

1907.
NEW ZEALAND.

DEPARTMENT OF LANDS: SURVEYS

(ANNUAL REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

The SURVEYOR-GENERAL to the Hon. the MINISTER OF LANDS.

SIR,—

Department of Lands, Wellington, 1st June, 1907.

I have the honour to submit herewith the annual report on the survey operations of the Department for the twelve months ended the 31st March, 1907.

I have, &c.,

THOS. HUMPHRIES,

Surveyor-General.

The Hon. R. McNab, Minister of Lands.

WORK DONE DURING THE YEAR.

The past year has been a busy one both for field and office staffs, though the output of completed work by the former is a little less than that of the previous year. This is partly due to several of the officers having been taken from purely settlement work to render professional assistance, by surveys and reports, to the several Native Land Boards. Besides, at the close of the year a very large amount of survey was in progress, and a considerable portion of it on the eve of completion. As will be seen in what follows, settlement survey was notwithstanding vigorously carried on, for considerably over 400,000 acres was sectionally surveyed and mapped, besides 200,000 acres prepared for offering for selection under the "unsurveyed" clauses of the Land Act.

The number of surveyors employed during the year was 33 on the permanent staff and 40 on the temporary staff. In addition to these, there were 54 contract surveyors on Native Land Court and mining surveys, and the work of 139 licensed surveyors in private practice under the Land Transfer and Public Works Acts had to be examined, approved, and recorded by the district offices before the plans could be made use of, besides the actual surveys being subjected to occasional rigid field checks by our Inspectors. Consequently, during the year the surveys of no less than 266 surveyors, official and private, came under the supervision and control of the Department, which necessitated a strong office staff of computers and others.

The following is a summary of the surveys completed during the year, exclusive of those under the Land Transfer Act executed by non-official licensed surveyors referred to above:—

| Class of Work. | Area. | Cost per Acre. | Total Cost. |
|---|-------------|-----------------|-------------|
| | Acres. | | £ s. d. |
| Minor triangulation | 130,423 | 1·56d. | 848 16 0 |
| Topographical | 335,938 | 1·05d. | 1,466 16 1 |
| Topographical provisional settlement | 200,515 | 4·37d. | 3,652 6 6 |
| Rural and suburban | 407,724 | 1·74s. | 35,556 1 0 |
| Town | 494 | 18·71s. | 902 19 0 |
| | | per section | |
| Native Land Court | 237,380 | 5·43d. | 3,580 9 0 |
| Gold-mining | 2,240 | 4·70s. | 531 15 0 |
| Roads and railways | 288·8 miles | £18·58 per mile | 5,367 3 0 |
| Miscellaneous work and other duties | ... | ... | 9,589 16 9 |
| Total cost of field-work completed during the year | | | £61,496 2 4 |

TRIANGULATION.

There was 204 square miles of country covered by minor triangulation during the year, at an average cost of slightly over 1½d. an acre. No more was done than was actually needed to control the sectional surveys, and establish permanent reference points on to which all traverses are connected. Much of the existing triangulation which was done many years ago was made in numerous small groups, with independent bases having no uniform standard of measurement, and a permitted maximum of error in closures of 2 links per mile. The method then adopted is acknowledged to have been admirably adapted to the conditions then existing, when rapidly increasing settlement was widely scattered, and in parts sparse and isolated, on account of its being both speedy and economical. Subsequent minor triangulation has mainly been extensions of these groups, massing them, and each succeeding year it has become increasingly evident that a network of larger triangles is necessary to reduce the numerous variations in the different groups to a uniform standard of length—viz., the “Imperial,” which is now used throughout the colony in all surveys; for with the modern appliances and refined methods of measurement now in vogue a greater precision is attained in the ordinary traverse work than exists in much of the triangulation.

The importance of this work has been recognised by my predecessors, who unquestionably would have preferred to have had it preceded by a major triangulation, which would then have been in its proper order; but, finding this unattainable, gradually, as opportunities arose, carried on the secondary as a governing work. At the present time about 6,000 square miles of country in the Wellington and Taranaki Districts have thus been covered with triangles of from 8- to 15-mile sides, and the angles observed mostly with 10 in. instruments.

Prominent and suitably situated stations in the minor triangulation (already cleared of forest) having been used as stations in the secondary triangulation, has greatly facilitated the work, and enabled it to be carried on with greater ease and more economically than it would otherwise have been.

It is hoped that sanction will be given to proceed with the final selection and measurement of the bases and the observation of a few triangles, which is all that remains to be done to complete this portion, which is about 200 miles in length, stretching from Cook Strait to New Plymouth; and also to continue this very important and much needed work in both Islands.

TOPOGRAPHICAL.

Ordinary surveys of this nature have been chiefly confined to the Otago and Westland Districts—106,300 acres and 217,860 acres respectively—the remaining 11,778 acres being in Hawke's Bay and Nelson. The large area in Westland was principally rough, unexplored, and unmapped forest country, with high barren mountain tops, and the surveyor reports that little if any of it is fit for settlement.

TOPOGRAPHICAL SURVEY OF LANDS FOR SELECTION AS “UNSURVEYED.”

This is of a much more detailed character than the foregoing, involving as it does the careful location of road routes, at times by compass, at others by permanent theodolite traverse; the defining of the principal natural features so as to indicate suitable fencing-lines for boundaries; ascertaining the character and capabilities of the land, and fixing values to the different parts.

An area of 200,515 acres has been surveyed and mapped in this way, some of which has already been thrown open for selection, and the remainder will shortly be dealt with in a similar manner.

The pressure having been relieved by the very large extent of country prepared and thrown open of late years on these conditions, more surveyors will now be available for the more economical method of direct sectional survey than was possible when so many were engaged on this particular class of work.

RURAL AND SUBURBAN.

The 407,724 acres returned as completed and mapped have been done at a cost of 1·74s. an acre. This is purely sectional work, the average area of the sections being 268 acres, a smaller average than in any year for the past ten, with one exception, which is satisfactory considering that we are now dealing largely with remote, wooded, and broken Crown lands where holdings need to be fairly large. On the other hand, there has been the subdivision of nine rural properties purchased under the Land for Settlements Act, with a total area of 88,000 acres, in which case the land is more suitable for comparatively small holdings.

Of the total area, the Auckland District accounted for 117,503 acres; Wellington, 76,961 acres; and the remaining districts ranged from Taranaki, with 50,556 acres, to Southland, with 10,625 acres.

TOWN SECTION SURVEY.

Comparatively little has been done of this class of work, there being only 494 acres subdivided into 965 sections. It represents a number of workmen's homes settlements in Auckland, Wellington, and Christchurch; repegging some sections for sale in an old township and a few villages in newly settled districts.

The amount of subdivisions of suburban lands by private owners has, however, been considerable, for no less than 98 private townships have been submitted for approval and approved under sections 17 and 18 of "The Land Act, 1892," and "The Towns Main Streets Act, 1902."

NATIVE LAND COURT AND NATIVE LAND BOARD SURVEYS.

As will have been seen by the table in an earlier part of the report, a large area of this class has been brought under survey, five-eighths of it being in the Auckland District.

Nearly the whole of the Native Land Court blocks, comprising 81,021 acres, were surveyed by licensed surveyors at schedule rates, whereas the surveys for the Native Land Boards, amounting to 156,359 acres, were executed by staff officers.

During the year 212 authorities were issued by this office for surveys of Native land.

MINING SURVEYS.

There has been a considerable falling-off in surveys of this nature, only 37 claims having been surveyed, two-thirds of them being in the Auckland District.

ROADS AND RAILWAYS.

The surveys of 288.84 miles have been made, of which 10.9 miles comprised railway surveys, the remainder being those of roads. It may be explained that the roads referred to are not those within the limits of settlement surveys, the cost of the survey of which is included in the cost of the sectional work, but the work in question includes roads taken by virtue of rights existing under Crown and Native Land Acts; roads taken under the Public Works Act through private property; and numerous deviations of old roads made for the purpose of improving the grades.

OTHER WORK.

A large amount of miscellaneous work has been done by the staff other than that scheduled under the headings already referred to. The expense incurred in connection with it was £9,589 16s. 9d., a lesser sum, however, than the cost has been for many years past. It includes, among other matters, cost of standard surveys, supervision of expenditure of grants for roads, and other objects in the Nelson and Westland Districts, one officer in particular being wholly engaged on this duty; inspections and reports on surveys, Crown lands, scenic, roads, timber, drainage; cost of transfer of officers, &c.

Fuller details regarding this item are given in the reports of the Chief Surveyors, in the Appendix.

STANDARD SURVEYS.

This is a very important class of work, and it is only the pressing need for settlement surveys that has prevented more being done this year. However, the standard and alignment survey of the City of Wellington has been completed by the Department, the City Council having borne a large share of the expense; and that for Auckland City has lately been commenced, the Council in this case also having agreed to contribute largely towards the cost. Representations have also been received lately from Dunedin to have that city similarly treated, but arrangements have not yet been completed.

In the reports of previous years, repeated references have been made to the importance and urgency of extending standard traverses with permanent marks into suburbs and level country adjacent to cities, where the trig. stations have been rendered futile through obstructions in the shape of plantations, buildings, &c. Unfortunately, circumstances have been against much being done last year, but efforts will be made to extend it to localities most needing it, where close subdivision of property has taken place for building purposes, and Land Transfer surveys are being extensively carried out.

INSPECTIONS OF SURVEYS.

Systematic field inspection has been carried on, though not quite as general as could have been wished, owing to the Inspectors having been so much engaged on other pressing work—city standard and settlement surveys, &c.; but in the field checks that have been applied, nearly a hundred in number, enough has been done to show that, with a few exceptions where there is room for improvement, the work of both staff and licensed surveyors in private practice is reliable, and that a very excellent standard has been maintained, which view is supported by the reports of the Chief Surveyors bearing on the character of the surveys made in their several districts, the error in closures, as a rule, being under 2 links to a mile, much of it less than 1 link.

FUTURE OPERATIONS, 1907–8.

The new year commenced with a field staff of 73 surveyors, and a very large amount of work in progress, which will with certainty be supplemented very materially from time to time; and with the prospect of new purchases under the Land for Settlements Act, and heavy calls upon the Department for surveys of Native land in connection with Native Land Boards, &c., there is a likelihood of the necessity for an increase in the number of surveyors so as to cope with it.

Apart from some 1,500 square miles of minor triangulation in hand, and that which will be found necessary to control the surveys to be made, there is in the hands of the surveyors at the present time 533,472 acres for settlement work, 524,612 acres of it being sectional and 8,860 acres “provisional settlement.” Of the former, there are no less than 310 unsurveyed selections, representing 145,496 acres, which are now receiving special attention, so that the applicants may be put in possession. This particular work is being rapidly pushed forward, and a considerable portion of it will shortly be completed.

