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DEPARTMENT OF TRADE AND COMMERCE

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USE OF ELECTRIC POWER

IN

MANUFACTURING AND MINING INDUSTRIES

IN

CANADA

1942

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Dominion Statistician, S. A. CUDMORE, M.A. (Oxon.), F.S.S., F.R.S.C.
Chief, Transportation and Public Utilities Branch, G.S. Wrong, B.Sc.

USE OF ELECTRIC POWER IN MANUFACTURING AND MINING INDUSTRIES IN CANADA 1942

This report, issued during the past thirteen 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 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 seventeen years from 1925 to 1942 the increase in the total capacity of power equipment in manufacturing and mining industries has been 4,622,576 h.p., or 188.8 p.c. Of this total increase electric motors operated on central electric station power accounted for 3,762,972 h.p., or 81 p.c. Steam engines increased by 379,629 h.p., and internal combustion engines by 278,065 h.p. This latter increase was 517.4 p.c., there being only 53,743 h.p. installed in 1923. These engines include both gasoline or electric ignition engines and diesel or compression ignition engines, and many of these are used to drive electric generators. The electric motors driven by power generated in the industries increased in capacity from 410,996 h.p. in 1923 to 919,665 h.p. or by 123.8 p.c. The main reason for the large increase in motors driven by central electric power is the extensive use of water power, chiefly in central electric stations and particularly in Quebec and Ontario.

The following table shows the rated horse power capacity of all power equipment in manufacturing and mining industries operating in 1923 and in 1942.

	Capacity (Horse Power)		Increase	
	1923	1942	H. P.	P. C.
Manufacturing Industries				
Water Wheels	587,191	741,751	154,560	26.3
Steam Engines	554,191	927,509	373,318	67.4
Internal Combustion Engines	46,829	224,358	177,529	379.1
Total	1,188,211	1,893,618	705,407	59.4
Electric Motors on Purchased Power	958,692	4,168,402	3,209,710	334.8
Total Power	2,146,903	6,062,020	3,915,117	182.4
Electric Motors on Power Generated in the Industries	357,136	800,917	443,781	124.3
Total Electric Motors	1,315,828	4,969,319	3,653,491	277.7
Mining Industries				
Water Wheels	27,528	74,880	47,352	172.0
Steam Engines	148,039	154,350	6,311	4.3
Internal Combustion Engines	6,914	107,450	100,536	1,454.1
Total	182,481	336,680	154,199	84.5
Electric Motors on Purchased Power	118,835	672,097	553,262	465.6
Total Power	301,316	1,008,777	707,461	234.8
Electric Motors on Power Generated in the Industries	53,860	118,748	64,888	120.5
Total Electric Motors	172,695	790,845	618,150	357.9
Manufacturing and Mining Industries				
Water Wheels	614,719	816,631	201,912	32.8
Steam Engines	702,230	1,081,859	379,629	54.1
Internal Combustion Engines	53,743	331,808	278,065	517.4
Total	1,370,692	2,230,298	859,606	62.4
Electric Motors on Purchased Power	1,077,527	4,840,499	3,762,972	349.2
Total Power	2,448,219	7,070,797	4,622,578	188.8
Electric Motors on Power Generated in the Industries	410,996	919,665	508,669	123.8
Total Electric Motors	1,488,523	5,760,164	4,271,641	287.0

The ratio of electric motor capacity to total power employed in manufacturing industries has increased fairly steadily, the recessions being few and small. The increase in the ratio has been considerably less since 1929 than during the preceding six years, the increase being 7.5 points from 1929 to 1942 as against 15.4 points from 1923 to 1929. Commencing with 1935 reports data were gathered on spare or idle equipment. For each of the years 1935-1942 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 255,547 h.p or 5.9 per cent of the total capacity, whereas in 1942 the capacity was 576,076 or 6.2 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 32.2 in 1942. 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 1942 the energy purchased for this purpose decreased to 1,706,658,000 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 8,547,585,000 kw. hrs., an amount almost equal to 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 1942. 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 was 13,619,115,000 kw.hrs. of purchased power, or 58 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 78.4 per cent in 1942. Data for the mining industries are shown in Tables 6 and 7.

