200,343
Railway rolling stock		130,442	114,467	10,166	124,633	95.55	101,797	35,781	6,949	144,527
Sheet metal products		34,318	33,441	580	34,021	99.13	48,629	4,406	193	53,228
Shipbuilding and repairs		97,461	83,189	266	83,455	85.63	56,784	-	188	56,972
<u>GROUP 6. NON-FERROUS METAL PRODUCTS</u>	x	555,693	469,350	27,332	496,682	89.38				
		413,807	387,153	24,123	411,276	99.39	1,047,012	5,376,686	11,418	6,435,116
Aluminium products		32,157	31,942	-	31,942	99.33	45,237	68,836	-	114,073
Brass and copper products		32,393	31,951	-	31,951	75.37	37,407	11,469	-	48,876
Electrical apparatus and supplies		100,139	88,724	19,315	108,039	100.00	132,322	5,880	228	138,430
Non-ferrous metal smelting & refining		231,059	216,677	4,808	221,485	95.86	807,740	5,290,493	11,190	6,109,423
<u>GROUP 7. NON-METALLIC MINERAL PRODUCTS</u>	x	332,016	258,902	9,403	268,305	80.81				
		290,742	229,330	8,924	238,254	81.95	509,830	847,131	19,794	1,376,755
Cement		80,000	77,687	933	78,620	98.30	193,679	-	347	194,026
Clay products - domestic clay		21,635	14,162	232	14,394	66.53	21,160	330	303	21,793
Coke and gas products		31,415	19,962	3,945	23,907	76.10	50,644	11,685	9,509	71,838
Petroleum products		72,534	39,278	279	39,557	54.54	108,403	-	127	108,530
<u>GROUP 8. CHEMICALS AND CHEMICAL PRODUCTS</u>	x	284,990	245,030	13,559	258,589	90.74				
		258,217	222,858	12,145	235,003	91.01	1,233,724	1,350,780	96,507	2,681,011
Acids, alkalies and salts		99,710	74,219	11,232	85,451	85.70	305,856	1,247,469	92,385	1,645,710
Fertilizers		91,403	85,618	-	85,618	93.67	827,052	-	3,531	830,583
<u>GROUP 9. MISCELLANEOUS INDUSTRIES</u>	x	36,273	33,045	2,351	35,396	97.58				
		33,809	31,753	1,894	33,647	99.52	68,480	190	4,239	72,909
Ice, artificial		12,361	12,271	-	12,271	99.27	41,079	-	2,828	43,907
<u>TOTAL ALL INDUSTRIES - 1946</u>	x	6,783,949	4,649,993	820,371	5,470,564	80.64				
		6,189,576	4,311,762	775,750	5,087,512	82.19	11,808,278	13,442,598	2,714,262	27,965,138
<u>1945</u>	x	6,606,651	4,586,636	787,930	5,374,566	81.35				
		6,076,433	4,257,069	748,786	5,005,855	82.38	11,246,033	12,740,960	2,362,260	26,349,253

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

Table 5

POWER EMPLOYED IN MANUFACTURING INDUSTRIES, BY PROVINCES, 1946

(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 for own use	Total
						For Power and Lighting	For Other Purposes		
	H.P.	H.P.	H.P.	H.P.	H.P.	(Thousands of Kilowatt Hours)			
Prince Edward Island	5,278	1,139	-	1,139	21.6	1,170	-	3	1,173
Nova Scotia	186,283	86,945	64,042	150,987	81.1	201,793	1,981	92,731	296,505
New Brunswick	235,176	130,930	48,706	179,636	76.4	432,415	8,785	210,444	651,644
Quebec	2,205,952	1,699,734	152,846	1,852,580	84.0	5,364,996	9,696,735	697,580	15,779,311
Ontario	2,576,131	1,876,904	340,744	2,217,648	86.1	3,917,747	2,856,576	1,271,487	8,045,810
Manitoba	167,565	144,359	5,213	149,572	89.3	337,779	227,531	6,788	572,098
Saskatchewan	76,041	44,878	277	45,155	59.4	104,070	152,196	846	257,112
Alberta	140,242	85,557	5,691	91,248	65.1	236,861	100	7,431	244,392
British Columbia	596,486	241,295	158,231	399,526	67.0	1,191,430	498,694	426,952	2,117,076
Yukon & N.W. Territories	422	21	-	21	5.0	17	-	-	17
Total	6,189,576	4,311,762	775,750	5,087,512	82.2	11,608,278	13,442,598	2,714,262	27,965,138
<u>Including Idle and Reserve Equipment</u>									
Prince Edward Island	5,695	1,257	-	1,257	22.1				
Nova Scotia	203,276	95,370	65,204	160,574	79.0				
New Brunswick	271,182	141,234	54,600	195,834	72.2				
Quebec	2,463,153	1,871,289	164,193	2,035,482	82.6				
Ontario	2,789,436	1,986,765	361,668	2,348,433	84.2				
Manitoba	179,738	154,163	6,193	160,356	89.2				
Saskatchewan	83,419	47,598	277	47,875	57.4				
Alberta	150,386	91,465	6,276	97,741	65.0				
British Columbia	637,048	260,829	161,960	422,789	66.4				
Yukon & N.W. Territories	616	23	-	23	3.7				
Total	6,783,949	4,649,993	820,371	5,470,364	80.6				