The staff has also in hand Native Land Court surveys to the extent of 102,694 acres and 362 miles of road survey, besides a considerable amount of miscellaneous work, one of the principal items being the standard and alignment survey of the City of Auckland. There will doubtless be the usual amount of Native Land Court and mining surveys required, which will, as is customary, be placed in the hands of licensed surveyors at schedule rates.

The proposed operations for the coming year as they affect the several land districts are very fully set out in detail in the reports of the respective Chief Surveyors, which appear in the Appendix.

THE MAGNETIC OBSERVATORY.

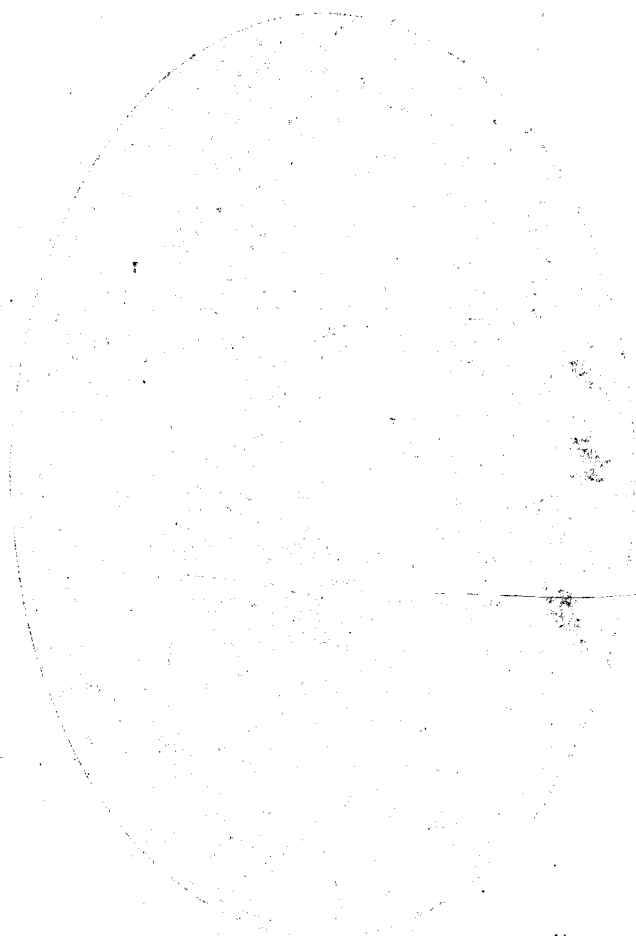
During the year the Magnetic Observatory has been kept in successful operation, and the usual magnetic, seismological, and meteorological records obtained. The observatory buildings were repainted and necessary repairs executed. Especial interest attaches to seismograms recording the effects in Christchurch of the disastrous San Francisco and Valparaiso earthquakes, and these records are proving of immense value to the science of seismology. Some of the principal seismograms and magnetograms are reproduced in the report. The work of reducing observations has been carried on, and a table of hourly values of magnetic forces for 1902 will be published in June, to be followed by others.

Considerable interest is taken abroad in our observatory-work and the field-work in connection with it, which was so very ably initiated and carried out by Dr. Farr in the first instance, and subsequently satisfactorily continued by his successor, Mr. H. F. Skey, B.Sc., partly, no doubt, owing to the value attachable to it on account of our outlying position. Mr. Heimbrod, who has been appointed by the Carnegie Institution Department of International Research in Terrestrial Magnetism to make magnetic observations in the islands in the equatorial and North Pacific, visited the Christchurch Observatory in July last to compare his magnetic instruments with ours, and the magnetic survey vessel “Galilee” will also call next year for the same purpose on her way to her work in the extreme South Pacific.

Scientific authorities are looking to New Zealand to take her part in the international work of making a complete magnetic survey of the globe now in progress by extending our observations throughout the various outlying islands of the colony. Strong representations have been made for New Zealand to join in this, which is not alone of theoretical importance, but has a practical bearing on navigation, and it is very gratifying to find that the Government is favourably disposed to the carrying out of the project.

BOARD OF EXAMINERS FOR SURVEYORS.

During the preceding twelve months the Board held fourteen meetings, one of which was an inquiry into the case of a licensed surveyor who had executed very faulty work, the result being that his license was suspended for three months.





MR. J. W. A. MARCHANT.

In conjunction with the Australian Boards, the Board conducted two examinations, in September, 1906, and in March last. At the September examination there were 20 candidates, and of these the following 7 passed: Messrs. K. M. Graham, W. Loudon, E. W. M. Lysons, P. W. G. Barlow, B. Cooper, W. Stewart, and A. W. Cheal. At the March examination there were 17 candidates, 6 of whom passed—viz., Messrs. Y. Booker, O. N. Campbell, N. C. Kensington, C. A. Gordon, B. S. Sherratt, and G. H. Davis.

Surveyors licensed in the colony now number 420.

DEPARTMENTAL CHANGES.

On the 26th June last Mr. J. W. A. Marchant resigned the positions held by him of Surveyor-General and Secretary for Crown Lands, and retired on a well-merited pension after forty-one years' service. He entered the Department in 1865 as a draughtsman and surveyor, and by his energy, ability, and zealous devotion to duty rapidly passed through the grades of Deputy Inspector of Surveys of the Wellington and West Coast Districts, first Geodetical Surveyor for the colony, then Chief Surveyor and Commissioner of Crown Lands for the Wellington and Canterbury Districts, and, finally, on the 1st January, 1902, attained the position of head of the Department of Lands and Survey as Surveyor-General and Secretary for Crown Lands. Mr. Marchant always took an absorbing interest in the settlement of the country, one of his most prominent undertakings being the subdivision and settlement of the Cheviot Estate, the first of a long series of purchases of estates for close settlement, and which has proved so very successful. Scientific matters also engaged his attention, and in this connection it may be mentioned the part he took in the observations of the transit of Venus in December of 1882, when he had the gratification of finding his observations with those of some other amateur astronomers in the colony being made use of by Mr. E. J. Stone, the directing astronomer, and his assistants, in the final deductions.

Mr. Marchant's retirement brought about the following promotions in the survey branch of the Department: T. Humphries, Chief Surveyor and Commissioner of Crown Lands, Canterbury, to be Surveyor-General; E. C. Gold Smith, Chief Surveyor, Hawke's Bay, to be Chief Surveyor, Canterbury; H. Trent, Chief Surveyor, Marlborough, to be Chief Surveyor, Napier; F. Stephenson Smith, District Surveyor, Gisborne, to be Chief Surveyor, Marlborough; T. N. Brodrick, District Surveyor, Timaru, to be District Surveyor and Land Officer, Gisborne. Other changes were: W. D. B. Murray, of Nelson, to be Chief Draughtsman, Head Office; T. M. Grant, Chief Draughtsman, Hokitika, to be Chief Draughtsman, Nelson; E. H. Wilmot, District Surveyor, Otago, to be Chief Draughtsman, Hokitika.

Three cadets—viz., W. C. Wall, T. A. Johnston, and W. Stewart—who passed at the March, 1906, examinations of the Board of Examiners for surveyors, were promoted to the grade of Assistant Surveyors.

The following officers resigned their positions during the year: Assistant Surveyors E. A. Marchant, J. Dewar, and W. C. McAlister; and J. Mouat, Draughtsman and Surveyor. The last-mentioned three left to take appointments on the survey staff of the Federated Malay States Government.

Mr. W. D. B. Murray, Chief Draughtsman at the Head Office, reports as follows:—

The regular work of the draughting staff, such as office maps and records and the usual routine work, has been kept up to date.

The county tenure maps for general use have been regularly altered to keep pace with the constant changes in tenure and in other ways. New ones have been made and published of the Cook and Wairoa Counties, and the East Taupo and Mackenzie County maps are with the Government Printer for reproduction by photo-lithography. Six others—viz., Buller, Inangahua, Westland, Amuri, Opotiki, and Cheviot—still remain to be done, and will be published as soon as the information is received from the district offices.

The standard 8-mile map of New Zealand, from which lithos. are reproduced, has been brought up to date for the purpose of preparing a new general map of the counties on a scale of 16 miles to an inch.

The largest work of the year, which severely taxed the strength of the staff, and which was of great magnitude, was the preparation of large scale maps of the whole of New Zealand, with the population as given by the last census shown in detail on them, for the use of the Representation Commission, and the subsequent compilation of 244 electoral maps, showing the boundaries of the new electorates as finally determined by the Commission—one full set for the Chief Electoral Officer, and two sets for the Legislative Council and House of Representatives, as required by the Electoral Act; also 76 descriptions of boundaries were written in connection with the work.

Land-sale maps to the number of 194 passed through the office, and other maps and tracings numbering 320 were drawn during the year.

A map of the Town of Greymouth for reproduction by photo-lithography is in progress; also one of Chatham Islands, showing the latest information in regard to names, &c., kindly supplied by Mr. Shand, one of the oldest residents of the islands.

Geological maps were prepared of the following districts: Leaning Rock, Tiger Hill, Poolburn, Davy Creek coal area, Waikerikeri and Ophir Goldfields; and ten-mile maps showing land tenure, Native lands, forest reserves, &c., for Parliament, and maps for Native Land Commission.

Schemes of towns, both public and private, numbering in all 98, were submitted for the approval of His Excellency the Governor and Minister of Lands under sections 17 and 18 of "The Land Act, 1892," and "The Towns Main Streets Act, 1902."

Schedules and descriptions have been prepared in connection with lands to be taken by Proclamation or otherwise to be set apart for roads, workers' dwellings, local bodies' loans, kauri-gum districts, scenery, State forests, &c.

Seventy-one descriptions have been written and recorded, when necessary, of counties, ridings, road districts, boroughs, registration districts, reserves, &c., and schedules prepared and checked of 16 Bills for Parliament.

All the county and principal lithographs are now arranged in the draughting-room, which is a great convenience. The office strong-room has also been rearranged, but to bring it up to date, and also facilitate the handling of maps, the old portfolios should be dispensed with and drawers substituted.

APPENDICES.

APPENDIX I.—SURVEYS.

AUCKLAND.

Minor Trigonometrical and Topographical Survey.—Under this heading work has been returned amounting to 25,123 acres, the cost being 1'36d. per acre, anything further being but check points in connection with other surveys.

Rural and Suburban.—The year's finished output amounts in all to 117,503 acres, subdivided into 415 sections, at an average cost of 2'02s. per acre. The area is considerably less than last year, and the rate per acre higher. A great deal of this area, as is usual in the Auckland District, is in heavily timbered country, often in remote districts, and it is only reasonable to expect that the further back and more scattered the surveys get the greater the expense, particularly with unsurveyed spotting applications. These surveys are chiefly located in the Counties of Rotorua, Piako, Ohinemuri, Opotiki, Hobson, and Awakino, the surveyors being Messrs. Barron, Thompson, Kensington, Edgecumbe, Haszard, Allom, Seaton, Stretton, Martin, and Galbraith. In addition to the above, but also for purely settlement purposes, 110,113 acres of topographical surveys for selection as "unsurveyed land," at a cost of 2'3d. per acre, has been prepared, the object being, after locating in a rapid manner roads and topographical features with sufficient accuracy, to define sections approximately. The Department is thus in a position to throw open settlement areas much sooner than would be the case if finished surveys were undertaken from the first. This class of work has been adopted with good results in Opotiki and Piako Counties by Messrs. Allom, Byrne, Mitchell, Thompson, and Haszard; therefore, adding these areas to the completed sectional work, it brings the total annual settlement surveys up to 227,616 acres for the season.

