

Now $n_1 N_1^{1/2}$ is the specific speed or type characteristic n_s . Substituting n_s and reducing, (XX) becomes

$$\tan Q = \frac{.187 l w_1 n_s (1/v)^{1/2}}{g + w_1^2 (r^{1/2} - r'^{1/2})/2} \dots\dots\dots (XXI)$$

The writer wishes to express his thanks to Mr. Fish and Mr. Balbach for their co-operation and encouragement.

A.I.E.E. MEETING IN TORONTO

AN official meeting of the American Institute of Electrical Engineers will be held in Toronto to-morrow and Saturday, November 22nd and 23rd. It will be the 344th meeting of the Institute and the first official meeting of the whole Institute which has been held in Toronto since the Toronto section was founded fifteen years ago.

Members and guests will assemble at noon at the Engineers' Club, where there will be an informal reception and registration, followed by luncheon. In the afternoon a technical session will be held in the assembly room of the club.

Arthur H. Hull, chairman of the Toronto section and assistant electrical engineer of the Hydro-Electric Power Commission of Ontario, will read a paper on "Electric Power Development in Ontario," dealing chiefly with the Hydro-Electric Power Commission's systems. He will describe briefly the generation, transmission and use of the power sold in each system.

W. G. Gordon, transportation engineer of the Canadian General Electric Co., who is a past chairman of the Toronto Section, will present a paper on "The Electrical Equipment of the Canadian Northern Tunnel, Montreal."

An informal dinner will be served at the Engineers' Club at 6.30 p.m. for which tickets may be obtained from the secretary of the club. Sir Robert Falconer, president of the University of Toronto, will deliver a post-prandial address.

At 8 p.m. another technical session will be held in the lecture room of the University of Toronto's Chemical and Mining Building, on College Street at the head of McCaul Street.

S. Svenningson, designing engineer of the Shawinigan Water & Power Co., Montreal, will read a paper on the 110,000 volt transmission line which crosses the St. Lawrence River near Three Rivers. As described in previous articles in *The Canadian Engineer*, these overhead power cables have approximately a mile span, being suspended from two steel towers which are 5,000 feet apart and which rival in height the main posts of the Quebec bridge.

On Saturday morning there will be three excursions, of which the members may take their choice. The trips will be to the Hydro-Electric laboratories and sub-station, to the British Forgings plant and to the Leaside Munitions factory.

The switchgear in the Hydro-Electric sub-station controls transformers of 75,000 k.v.a. capacity. The laboratories are equipped for special insulator testing, photometry, meter testing, structural testing, etc.

The British Forgings Co. are operating the world's greatest electric steel plant, with ten 6-ton Heroult furnaces, all being supplied with energy from Niagara Falls. The Leaside Munitions plant is described in the Institute's program as "one of the largest and most perfectly equipped shell factories in America."

Arthur H. Hull is chairman of the Toronto Section of the Institute, and Ernest V. Pannell is secretary. Com-

fort A. Adams is president of the Institute; F. L. Hutchinson, secretary. The following are members of the Entertainment and Reception Committee of the Toronto Section:—W. M. Andrew, E. M. Ashworth, R. G. Black, E. T. Brandon, W. A. Bucke, H. C. Don Carlos, F. G. Clark, F. A. Gaby, W. G. Gordon, H. U. Hart, Jas. Kynoch, G. D. Leacock, Wills MacLachlan, D. H. McDougall, W. R. McRae, P. H. Mitchell, A. L. Mudge and T. R. Rosebrugh.

MORE "HYDRO" PLANTS PLANNED

IT was announced some weeks ago that the Hydro-Electric Power Commission of Ontario would spend about \$10,000,000 on water power development in Northern Ontario. It is now stated that this work will include the development of Ranney's Falls on the Trent River, near Campbellford, where 10,000 h.p. will be generated; the development of High Falls on the Mississippi River, where the Commission will obtain 3,000 h.p.; and a 50,000 h.p. plant at Cameron's Pool on the Nipigon River.

The Nipigon development will likely be the first to be undertaken, as the demand for power on the Port Arthur system has greatly increased. The ultimate development by the Hydro on the Nipigon River will be about 150,000 h.p., as the Commission has other schemes for that river besides the one at Cameron's Pool. The power house at the latter point will be about eighty miles from Port Arthur, to which city the power will be transmitted at 110 volts, 3 phase, 60 cycles.

Early development is also expected at Silver Falls, on the Kaministiquia River, about twenty-five miles from Fort William, where 25,000 h.p. will be generated. The available head at Silver Falls is nearly 350 feet.

GEODETIC SURVEY REPORT

PUBLICATION No. 1, on precise levelling, has been issued by the Geodetic Survey of Canada. This is the first report which has been issued by the Geodetic Survey as a separate branch of the Department of the Interior. It has been compiled by F. B. Reid, supervisor of levelling, under the direction of Noel Ogilvie, superintendent of the Geodetic Survey. The title is "Certain Lines in Quebec, Ontario and British Columbia."

The booklet is 6½" x 10", 66 pages and a folded index map showing the precise levelling previously published and that not published. Descriptions are given of bench-marks from Rouse Point, N.Y., to Sherbrooks, P.Q.; Ste. Rosalie Junction to Farnham, P.Q.; Chaudiere to Richmond, P.Q.; Loop line around Montreal, P.Q.; Brantford to Lucan Crossing, Ont.; Guelph Junction to Palmerston, Ont.; Fergus to Melville, Ont.; Port Dalhousie to Port Colborne, Ont.; Franz to Port Arthur, Ont.; Jasper, Alta., to Loos, B.C.; Abbotsford to Revelstoke, B.C., and Revelstoke to Kamloops, B.C.

There are tables showing elevations above main sea levels and also tables of rail elevations, and an index which gives an alphabetical list of cities, towns and villages at or near which bench-marks have been established.

F. J. Coyle, of St. Catharines, George McC. Chrysler, of Kenmore, and J. H. Gardner, of Welland, are the provisional directors of the Gardner Construction Co., Ltd., of Welland, incorporation of which was recently announced.