POWER EQUIPMENT

Table 6

IN REGULAR USE AND TOTAL INCLUDING IDLE AND RESERVE EQUIPMENT, 1946

MANUFACTURING INDUSTRIES

Industry	TOTAL POWER EMPLOYED		ELECTRIC MOTORS OPERATED BY						Ratio of Motor to Total Power		CONSUMPTION OF ELECTRICITY			
	In Regular Use	Incl. Idle & Reserve Equipment	Central Station Power		Power Generated in the Industries		Total		In Regular Use	Incl. Idle & Reserve	Purchased from Central Electric Stations		Generated by the Industries for own use	Total
			In Regular Use	Incl. Idle & Reserve	In Regular Use	Incl. Idle & Reserve	In Regular Use	Incl. Idle & Reserve			For Power & Lighting	For Other Purposes		
	A H.P.	B H.P.	C H.P.	D H.P.	E H.P.	F H.P.	G H.P.	H H.P.	I P.C.	J P.C.	K (Thousands of Kilowatt Hours)		L	M
1. Vegetable Products	510,648	554,499	541,759	570,440	48,490	52,299	590,249	422,759	76.42	76.24	580,561	52,712	90,455	725,728
2. Animal Products	199,111	212,634	160,985	169,797	4,828	4,979	165,811	174,776	65.28	82.20	272,564	2,525	7,091	281,978
3. Textiles and Textile Products	280,551	301,585	255,829	248,117	26,185	28,512	260,012	276,629	92.69	91.75	481,501	20,655	60,226	562,560
4. Wood & Paper	5,098,862	5,515,788	1,772,575	1,877,930	536,175	569,249	2,510,546	2,447,179	74.56	75.85	6,541,506	4,966,153	2,254,259	13,761,898
5. Iron and its	1,105,849	1,192,471	951,724	977,582	110,990	112,687	1,042,714	1,090,069	94.46	91.41	1,075,500	825,590	170,295	2,069,185
6. Non-ferrous Metal Products	415,807	555,695	587,153	469,350	24,123	27,332	411,276	496,682	99.39	89.58	1,047,012	5,576,686	11,418	6,455,116
7. Non-metallic Mineral Products	290,742	332,016	229,550	258,902	8,924	9,403	258,254	268,505	81.95	80.81	509,650	847,151	19,794	1,576,755
8. Chemicals and Chemical Products	258,217	284,990	222,858	245,050	12,145	15,559	235,005	258,589	91.01	90.74	1,255,724	1,550,780	96,507	2,681,011
9. Miscellaneous Industries	55,809	56,275	51,755	55,045	1,894	2,351	55,647	55,396	100.00	97.58	68,480	190	4,259	72,909
Total - 1946	6,189,576	6,785,949	4,511,762	4,649,993	775,750	820,571	5,087,512	5,470,564	82.19	80.64	11,808,278	15,442,598	2,714,262	27,965,158
- 1945	6,076,453	6,606,651	4,257,069	4,586,636	748,786	787,930	5,005,855	5,574,566	82.38	81.35	11,246,035	12,740,960	2,562,261	26,549,254
Per cent change	1.86	2.68	1.28	1.58	3.60	4.11	1.65	1.78			5.00	5.51	14.74	6.15

Table 7

MINING INDUSTRIES

Metal Mining	550,695	592,154	446,535	487,553	45,402	55,791	491,937	541,524	92.70	91.42	1,270,970	65,146	151,247	1,487,565
Non-metal Mining	101,559	110,885	75,816	81,858	4,689	5,645	80,505	87,501	79.44	78.91	181,541	-	10,126	191,667
Sand, Gravel & Stone	57,457	64,752	35,482	40,952	1,116	1,119	36,598	42,051	65.72	64.98	57,759	-	582	58,341
Fuels	217,470	242,264	128,672	156,546	22,096	24,874	150,768	161,220	69.52	66.55	184,452	-	57,995	242,427
Total - 1946	906,941	1,010,013	686,505	746,669	75,305	85,427	759,808	852,096	85.78	82.58	1,674,702	65,146	199,950	1,959,798
- 1945	875,548	987,595	647,050	708,775	78,810	90,142	725,840	798,917	82.90	80.90	1,580,224	86,532	201,764	1,868,520
Per cent change	3.59	2.26	6.10	5.55	- 7.00	- 5.25	4.68	4.15			5.98	- 24.55	- 0.90	5.85

Totals Tables 6 & 7

MANUFACTURING AND MINING INDUSTRIES

1946	7,096,517	7,795,962	4,998,267	5,596,662	849,055	905,798	5,847,520	6,502,460	82.40	80.86	13,482,980	15,507,744	2,914,212	29,904,956
1945	6,951,979	7,594,246	4,894,099	5,295,411	827,596	878,072	5,751,695	6,175,485	82.44	81.29	12,826,257	12,827,292	2,564,025	28,217,574
Per cent change	2.08	2.65	2.15	1.91	2.85	5.16	2.02	2.09			5.12	5.50	15.66	5.98

