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USE OF ELECTRIC POWER
IN
MANUFACTURING AND MINING INDUSTRIES
IN
CANADA
1943



OTTAWA
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OTTAWA

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USE OF ELECTRIC POWER

IN

MANUFACTURING AND MINING INDUSTRIES

20-1920

IN CANADA

1 9 4 3

This report 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 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 equipment.

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 twenty years from 1923 to 1943 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 69 per cent of the total power capacity, increased by 375 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 total and although internal combustion

engines increased in capacity by 578 per cent, they still constitute less than 5 per cent of the total capacity. These include both diesel or compression ignition engines and electric ignition engines, the latter having approximately twice the capacity of the former.

Electric motors driven by current generated in the industries showed a decrease in 1943 from the 1942 capacity and total power in mining industries also showed a decrease of 2.0 per cent. These data include equipment only in mines operating in the respective years and an increasing number of mines ceased to operate in 1942 and 1943.

The following table shows the rated capacity, in horse power, of all power equipment in manufacturing and mining industries in 1923 and 1943. These include equipment in regular use and idle equipment in operating industries.

	Capacity (Horse Power)		Increase	
	1 9 2 3	1 9 4 3	H. P.	P. C.
<u>Manufacturing Industries</u>				
Water Wheels	587,191	749,593	162,402	28
Steam Engines	554,191	988,280	434,089	78
Internal Combustion Engines	46,829	257,873	211,044	451
Total	1,188,211	1,995,746	807,535	68
Electric Motors on Purchased Power	958,692	4,420,105	3,461,413	356
Total Power	2,146,903	6,415,851	4,268,948	199
Electric Motors on Power Generated in the Industries ...	357,136	760,630	403,494	113
Total Electric Motors	1,315,828	5,180,735	3,864,907	294
<u>Mining Industries</u>				
Water Wheels	27,528	40,450	12,922	47
Steam Engines	148,039	146,506	- 1,533	- 1
Internal Combustion Engines	6,914	106,392	99,478	1,439
Total	182,481	293,348	110,867	61
Electric Motors on Purchased Power	118,835	695,109	576,274	485
Total Power	301,316	988,457	687,141	228
Electric Motors on Power Generated in the Industries ...	53,860	105,436	51,576	96
Total Electric Motors	172,695	800,545	627,850	364
<u>Manufacturing and Mining Industries</u>				
Water Wheels	614,719	790,043	175,324	29
Steam Engines	702,230	1,134,786	432,556	62
Internal Combustion Engines	53,743	364,265	310,522	578
Total	1,370,692	2,289,094	918,402	67
Electric Motors on Purchased Power	1,077,527	5,115,214	4,037,687	375
Total Power	2,448,219	7,404,308	4,956,089	202
Electric Motors on Power Generated in the Industries ...	410,996	866,066	455,070	111
Total Electric Motors	1,488,523	5,981,280	4,492,757	302

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 1943 when the decline was from 81.7 to 80.7 per cent. Commencing with 1955 reports data were gathered on spare or idle equipment. For each of the years 1935-1943 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 might be expected to decline in both total capacity and as a percentage of the total, but this has not occurred. In 1935 idle equipment in the manufacturing industry had a total capacity of 255,347 h.p. or 5.9 per cent of the total capacity, whereas in 1943 the capacity was 406,330 or 6.4 per cent of the total. Apparently a certain amount of reserve equipment is required in various industries.

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 36 per cent in 1942.

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 aluminium 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. This was due to the increased consumption of electricity by other industries and also by the transfer from electric boilers to fuel boilers by the pulp and paper mills; in 1939 these mills purchased 5,152,790,000 kw. hrs. for their boilers, whereas in 1943 the energy purchased for this purpose decreased to 1,539,242,000 kw. hrs. The consumption for all purposes by the non-ferrous metal, smelting and refining group, which includes the aluminium industry, increased from 3,492,822,000 kw. hrs. in 1939 to 11,290,223,000 kw. hrs., an amount 40 per cent above that consumed by the pulp and paper industry, and this does not include the fabricating plants of the aluminium industry.

