TABLE 4—CENTRAL ELECTRIC STATIONS:—CAPITAL INVESTED IN CENTRAL ELECTRIC STATION INDUSTRY PER PRIMARY HORSE-POWER FOR ALL STATIONS AND FOR HYDRO-ELECTRIC STATIONS AND SYSTEMS

	ALL CENTRAL ELECTRIC STATIONS							Hydro Central Electric Stations and Non-Generating Stations which buy power in bulk from Hydro-Electric Generating Stations		
		Including Auxiliary Plant Equipment		Not Including Auxiliary Plant Equipm't						
PROVINCES	Total Capital Invested	Total Primary H.P.	Capital Invested Per H.P.	Total Primary H.P.	Capital Invested Per H.P.	Total Capital Invested in Commercial Stations	Total Capital Invested in Municipal Stations	Total Capital Invested	Total Turbine H.P.	Capital Invested Per Turbine H.P.
1	2	3	4	5	6	7	8	9	10	11
Canada	$401,942,402	1,958,642	$205	1,841,114	$218	$288,151,605	$113,790,797	$364,479,961	1,682,191	$218
Alberta	12,777,082	78,320	163	75,915	168	7,921,736	4,855,346	6,990,972	32,600	214
British Columbia ...	39,446,950	243,964	162	217,184	182	36,935,917	2,511,033	38,450,131	211,043	182
Manitoba	15,020,866	94,542	159	75,142	200	6,423,316	8,597,550	14,340,458	71,790	200
New Brunswick ...	3,564,542	19,063	187	18,563	192	3,059,111	505,431	1,303,727	6,978	187
Nova Scotia	3,977,311	20,315	196	19,565	203	3,196,188	781,123	797,122	3,614	221
Ontario	178,788,085	819,743	218	780,213	229	92,556,606	86,231,479	166,112,988	744,221	223
Prince Edward Island	403,761	1,353	298	1,353	298	403,761	.....	67,230	227	296
Quebec	138,374,304	639,907	216	611,744	226	133,895,147	4,479,157	132,945,655	601,718	221
Saskatchewan	6,083,198	31,215	195	31,215	195	253,520	5,829,678	.....	.....	...
Yukon	3,506,303	10,220	343	10,220	343	3,506,303	.....	3,471,678	10,000	347

machines of these plants added to the capacity of the hydraulic turbines gives a more logical basis for this analysis and reduces the capital investment per installed primary horse power for the hydro stations to $203. The capital invested in water and fuel power central electric stations is represented graphically in Fig. 3.

General Observations

The results of this census show a decided activity in the development of electrical energy for central electric station purposes. This activity is particularly evident from the reported contemplated enlargements to existing plants, as well as from the new developments at present under construction and the extension of the already notable transmission systems of the larger stations. In connection with enlargements of existing plants, the hydro generating stations reported new installations contemplated for the immediate future amounting to 135,755 h.p. The ultimate designed capacity of existing hydro-electric central stations is 2,115,043 h.p.

POWER DEVELOPMENT FOR BRIDGE RIVER, B.C.

ANOTHER step towards the development of the immense reservoir of power presented by the Bridge River, British Columbia, is the organization of an engineering party under W. R. Bonnycastle of Vancouver which is to leave immediately for Lillooet, the headquarters of the works. Men are already on the ground doing preliminary clearing.

The development of the power rights on the Bridge River calls for a tunnel two and a half miles in length under Mission Mountain, discharging on the shores of Seton Lake, about six miles from Lillooet. In that distance a fall of 1240 ft. is obtained and the total estimated horsepower has been set at 400,000, when the greatest available use is made of the water of Bridge River above the diversion. The plans of the interests behind the project have not been announced, but it is stated that they call for an eventual expenditure of $30,000,000 for the construction of six power units, to be placed in operation as conditions warrant at a cost of $5,000,000 each. The full scheme places the development among the biggest of its kind in the world.

The development is to be done by the Bridge River Power Co., the president of which is J. R. Read, Vancouver representative of the Canadian Westinghouse Co.

The committee of the Toronto branch of the Engineering Institute of Canada which, on the invitation of the City Architect of Toronto, has been for some time studying the proposed new city building by-law, is now practically ready to report.

DEFORESTATION AND BRIDGES

THE effect of the removal of the forest cover on watersheds is more widespread than is generally supposed. Not only is the snowfall allowed to melt more quickly and heavy rainfall permitted to reach the streams more rapidly, but in doing so it carries with it much lumbering waste and other forest debris. Such material causes serious jams, forming itself into closely-woven masses against the abutments and piers of bridges; the pressure of the water behind these jams carries away the bridges and their approaches, and floods much surrounding territory.

The rapid rise of the streams in response to the precipitate run-off also requires the provision of greater clearance between the abutments of bridges, whereas the tendency has been to reduce the spans, thus emphasizing the possibility of their destruction by freshets.

In this connection the experience of James W. MacKenzie, assistant road commissioner of Nova Scotia, is interesting. He says:—

"It seems to have been the custom for years, as wood became scarce, to narrow up and confine the streams in smaller vents. If it is a fact that the clearing of the country is the cause of the water running off suddenly in case of heavy downfalls, our bridges must be enlarged to carry the increased streams, and this has been my experience during the last twenty years.

"The most destructive summer freshet experienced in the counties of Antigonish and Pictou for the last twenty years, was the freshet of August 2nd, 1908. Some forty-six bridges in Antigonish county and fifty-six in Pictou were carried out, and in some sections every structure in wood was cleaned away. I took particular notice that, where the lumber trimmings had been thrown into the stream, the destruction was the greatest."—From "Conservation."

PUBLICATIONS RECEIVED

WROUGHT PIPE—Price List No. 3, of the Page-Hersey Iron, Tube & Lead Co., Ltd., Toronto. Paper; 4¼ by 7½ ins.; pp. 75; illustrated.

SMITH SIMPLEX PAVING MIXER—Bulletin No. 409A issued by the T. L. Smith Co., Old Colony Building, Chicago. Paper; 7½ by 11 ins.; pp. 20; illustrated.

DE LAVAL CENTRIFUGAL PUMPS FOR SUGAR HOUSE SERVICE—Issued by the De Laval Steam Turbine Co., Trenton, N.J. Paper 8½ by 11 ins.; pp. 8; illustrated.

CHRONOLOGY OF THE WAR, VOL. II., 1916, 1917—Issued under the auspices of the Ministry of Information, London: Constable & Co.; cloth; 5½ by 8¼ ins.; pp. 330; 7s. 6d.