Table 8

MANUFACTURING INDUSTRIES
TOTAL POWER EQUIPMENT - TOTAL EMPLOYEES
 Average Horse power per Employee

	1925	1935	1935	1937	1939	1940	1941	1942	1943	1944	1945	1946
<u>Power Employed - H.P.</u>												
1. Vegetable Products	257,176	528,666	351,861	547,002	364,195	376,519	402,441	405,076	414,953	508,073	528,605	554,499
2. Animal "	80,895	112,035	122,560	133,647	145,931	151,321	163,917	165,682	179,322	189,159	197,221	212,634
3. Textiles & Textile Prods.	107,850	215,907	240,549	211,729	234,597	246,054	251,916	258,679	266,834	277,304	285,862	301,585
4. Wood & Paper Products	1,146,571	2,035,112	2,160,083	2,420,436	2,579,463	2,677,502	2,772,081	2,742,314	2,766,491	2,845,242	2,987,435	3,315,788
5. Iron and its "	213,705	626,730	660,491	719,265	730,594	763,195	963,548	1,056,870	1,209,202	1,260,802	1,244,225	1,192,471
6. Non-ferrous Metal "	99,963	434,561	416,927	472,031	549,120	598,106	673,480	656,415	701,970	656,664	636,900	555,693
7. Non-metallic Mineral Products	151,780	219,612	222,555	239,898	257,731	270,534	285,820	289,332	314,221	316,177	318,121	332,016
8. Chemicals & Allied "	62,447	110,873	130,464	141,755	156,300	179,741	302,746	354,314	525,762	377,448	371,535	284,990
9. Miscellaneous Industries	46,516	66,315	61,785	26,520	27,361	28,163	34,127	32,107	37,096	37,570	36,747	36,273
Total	2,146,903	4,147,831	4,346,775	4,712,265	5,047,292	5,290,935	5,850,076	5,969,895	6,415,851	6,468,439	6,606,651	6,783,949
<u>Employees</u>												
1. Vegetable Products	65,395	73,095	79,285	94,258	99,447	103,634	113,753	115,476	117,243	130,679	135,311	137,170
2. Animal Products	61,517	53,111	60,124	67,996	69,358	73,668	82,151	87,058	88,037	94,195	98,267	102,844
3. Textiles & Textile Prods.	92,669	106,235	120,699	121,677	121,022	138,973	156,892	165,478	157,987	153,122	158,148	164,737
4. Wood & Paper Products	128,404	105,471	123,724	147,254	144,782	160,868	179,967	186,106	183,865	189,674	199,373	224,121
5. Iron and its "	88,071	70,947	95,428	127,148	121,041	164,325	253,701	360,845	435,744	411,944	321,719	249,279
6. Non-ferrous Metal "	21,409	25,273	33,613	44,614	44,563	54,317	73,450	90,937	109,522	104,314	88,350	84,833
7. Non-metallic Mineral Products	24,978	19,296	23,342	23,837	23,026	25,415	28,829	30,707	30,994	31,590	32,525	36,493
8. Chemicals & Allied "	15,149	15,397	18,933	21,968	22,595	27,682	54,014	93,030	92,288	81,822	60,723	37,278
9. Miscellaneous Industries	16,581	10,361	12,270	11,699	12,280	13,364	18,441	22,474	25,388	25,542	24,936	21,381
Total	514,173	479,186	567,416	660,451	658,114	762,244	961,178	1,152,091	1,241,068	1,222,882	1,119,372	1,058,156
<u>Average Horse power of Equipment in Manufacturing Industries per Employee</u>												
1. Vegetable Products	3.9	4.5	3.9	3.7	3.7	3.6	3.5	3.5	3.5	3.9	3.9	4.0
2. Animal Products	1.3	2.1	2.0	2.0	2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.1
3. Textiles & Textile Prods.	1.2	2.0	1.9	1.7	1.9	1.8	1.6	1.6	1.7	1.8	1.8	1.8
4. Wood & Paper Products	8.9	19.3	16.8	16.4	17.8	16.7	15.4	14.7	15.1	15.0	15.0	14.8
5. Iron and its "	2.4	8.8	6.3	5.7	6.0	4.6	3.8	2.9	2.8	3.1	3.9	4.8
6. Non-ferrous Metal "	4.7	17.2	12.5	10.6	12.3	11.0	9.2	7.2	6.4	5.3	7.2	6.5
7. Non-metallic Mineral Products	5.3	11.4	10.8	10.1	11.2	10.6	9.9	9.4	10.1	10.0	9.8	9.1
8. Chemicals & Allied "	4.1	7.2	6.9	6.5	7.0	6.5	5.6	3.8	5.7	4.6	6.1	7.6
9. Miscellaneous Industries	2.8	6.4	2.6	2.3	2.2	2.1	1.9	1.4	1.5	1.5	1.5	1.7
Total	4.2	8.7	7.5	7.1	7.7	6.9	6.1	5.2	5.2	5.3	5.9	6.4

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