The fuels group showed an increase in capacity of motors operated on purchased power from 10,035 horse power in 1923 to 115,217 horse power in 1942 as compared with a decrease from 37,308 to 25,390 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	2,146,903	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	72.3
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	4,028,942	740,112	4,769,054	81.6
1942	6,062,020	4,168,402	800,917	4,969,319	82.0

/ 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
		Operated by Central Electric Station Power	Operated by Power Generated in the Industry	Total Motor Capacity	P.C. of Total
	H.P.	H.P.	H.P.	H.P.	P.C.
1923	301,518	118,835	53,860	172,695	57.3
1924	314,173	125,725	71,378	197,101	82.7
1925	325,882	147,191	64,128	211,317	65.2
1926	336,880	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	482,544	287,150	76,626	363,756	75.4
1933	533,779	322,561	47,407	369,788	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

≠ 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	1 9 2 5		1 9 3 9		1 9 4 1		1 9 4 2	
	P o w e r		P o w e r		P o w e r		P o w e r	
	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	364,195	80	402,441	79	405,076	79
2. Animal Products	80,895	72	145,951	78	163,917	78	165,682	84
3. Textile Products	107,850	83	234,597	94	251,916	91	258,879	91
4. Wood & Paper Products	1,146,571	50	2,579,465	74	2,772,081	75	2,742,514	75
5. Iron and its "	213,705	89	730,594	87	963,548	93	1,148,995	95
6. Non-ferrous Metal "	99,965	47	549,120	89	673,480	90	656,415	90
7. Non-metallic Mineral Products	131,780	85	257,731	85	285,820	82	289,352	85
8. Chemical & Allied "	62,447	72	158,300	89	302,746	87	354,314	92
9. Miscellaneous	46,516	86	27,361	98	34,127	90	32,107	98
TOTAL	2,146,903	61	5,056,357	81	5,850,076	82	6,062,020	82

Table 4.

POWER EQUIPMENT OF MANUFACTURING INDUSTRIES IN CANADA, 1942

(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	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	405,076	285,449	37,635	321,084	79.3				
	385,725	268,724	33,783	302,507	78.8	443,583	258	58,465	502,306
Biscuits, confectionery, etc.	24,370	22,084	731	22,815	93.6	30,344	...	560	30,904
Bread and bakery products	18,896	17,758	190	17,948	95.0	33,752	251	...	34,003
Breweries	25,174	20,386	146	20,532	81.6	32,251	...	275	32,526
Flour and feed mills	125,114	66,270	2,270	68,540	54.8	130,403	1	23,890	154,294
Fruit and vegetable preparations	23,435	14,945	1,348	16,293	69.5	9,766	3	244	10,013
Rubber goods, footwear, etc.	74,044	66,915	847	67,762	91.5	115,299	...	11,876	127,175
Sugar refineries	25,761	8,477	20,672	29,149	100.0	11,325	...	15,221	26,546
GROUP 2. ANIMAL PRODUCTS x	165,682	135,691	3,353	139,044	83.9				
	164,171	129,187	3,301	132,488	80.7	227,186	1,085	4,214	232,485
Butter and cheese	47,465	35,946	...	35,946	75.7	52,720	109	...	52,829
Fish curing and packing	19,393	7,007	1,725	8,732	45.0	10,141	793	2,104	13,038
Leather tanneries	16,445	13,993	548	14,541	88.4	19,468	18	401	19,887
Slaughtering and meat packing	52,280	48,411	135	48,546	92.9	104,505	24	436	104,965
GROUP 3. TEXTILES AND TEXTILE PRODUCTS x	258,688	206,382	28,051	234,433	90.6				
	241,669	195,737	27,177	222,914	92.2	479,407	22,457	83,518	585,382
Cotton yarn and cloth	101,496	84,142	8,702	92,844	91.5	228,914	22,059	34,471	285,444
Hosiery and knitted goods	19,071	12,939	4,413	17,352	91.0	25,329	...	4,314	29,643
Silk and artificial silk	35,398	25,473	8,822	34,295	96.9	103,681	...	27,816	131,497
Woollen cloth	17,808	15,770	382	16,152	90.7	27,619	396	2,087	30,302
GROUP 4. WOOD & PAPER PRODUCTS x	2,742,314	1,491,354	504,650	1,996,004	72.8				
	2,608,984	1,429,454	461,295	1,880,749	72.1	5,199,144	1,708,062	2,496,983	9,404,189
Furniture	23,507	15,721	3,674	19,395	82.5	16,264	298	2,935	19,497
Planing mills, sash and door	59,770	35,131	4,525	39,656	66.3	31,247	115	4,045	35,407
Printing and publishing	27,907	27,147	658	27,805	99.6	35,965	403	6	36,374
Pulp and paper	1,960,060	1,231,445	386,816	1,618,261	82.6	4,963,381	1,706,658	2,025,723	8,695,762
Saw mills	432,710	42,013	58,476	100,489	23.2	46,272	67	451,630	497,969
GROUP 5. IRON & ITS PRODUCTS x	1,148,995	921,349	170,701	1,092,050	95.0				
	1,064,683	887,577	162,652	1,050,229	98.6	1,242,064	1,401,129	268,563	2,911,756
Agricultural implements	26,334	23,713	...	23,713	90.0	38,489	...	41,053	79,542
Aircraft	20,364	19,574	2,100	21,674	100.0	60,893	442	63,037	124,372