Town Section Survey.—An area of 165'19 acres under this heading, subdivided into 354 allotments, has been completed.

Land for Settlements.—During the most of the season there has been a good deal of rush with this class of work, which comprised areas in the Selwyn, Mangawhero, and Mangapouri Estates, aggregating in all to about 26,036 acres; whilst in another class of settlement—viz., the workers' homes sections, in the neighbourhood of Otahuhu, Penrose, and Ellerslie—the plans completed comprised 228 allotments. The Waimana Estate, of 4,731 acres, in the Whakatane County, is also well forward, and it is hoped will be ready for offering in June.

Native Land Court and Board Surveys.—Under this heading no less than 141,536 acres, subdivided in 92 divisions, were surveyed, at an average cost of 2'08d. per acre; the quota of the staff to this total being 122,712 acres in 73 subdivisions, at an average cost per acre of 1'65d., the staff surveyors being Messrs. Wheeler, Blake, Mitchell, and Mountfort, their labours being largely of a provisional character, in order to assist the Native Land Court and Council in their investigations and decisions. The areas operated on by the staff lay chiefly in the Mongonui, Bay of Islands, and Rotorua Counties. I need hardly remark that but for the magnitude of these operations the output of the purely settlement surveys would have been much greater. The portion of the work undertaken by private and contract surveyors amounted to 18,824 acres, in 19 subdivisions, the cost, so far as known, averaging 4'92d.; but I have no information, however, as to the expenditure on 59,319 acres additional.

Gold-mining Surveys.—All surveys of this class undertaken were carried out by contract surveyors, and consisted of 1,162 acres in 17 sections, costing on an average 5'95s.

Road Surveys.—These in all totalled into 57'88 miles, at an average cost of £25'4 per mile, very much higher than last year. The increase in price is somewhat hard to account for. In forest country, however, there is this to be said, that often a single mile costs more to locate and survey than another ten miles under more favourable conditions; another factor being the character and nature of the survey of the holdings through which the road passes. These surveys were principally taken by virtue of rights existing under the Crown or Native Land Acts as well as deviations, and were very often made to give access to holdings without any practicable road.

Other Work.—Under this designation are included all classes of our operations that cannot find a place in any of the columns of the general return, the principal items this year being inspection surveys, reporting on Native blocks, timber and timber-measuring, flax estimates and appraisements, showing settlers over Crown lands, and land for settlements estates, repair and maintenance of pack-tracks into Crown lands, defining old boundaries, repairs to trig. stations, preliminary surveys and examinations of Native blocks, and miscellaneous reports of all kinds. All these are necessary and unavoidable, but they often interfere very seriously with the work of our outside officers, and large as the cost is it could readily be doubled if all requests by local bodies, settlers, and others were complied with.

Survey Inspections.—During the year the Inspecting Surveyor has made in all 41 inspections of staff, contract, Land Transfer, and Native Land Court surveyors' work, full diagrams of which have been forwarded to you from time to time, the cost of this part of Mr. Langmuir's duties being £468 9s. 5d.; his other work being of a miscellaneous character, such as reports, standard surveys, repairs to trig. stations, surveyors' examinations, standard survey Auckland City, &c., amounting to £287 12s. 4d. Taken all together, there is a marked improvement in the character of the work, although there are instances where there is room for improvement. One case in particular has been brought under your notice as requiring special attention. I have much pleasure in drawing your attention to the results of 65 closures from 20 staff surveyors, disclosing

an average error of only 0.48 links on meridian and 0.525 on perpendicular, demonstrating that, although this work embraces all classes of country, with care, good results well within the prescribed limit of error can be obtained. I have no doubt that just as favourable a result could be obtained from private surveyors' work.

Field-work: Proposed Operations for Year 1907-8.—Table 2 shows that the coming year's field-work will comprise about 128,271 acres of ordinary rural settlement work and 36,570 acres of land-for-settlement surveys, 37,637 acres of Native Land Court and Maori Land Board work, 206 miles of road, besides other items. This will keep our 21 surveyors, I know, very fully employed, and, of course, there will be the usual Native Land Court contract and miscellaneous work in addition. If, however, the staff are needed for special Native work, as has been the case during the past year, this programme may be very materially altered.

Land Transfer Surveys.—Mr. Davis, Land Transfer Draughtsman, reporting on the year's work, states that the number of plans passing through this branch is about the same as in previous years; 318 were received, 300 passed through approved, 59 plans were compiled or drawn in the office, 27 plans of towns were sent for His Excellency the Governor's approval, and 19 inspection reports were dealt with. The registers are up to date; 12 plans are unchecked, of which, however, 7 were received on the last day of the financial year. Mr. Davis reports favourably as to the class of work coming into the office, as also to the promptitude with which requisitions were complied with, although in two or three cases certain surveyors caused inconvenience through procrastination. Attention is drawn to the fact that the rigid inspections by Mr. Langmuir show that a good and satisfactory standard of work is being generally maintained. The greatest drawback at present is the want of a computing draughtsman, as the officer doing this duty for a long period was through illness only able to work about half his time, and finally was compelled to retire through ill-health, which has resulted in only 193 plans being recorded, as against 398 for the previous year, whilst, in addition to this, illness and leave of absence reduced the branch at times to half its strength.

Office-work.—Mr. C. R. Pollen, Chief Draughtsman, reports that a total of 701 plans, including 130 settlement, 65 Native Land Court, 104 gold-mining, and 402 road plans and tracings covering a length of 129 miles in roads taken, and 45 miles roads closed, have been examined, together with 919 trig. and traverse sheets with all computations covering areas, &c.; 189 tracings of roads were prepared, 27 (trip.) vouchers for contract surveys were checked, and 295 certificates of costs for Native surveys were issued. The office-work in connection with the examination of plans received from 53 surveyors, including 21 staff and 32 contract surveyors, and the contingent preparations of data was necessarily very heavy. 3,738 plans were placed on Crown grants, certificates of title, &c., which included 346 quadruplicate, 422 triplicate, 44 duplicate, and 20 single copies; 98 Native Land Court orders were also indorsed in duplicate, 5,400 lithos were printed, and the amount collected in search fees, sale of lithos, &c., was £118 14s. 2d. 1,332 tracings were prepared for new selectors, Rangers, and local bodies, or an average of 111 per month. Numerous tracings for sale-posters, lands for settlement, &c., were prepared and forwarded to Head Office for printing and publication. A large amount of work is caused by the claims of other departments for the preparation of plans, information, &c. The past year has been a busy one, and the work arduous and heavy in all branches consequent on the steady increase of settlement. Two county maps were prepared at the request of the Under-Secretary for Lands for Exhibition purposes. Measuring-bands of a total length of 127 chains were tested for 16 surveyors and certificates issued.

Government Loans to Local Bodies Blocks.—During the year proposals for 14 new loan blocks, of a total area of 70,795 acres, have been prepared and forwarded to Head Office, the work being carried on in the computing branch. 48 schedules of loan blocks have been adjusted and forwarded to Head Office with tracings. A total of 110 schedules have now been adjusted to date or compiled into complete schedules. Most of these blocks were unsurveyed at the time the loans were granted, and considerable adjustment was required when the surveys were completed. The total number of loan blocks proclaimed is 126; of these, 110 have now complete schedules, 3 are being adjusted; of the remaining 13 schedules, most were complete when the loan proposals were made, and the others are complete as far as the blocks have been surveyed.

Transfers.—Mr. D. Innes Barron, District Surveyor, was transferred to Dunedin on the 18th June, 1906; Mr. E. F. Luks, Assistant Draughtsman, to New Plymouth, 27th April, 1906; Mr. G. H. Davis, field cadet, from Christchurch to Auckland, 5th June, 1906, and from Auckland to Gisborne, 22nd October, 1906; J. F. Thompson, draughting cadet, to Deeds Department, Wellington, 30th March, 1907; and Mr. H. Kensington, temporary draughtsman, to Christchurch, 30th May, 1906.

Resignations.—Mr. A. Wood, temporary draughtsman, 31st May, 1906, and Mr. J. E. Leahy, temporary draughtsman, 30th October, 1906.

Retirements.—I regret to say that Mr. J. Rowley, Assistant Draughtsman, with forty years' service in the Department, was compelled to retire on account of ill-health. He was only for a short time in this district, the bulk of his service having been in Christchurch, where he was respected as an industrious officer. He left this office with three months' leave of absence on the 28th February, 1907.

Deaths.—It is with great regret I have to report the death of Mr. E. C. J. Clarke, field cadet, who passed away after an illness of only a few days on the 26th December, 1906. He was a young officer of great promise, and but for his untimely end would doubtless have passed into the grade of an Assistant Surveyor at the recent examinations of the Surveyors' Board. His death is regretted by his fellow-officers and a large circle of friends. I have also the sorrowful duty of recording the death of Mr. Joseph Bird, temporary draughtsman, a very old servant of the Department, who died on the 1st October last. Mr. Bird had held important offices in his day, including the rank of District Surveyor in Taranaki, and later the office of Chief Draughtsman in the same office.

Survey Examinations.—Messrs. P. S. Sherratt and O. N. Campbell, field cadets, passed their examinations under the Surveyors' Board in March, 1907.

In conclusion, it affords me great pleasure in again acknowledging the assistance I have received in this portion of my administration from the Chief Draughtsman, the Inspecting Surveyor, and the inside and outside staffs generally; particularly has this been so with regard to the various heads of branches that I have come more in contact with.

J. MACKENZIE,
Chief Surveyor.

HAWKE'S BAY.

Topographical Surveys.—The only work done under this heading during the year was an area of 7,918 acres, taking in portion of Pukekura East, Pukekura West, Patangata Nos. 1 and 2 Native Blocks, which District Surveyor Brook did in order to arrive at the approximate areas of the various classes of land in the several blocks named; the cost of this work was 0·87d. per acre.

Minor Triangulation.—Nothing has been done in this class during the past year.

Rural and Suburban.—There have been 79 sections with a total acreage of 44,410 acres surveyed, at an average cost of 1·2s. per acre, out of which 31,810 acres, divided into 20 sections, represent Mr. John Roddick's surveys in the Motu, Upper Motu, Moanui, and Koranga districts; 7,068 acres by Mr. W. C. Wall, being portions of the Mangatahi and Tamaki Settlements; 3,057 acres of Tamaki No. 1 Block, laid off by Mr. E. H. Farnie; 2,452 acres in the Hikurangi district, defined by Mr. J. G. Wilson, being the area known as the Rangikohua Exchange. In addition to the foregoing, which represents the work completed and mapped, there are large areas completed in the field, and of which the plans are well forward—i.e., some 20,000 acres, embracing Mangatahi, Tamaki, and Pourerere Blocks, and 6,600 acres of the Moanui Block to complete Mr. Roddick's work.

