

remaining area, 546 acres represent sawmill areas, the surveys of which were paid for by fees deposited by applicants.

*Town Surveys.*—Sixteen acres situated in Manapouri and Orepuki Townships were surveyed by Mr. Drury into 18 sections.

*Other Works.*—These included the traverses of water-races, sludge-channels, tramways, &c., in connection with M.D.L.O. surveys, minor surveys, reports, unfinished work, &c.

*Roads and Water-races.*—These represent 27.3 miles, nearly all of which were executed by the staff, in connection with blocks of land to be opened for selection.

*Gold-mining Surveys.*—There were only three of these surveys executed during the year. They were all done by private surveyors, and paid for by the applicants.

*Proposed Operations.*—On the completion of the block of 800 acres on which he is now engaged, I propose to place Mr. Otway on the subdivision of about 10,000 acres for settlement in Aparima and Jacob's River Hundreds. Mr. Macpherson will probably complete his landless Natives survey in Forest Hill and Hokonui Districts in October next, after which he will be available to assist in the cutting-up of the 10,000-acre block above referred to. Mr. Falkner will be engaged during the whole of the current year in his subdivision for landless Natives of 14,700 acres in Waimumu and Lindhurst Hundreds. Mr. Drury will have finished his survey of 4,000 acres in Blocks V and VII, Longwood, about the end of July, and then will take up a further area contiguous. There are 18,000 acres for landless Natives in Stewart Island to be undertaken, which will require the services of two extra surveyors. There are other areas withdrawn from State forest, and some isolated areas that would keep another surveyor fully employed. In South Riverton a revision survey is required of the various Land Transfer subdivisions, to endeavour to reconcile the many known discrepancies in respect to the position of the roads and sections. For many years this particular corner of Southland has caused a great deal of trouble to every one.

*Office-work.*—During the year 72 ordinary survey-plans, representing 20,116 acres, were examined and approved, and also 20 sheets of railway-land plans. Twenty-nine photo-lithographic tracings for sale plans were made, 332 working-tracings, and 504 miscellaneous tracings. Two new Crown-grant record maps were compiled, and current work placed on existing maps, and 3 new application maps drawn. Many more of these require to be done, which work is being attended to as opportunity occurs. Twenty-four local bodies' schedules were prepared in duplicate, and 264 maps, lithographs, and tracings were mounted. In the Land Transfer branch, 75 plans, covering an area of 4,355 acres, were examined and passed. By instructions from Head Office, a new map of the Dominion is being prepared in this office by Mr. Deverell, who has entered on his labour with enthusiasm; and, in the hands of one of his large experience as a draughtsman and artist, the result will no doubt be a very fine map. It is intended to represent the Dominion as it now is, with its cities, boroughs, and many small towns linked together by railways and roads. It will be issued in four sheets. The islands that are attached to the Dominion will also be shown. The scale fixed by the Home Government for the maps of India and the Dominion of Canada has been adopted, and I am pleased to state that the work is now well advanced, although the map may not be ready for the photo-lithographer till near the end of the present year. As has been pointed out on more than one occasion, another experienced draughtsman is much needed in this office to bring up the arrears. Many of the record maps are worn and dilapidated, necessitating new maps. Some of the county maps also require to be renewed, and fresh drawings made of several survey districts and towns, the lithographs of which are out of date. The compilation of new Land Transfer record maps has also had to remain in abeyance owing to the press of current work. One of the cadets, having completed his office course, was transferred to the field during the year. I have to thank the Chief Draughtsman and other officers for their faithful attention to their duties, and for the assistance given to me coming here a complete stranger.

H. M. SKEET,  
Chief Surveyor.

## APPENDIX II.

### THE MAGNETIC OBSERVATORY AND THE MAGNETIC SURVEY.

DURING the past year the work of the Observatory has been successfully carried out in its various branches. The Adie magnetographs have been kept in thorough working-order, and an unbroken series of magnetograms has been obtained. It was found necessary to readjust all the three instruments, on account of the gradual slowing of the working magnets and the accumulated secular change of the magnetic elements bringing the registration too near the edge of the magnetograms. This was successfully accomplished. A fresh determination of the sensitiveness of the horizontal force and vertical force magnetographs gave values within 3 per cent. of the values obtained previously. The usual absolute observations of magnetic declination, dip, and horizontal force necessary for evaluating the magnetic curves were made throughout the year. All the magnetograms and seismograms obtained during the year have been developed and annotated up to date.

A number of magnetograms showing the curves obtained on the most disturbed days are reproduced herewith. The vertical ordinates on these curves have the following scale-values:—

Declination curve	..	..	..	..	1 mm. = 3'.
Horizontal force curve	..	..	..	..	1 mm. = 0.00012 c.g.s.
Vertical force curve	..	..	..	..	1 mm. = 0.00010 c.g.s.

The great magnetic storm of the 25th November, 1909, began at Christchurch at 11.42 a.m. Greenwich time with a sudden increase of the easterly declination of about 4'. A simultaneous sudden