

## MAJOR TRIANGULATION.

This survey is held in abeyance, both as regards the field-work and the office computations. In an appendix will be found a report by the Chief Inspector of Surveys, making certain recommendations for conducting this work when it is resumed.

## STANDARD SURVEYS.

Two experienced staff surveyors are at present engaged on these useful surveys—Messrs. C. A. Mountfort and H. M. Kensington—in the vicinity of Feilding and at Auckland respectively.

During the year under report Mr. Mountfort has completed a traverse of forty-two miles on the Kimbolton, Feilding, Halcombe, Feilding—Awahuri—Palmerston, and the Awahuri—Mount Stewart Roads, and has prepared an additional ten miles ready for measurement and observation.

Mr. Kensington returns forty-seven miles of streets in Arch Hill, Eden Terrace, Epsom, and Grey Lynn, of which the field-work has been completed.

The amount of reinstatement work was much larger than in previous years, as after five years the usual inspection was made of every block in the City of Auckland, and all blocks requiring adjustment or repairs were attended to. Good progress is being maintained with the plans of the survey by the staff at the Standard Survey Office. The plans of the portion of the Dunedin standard survey, of which the field-work was done by Mr. Neill, have now been completed. These comprise 112 sheets excellently drawn by Mr. A. H. Saunders.

The plans of the Napier standard survey are being made by the Head Office staff.

## TOPOGRAPHICAL SURVEY.

An estimate of the cost of this survey for the Dominion has been prepared, based on experience gained on the work already done in this class of survey at Auckland, Dunedin, and Wellington. The work cannot be started until it is authorized by the Government and sufficient equipment is obtained to provide at least one party with the necessary instruments and apparatus for commencing the survey. Particulars of the instruments to be used in the performance of the topographical survey are given by the Chief Inspector of Surveys in Appendix I.

## INSPECTIONS.

The inspection-work has of late been carried on by the Chief Draughtsmen and staff surveyors, but on account of the pressure of work in connection with settlement surveys not much of this very necessary work has been done during the past year.

It is important that more Inspectors should be appointed as soon as circumstances permit, so that a check can be kept on the work of the staff and private surveyors.

The increasing number of plans being received from surveyors in private practice creates a demand for more inspection-work in order to protect the public from inaccuracy in the field-work, as absence of inspections has a tendency to induce remissness in some surveyors.

## TIDAL SURVEY.

The work for the year comprised the preparation of the data to enable a tide-table for the year 1921 to be prepared by means of the tide-predicting machine at the National Physical Laboratory, Teddington, England, of the ports of Auckland, Wellington, Lyttelton, Dunedin, Bluff, and Westport.

The computations were carried out by Messrs. T. G. Gillespie and E. J. Williams until the end of August, when, owing to Mr. Gillespie's promotion to the position of Draughtsman in Charge of the Native Land Branch and his transfer to the Wellington District Office, the work was carried on by Mr. Williams with the temporary assistance of a cadet.

Tidal records and other meteorological data, together with the surface temperature of the sea, have been received regularly from New Plymouth.

Fresh analyses of the six ports for which predictions are required have been commenced, and will be continued during next year.

In the report of Mr. W. T. Neill, Chief Inspector of Surveys, appended hereto, are given details of the tidal work and a brief description of some of the tide-predictors.

## MAGNETIC OBSERVATORY.

During the year the Christchurch Magnetic Observatory and the substation at Amberley have been in continuous operation, and records very valuable to terrestrial magnetism have been secured.

The illness and subsequent death of Mr. Thomas Maben, who had been connected with the Observatory for over eight years, led to the temporary appointment of Mr. W. J. Stacey, who resigned on the 13th March, 1920. Since then the Observatory has been without an assistant, but an understudy to Mr. Skey will be appointed at an early date; this will allow the Director to devote more time to the mathematical discussion of the annual data. A scheme for the construction of special measuring-scales has been devised by Mr. Skey for the purpose of reducing the time occupied in measuring curve ordinates.

In Appendix II is given the Director's report, which includes diagrams showing the magnetic curves and hourly values of the magnetic declination and horizontal force for the years 1919 and 1905.

## PROPOSED OPERATIONS FOR 1920-21.

*Triangulation.*—This survey for the time being is discontinued, but it is hoped that a start may again be made some time during the coming year.

*Standard Surveys.*—A standard survey of the Gisborne Borough will be undertaken by Mr. H. M. Kensington, District Surveyor; and Mr. C. A. Mountfort, District Surveyor, will continue rural