Published by Authority of Hon. ~~James Malcolm,~~ M.P.,
Minister of Trade and Commerce

DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
TRANSPORTATION BRANCH
OTTAWA

Dominion Statistician, R.H. Coats, B.A., F.S.S., (Hon.), F.R.S.C.
Chief, Transportation Branch, G.S. Wrong, B.Sc.

PRODUCTION AND USE OF ELECTRIC ENERGY IN CANADA

1928

During the past five years the output of electric energy from central electric stations in Canada has almost doubled and during the past six years it has increased by 136 per cent. In 1928 the large stations, which report monthly and which produce over 99 per cent of the total of all stations, generated 15,899 million kilowatt hours. This was an increase of 11 per cent over the 1927 output and of 96 per cent over the 1923 output.

The production during 1928 averaged 43,558,000 kilowatt hours per day and for the last three months the average increased to 47,103,000 kilowatt hours per day. On the attached chart are plotted the daily averages for each month during 1925 - 1928 and the moving average or the daily average per year, and the latter has been projected to June, 1930, indicating an approximate production at the end of 1929 of 50,000,000 kilowatt hours per day and at June 1930 of 53,000,000 kilowatt hours per day. The total production of 15,899 million kilowatt hours for 1928 was an average of 1,640 kilowatt hours per capita compared with approximately 730 kilowatt hours in the United States. The United States figure also includes the output of power plants of electric railways while the Canadian figure does not.

During 1928 the exports of electric energy to the United States amounted to 1,587,710,000 kilowatt hours, or approximately one tenth of the total production. This export included 454,156,000 kilowatt hours of off-peak power developed by the Niagara stations.

The rapid growth of the pulp and paper industry has been one factor in the large increase in the consumption of electricity but it has by no means been the only important factor. The domestic load or the consumption for lighting houses has grown from the addition of new customers and also from increased use per customer and the consumption for power purposes by all manufacturing industries has grown very rapidly.

Practically all manufacturing industries in Canada are operating their machinery either partially or wholly by electricity, which is largely purchased from central electric stations. The data for 1926, which is the latest available, shows that 69 per cent of the power equipment in manufacturing industries other than central electric stations is electrical, or, in other words, the total rated horse power of electric motors in Canadian manufacturing industries is 69 per cent of the total power used by these industries and 82 per cent of these motors are operated by power purchased from central electric stations. There is a small error in this computation caused by considering that the electric motors operated by electric energy generated within the industries require steam engines, water wheels, etc. of a capacity equal to the capacity of the motors. This is not always true; a factory equipped with a 300 horse power engine driving a dynamo might have small motors distributed throughout the plant with capacities totalling 350 horse power, but allowing for over capacity of motors of 10 per cent, the above ratio would be reduced by only one per cent, or to 68 per cent.

Many of the industries are entirely electrified and purchase all the power used, while others, such as the automobile industry, are equipped with steam engines but are 100 per cent electrified in as much as their steam engines are operating electric motors of capacity greater than the capacity of the engines and these industries are also purchasing large quantities of electric energy.

The attached table shows the capacities of the power equipment employed in the groups of industries and in the principal power using industries for 1926.

As might be expected, the feed and grist mills have the lowest ratio of electric power. These are closely followed by saw mills which use large quantities of waste as fuel and are often located remote from supplies of electric power. While the pulp and paper mills consume large quantities of electric energy the ratio of electric motor capacity to total power capacity is only the average for all industries, viz. 69 per cent. This is due to the large amount of direct hydraulic drive employed which is approximately half of the hydraulic power installed in the industry.

Although many of the smaller industries use electric power exclusively, the automobile, cement, paper goods and printing and book binding industries were the large industries showing 100 per cent electric power. Several others, however, were above 85 per cent electrified. Electrical apparatus and supplies shows 97 per cent, brass and copper goods 96 per cent, rubber goods 94 per cent, railway rolling stock 91 per cent, machinery 89 per cent, printing and publishing 88 per cent, sugar refineries, hardware and tools, and shipbuilding and repairs all show 87 per cent and castings and forgings 86 per cent.