Road Surveys.—In this class 23·25 miles are returned, at an average cost of £25·63 per mile, out of which Mr. Farnie surveyed 14 miles in the Patutahi, Hangaroa, and Tutamoe Survey Districts, and Mr. Wilson 8·25 miles in the Hikurangi Survey District, besides one or two small deviations by Messrs. Roddick and Brook. There are some 20 miles in hand but not mapped, in addition to the above.

Other Work.—The amount set against other work—viz., £1,319 2s. 9d.—includes a preliminary survey of 4,445 acres of the Abbotsford Estate, and numerous miscellaneous surveys which cannot be classed under the foregoing headings, reports on various matters for the information of the Land Purchase Department, Native Land Court, Land Board, and so on; also field inspections, and general departmental duties carried out by the District Surveyor at Gisborne. Against this item must also be mentioned the work performed for the Native Land Court in preparing tracings and descriptions of some 33,000 acres in the Waimarama Block, and waiting upon the Court in connection therewith.

Inspections.—District Surveyor T. N. Brodrick has made 13 inspections, most of which were of Land Transfer surveys in the Town of Gisborne and its suburbs, which, with one or two exceptions (due to the adoption of old, unreliable work), were found to be well up to the required standard, and as the defective ones were rectified directly attention was directed thereto, there was no report needed for transmission to the Head Office. Three inspections were carried out by District Surveyor Brook, and 1 by Mr. Farnie, in the neighbourhood of Dannevirke; 3 of these, executed by the same private surveyor, were so faulty that they were made the subject of a report to the Surveyor-General, by whom they were referred to the Board of Surveyors for consideration and action. With the few exceptions mentioned, the result of the inspections may be considered as highly satisfactory, the differences disclosed being well within required limits.

Proposed Operations for 1907-8.—In the Napier, or southern, portion of the district Mr. Brook has the Otanga land-for-settlement blocks to cut up for settlement, which embraces some 4,000 acres, Mr. Wall the subdivision of the Pourerere purchase of 2,000 acres, while Mr. T. W. Hughes has been instructed to make sketch surveys and furnish reports upon the following Native blocks for the Tairāwhiti District Maori Land Board: Hinewhaki East and West, and Ohuia Nos. 3 and 4 respectively, in the Wairoa district. Upon the completion of these he will take up the subdivisional survey of Mohaka 1 and 2 Blocks for the Native Land Court. In the Poverty Bay, or northern, portion of the district Mr. Roddick has the completion of the Upper Motu portion of the block (part of which is returned as finished), comprising about 6,600 acres. Mr. Farnie has returned to the Waipaoa Block, in the Tuahu Survey District, after being taken off for a time in order to hasten the completion of settlement surveys in the Dannevirke district; while Mr. Wilson, whose services were needed by the Native Land Court at Hastings for a considerable time, has proceeded to Te Araroa to make surveys at various outlying places between that place and Tolago Bay.

Office-work.—The year's work includes 355 plans examined and approved, representing an area of 312,858 acres. These divided in their respective classes give the following figures, viz.: 222 plans under Land Transfer Act, with an area of 142,000 acres; 72 plans of Public Works surveys, giving 578 acres; 33 plans of Native Land Court surveys, of 82,000 acres, and 20 departmental surveys, embracing an area of 88,000 acres; to these may be added 8 road plans. In addition to the above, 183 tracings were prepared for settlers, surveyors, local bodies, and so on; also 7 large tracings for photo-litho purposes and publication as sale-posters, while 904 maps were mounted during the year.

Miscellaneous.—Under this heading I have to record a number of changes in both the field and office staffs that have occurred during the year. In July, 1906, upon the transfer of Mr. F. S. Smith, local Land Officer and District Surveyor at Gisborne (on promotion to the Marlborough

District), Mr. T. N. Brodrick was appointed to the position thus vacated, and this officer has lost no time in making himself acquainted with the large district over which his duties extend, in addition to attending to the many calls upon his services at his headquarters. In the same month Mr. John Mouat, who held the position of Computing Draughtsman in the Gisborne District Office, accepted an appointment as a surveyor under the Government of the Federated Malay States, and consequently tendered his resignation, which was accepted. In order to fill the vacancy thus created Mr. G. H. Davis, of the Auckland staff, was transferred in October, 1906, but, in order to enable him to complete his examinations for a surveyorship, he was removed temporarily to the Wellington District Office in January last, and the appointment of his successor is now under consideration. In August Mr. P. D. N. Verschaffelt, cadet at Gisborne, was transferred to the Head Office at Wellington, in consequence of which Mr. David Nelson was provisionally appointed in his stead, and this appointment was confirmed at the expiration of his three months' probation. Mr. A. Hodgkinson, formerly of the Southland staff, but of late temporarily attached to the Head Office staff, was sent to Napier in October last to fill the post of Office Computer, and in the same month Mr. T. W. Hughes, Temporary Surveyor, was transferred from Westland to Hawke's Bay, in order to assist in the work of laying off settlement blocks. This officer had the misfortune to meet with an accident immediately after his arrival in the district, which incapacitated him for field-work for several months, so that he did not take up his duties until about the middle of January last. In August, 1906, Mr. W. C. Wall received the appointment of Assistant Surveyor, and was sent to join District Surveyor Brook on the survey of the Mangatahi Settlement. The whole of the field and office staff have been kept very busy owing to the steadily increasing demands upon their services, due to the expansion of settlement in this district, which is likely to continue judging by the continual demand for land. And, while referring to this, I take the opportunity to remark that the entire staff has always responded loyally to the many calls made upon it in order to cope with the increasing work in this district.

HENRY TRENT,
Chief Surveyor.

TARANAKI.

The operations under the various headings represent a gross return of 121,056 acres, together with 17.62 miles of road and railway surveys. The particulars are as follows:—

Minor Triangulation.—An area of 70,500 acres has been triangulated and plans completed of same by Messrs. Morpeth, Weir, and Gillett, in the Totoro, Aria, and Upper Waitara Districts.

Rural and Suburban.—The operations under this class amounted to 50,556 acres, in 151 sections, at an average cost of 2.25s. per acre. The whole of this work has been undertaken by staff surveyors, and has mainly constituted the completion of final survey of provisional work undertaken during the years 1902–5, and situated in Totoro, Aria, Ohura, Waro, Upper Waitara, and Mahoe Survey Districts, and all in broken forest country.

Roads.—Under this heading work amounting to 17.63 miles was completed, at an average cost of £16.81 per mile.

Inspections.—During the year I have made my usual visits of inspections of field-work in progress by the staff. Work done by private surveyors has also received my attention. The result of closures taken from the traverse tabulations of seven of the field staff, covering 66 closures of a total length of 209 miles, show a mean error of 0.9 links on meridian and 1 link on perpendicular, a result well within the limit allowed by the regulations.

Other Work.—The expenditure under this heading amounts to £527 8s. 11d., made up by costs against general miscellaneous work in the field, reports and plans on various subjects, explorations, pack-track through new blocks, and a variety of other matters.

OFFICE-WORK.

Examination of Plans.—The number of plans checked during the year in the ordinary survey branch was 82, with 262 traverse sheets, comprising 195 sections, of a total area of 164,468 acres, and 22 miles 31 chains of roads taken and closed, and railway land plans. Of these, settlement surveys represented 24 plans, containing 154 subdivisions, of a total area of 62,644 acres; trigonometrical, 4 plans, containing 100,000 acres; 27 plans defining 20 miles 34 chains of roads taken and closed; 6 plans of 1 mile 77 chains railway land plans; 1 Native Land Court plan, containing 1 subdivision of 396 acres; and 30 miscellaneous plans of 40 subdivisions, containing 1,428 acres: making a total as above.

Land Transfer.—There were 118 plans with 153 traverse sheets checked and approved, comprising 358 sections and subdivisions, of an area of 15,624 acres 3 roods 25.14 perches.

Titles.—There were 1,462 plans placed on Crown grant, certificates of title, Crown leases and licenses, and Native Land Court orders, and 487 leases and licenses were prepared.

Miscellaneous.—The usual demands made on the office staff were attended to. These comprised supplying information to the general public, data to the staff for execution of surveys, information for local bodies and other Departments, &c. Eighty tracings were made for the Valuer-General, and 188 for Crown solicitors, 12 block sheets were compiled, and all recording on block sheets, record, reserve, and other maps has been kept up to date; 13 authorities for survey of Native lands were also dealt with.

Proposed Operations for 1907-8.—A staff of three permanent and five temporary surveyors are at present engaged in different parts of the district on field-work, covering an area of 101,812 acres, more or less, of subdivisional work in Totoro, Ohura, Waro, Tainui, Mokau, Piopio West, and Mahoe Survey Districts; also the survey of 36.5 miles of road to be taken under warrant through Native lands, road deviations, and other miscellaneous work. The completion of the standard survey of Hawera Town, and, if arrangements can be made with the Council, a portion of the Borough of Eltham, may also receive attention.

FRANS. SIMPSON,
Chief Surveyor.

WELLINGTON.

The gross area surveyed during the year under the various headings is approximately 88,794 acres, besides 34 miles of the North Island Main Trunk Railway and roads in the North Wainarino Block, plans of which are completed. The particulars are as follows:—

Rural and Suburban.—The principal surveys of this class have been the completion of the northern portion of the Wainarino Block, situated in the Hunua and Kaitieke Districts, by Messrs. Lowe, Strachan, and Roberts; the continuation of the subdivision of the Kaitieke Block in the Kaitieke Survey District, by Mr. Thompson, for ordinary Crown lands settlement; also of the Dyer Settlement, in the Huangarua, Wairarapa, Waipawa, and Haurangi Districts, by Messrs. McKay, Strachan, and Girdlestone, for occupation under the Land for Settlements Act. Mr. Carkeek completed the subdivision of the Ohutu Block for the Aotea District Maori Land Board. Mr. Girdlestone completed the subdivisional survey of part of the Tauakira Block, situated in the Tauakira and Ngamatea Survey Districts, and explored for roads.

Native Land Court.—In addition to the 11,640 acres in the Tauakira Block, as shown in Table 1, the Government is also interested in the survey of 2,035 acres of Native land—viz., Mangatainoka J4f and Rangitatau Blocks—on which Government surveyors, Messrs. Mountfort and Strachan, surveyed certain boundaries (returned under headings of "Other Work," on Table 1). Liens have been taken out over the greater portions of these blocks in the Native Land Court, and in addition 51 Native blocks, comprising 147 subdivisions, containing 20,361 acres, were surveyed by private surveyors for the Natives direct, so that the total surveyed by staff and licensed surveyors is 34,036 acres.

