

The latitude is based on a mean of the latitude determinations at 60 stations, and the longitude on that determined for the Dominion Observatory transit pier by Messrs. R. C. Hayes and I. L. Thomsen in 1933, but corrected for deflection of the vertical. The initial azimuth is a mean value based on azimuth observations made at 22 North Island stations.

2. SECOND AND THIRD ORDER TRIANGULATION

Second and third order triangulation established during the year was confined mainly to the Rotorua-Taupo district where extensive topographic mapping is in hand as a preliminary to the development of unproductive lands and other national projects in this area. Work was started in October, 1948, and up to March, 1950, the area covered by new triangulation is approximately 2,400 square miles. The number of stations beaconed is 259 of which 177 have been finally fixed.

Triangulation was also carried out in the Southland district where a number of stations were fixed as control for the hydrographic charting of the Foveaux Strait area.

3. PRECISE LEVELLING

In the Wellington district the precise level traverse between the portals of the proposed Rimutaka Railway Tunnel was completed. This traverse is a portion of the Wellington - Hutt Valley - Wairarapa geodetic level net, and it is hoped to complete the traverse to the Wellington tide-gauge during 1950 so that level datums can be finalized in the Hutt Valley and southern Wairarapa.

In the Auckland district the traverse along the Waikato River for the control of hydro-electric development was continued. At the end of the year 106 miles of this 110-mile traverse had been completed. In the Bay of Plenty district bench-mark monuments were established for the Whakatane-Tauranga traverse and observational work will start during 1950. An automatic tide-gauge for the determination of mean sea-level was established at Tauranga during the year.

4. STANDARD TRAVERSE SURVEY

With the exception of a few miles of traverse carried out for revision and maintenance purposes, no standard traverse surveys were made during the year. There are many miles of both city and rural standard traverse urgently required in all districts for the control of title surveys, but the acute shortage of survey staff in the Department has dictated a complete cessation of this work for some years. It is hoped, however, that staff can be made available in 1950 to carry out some of the most urgent surveys.

5. TOPOGRAPHIC MAPPING

Mapping operations were continued in the Rotorua-Taupo region, but progress has been disappointing as the shortage of survey staff has restricted operations to establishing preliminary control and the actual mapping of areas urgently required for current land-development operations. During the year 62 square miles of mapping was completed, 80 square miles is in hand, and mapping control has been established for a further 110 square miles.

In general, the area being mapped is covered with dense bracken fern and second growth, and progress is not as rapid as could be expected in more open country. However the Department has now received delivery of additional photogrammetrical plotting equipment and it is hoped that most of the difficult access country will be mapped in the future with the aid of these machines.