Automobiles	63,988	19,145	36,008	55,153	86.2	28,902	...	30,700	59,602
Automobile supplies	62,060	60,466	30	60,496	97.5	124,235	11,060	...	135,295
Bridge and structural steel	31,825	29,424	1,185	30,609	96.2	28,935	...	...	28,935
Castings, iron	51,626	49,719	1,269	50,988	98.8	68,325	1,041	1,113	70,479
Iron and steel products	107,927	106,416	235	106,651	98.8	134,354	130	...	134,484
Machinery	65,699	61,504	3,907	65,411	99.6	68,816	...	4,710	69,526
Primary iron and steel	212,140	131,964	99,813	231,777	100.0	277,134	1,378,440	112,934	1,768,508
Railway rolling stock	219,848	208,015	9,872	218,887	96.8	139,839	670	9,504	150,013
Shipbuilding and repairs	90,541	77,429	140	77,569	85.7	100,077	...	237	100,314
GROUP 6. NON-FERROUS METAL PRODUCTS x	656,415	571,839	17,854	589,693	89.8				
	619,911	537,574	17,500	555,074	89.5	1,103,210	7,574,331	274,672	8,952,213
Aluminium products	21,294	21,244	...	21,244	99.8	34,318	35,201	...	69,519
Brass and copper products	48,389	47,957	...	47,957	99.1	72,512	95,206	...	167,718
Electrical apparatus & supplies	100,050	87,980	13,052	91,032	91.0	125,085	4,369	14,848	144,302
Non-ferrous smelting & refining	438,125	368,365	4,448	372,813	85.1	848,228	7,439,533	259,824	8,547,585
GROUP 7. NON-METALLIC MINERAL PRODUCTS x	289,332	228,519	12,049	240,568	83.1				
	252,934	202,488	11,595	214,083	84.6	409,833	1,044,372	21,348	1,475,583
Abrasive products	10,706	10,656	...	10,656	99.5	16,994	754,876	...	771,870
Cement	79,690	77,069	968	78,037	97.9	154,502	...	...	154,502
Clay products - domestic clay	18,198	12,790	330	13,120	72.1	11,503	79	365	11,947
Coke and gas products	24,222	14,260	6,296	20,556	84.9	39,815	11,121	10,154	61,090
Petroleum products	56,273	32,153	296	32,449	57.7	81,021	...	125	81,146
GROUP 8. CHEMICALS AND CHEMICAL PRODUCTS x	354,314	301,344	23,714	325,058	91.7				
	319,588	275,882	22,874	298,756	93.5	865,815	1,867,419	134,491	2,867,725
Acids, alkalies and salts	144,261	115,325	11,881	127,206	88.2	430,607	1,356,252	110,255	1,897,114
Fertilizers	38,272	37,937	...	37,937	99.1	169,755	500,000	...	669,755
GROUP 9. MISCELLANEOUS INDUSTRIES x	32,107	28,475	2,910	31,385	97.8				
	30,279	27,482	2,453	29,935	98.9	61,488	...	3,191	64,679
Artificial ice	11,497	11,115	604	11,719	100.0	33,442	...	...	33,442
TOTAL ALL INDUSTRIES - 1942 x	6,062,020	4,168,402	800,917	4,969,319	82.0				
	5,685,944	3,954,105	742,630	4,696,735	82.6	10,031,728	13,619,113	3,345,445	26,996,286
1941 x	5,850,076	4,028,942	740,112	4,769,054	81.5				
	5,485,495	3,825,777	716,891	4,542,668	82.8	9,457,950	10,851,307	2,840,843	23,150,080