Standard Surveys.—The Inspecting Surveyor, Mr. Climie, completed the extension and revision of the former standard survey of the City of Wellington at a cost to the Government of £812 3s. 2d.

OFFICE-WORK.

Examination of Plans.—During the year 152 plans of sectional and Native surveys, containing 121,678 acres, were received, and 135 approved; 65 statutory plans were received, 157 approved and recorded, and 74 others were examined, and 43 sent for proclamation.

Compilations.—Thirty-one drawings and tracings were prepared for photo-lithography, 3 new Crown grant maps compiled, and one 40-chain trig. map.

Roads and Railways.—The staff having been principally employed on settlement surveys, only necessary deviations and side pegging of roads have been attended to, and in addition 18.5 miles of the North Island Main Trunk Railway was surveyed, at a cost of £325 10s. 7d., or £17 12s. per mile.

Other Work.—Under this heading many and various duties are included distinct from the actual cost of subdivisional surveys, comprising as it does small surveys for scenic purposes and other departments, repairing and replacing of trig. stations and displaced standard blocks, redefining old boundaries, timber estimates, road deviations, &c., the character of which cannot be tabulated in the ordinary schedule of work returned. The usual repairs to trig. stations have been effected by Mr. Lowe, at a cost of £42 13s. 2d.

Inspection of Surveys.—Mr. Inspector Climie inspected 18 surveys during the year, including 15 for the Land Transfer Department, at a cost of £195 11s. 7d.; and Mr. Mountfort completed 7 inspections, at a cost of £135 14s. 7d. The Surveyors' work maintains a uniform standard of excellence, regardless of the difficulties obtaining in the rough and remote blocks in which most of the surveys are now carried on.

Land Transfer Office (Survey Branch).—There were 340 plans passed, which does not include 50 single and 3,012 in duplicate plans indorsed on transfers, &c., all of which have to be examined; 33 Land Transfer plans and tracings have been mounted and repaired.

Titles.—There were 3,150 deeds and other instruments passed, showing an increase of 55 over last year; 50 single and 3,012 plans in duplicate were placed on certificates of title, being an increase of 52 over last year; 20 miscellaneous plans were drawn or compiled.

Miscellaneous.—The usual demands were attended to by the office staff. These comprised supplying information to the public generally, data for the execution of surveys by staff surveyors and others, 53 tracings, 78 general plans, 38 sale-plans, 240 lithos, 276 applications, and 12 plans were remounted and repaired, and a multitude of other duties performed.

Proposed Operations.—A staff of seven permanent and three temporary surveyors is at present engaged in different parts of the district, and has an area of some 83,300 acres of subdivisional surveys in hand, consisting chiefly of bush land suitable for pastoral purposes in large areas. About 14,000 acres of selection surveys in the Kaitieke Block will be completed during the next season. Mr. Strachan has the survey of the surplus land around the margin of the Wairarapa

lakes in hand, and also the laying out of roads preparatory to defining reserves for Natives. Mr. J. Stevenson explored for and located 25 miles of roads in Native Reserve A—14,850 acres, situated in the Makotuku and Rarete Survey Districts. He also located and graded 2 miles in this block. In Native Reserve E, situated in Block VIII, Kaitieke Survey District, he located and graded 6 miles 20 chains of roads. He also has an area of about 14,400 acres of the Morikau No. 2 Block to complete for subdivision and settlement under the Aotea District Maori Land Board; also the location of roads, prior to subdivision, in Reserve A, Waimarino. Messrs. Girdlestone and Stewart will continue and complete the survey of the Ruatiti Block, South Waimarino, of about 18,500 acres, and Mr. Johnston the subdivision of the Ohakune Extension and Horopito Townships. The other staff surveyors, when available, will be fully employed in the subdivision of land for settlements, Crown and Native lands, and other miscellaneous work.

It is desirable that the Wellington City standard survey should be extended to the suburbs (if possible during the coming season), owing to the many subdivisions now taking place around the city.

Mr. District Surveyor Carkeek has been transferred to Marlborough, and Mr. District Surveyor Lowe has come into the office for the current year.

It is with regret that I have to record the loss to the Department of the valuable services of Mr. District Surveyor McKay, who resigned at the end of March last, and who has been in the service of the Department since 1883, and worked the greater part of his time in the Wellington District. He was an able and most reliable officer. I also regret to record the resignation of Mr. Assistant Surveyor E. A. Marchant, who is a most promising young surveyor, and a loss to the staff.

JOHN STRAUCHON,
Chief Surveyor.

NELSON.

Topographical.—An area of 82,739 acres was executed under this heading. 3,860 acres of this is simply topographical, costing 0·96d. per acre, the remainder, 78,879 acres, being “provisional” survey of Crown lands for settlement, costing 4·97d. per acre. In some cases this latter work is governed by subsidiary trig., and in others by theodolite traverse of main line of road through the blocks. These blocks are situated in the Maruia, Glenroy, Rappahannock, Maungatapu, and Tadmor Districts.

Minor Trigonometrical and Topographical Survey.—The only area returned under this heading is a block of 4,600 acres to check sectional surveys, costing 1·5d. per acre. An area of 46,000 acres of subsidiary trig. has been completed in the field by Messrs. Cumine and Fairhall, partly in conjunction with “provisional” surveys, and partly to check sectional surveys. The area of 409,488 acres returned as unfinished was completed in field by Mr. Sadd four years ago and partly mapped, but owing to more urgent work the plans have not yet been finished.

Rural and Suburban.—An area of 25,674 acres, in 99 sections, at an average cost of 1·42s. per acre, has been returned under this heading, chiefly in the Howard, Pakawau, Hope, Kongahu, and Kawatiri Districts. The bulk of this work lies in heavy bush, hilly country.

Gold-mining Surveys.—There were 4 surveys of this class, all by private surveyors, passed through the office, containing 457 acres. Cost of same, £125 16s., being 5·5s. per acre.

Roads, &c.—26·57 miles. The bulk of this is a traverse of Greymouth—Reefton Road, the remainder being several small access roads. Cost is £11·02 per mile.

Other Work.—Represents the cost of various duties which cannot be placed under any of the above headings, such as field inspection, small surveys, reports, work for other departments, general office work, &c., in district offices at Reefton and Westport.

Field Inspections.—During the year Mr. Sadd, District Surveyor, made two inspections of selection surveys in the Maruia and Matiri Districts. Mr. Snodgrass, District Surveyor, also inspected similar work at Karamea.

Proposed Operations for 1907–8.—Mr. Montgomerie has the survey of the Blackwater Township to complete, survey of reserves, &c., repegging Black’s Point Township, and sectional surveys, totalling about 1,254 acres. Mr. Snodgrass, District Surveyor, has to complete the Inangahua Block of 5,000 acres, 1,500 acres of which is completed in the field, also certain small surveys, and such selections as may be hereafter allotted to him. Mr. Carkeek, District Surveyor, began a Native Land Court survey of D’Urville Island on the 6th March. This comprises about 40,000 acres of triangulation and topography, to be followed by some subdivisional work. Mr. Sadd, District Surveyor, is engaged on the survey of Wangapeka Estate, 4,587 acres, and Crown lands adjoining, 1,555 acres. He has also 3,540 acres of selections and 12,000 acres of “provisional” survey to execute. Mr. Thomson, District Surveyor, has 1,300 acres completed in the field, and 1,340 acres in progress of rural selections, in Kaiteriteri and adjoining districts. In addition he has 2,346 acres of selections to survey. Mr. Maitland, District Surveyor, is engaged upon rural selections at Aorere; 1,060 acres is completed in the field, and also an access road at Upper Takaka; mapping in progress. In addition he has 14,090 acres of selections to survey. Mr. Cumine, temporary surveyor, has just begun the survey of 8,000 acres rural selections in the Maruia North Block, assisted by Mr. J. H. Buttress. Mr. Cumine has also 25,000 acres subsidiary trig. completed in the field, covering sectional surveys in Maruia Valley. Mr. Fairhall, temporary surveyor, has just completed the field-work of 21,300 acres subsidiary trig. to check sectional surveys, also of 11,457 acres of rural selections, and 680 acres of revision work adjoining, in the Matiri District; mapping in progress. In addition he has an 1,800-acre block to cut up, and further rural sectional surveys amounting to 2,985 acres.

In addition to the above works in the hands of the surveyors, there are also 38 selections, totalling 16,200 acres, which await survey, and are not yet allotted. These latter comprise areas situated in various localities of Nelson District. It is evident that the survey of selections will largely absorb the services of the surveyors in this district during the coming year, this work being extremely pressing.

Land Transfer Office (Survey Work).—Mr. Curtis, Land Transfer Draughtsman, reports that 65 survey plans have been examined and passed, 162 application and transfer deeds passed, and 400 diagrams placed on 194 certificates of title in duplicate. 150 tracings were made for the Valuation Department, 59 reports made, and 62 leases, &c., examined, before issue of warrants for certificates of title in lieu of Crown grants. The Land Transfer work has fallen rather behind-hand during the past six months on account of some large private estates being subdivided, entailing increased work, but with extra office assistance the arrears are now being fast overtaken.

Office-work (Draughting Branch).—During the year 49 plans were examined, containing 32,145 acres in 178 sections, 2 plans of triangulation, 1 plan of township, and 51 plans of roads and railways; total, 103 plans. The number of tabulation sheets checked was 258. There remain in hand to be examined 14 plans and 40 tabulation sheets. Diagrams were placed on 126 Crown titles in quadruplicate, 58 in triplicate, 93 in duplicate, and 1 singly, and on 58 certificates of title in lieu of Crown grants, in triplicate, totalling 1,039. County maps of Inangahua and Buller, on a 40-chain scale, are being traced for photo-lithography, and are well advanced. There were 12 plans drawn during the year, for photo-lithography, of blocks of land available for settlement. The office-work included the usual tracings for surveyors, for settlers, and for other departments. The much-needed work of compiling a register of all the plans in the safe is well in hand.

T. M. GRANT,
Acting Chief Surveyor.

MARLBOROUGH.

Minor Triangulation.—This class of work has been practically neglected for some years in this district; in fact, there is only a small area of country which has not been covered by some sort of triangulation, about 140,000 acres being required, chiefly along the northern boundary of the district. It may be stated that generally the minor triangulation has been very well done, considering the cost and the class of instruments used, the nature of the country being very suitable to this form of check, the only item under this heading being about 9,000 acres, situated near the head of the Wakamarina Valley. This was observed by Mr. A. J. Wicks to check some settlement surveys in that locality. The cost has been 1'2d. per acre, which is not high, considering the smallness of the job, and that the work necessitated a good deal of bush-clearing, and the work of observation was delayed by cloudy weather.

