

Central electric stations, which generate electricity for sale for both lighting and power purposes have been eliminated from the manufacturing statistics and, therefore, are not included in Table 33. Internal combustion engines include all gasoline engines, gas engines (natural, coal, and producer gas), and diesel and semi-diesel or other engines which produce power by burning the fuel in the cylinder.

The great increase since 1923 in the power equipment of manufacturing industries has been in electric motors operated by power purchased from central electric stations. Nearly 96 p.c. of the power installation of these stations is water power (see Water Powers chapter, p. 364). However, some sections of Canada are not so well provided with water power and in such sections primary power derived from steam engines and turbines and internal combustion engines has also increased rapidly during the period covered. In the provinces of Prince Edward Island, Nova Scotia, Saskatchewan, and Alberta, power produced from fuels is an important factor. The total installation of electric motors increased 2,190,387 h.p., or 167 p.c. in the 13 years from 1923 to 1936, by far the greatest part of this increase being in motors operated by power purchased from central electric stations.

Of the total power equipment installed in the manufacturing industries (Table 33), it will be seen that approximately 50 p.c. is used in the manufacture of wood and paper products; the next group in importance is iron and its products, which accounts for a little over 15 p.c.; non-ferrous metal products is third with 10.3 p.c. Together, these three groups account for about 75 p.c. of such installation.

Fuel and Electricity.—Fuel is used quite generally throughout the industrial field for the generation of power by means of steam and internal combustion engines. It is also used for the heating of plants, and for providing the heat necessary to some manufacturing processes. The most important industries where heat is applied to the materials to facilitate or accomplish the desired transformation are foundries and machine shops, brick, tile, lime, and cement making, petroleum refining, the glass industry, distilleries, food preparation, rubber goods, etc. Fuel used for such heating purposes, as well as for power, is included in the figures of Table 34. In addition to the electricity used for ordinary power purposes, the figures include also the electricity used for heating boilers in the pulp and paper industry. Consumption of surplus energy in electric boilers has increased rapidly in recent years.

The figures of the table do not include fuel charged in furnaces in metallurgical operations as in the iron and steel industry and in non-ferrous metal smelting. Neither do they include fuels which constitute the raw materials to be transformed as coal in the coke and gas industries and crude petroleum in the refining industry. Electricity used in metallurgical processes as in the electrolytic refining of non-ferrous metals is also excluded.

The value of fuel consumed was \$53,790,000 in 1924, \$60,564,000 in 1929, and \$44,816,000 in 1936. The value was, therefore, lower in 1936 than in 1924. The quantity of bituminous coal, the principal fuel consumed, declined by 17 p.c. and its value by 28 p.c. The cost of electricity, on the other hand, has increased during the same period by 134 p.c. and there has been a decline in the average unit cost of electricity as there has been in the case of fuels. According to Table 4, of the Water Powers chapter, p. 364, the revenue of central electric stations from the sale of power, per kilowatt hour generated, has declined by 33 p.c. from 1924 to 1936. Out of a fuel account of \$44,815,665, Ontario's requirements cost \$22,550,167 or 50.3 p.c. of the total; Quebec's cost \$12,066,700 or 27 p.c.; Nova Scotia's \$2,691,890; and British Columbia's \$2,676,212.