LETTER TO PROFESSOR P. G. HORNELL.

DEAR SIR,— 23rd August, 1930.

Re *Arapuni Inspection.*

1. In connection with your forthcoming inspection and subsequent report on the Arapuni Hydro-electric Station and surroundings I desire to say that facilities have been provided by the Engineer-in-Chief, Public Works Department, for you to make an examination of the records, plans, and specifications, and other matters in connection with the scheme.

2. It is presumed that you will require a few days to carry out this investigation, and Mr. F. W. Furkert, Engineer-in-Chief, will then, at your convenience, accompany you to Arapuni, where residential quarters have been arranged.

3. In order to further facilitate your examination and report, I hand you herewith the following :—

(*a*) Statement presented by me to the House of Representatives on the 28th June, 1930.

(*b*) Report (in two sections) by the Officer in Charge of the Scientific and Industrial Research Department on the geological formation of the area.

(*c*) The proposals of the Engineer-in-Chief, Public Works Department, in regard to the station.

(*d*) A report covering the financial and economic aspects of the Waikato hydro-electric system, which includes Arapuni Station and Horahora Station.

(*e*) The order of reference, which sets out the points upon which the Government desires information.

I desire to assure you that I shall be pleased to do everything in my power to facilitate your investigation of the position, and to that end I ask you to please consider all the resources of my Department as being at your disposal.

Yours faithfully,
W. B. TAVERNER, Minister of Public Works.

Professor P. G. Hornell, Wellington.

ARAPUNI HYDRO-ELECTRIC SCHEME: ORDER OF REFERENCE FOR PROFESSOR P. G. HORNELL.

The Government desires a full report, set out in your own way, covering your impressions of the scheme generally, the trouble which occurred on the 7th June, 1930, and the possibilities, methods and probable costs of rehabilitation, and, in addition, the Government desires replies to the following questions :—

(1) Are the general surroundings, the class of country, and the power-development possibilities such that the locality was suitable for the economic generation of hydraulic power ? Also under this heading replies to the following :—

(*a*) Whether it is likely that the country supporting the lake is capable of continuing to retain the weight of water, having special reference to the part known as Acacia Gully ; if it is not capable of continuing to retain the weight of water, what steps, if any, are recommended to create adequate strength ; and an estimate of the cost of carrying out such strengthening-work.

(*b*) Whether the main dam is correct in its location, design, and construction, having regard to the nature of the country, the weight of water the dam is required to support under full head, the ultimate proposed power output, and the public safety.

(*c*) If, in any particular under (*b*) the answer is in the negative, how and at what cost do you consider such shortcoming(s) may be rectified ?

(2) Assuming the reply to (1) to be in the affirmative, do you consider that the best use was made of the topography existing ?

(3) Were the works sited in such a way as to ensure the development of the maximum power available consistent with reasonable expenditure, and have the works as executed been designed in accordance with the accepted principles of engineering ?

(4) Are there any points in connection with the scheme on which you have reason for adverse criticism ? If so, give particulars. Also reply to the following question :—

Whether, in view of the geological formation between the gorge and the headrace and spillway the locations of the spillway-weir, the penstock-tunnels, the out-door station and the power-house are situated in the best relation to each other from the viewpoints of (*a*) electrical engineering practice and (*b*) civil-engineering practice.

(5) Has the constructional work been well carried out ?

(6) Was the cracking which took place on the 7th June a phenomenon which should have been foreseen by those responsible for the installation ?

(7) If your reply to No. (6) is in the affirmative, what steps do you consider should have been taken to prevent this cracking ?