Rural and Suburban.—There was 19,330 acres, in 96 sections, completed under this heading, nearly half of which is represented by the survey of Dungee leaseholds, necessitating very extensive surveys of adjoining freeholds to get at the area required. This is another instance of the bad old system of granting land on paper surveys. The remaining area consists mainly of small isolated surveys of bush land, frequently at high altitudes, also necessitating elaborate surveys to re-establish old freehold boundaries of surrounding or adjacent lands. This accounts in a great measure for the high average cost—viz., 2'08s. per acre—which is not a very satisfactory result; but, as the Crown lands are rapidly getting taken up, leaving only isolated fragments, I am afraid we cannot look forward to any reduction in the cost of surveys. This is specially the case in the Sounds County, where the country is very rough, the climate wet, and the surrounding freeholds are small, and sometimes intricate.

Town Section Surveys.—Only 8 acres, in 22 sections, has been completed under this heading. This is some further subdivision of the Township of Seddon, included in which is the extension of the standard marks. The cost of 44s. per allotment may be considered rather high, but the surveyor had to shift his camp to undertake this work.

Native Land Court Surveys.—Under this heading 4,524 acres, subdivided into 55 divisions, has been done, at a cost of 2'5s. per acre. This is the subdivision of the Mangamaunu Block, situated between the Hapuku and the Clarence Rivers. It is chiefly high, rough, bush hills; but the cost is, I think, unnecessarily high.

Roads, Railways, Water-races, &c.—Under this heading 43'8 miles has been completed. Out of this, water-races represent half a mile, the balance being traverses of roads chiefly within the Sounds County, and are generally through very rough, steep, bush-covered hills. Where the lines average less than 2 chains in length, the cost is considerably increased by the numerous intersections of section lines after necessitating practically the whole resurvey of the holdings, and as many of these freehold have never been marked on the ground, or surveys are so old that it practically amounts to the same thing, the work is proving rather costly. Under the heading of "Cost of Other Work" are some compass surveys to locate the proclaimed boundaries of State and other forests, some magnetic surveys of sawmilling areas and reports and inspections for Land Board, and many other small services required from surveyors which cannot otherwise be charged. Only one field inspection of a Land Transfer survey has been made during the year. This, if a fair sample, would prove that the modern surveys in this district are of a satisfactory character. Sixteen Land Transfer plans have been examined and approved during the year. I anticipate that this number will be considerably increased during the coming year. So far it

would appear as if the landowners in this district do not realise the advantage of bringing their holdings under the Land Transfer Act, greatly owing probably to the bad state of the old surveys, which necessitate costly and elaborate survey work to comply with the modern requirements for a sound title.

Proposed Survey Operations for the Present Year.—The surveys required to legalise roads—most of them already formed—are chiefly in the Sounds County. These will take the undivided attention of one surveyor, and, if much progress is required, another should be detailed to this work. The settlement work in this district is composed chiefly of small isolated pieces of Crown lands, situated behind land already taken up. This is almost entirely situated in the Sounds and Pelorus Districts. I do not expect that we shall be able to open up any large blocks during the coming year, because most of such land is in the hands of the sawmillers. It is proposed to undertake the revision and extension of the standard survey of the Town of Picton during the coming winter, if we have a surveyor available. Some attention should also be paid to the standard survey of Blenheim, which should be extended to meet the requirements of subdivisional surveys in the suburbs. These works will more than keep the present staff fully employed. Three field surveyors have left the district, and one has been added to the field staff. One surveyor's time will be largely taken up in surveying applications under the Mining Districts Land Occupation Act and sawmill areas. The total cost of services performed by the survey staff has been £3,100 10s. 10d., but if the portion of the cost of the Mangamaunu Block which should be repaid by the Native owners is credited to the work done in this district the total cost should be £2,649 1s., less recoveries from Land Transfer Department, Court orders, and Agricultural Department, £27 19s. 2d.

Office-work.—By the completion of the one-mile-to-the-inch maps of Linkwater and Cape Campbell Survey Districts, the goal for which we have been striving for so many years has at last been reached—viz., the lithographing of the whole of the survey districts. This work having been completed, the opportunity was taken to prepare a plan which has long been urgently required (owing to the original having become obsolete), showing topography, roads, towns, stations, post, telegraph and telephone offices, &c., on a scale of 2 miles (for reduction to 4 miles) to an inch, of the whole of the Marlborough Land District. This map was completed during the present year, and, as it embodies all the recent surveys, will be found to be very useful to the office and the general public. The completion of an allotment-book, index maps, arrears in block sheets, and record maps has yet to be undertaken. 50 plans of sectional, Native, Land Transfer surveys, and 44 miles of roads were examined and approved; 104 diagrams were drawn on 52 certificates of title, 371 diagrams on 117 Crown leases, 110 diagrams on Native Land Court orders, and 102 diagrams on mining leases, besides the usual tracings of reserves, road surveys for proclamation, and miscellaneous office-work.

F. STEPHENSON SMITH,
Chief Surveyor.

WESTLAND.

Geographical Survey.—Under this heading 217,860 acres has been returned during the past year. Of this area, 208,000 is noted in Table 1 as topographical, and comprises rough, densely-bushed country with high, rough, mountain tops, very little, if any, being fit for settlement. The cost of this worked out at a little over 1d. per acre. The balance, 9,860 acres, is noted as exploration survey, and comprises areas in the Valleys of the Okuru, Karangarua, Wataroa, and other South Westland rivers. This is also densely-bushed country, and it has been very thoroughly explored by means of compass work, and in some instances theodolite traverse along the rivers, for the purpose of ascertaining what areas are suitable for subdivision for settlement. When undertaking this work the surveyors go very carefully into the matter of probable road location, general "lay" of the country, quality of soil, timber, &c., and from the maps sent in areas can be selected for subdivision, and schemes of roading and sections arranged. The cost of this class of work is just under 54d. per acre, which, considering the amount of detail and valuable information obtained, is very reasonable.

Rural and Suburban.—Work returned under this heading amounts to 10,967 acres, and comprises blocks subdivided for settlement, and a large proportion of isolated areas taken up under the Regulations for the Occupation of Pastoral Lands in Westland, and under the Mining Districts Land Occupation Act. In bush country the survey of these isolated holdings is necessarily very expensive, and the average cost per acre—viz., 3'9s.—is not at all excessive. It is anticipated that as the above-mentioned tenures become better known the number of applications will largely increase, and the overtaking of the surveys will fully occupy the time of at least two surveyors during the next twelve months.

Gold-mining Survey.—Very little work has been done in this class during the year, the number of plans sent in being only four, two being of special claims surveyed by a private surveyor.

Town Section Survey.—There is no return under this head for the past twelve months, though there is an item under the head of "Other Work" against the uncompleted subdivision of the Township of Rohutu. It is intended that the survey shall be completed, and the sections put on the market during the ensuing year.

Roads.—Under this heading 46 miles of roads located and surveyed is returned. Most of this is through bush country. The return does not include roads laid off as frontages to sections, but those laid off with a view to giving access to settlement lands.

Other Work.—The principal items under this heading are inspection of surveys; administration, &c., in respect of votes and authorities for Roads, Mines, and Tourist Departments; work done for other departments; defining disputed boundaries, residence-sites, &c. Of the cost

returned under this heading, the total amount recouped for work done for other departments amounts to £881 14s. 11d. As before, the construction and maintenance of the Government roads in Westland has been in the hands of this Department, and Mr. District Surveyor Wilson's time is almost wholly occupied in connection with this work. Attached to this report is a statement by him as to roads constructed in Runanga Township, and other work paid for by appropriations of the Lands Department. I beg to acknowledge Mr. Wilson's skilful and constant attention to these important works, which have been carried out so satisfactorily.

New Chain Standard.—The establishment of the new 5-chain standard has not yet been completed. Owing to my having been so much away, and there being too many demands on the time of other experienced officers, this work could not be overtaken, but we hope to be able to make the final marking at an early date.

Proposed Operations for 1907-8.—The survey work for the ensuing year will comprise the sectionizing of a new block of 6,000 acres for settlement at Punakaikai in North Westland, a block of 300 acres on the Wataroa River bed, and other smaller areas in South Westland. Besides this there will be the survey of a large number of scattered areas taken up under the Regulations for the Occupation of Pastoral Lands, and under the Mining Districts Lands Occupation Act. It is proposed also to complete the standard surveys of Greymouth and Hokitika, works that are very urgently required, and to complete the sectionizing of Rohutu Township.

Office-work.—Mr. E. H. Wilmot, Chief Draughtsman (whose loyal and able assistance I wish to acknowledge), reports that the number of plans received during the year was 97, of which 76 were from staff surveyors, the remainder being almost all Land Transfer plans. The work of checking has been kept well up, 104 plans, of which 24 were Land Transfer plans, having been checked. In this connection 275 traverse sheets were completely checked also. In addition to this 18 mile-sheets of railway land plans were also checked. Application maps were kept up and two new ones made. Block maps were also kept up as far as possible, and new ones were made to replace old ones, where new work covered and took the place of old and faulty work; 10 new Land Transfer sheets on 50-link scale were prepared; 700 leases were prepared, and 922 plans put on deeds, of which 261 were on Land Transfer titles; 180 tracings in connection with the proclamation of 87 reserves were made; and miscellaneous tracings (including data tracings for surveyors) to the number of 354 were prepared. For photo-litho. work, 6 tracings were prepared. Tracings for the litho. map of Greymouth have been completed as far as possible, but this work is held back for data not at present available. I hope it will be taken up again early in the ensuing year. The tracings for the first portion of Westland have been completed, and are ready to be sent up for lithographing. In addition to the usual work of the draughtsmen, 4 maps were prepared for the New Zealand International Exhibition, 1 of which, showing location of economic minerals on the west coast of the Middle Island, measured over 23 ft. in length, and another showing settlement and timber lands measured over 11 ft. Work for the next year should include the bringing of all block maps up to date, the preparation of Crown grant and Land Transfer record maps, and completion of Greymouth and Westland County lithos. The record maps are urgently wanted, but with the amount of other work on hand the present staff will not be able to fully undertake their preparation.

G. J. ROBERTS,
Chief Surveyor.

REPORT ON CONSTRUCTIVE WORKS CARRIED OUT BY THE LANDS DEPARTMENT, WESTLAND, 1906-7.

Vote 67, Item 22.—*Eradication of Noxious Weeds on Crown Lands*, £204 12s. 9d.—This represents a large number of payments in small sums for clearing weeds in the Grey and northern part of Westland Counties, certified to by the Inspector of Stock.

Vote 67, Item 54.—*Kokatahi-Hokitika River and Main Road Protective Works*, £117 19s. 3d.—Of this amount £50 was a subsidy to a settler for work done. The remainder was expended in repairs to the existing works, which have stood very well. Owing to the soft nature of the bank, there is always the possibility of the river cutting in behind the groins. The balance of the authority is to be expended in April and May in further strengthening the work.