Table 4 shows the power equipment in regular use in manufacturing plants operating during 1943. 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, 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 1943 was 15,904,207,000 kw.hrs. of purchased power, or 60 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 1923 to 81.0 per cent in 1943. 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 horse power in 1923 to 151,720 horse power in 1943 as compared with a decrease from 37,308 to 23,922 horse power 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 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	2,146,908	958,692	357,136	1,315,828	61.3
1924	2,538,535	1,256,183	398,001	1,654,184	65.2
1925	2,868,164	1,547,754	434,678	1,982,432	68.6
1926	3,134,248	1,770,324	392,322	2,162,656	69.0
1927	3,287,582	1,924,627	386,355	2,311,242	70.3
1928	3,592,184	2,139,129	457,565	2,596,694	72.3
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	539,800	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
1940	5,290,935	3,563,048	724,769	4,287,817	81.1
1941	5,850,076	4,028,342	740,112	4,769,054	81.6
1942	x 5,969,895	x 4,076,277	800,917	x 4,877,194	x 81.7
1943	6,415,851	4,420,105	760,630	4,911,911	80.7

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

x - Revised.

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	57.3
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	520,638	313,567	79,259	392,826	75.5
1932	482,344	287,150	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	76.3
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
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

[†] 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		1941		1942		1943	
	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	402,441	79	405,076	79	414,953	80
2. Animal Products	80,895	72	163,917	78	165,682	84	179,322	79
3. Textile Products	107,850	83	251,916	91	258,679	91	266,834	92
4. Wood & Paper Products	1,146,571	50	2,772,081	75	2,742,314	73	2,766,491	72
5. Iron and its "	213,705	89	963,548	93	1,056,870	95	1,209,202	91
6. Non-ferrous Metal "	99,963	47	673,480	90	656,415	90	701,970	89
7. Non-metallic Mineral Products	131,780	83	285,820	82	289,332	83	314,221	80
8. Chemical & Allied "	62,447	72	302,746	87	354,314	92	525,762	85
9. Miscellaneous	46,516	86	34,127	90	32,107	98	37,096	98
TOTAL	2,146,903	61	5,850,076	82	5,969,895	82	6,415,851	81

x - Revised.

Table 4.

POWER EQUIPMENT OF MANUFACTURING INDUSTRIES IN CANADA, 1943
(Equipment in Regular Use)

	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 for		Generated by the Industries	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	414,953	296,936	35,385	332,321	80.1				
	391,530	282,285	30,494	312,779	79.9	467,276	293	37,718	505,287
Biscuits, confectionery, etc.	24,258	22,193	788	22,961	94.7	28,525	20	772	29,317
Bread and bakery products	19,097	17,657	5	17,662	92.5	35,662	256	...	35,918
Breweries	25,428	21,026	148	21,172	83.3	29,985	...	854	30,839
Flour and feed mills	124,298	67,456	2,229	69,685	56.1	148,458	1	2,277	150,736
Fruit and vegetable preparations	26,012	18,238	964	17,202	66.1	11,470	11	163	11,644
Rubber goods, footwear, etc.	80,349	73,300	1,391	74,691	93.0	114,423	...	11,937	126,360
Sugar refineries	20,391	7,154	17,297	24,451	100.0	7,267	...	19,286	26,553
GROUP 2. ANIMAL PRODUCTS x	179,322	139,013	5,538	142,549	79.4				
	168,580	132,688	3,442	136,130	80.8	223,797	1,015	5,271	230,083
Butter and cheese	47,523	36,505		36,505	76.8	45,153	40		45,193
Fish curing and packing	20,620	7,653	1,809	9,462	45.9	9,981	842	2,504	13,327
Leather tanneries	16,787	14,412	548	14,960	89.1	19,936	18	333	20,287
Slaughtering and meat packing	53,619	48,938	172	49,110	91.3	106,629	...	524	107,153
GROUP 3. TEXTILES AND TEXTILE PRODUCTS x	266,834	209,982	34,520	244,502	91.6				
	247,590	198,237	31,087	229,324	92.6	447,115	4,460	81,429	533,004
Cotton yarn and cloth	103,549	83,948	9,735	93,683	90.5	218,547	1,545	33,187	253,279
Hosiery and knitted goods	20,637	13,491	3,770	17,261	83.6	28,093	...	3,209	31,302
Silk and artificial silk	35,488	25,608	8,144	33,752	95.1	103,329	2,485	27,234	133,048
Woollen cloth	18,375	16,177	362	16,539	90.1	15,163	391	1,683	17,237
GROUP 4. WOOD & PAPER PRODUCTS x	2,766,491	1,510,149	493,210	2,003,359	72.4				
	2,619,657	1,447,176	464,931	1,912,107	73.0	4,798,634	1,539,889	2,395,189	8,733,712
Furniture	24,948	17,184	3,169	20,353	81.6	16,500		2,815	19,315
Planing mills, sash and door	61,433	37,080	4,714	41,794	68.0	32,519	59	5,756	38,334
Printing and publishing	28,070	27,354	782	28,136	100.0	35,194	410	131	35,735
Pulp and paper	1,966,533	1,234,887	389,326	1,624,213	82.6	4,571,599	1,539,242	1,928,185	8,039,026
Saw mills	433,844	51,772	59,320	111,092	25.6	43,832	99,763	446,327	539,922
GROUP 5. IRON & ITS PRODUCTS x	1,209,202	974,212	123,697	1,097,909	90.3				
	1,122,306	936,861	118,122	1,054,983	94.0	1,599,536	1,492,993	238,210	3,330,739
Agricultural implements	28,176	25,458	...	25,458	90.4	46,722	...	...	46,722
Aircraft	33,553	32,190	...	32,190	95.9	113,923	368	...	114,291

