Minor Triangulation.

With the exception of the revision of the triangulation in the Hawke's Bay District no work was carried out under this heading during the year.

Topographical Surveys.

In the Auckland and Wellington Districts an area of 66,890 acres under this heading was surveyed for settlement purposes.

Settlement Surveys.

The Crown lands and land-for-settlement surveys are set out in Table 2 under their appropriate headings for each land district.

Native-land Surveys.

This work, the greater proportion of which was carried out by private surveyors, shows a reduction in area of 140,000 acres.

Geodetic Triangulation.

The field-work on this was stopped after one month's work had been done this year, the network now including a further base-line—Matamata.

The preliminary computation was completed as far as the network enclosing the three bases—Kaingaroa, Wairarapa, and Eltham—is concerned. This has enabled us to decide upon an azimuth for the Hawke's Bay revision, which will be practically in agreement with the geodetic work when the final datum of that work is decided upon. The distances for the sides of the geodetic have been accepted and held correct in this revision, so that it will be in harmony with it and with adjoining circuits when they are adjusted on the new basis.

Hawke's Bay Re-establishment of Surveys.

All the original survey plans and records of this district were destroyed by fire following the earthquake of the 3rd February, 1931, and the work this year has been principally taken up with the re-establishment of these records and laying down control for any future surveys or for those for which the details may be recovered. A brief outline of the procedure adopted may be of interest.

Copies of published cadastral maps on scales of half a mile and one mile to an inch for the whole of the rural areas and on 5 to 10 chains to an inch for most of the towns were available, and were utilized as key plans on which to base detailed information as it was recovered from various sources. Larger scale tracings of practically all Land Transfer subdivisions were recovered from the Valuation Department, but these do not show survey details except areas. However, these plans, together with other information which is being steadily acquired from local bodies, Government Departments, and private surveyors, has enabled the office to compile a cadastral record which will be lacking in minor details only.

The field control has been both by triangulation and precise traverse. Owing to the noticeable uplift of part of the land, it was necessary to revise a number of the triangles of the geodetic triangulation. Three stations were found to have been definitely disturbed, other differences found on readjustment being probably observation differences. The largest displacement was 4 ft. at Kauranaki, whilst Mohaka and Bluff showed differences of about 1 ft. each.

A network of second-order triangulation was thrown over the whole district with sides of from seven to ten miles in length, and several points were directly tied in by first-order work with the revised geodetic triangulation to furnish a closer control. The accuracy of the second-order work, as shown by triangular closes, is high, the average being about $2\frac{1}{2}$ seconds, and the maximum 8 seconds. This was obtained by four sets direct and four reversed with a Wild Primary triangulation theodolite. The computation of this second-order work is now in progress, and it has been found advisable to adjust in larger figures than would at first sight be thought necessary. The average figure has about sixty equations in the least square adjustment. At the same time, the bearings and distances are made to conform to the projection adopted—the Transverse Mercator—using the old initial station of the circuit as origin.

Precise or standard traverses are being run along the principal roads, permanently marked with iron pipes set in concrete and with a closing accuracy of about $\frac{1}{10}$ link to one mile. These traverses tie in all boundary corners along the frontage, and any old pegs which may be visible. The traverses are all controlled by the triangulation, and both works will be brought into harmony. To date about 630 miles have been traversed in the field, but office check is not yet complete.

It has been found possible to have a large number of the destroyed plans reproduced from information in the possession of the surveyors who made the original surveys, and to date 243 such plans have been made available. Further information of this nature is being collected, and it will be found that a large proportion of the later surveys will be recovered in this manner. In this connection, I would like to thank all the private surveyors practising in the district for placing at the disposal of the Department survey information from their office records; Mr. C. A. Mountfort for data of Napier and district standard traverses, and Messrs. Brook, Farnie, and Dyett for similar information of surveys made within the district.

Regulations are being issued under the Earthquake Act, 1931, to provide for the resurvey of certain areas that have been displaced within the Borough of Napier and to re-align streets where original marks and records have been lost.