Vote 67, Item 87.—*Protective Works to prevent Encroachment of Rivers in Westland Land District*, £31 5s. 6d.—This amount represents purchase of wire nets and part subsidy on a moiety basis to a settler at Callaghan's Creek near Ahaura. The bank of the creek, which is threatened by flood waters caused by the accumulation of mining tailings, is being protected by a wire crate and scrub wall.

Vote 67, Item 112.—*River Protective Works, Wanganui River, South Westland*, £138 15s. 4d.—Several very strong groins of wire crate and stone were put in early in the year to prevent the river overflowing and destroying the excellent land in the vicinity. These were very strongly built, but since the last flood require strengthening. This work is now being carried on.

Vote 67, Item 114.—*Roads in Runanga Township*, £2,080 13s. 2d.—The work of forming and metalling streets in this thriving township has progressed very satisfactorily during the year, in spite of the operations being handicapped by the difficulty and costliness of procuring suitable metal for the roads. Endeavours have been made to keep pace with the building operations, and to give access of one sort or another to each settler as the houses were erected. A large number of houses were built last year of a superior type, and, as the Municipal and Government reserves have now been cleared, the township presents a prosperous appearance. The work of forming and metalling the streets is still in progress, and when that is well under way and no buildings left without road access it will be necessary to seriously consider the question of draining, as a great number of complaints have been received from the leaseholders. Estimates will be submitted later dealing with this question. The metalling of the formed roads has been the most costly work during the past year's operations, as it has to be brought some distance, and tram-lines have to be laid for every chain of metal put on. The following is a summary of the work done during the

year: Formation, 16 ft. to 18 ft., 125 chains; metalling, 12 ft., 68 chains; bridle-track, 6 ft., 10 chains; ditches, 3 ft. by 2 ft., 72 chains; pipe culverts, 130 ft.; culverts, 18 ft. wide, 14 ft.; bridges (five), 18 ft. wide, 115 ft.; tramway laid, 70 chains. Also the whole of the Municipal and Government reserves were cleared of standing timber. The School Reserve was gravelled, but the cost of this was recovered from the Education Board.

Vote 67, Item 120.—*Stockman's Shelter Hut at Big Wanganui River*, £44 2s. 10d.—A comfortable hut has been erected and small paddock enclosed for the use of drovers on the south side of the Wanganui River.

WM. WILSON,
District Surveyor.

CANTERBURY.

Owing to there being no unsurveyed or unoccupied Crown lands in this district, and no estates having been acquired during the last year, the survey operations have been limited to the subdivision of some runs, the survey of small blocks of isolated Crown lands, and the standard surveys of the Town of Timaru and part of the Town of Rakaia.

Rural and Suburban.—The total area returned under this heading is 13,396 acres, consisting of 15 sections, surveyed at a cost of 0.67s. per acre; the whole of this area was executed by staff officers. Mr. T. A. Johnston, Assistant Surveyor, who was engaged in this district for seven months, surveyed 4 small grazing-runs and reserves in the Hororata District, of a total area of 10,492 acres, and an education reserve of 151 acres in Westerfield District. District Surveyor McClure has surveyed a number of small reserves, of a total area of 75½ acres, in much scattered localities, and a portion of 1 small grazing-run of 2,590 acres. Mr. Brodrick surveyed a recreation reserve of 87 acres in the Hutt District, at a cost of £41 8s. 11d., which appears high; but the survey was situated at a considerable distance from Mr. Brodrick's headquarters at Timaru, and was made at a time when the country was under snow.

Town Surveys.—Under this heading 37½ acres has been subdivided into 138 allotments, at a total cost of £72 18s. 9d., or 10.6s. per allotment. Of this area, Mr. McClure subdivided 30½ acres into 118 allotments, these comprising the workers' dwellings site at Sydenham, and the resurvey of 83 lots in the Rakaia Township. Mr. Johnston pegged 20 allotments in the Domett Township, Cheviot. Work completed in the field, but not mapped, and therefore carried on to next year, comprises the standard surveys of parts of the Towns of Timaru and Rakaia. In the standard survey of Timaru there is 18½ miles of standard traverse completed, the total cost, including £161 0s. 4d. for work partially executed by Mr. Brodrick but completed by Mr. McClure, being £641 6s. 1d. In the re-marking of sections in the Rakaia Township, executed by Mr. McClure, 2 miles of standard traverse is completed, at a cost of £15 8s. 5d.

Other Work.—In addition to the work already enumerated, Mr. McClure was occupied for about two months and a half upon the survey of a line of water-race and a small section in the Steward Settlement, Otago District, and about two weeks on the completion of plans of surveys executed by him during the previous year in the Westland District. The cost of these works, amounting in all to £212 5s. 5d., is chargeable in due proportion against the districts named. Owing to District Surveyor McClure being engaged in other duties, and no other officer being available, only three inspections have been made of Land Transfer surveys, but these have demonstrated that the private surveyors are doing very satisfactory work.

Proposed Operations for 1907-8.—Unless some estates are acquired we shall have no settlement surveys in progress, and Mr. McClure will be employed on the survey of Tekapo Township, reserves, field inspections, and the completion of his standard survey plans.

Office-work.—Mr. Shanks, Chief Draughtsman, reports as follows: "During the past year, no lands having been acquired for settlement, the surveyor has been enabled to clear off a number of urgent miscellaneous surveys, and the office staff to overtake a large amount of arrears of mapping, especially in the much-needed work of preparing photo-lithographic tracings of the unpublished districts within the Ashley, Selwyn, and Ashburton Counties. Eighteen districts were traced, leaving 8 on hand, which when finished will complete the districts within the above-named counties, and allow the draughtsmen to proceed with the compilation of the districts comprised in the Amuri and Cheviot Counties; one sheet of the latter is now being prepared. Photo-lithographic drawings were made of the workers' dwellings block in the Sydenham Ward of Christchurch, small grazing-runs in the Hororata District, and of Rural Section 37116 in the Fighting Hill District, and the original drawings of the Corwar and Hawkins Districts were brought up to date. Five large and 13 small plans were received from the surveyors; 8 delineating surveys of acquired land returned last year, the balance miscellaneous surveys, and the small grazing-run plans. They have all been checked with the exception of the 2 run plans recently received. Plans were placed on 102 Crown leases prepared in quadruplicate, 19 in triplicate, 70 in duplicate, including 4 Native Court titles, and on 54 certificates of title and 2 surrender deeds, making a total of 1,260 plans. The only arrears on hand are 7 miscellaneous and 5 small-grazing-run leases recently balloted for and granted. Record maps were constructed for the Morice, Kinloch, and Mills Settlements, also for the Domett Township, and additional information placed on a number of the formerly constructed records; 66 certificates of title, 94 leases in perpetuity, and 196 Crown grants were registered on the above-mentioned and other district record maps, but there are still many thousands of the latter to record, for the current and more urgent work has not left the draughtsmen much time to overtake the arrears. As current duties permitted, a set of 276 mounted lithographs and tracings were made for the Education Boards, illustrating the localities

of the several schools within the North and South Canterbury Education Districts. The above items represent the principal work done, the balance being the usual routine current and miscellaneous matters."

Mr. Leversedge, Land Transfer Draughtsman, reports that the amount of work executed during the past year was far greater than in the preceding year, and appears to be steadily increasing each year. No new record plans have been made, although many are urgently required. During the year it has been necessary to remount and repair about 50 deposit plans. The record plans made some twenty-four years ago of the district around Christchurch are getting very worn, and several of them require to be replotted. The City of Christchurch (Central Ward) should be redrawn on a larger scale; but in the present state of the current work this cannot be done without an increase in the staff. The work done by contract in supplying paper copies of all certificates has been satisfactorily performed. The number of plans passed was 360; deeds and other instruments examined and passed, 2,433; plans placed on certificates of title, 4,202; miscellaneous plans drawn, 37: the total cost being £1,038 15s. 9d. Also very numerous tracings for Land-tax Department; partially cancelled titles coloured-off for reissue; new roads and proclamations indorsed on certificates.

Miscellaneous.—I find that some of the records are not in a satisfactory condition, and that the block sheets are not up to date. It will be noticed by the Land Transfer officer's report that the work is increasing, and to record all plans in a satisfactory manner and bring up the back work two more draughtsmen are required. The only changes in the staff have been the transfer of District Surveyor Brodrick to the Hawke's Bay District, and of Ranger Ward to Marlborough, the latter's position here being taken by Ranger Buckhurst. Both field and office staff have been most diligent in their duties, and the work of the Department in this district is being efficiently performed.

ERIC C. GOLD SMITH,
Chief Surveyor.

OTAGO.

Topographical Surveys.—Mr. District Surveyor Calder returns 106,300 acres under this head. This area comprises the runs formerly known as Home Hills and Lauder Runs, which have now been divided into small grazing-runs and blocks reserved for settlement.

Minor Triangulation.—Mr. District Surveyor Wilmot finished and sent in a plan showing a remeasurement of the base-line and revision of the bearings and calculations of part of Waitahuna West District. The field-work of this survey was carried out during the subdivision of Greenfield Settlement, in order to more accurately test the traverse closures.

Rural and Suburban.—Under this heading the total area surveyed during the past year is 38,302 acres, and includes Mr. District Surveyor Calder's survey of Blackstone Hill small grazing-runs, Mr. Neill's survey of part of Steward Settlement, also Mr. D. I. Barron's survey of Plunket, Totara, and Kurow Settlements, and several small scattered surveys by Mr. Wilmot. The number of sections into which this area was subdivided is 160, and the average cost per acre 0·89s., being practically the same as that of the preceding year.

Town Section Survey.—Only a small area of about 4 acres subdivided into 21 sections was surveyed during the year, at a cost of 17·95s. per allotment. The sections were situated in the Towns of Oamaru, Roxburgh, and Windle Settlement.

Gold-mining Surveys.—There is not now the demand for this class of survey that existed during the boom of a few years ago. The work is now entirely undertaken by private surveyors, five of whom forwarded plans for examination and check, representing 1,132 acres comprised in 26 sections. The total fees for which vouchers were passed for these surveys amounted to £243 14s. 6d., making the cost 4·31s. per acre. In addition to these fees, several vouchers were passed for inspections and reports made for the Wardens of the several mining districts.

Water-races.—The engineering and land survey of 15 miles 67 chains of water-race for the irrigation of Steward Settlement was made last year. The survey of this race was commenced by Mr. Wilmot, but he had to leave it unfinished consequent on his transfer to Westland. The survey was then continued and completed by Mr. District Surveyor McClure, of Canterbury, at a cost of £15·26 per mile.

Other Work.—The amount charged under this head is £513 10s. 9d., of which the largest item is £267 13s. 1d. for office-work by Mr. Neill. The balance was incurred in various services, and includes £91 10s. 10d. for unfinished work on Airedale Settlement, making alterations, preparing plans, Naseby District office expenses, work in connection with irrigation in Central Otago, preliminary surveys and inspections, &c.