Automobiles	64,008	19,165	37,281	56,446	100.0	50,195	...	91,107	121,502
Automobile supplies	63,768	63,434	1	63,435	99.5	116,747	34,914	...	151,661
Bridge and structural steel	35,180	32,519	...	32,519	92.4	36,654	...	...	36,654
Castings, iron	56,442	54,210	441	54,651	96.8	67,727	1,561	1,263	70,551
Iron and steel products	122,470	120,316	94	120,410	98.3	166,640	4,061	...	170,901
Machinery	76,246	72,133	3,992	76,125	99.8	70,124	29	4,169	74,322
Primary iron and steel	286,233	204,215	52,495	256,710	89.7	447,801	1,443,107	126,862	2,017,770
Railway rolling stock	122,562	105,729	11,422	117,151	95.6	130,799	...	7,186	137,985
Shipbuilding and repairs	111,395	91,896	3,496	95,392	85.3	180,043	...	1,011	181,054
<u>GROUP 6. NON-FERROUS METAL</u> x	701,970	607,151	17,911	625,062	89.0				
<u>PRODUCTS</u>	659,883	569,848	17,567	587,415	89.0	1,101,393	10,381,346	282,041	11,764,780
Aluminium products	28,009	27,874	...	27,874	99.5	41,916	52,723	...	94,639
Brass and copper products	67,232	66,732	...	66,732	99.3	74,015	161,725	...	235,740
Electrical apparatus and supplies	100,742	88,619	13,414	102,033	100.0	123,066	3,778	11,658	138,502
Non-ferrous smelting and refining	451,745	374,475	4,133	378,628	83.8	846,725	10,163,115	270,383	11,280,223
<u>GROUP 7. NON-METALLIC MINERAL</u> x	314,221	241,583	9,157	250,740	79.8				
<u>PRODUCTS</u>	272,036	212,544	8,712	221,256	81.3	431,523	1,190,469	19,295	1,641,287
Abrasive products	12,796	12,746	...	12,746	99.3	19,166	897,746	...	916,912
Cement	79,419	76,989	968	77,957	98.2	150,929	...	328	151,257
Clay products - domestic clay	18,253	12,185	267	12,452	68.2	10,621	128	259	11,008
Coke and gas products	29,905	18,889	3,945	22,834	76.4	46,120	11,244	8,796	66,160
Petroleum products	67,637	35,301	191	35,492	52.5	87,985	...	371	88,358
<u>GROUP 8. CHEMICALS AND CHEMICAL</u> x	525,762	407,580	40,296	447,876	85.2				
<u>PRODUCTS</u>	493,317	384,868	38,565	423,433	85.8	1,361,556	1,293,721	152,456	2,807,733
Acids, Alkalies and salts	178,576	150,962	12,036	162,998	91.3	466,580	1,283,834	130,794	1,881,208
Fertilizers	33,299	32,969	...	32,969	99.0	633,904	...	...	633,904
<u>GROUP 9. MISCELLANEOUS INDUSTRIES</u> x	37,096	33,499	2,918	36,417	98.2				
	34,622	32,027	2,457	34,484	99.6	64,693	21	...	64,714
Artificial ice	11,240	11,190	604	11,794	100.0	33,570	...	...	33,570
<u>TOTAL ALL INDUSTRIES - 1943</u> x	6,415,851	4,420,105	760,630	5,180,735	80.7				
	6,009,521	4,196,534	715,377	4,911,911	81.7	10,495,523	15,904,207	3,211,609	29,311,359
1942 / x	5,969,895	4,076,277	800,917	4,877,194	81.7				
/	5,593,819	3,861,980	742,630	4,604,610	82.3	10,031,728	13,619,113	3,345,445	26,396,286