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

POWER EMPLOYED IN MANUFACTURING INDUSTRIES, BY PROVINCES, 1942

Table 5. (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	4,181	841	...	841	20.1	561	...	11	572
Nova Scotia	179,330	81,971	63,725	145,696	81.2	207,154	2,503	130,129	339,786
New Brunswick	217,461	117,066	47,095	164,161	75.5	336,906	24,541	200,667	562,114
Quebec	2,008,243	1,465,617	152,100	1,617,717	80.6	4,664,745	8,791,316	1,096,312	14,552,373
Ontario	2,310,745	1,698,638	332,873	2,031,511	87.9	3,808,161	3,204,062	1,089,746	8,101,969
Manitoba	191,744	167,794	4,396	172,190	89.8	296,370	330,121	13,186	639,677
Saskatchewan	67,344	39,779	155	39,934	59.3	52,482	59,247	324	112,053
Alberta	115,778	72,091	5,182	77,273	66.7	166,776	3	6,085	172,864
British Columbia	590,910	310,299	137,104	447,403	75.7	498,564	1,207,320	808,985	2,514,869
Yukon & N.W.Territories	208	9	...	9	4.3	9	...	...	9
TOTAL	5,685,944	3,954,105	742,630	4,696,735	82.6	10,031,728	13,619,113	3,345,445	26,996,286
Including Idle and Reserve Equipment									
Prince Edward Island	4,194	959	...	959	22.9				
Nova Scotia	187,977	84,649	64,674	149,323	79.4				
New Brunswick	246,870	122,244	56,634	178,878	72.5				
Quebec	2,127,680	1,547,704	158,399	1,706,103	80.2				
Ontario	2,470,748	1,784,642	370,155	2,154,797	87.2				
Manitoba	198,380	173,159	5,003	178,162	89.8				
Saskatchewan	71,315	41,411	155	41,566	58.3				
Alberta	126,071	79,077	5,765	84,842	67.3				
British Columbia	628,077	334,548	140,132	474,680	75.6				
Yukon & N.W.Territories	208	9	...	9	4.3				
TOTAL	6,062,020	4,168,402	800,917	4,969,319	82.0				

Table 6.

POWER EQUIPMENT - IN REGULAR USE AND INCLUDING IDLE AND RESERVE EQUIPMENT, 1942.