The mining industry in Canada is also highly electrified, the total showing the same percentage as manufacturing industries, viz. 69 per cent, despite the low percentage (51 per cent) of the coal, gas and petroleum mining.

30/1/29

POWER EQUIPMENT OF MANUFACTURING INDUSTRIES# IN CANADA

1926

INDUSTRIES	Total Power Employed	Electric Motors Operated: By Power Generated in the Industries	Electric Motors Operated: By Purchased Power	Electric Motors Operated: Total Motor Capacity	Per cent Electric Power Employed
	H.P.	H.P.	H.P.	H.P.	
Group I - Vegetable Products	267,643	21,490	160,171	181,661	68
Flour Mills	81,934	2,680	4,691	7,371	60
Feed and Grist Mills	31,832	37	6,626	6,663	21
Rubber Goods	35,492	110	33,261	33,371	94
Sugar Refineries	19,406	8,933	7,991	16,924	87
Group II - Animal Products	96,151	3,667	62,250	65,917	69
Butter and Cheese	23,187	16	14,859	14,875	64
Slaughtering & Meat Packing	32,045	775	24,791	25,566	80
Group III - Textiles and Textile Products	153,295	23,766	93,367	117,133	76
Cotton Yarn and Cloth	75,736	19,810	39,644	59,454	79
Hosiery, Knit Goods & Gloves	16,315	1,161	9,634	10,795	66
Group IV - Wood & Paper Products	1,552,885	228,500	710,554	939,054	60
Furniture and Upholstering	18,083	2,520	6,973	9,493	52
Paper Goods	26,992	-	26,990	26,990	100
Planing Mills	48,033	2,024	21,588	23,612	49
Printing and Book Binding	41,602	247	41,328	41,575	100
Printing and Publishing	17,153	461	14,560	15,021	88
Pulp and Paper	1,059,358	178,662	547,821	726,483	69
Saw Mills	299,075	42,109	28,233	70,342	23
Group V - Iron & Steel Products	422,356	70,946	250,548	321,494	76
Agricultural Implements	20,817	701	13,945	14,646	70
Automobiles	25,939	21,537	5,458	27,095	100
Castings and Forgings	49,172	1,884	40,452	42,336	86
Hardware and Tools	15,233	331	12,937	13,268	87
Machinery	29,385	3,971	22,047	26,018	89
Railway Rolling Stock	73,919	10,808	56,572	67,380	91
Steel and Rolled Products	166,526	26,730	64,836	91,566	55
Group VI - Non-Ferrous Metal Products	228,870	29,097	139,799	168,896	74
Brass and Copper Goods	16,942	487	15,744	16,231	96
Electrical Apparatus & Supplies	39,297	9,340	28,812	38,152	97
Non-ferrous Metal Smelting and Refining	166,360	19,134	89,017	108,151	65
Group VII - Non-Metallic Mineral Products	305,265	9,841	276,169	286,010	94
Cement	66,501	1,900	65,800	67,700	100
Clay Products	23,565	267	14,213	14,480	61
Petroleum Products	18,381	1,662	7,866	9,528	52
Group VIII - Chemicals & Chemical Products	63,635	3,506	40,912	44,418	70
Group IX - Miscellaneous Industries	44,148	1,509	36,564	38,073	86
Shipbuilding and Repairs	23,155	-	20,113	20,113	87
Total All Industries (Central Electric Stations excluded)	3,134,248	392,322	1,770,334	2,162,656	69
MINING INDUSTRIES X					
Metal Mining	127,630	8,676	97,168	105,844	83
Coal, Gas, Petroleum Mining	136,866	50,363	19,075	69,438	51
Other Non-Metal Mining (Excluding Salt)	40,719	2,657	33,391	36,043	89
Sand, Gravel and Stone	31,665	2,581	17,607	20,188	64
Total Mining	336,880	64,277	167,241	231,518	69

Central Electric Stations not included. X Excluding cement, salt and other composite mining and manufacturing industries included with manufactures.

AVERAGE DAILY OUTPUT OF CENTRAL ELECTRIC STATIONS IN CANADA