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, 1943

(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 and Lighting	For Other Purposes		
	H.P.	H.P.	H.P.	H.P.	P.C.	(Thousands of Kilowatt hours)			
Prince Edward Island	4,135	974	...	974	23.6	853	...	...	853
Nova Scotia	182,449	89,777	61,958	151,715	83.2	262,918	189	115,546	378,653
New Brunswick	220,516	120,105	47,233	167,338	75.9	344,600	14,752	196,294	555,646
Quebec	2,117,616	1,557,336	165,830	1,721,166	81.3	4,512,178	11,450,658	1,065,062	17,027,898
Ontario	2,489,930	1,816,419	295,053	2,111,472	84.8	3,850,325	3,536,384	991,059	8,157,768
Manitoba	159,423	136,311	5,337	141,648	88.9	292,852	212,706	9,545	515,103
Saskatchewan	71,480	41,480	284	41,764	58.4	65,500	226,228	264	291,992
Alberta	126,388	81,601	5,254	86,855	68.7	206,200	15	7,262	213,477
British Columbia	657,430	352,521	136,448	488,969	76.7	980,085	663,275	826,525	2,469,883
Yukon & N.W.Territories	154	10	...	10	64.9	14	...	52	66
TOTAL	6,009,521	4,196,534	715,377	4,911,911	81.7	10,495,523	15,904,207	3,211,609	29,611,339

Including Idle and Reserve Equipment

Prince Edward Island	4,559	1,117	...	1,117	24.5				
Nova Scotia	195,706	95,736	62,883	158,619	81.0				
New Brunswick	249,785	126,157	55,364	181,521	72.7				
Quebec	2,239,564	1,640,633	174,062	1,814,695	81.0				
Ontario	2,671,084	1,906,531	314,998	2,221,529	83.2				
Manitoba	165,924	141,260	6,629	147,889	89.1				
Saskatchewan	78,208	43,735	284	44,019	56.3				
Alberta	138,842	89,611	5,837	95,448	68.7				
British Columbia	672,023	375,313	140,573	515,886	76.8				
Yukon & N.W.Territories	156	12	...	12	76.9				
TOTAL	6,415,851	4,420,105	760,630	5,180,735	80.7				

Table 6.