MANUFACTURING INDUSTRIES

Industry	TOTAL POWER EMPLOYED		ELECTRIC MOTORS OPERATED BY						ELECTRIC POWER		CONSUMPTION OF ELECTRICITY			
			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	In Regular Use	Incl. Idle & Reserve Equipment	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	N
1. Vegetable Products	385,725	405,076	268,724	285,449	33,783	37,635	302,507	321,084	78.8	79.3	445,585	258	58,465	502,506
2. Animal Products	164,171	165,682	129,187	135,691	3,301	3,353	132,488	139,044	80.7	83.9	227,186	1,085	4,214	232,485
3. Textiles and Textile Products	241,660	258,679	195,737	206,382	27,177	28,051	222,914	234,433	92.2	90.6	479,407	22,457	83,518	585,382
4. Wood & Paper "	2,608,984	2,742,514	1,429,454	1,491,354	461,295	504,650	1,890,749	1,996,004	72.1	72.8	5,199,144	1,708,062	2,496,985	9,404,189
5. Iron and its "	1,064,685	1,148,995	887,577	921,349	162,652	170,701	1,050,229	1,092,050	98.8	95.0	1,242,064	1,401,129	268,563	2,911,756
6. Non-ferrous Metal Products	619,911	656,415	537,574	571,859	17,500	17,854	555,074	589,693	89.5	89.8	1,103,210	7,574,331	274,672	8,952,213
7. Non-metallic Mineral Products	252,954	289,332	202,488	228,519	11,595	12,049	214,083	240,568	84.6	85.1	409,633	1,044,372	21,548	1,475,553
8. Chemicals and Chemical Products	519,588	554,314	275,882	301,344	22,874	23,714	298,756	325,058	93.5	91.7	865,815	1,867,419	134,491	2,867,725
9. Miscellaneous Industries	50,279	52,107	27,482	28,475	2,453	2,910	29,935	31,385	98.9	97.8	61,488	...	3,191	64,679
TOTAL - 1942	5,685,944	6,062,020	3,954,105	4,168,402	742,630	800,917	4,696,735	4,969,319	82.6	82.0	10,031,728	13,619,113	3,345,445	26,996,286
1941	5,485,495	5,850,076	3,825,777	4,028,942	716,891	740,112	4,542,668	4,769,054	82.8	81.5	9,457,930	10,831,307	2,840,843	23,130,080
Per cent change	+ 3.7	+ 3.6	+ 3.4	+ 3.5	+ 3.6	+ 8.2	+ 3.4	+ 4.2			+ 6.1	+ 25.7	+ 17.8	+ 16.7

Table 7.

MINING INDUSTRIES

Metal Mining	529,715	604,014	420,257	453,501	78,698	88,358	498,955	541,659	94.2	89.7	1,338,494	...	240,550	1,579,044
Non-metal Mining	84,391	93,269	67,256	72,000	3,224	3,998	70,460	75,996	83.5	81.5	172,080	...	4,945	177,025
Sand, Gravel & Stone	51,632	56,513	50,417	53,579	934	1,004	51,351	54,583	60.7	61.2	50,038	...	419	50,457
Fuels	239,985	254,981	109,245	113,217	23,279	25,390	132,524	138,607	55.2	54.4	172,885	...	50,820	223,705
TOTAL - 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
1941	1,017,057	1,115,142	708,769	749,126	93,073	106,501	801,842	855,627	78.8	76.9	1,772,033	...	309,374	2,081,407
Per cent change	- 10.9	- 9.4	- 11.5	- 10.5	+ 14.0	+ 11.5	- 8.5	- 7.6			- 3.3	...	- 4.1	- 3.4

Totals Tables 6 & 7

MANUFACTURING AND MINING INDUSTRIES

1942	6,591,665	7,070,797	4,581,250	4,840,499	848,765	919,665	5,430,025	5,760,164	82.4	81.5	11,745,225	13,619,113	3,642,179	29,006,517
1941	6,502,552	6,965,218	4,534,546	4,778,068	809,964	846,613	5,344,510	5,624,681	82.2	80.8	11,229,963	10,831,307	3,150,217	25,211,487
Per cent change	+ 1.4	+ 1.5	+ 1.0	+ 1.3	+ 4.8	+ 8.6	+ 1.6	+ 2.4			+ 4.6	+ 25.7	+ 15.6	+ 15.0