

Section 3.—Evolution of Power Equipment and Utilization of Power in Industry

There has been a fairly rapid and continuous evolution in the power used in manufacturing and mining industries in Canada, from man-power to mechanical power; also there has been a strong movement in mechanical power, particularly during the past thirty or forty years, from steam engines to electric motors.

Steam engines are still used to drive machines and also to produce electricity but by far the largest part of the power used in Canadian manufacturing and mining industries is electric and most of it is hydro-electric power. Central electric stations are not here considered as a manufacturing industry.

The ratio of capacity of electric motors to total power was 79·3 p.c. in 1938, having increased from 60·8 p.c. in 1923 or by over 30 p.c. Between 1923 and 1938 the number of employees in manufacturing industries increased by 25 p.c. but the capacity of all power equipment increased by 132 p.c. and the capacity of electric motors increased by 201 p.c. as against an increase of only 40 p.c. in other classes of power equipment.

This apparent evolution towards electric power is somewhat over emphasized by the practice of installing motors at each machine or group of machines with a greater aggregate capacity than would be required if steam power with belts and shafting were used, but many industries use electric power exclusively and many more use it almost exclusively.

For each of the 642,016 employees in manufacturing industries in Canada in 1938 there were available 6·2 h.p. of electric motors and 1·5 h.p. of other power-producing engines.

The electric energy used by these motors in doing their work was equivalent to that of about 36,000,000 men working 8 hours per day for 300 days.

The equipment is not worked to its full capacity and beyond the kilowatt-hour consumption of the electric motors there are no statistics showing the extent of the use.

The details of equipment installed in manufacturing and mining industries in each year 1923 to 1938, inclusive, are shown in Tables 19 and 20. Statistics prior to 1923 contain duplications and consequently are not included.

19.—Percentages of Electric Rating to Total Power Equipment in the Manufacturing and Mining Industries, 1923-38

NOTE.—Figures exclude central electric stations and include idle and reserve equipment.

Year	Total Power Equipment Installed	Electric Power	
		Total Motor Capacity	Per Cent of Total
		h. p.	p. c.
1923	2,448,219	1,488,523	60·8
1924	2,833,240	1,844,781	65·1
1925	3,201,250	2,187,827	68·3
1926	3,459,257	2,387,574	69·0
1927	3,657,815	2,571,070	70·3
1928	3,999,864	2,882,048	72·1
1929	4,305,909	3,196,804	74·2
1930	4,548,014	3,376,103	74·2
1931	4,620,570	3,510,779	76·0
1932	4,625,002	3,559,516	77·0
1933	4,722,942	3,576,793	75·7
1934	4,850,743	3,781,779	78·0
1935	5,019,958	3,889,366	77·5
1936	5,186,506	4,059,355	78·3
1937	5,562,772	4,411,974	79·3
1938	5,844,666	4,635,423	79·3