POWER EQUIPMENT - IN REGULAR USE AND INCLUDING IDLE AND RESERVE EQUIPMENT, 1943
MANUFACTURING INDUSTRIES

Industry	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	In Regular Use	Incl. Idle & Reserve	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	B	C	D	E	F	G	H	I	J	K L M N				
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	591,530	414,953	282,285	296,936	50,494	35,385	512,779	332,321	79.9	80.1	467,276	293	37,718	505,287
2. Animal Products	168,580	179,322	132,688	139,013	3,442	3,536	136,130	142,549	80.8	79.4	223,797	1,015	5,271	230,083
3. Textiles and Textile Products	247,590	266,854	198,237	209,982	31,087	34,520	229,324	244,502	92.6	91.6	447,115	4,460	81,429	533,004
4. Wood & Paper "	2,619,657	2,766,491	1,447,176	1,510,149	464,931	493,210	1,912,107	2,003,559	75.0	72.4	4,798,654	1,539,889	2,395,189	8,733,712
5. Iron and its "	1,122,506	1,209,202	936,861	974,212	118,122	123,697	1,054,985	1,097,909	94.0	90.8	1,599,586	1,492,993	238,210	3,330,739
6. Non-ferrous Metal Products	659,883	701,970	569,848	607,151	17,567	17,911	587,415	625,062	89.0	89.0	1,101,393	10,381,346	282,041	11,764,780
7. Non-metallic Mineral Products	272,036	314,221	212,544	241,583	8,712	9,157	221,256	250,740	81.3	79.8	431,523	1,190,469	19,295	1,641,287
8. Chemicals and Chemical Products	493,317	525,782	584,868	407,580	38,565	40,296	423,433	447,876	85.8	85.2	1,361,556	1,293,721	152,456	2,807,733
9. Miscellaneous Industries	34,622	37,096	32,027	33,499	2,457	2,918	34,484	36,417	99.0	98.2	64,693	21	...	64,714
TOTAL - 1943	6,009,521	6,415,851	4,196,534	4,420,105	715,377	760,630	4,911,911	5,180,735	81.7	80.7	10,495,523	15,304,207	3,211,609	29,611,539
1942	5,595,819	5,969,895	3,861,980	4,076,277	742,630	800,917	4,604,610	4,877,194	82.5	81.7	10,031,728	13,619,113	3,345,445	26,996,286
Per cent change	+ 7.4	+ 7.5	+ 6.7	+ 8.3	- 3.7	- 5.0	+ 6.7	+ 6.2			+ 4.6	+ 16.8	- 4.0	+ 9.7

Table 7.

MINING INDUSTRIES

Metal Mining	497,686	565,356	423,670	459,664	53,621	77,038	477,291	536,702	95.9	94.9	1,271,462	7,408	195,086	1,473,956
Non-metal Mining	86,240	96,470	70,128	74,965	2,984	3,669	73,112	78,634	84.8	81.5	157,741	...	6,065	163,806
Sand, Gravel & Stone	52,604	57,400	29,524	32,682	807	807	30,331	33,489	57.6	58.3	31,816	...	361	32,177
Fuels	254,773	269,231	124,036	127,798	23,390	23,922	147,426	151,720	57.9	56.4	177,642	...	47,336	224,978
TOTAL - 1943	891,303	988,457	647,358	695,109	80,802	105,436	728,160	800,545	81.7	81.0	1,638,661	7,408	248,848	1,894,917
1942	905,721	1,008,777	627,155	672,097	106,135	118,748	733,290	790,845	81.0	78.4	1,713,497	...	296,734	2,010,231
Per cent change	- 15.9	- 2.0	+ 3.2	+ 3.4	- 23.9	- 11.2	- 0.7	+ 1.2			- 4.4	...	- 16.1	- 5.7

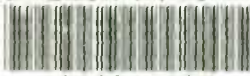
Totals Tables 6 & 7

MANUFACTURING AND MINING INDUSTRIES

1943	6,900,824	7,404,308	4,845,892	5,115,214	796,179	866,066	5,640,071	5,981,280	81.7	80.8	12,134,184	15,911,615	3,460,457	31,506,256
1942	6,499,540	6,978,672	4,469,125	4,748,374	848,765	919,665	5,337,900	5,668,039	82.1	81.2	11,745,225	13,619,113	3,642,179	29,006,517
Per cent change	+ 6.2	+ 6.1	+ 7.9	+ 7.7	- 6.2	- 5.2	+ 5.7	+ 5.5			+ 3.3	+ 16.8	- 5.0	+ 8.6

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