Office-work.—The amount of work in the draughting department, consisting largely of routine work, is a pretty constant quantity, and compares favourably with that of previous years. Two of the draughtsmen were employed at various times in the different survey camps assisting the surveyors with their plans in order to expedite bringing into the market the lands for settlement purchased by the Government during the year. One draughtsman was also employed for nearly two months relieving Ranger Atkinson, who at the time was incapacitated from attending to his duties. The subdivision of Blackstone Hill, Home Hills, Lauder, and Lee Stream Runs, comprising an area of 147,550 acres, into small grazing-runs entailed on the office staff a large amount of work in the preparation of tracings and traverse reduction sheets of all original survey data, also skeleton sheets on which to plot the new surveys, and drawing plans for photo-lithography, &c. The above remarks also apply to the subdivision of Plunket, Totara, and Kurow Estates, also to drawing boundary-plans based on the new surveys, tracings for transfers, and photographs for pamphlets. Catchment and irrigation areas of proposed Upper Taieri Water-race were also shown

on lithographs. Steward Settlement Water-race was recorded on settlement maps, section areas amended in accordance therewith, and copies of race plans made. In connection with the proposed Taieri drainage scheme, new drainage districts and ridings were shown on lithographs, areas taken out, and description furnished. A duplicate copy of a 4-mile-to-the-inch map of Otago runs was made and schedule of areas completed. A separate map was also made showing the Morven Hills and Mount Pisa Runs. Out of a total of 220 school districts, 97 have been mapped and described. In connection with this class of work the want of up-to-date lithographs of the older settled districts becomes apparent. It is intended to redraw some of these maps during the coming year in order of urgency, as the time of draughtsmen permits. Lithographs have been drawn and published of Tautuku, Rimu, and Kurow Survey Districts, and also of the Towns of Queenstown, Port Chalmers, and Newcastle. The Oamaru District map is now in hand, and when finished will show all land acquired under the Land for Settlements Act and deposited plans under the Land Transfer Act. A 1-mile-to-the-inch map of the Clutha County was coloured to show all tenures; 35 staff and settlement plans, 61 Land Transfer plans, 52 of which have been deposited, 27 railway land plans in duplicate and triplicate, 25 new road and road-closing plans in triplicate and duplicate, 10 scenic-reserve plans, and 20 mining special-claim plans in duplicate and triplicate, with complete sets of licenses, &c., all with traverse reduction sheets and schedules or descriptions; also 48 applications for bringing land under the Land Transfer Act have been examined, passed, and recorded on all necessary maps in the usual way. Tracings were made for the Forestry Department, maps of trig. stations, with their values, were supplied to the Geological Department, various post-offices were located on postal maps, locality plans were furnished to the Justice and Police Departments, plans were coloured for the Roads Department, 413 paper and cloth tracings were made showing land transactions for the Valuation Department, also coloured lithographs to show proposed Land Board members' districts, and various tracings and descriptions for gazetting purposes. 209 miscellaneous tracings, along with copies of traverse sheets, were made up; 15 maps were drawn for photo-lithography, inclusive of districts and towns above-mentioned. Diagrams were placed on 649 certificates of title in duplicate, 90 miscellaneous leases in duplicate, 25 leases in perpetuity in triplicate, 31 occupation leases in triplicate, 21 occupation-with-right-of-purchase licenses in triplicate, 3 timber licenses in duplicate, 2 cash certificates in duplicate, 4 agricultural leases in duplicate, 2 small-grazing-run leases in triplicate, 4 pastoral licenses in triplicate, and 86 certificates under warrant in triplicate; making in all a total of 2,003 copies. There were 250 copies of the Town of Arrowtown printed, 440 various other impressions taken, 1,120 maps and tracings mounted, 3 books bound, and numerous maps and other documents repaired prior to the 10th November, 1906, about which time Mr. W. J. Pearce, our lithographer, was seized with illness, which, I regret to say, terminated fatally. Mr. Pearce was noted for his conscientious discharge of duty, and is greatly missed. In the meantime, his late duties are being partially carried out by one or other of the draughting staff as occasion requires, until another lithographic printer has been appointed.

Proposed Operations for Year 1907-8.—During the year now current the operations will be more extensive and varied than usual, except during the year under review. Blackstone Hill and Lee Stream Runs, subdivided into a number of small grazing-runs, are almost completed. Portion of the former of these, comprising two small blocks of 1,500 and 5,200 acres, are being surveyed for closer settlement. The survey of Airedale Estate is now being effected, while several other estates have been, or are about to be, acquired under the Land for Settlements Act, and will require to be surveyed and placed on the market during the year. This will necessitate the employment of one or two surveyors in addition to those now employed.

During the year there have been some important changes in the *personnel* of the staff. In June last Mr. District Surveyor Wilnot was appointed to the position of Inspecting Surveyor and Chief Draughtsman for Westland. In losing his services we are deprived of a gentleman with an intimate knowledge of this district, and a surveyor not only with a thorough knowledge of his profession but also invariably reliable and accurate. In losing him, and also on a previous occasion Mr. District Surveyor Langmuir, and the services of Mr. District Surveyor Neill, temporarily transferred to Gisborne on account of illness, this district has lost men at the head of their profession.

D. BARRON,
Chief Surveyor.

SOUTHLAND.

Rural and Suburban.—Under this heading 10,625 acres, consisting partly of bush and partly of open land, was subdivided into 67 sections, at an average cost per acre of 1'69s., slightly under last year's cost; but considering the various surveys were widely scattered, the rate per acre may be considered fair and reasonable.

Town Surveys and Native Land Court Surveys.—Of the former, 94 acres (Greenhills Township and Brydone Village) was subdivided into 219 allotments, at an average cost per allotment of 10s.; of the latter class of work none was undertaken during the year.

Gold-mining Surveys.—Of this class of work there was 566 acres surveyed into 9 sections, at a cost per acre of 4'4s., consisting of special and dredging claims, slightly in excess of the area treated last year, and at a slightly reduced cost per acre. These surveys were all executed by private surveyors on the fee system, cost being paid out of deposits by applicants.

Roads and Railways.—Under this heading 24.1 miles was surveyed, at an average cost of £23.1 per mile. Of this length, 13.2 miles of roads was surveyed through rough bush country by the staff; at a cost of £25.4 per mile—lines short and intricate, and much labour in carrying in bear-

ings to control the work. The balance, 10·9 miles, consisted of railway land plan surveys through bush country, was completed by two private surveyors for the Public Works Department, at a cost per mile of £20·3.

Other Work.—This is chargeable with £37 7s. 4d., which was incurred in inspecting roads, survey inspections, reports for Land Board, and inspection and reports in connection with bush fires which swept through some 15,000 acres in this land district.

Land Transfer Surveys.—Mr. J. L. Dickie, Land Transfer Draughtsman, reports as follows: The number of plans received for deposit was 83, comprising 262 subdivisions, representing 4,219 acres, which have all been examined and approved. Diagrams were placed on 487 certificates of title in duplicate, 8 in triplicate, and 13 single copies, or 1,011 marginal plans in all. There were also thirty-six instruments of title examined as to area, &c. He also reports that the new section index and plan register have both been brought up to date.

Proposed Operations for Year 1907-8.—At the present time I have Mr. Surveyor Otway inspecting Blocks VI and XI, Alton District, with the object of ascertaining whether the land is suitable or otherwise for settlement; if the former, I propose cutting up this land, about 9,000 acres. This will occupy Mr. Otway for the greater portion of the year, and when finished he will undertake the cutting-up of some 3,000 acres in Blocks XVII and XVIII, Jacob's River Hundred. Mr. Surveyor McPherson, who has just arrived after six months' detention assisting the Otago staff, will undertake and complete the long outstanding surveys in Blocks I and II, Longwood District, left unfinished by the late District Surveyor Mathias, and will cut up the available portions of Blocks V, VII, X, and XI, same district, should time permit. The approximate area in this district is about 6,000 acres, but the surveys in Blocks I and II are very intricate, and will occupy considerable time and entail much patience. Mr. Surveyor Falkiner has commenced and will resurvey Blocks XXIII and XXIV, Invercargill Hundred, abutting on the Seaward Bush Railway. These blocks have recently been swept through by bush-fires, and considerable areas have just been surface-sown with a mixture containing 12 lb. cocksfoot, 10 lb. ryegrass, and 2 lb. white clover to the acre, and I anticipate the greater portion of the 6,000 to 7,000 acres will be readily selected as soon as the survey is completed, and the land offered for selection. The above-enumerated areas will doubtless keep the three surveyors fully employed during the ensuing financial year, so the landless Native surveys mentioned in my last annual report will have to remain in abeyance, or else my staff will have to be considerably increased.

Office-work, &c.—The Chief Draughtsman reports as follows: The number of plans checked and passed during the year was 72, comprising 318 sections, representing 42,723 acres; 13 miles 14 chains of roads taken and closed, and 11 miles of railway land plans. The pictorial map of New Zealand mentioned in last year's report was completed and forwarded to Christchurch Exhibition. As will be seen from the lithographs published, the map is replete with information, and I have no doubt that the lithographs will continue to be much sought after by tourists and the public generally. A large coloured drawing, some 18 ft. in length, was also prepared of the Mount Cook Range, with the object of exhibiting the remarkable features of the Southern Alps of the colony. This was also desired for Exhibition purposes. Original drawings for photo-lithography were made of Waitutu and Hakapoua Districts, the Borough of Campbelltown, and Tokanui Village, and additions and amendments made to Rowallan and Longwood Districts. A new drawing of Invercargill Hundred is in course of preparation. A map is also being prepared showing the mountains of the colony on a scale of 8 miles to the inch. This is intended to complete the 10-mile map of the colony already produced in Head Office, and now ready for publication. There were 34 lithographic tracings for sale plans made, 206 working tracings for surveyors, and 290 miscellaneous tracings, whilst 83 Land Transfer deposited plans were traced for the Valuer-General; 1 Land Transfer record map was compiled. There are still a number of these maps to be prepared, a work which will be proceeded with as time will permit.

A considerable amount of work was done in connection with the landless Native blocks, 224 sheets of awards having been checked, corrected, and copied, involving the recalculation of a great number of areas; 26 schedules in duplicate were prepared for expenditure of "thirds" by local bodies, and plans and descriptions of educational and other endowments, State forests, &c., were made. Diagrams were drawn as follows: Crown leases—88 in quadruplicate, 103 in triplicate, 31 in duplicate, and 33 single; certificates of title in lieu of grants—102 in triplicate, 1 in duplicate, and 2 single; 308 lithographs and plans were mounted.

During the financial year Mr. Otway has been employed on surveys of isolated outstanding selections, some of which have been hanging on for the last six or seven years, and I am pleased to say these surveys have now been nearly brought up to date.

I would also mention with regret that I lost the services of Mr. Surveyor Christophers, who left the service in July last, and went to California, where he is now employed on railway-construction work at a very satisfactory salary. A glance at the tabulated schedule will show that my field staff has been reduced to a minimum, only one being left over the greater part of the year to cope with the current work; but I am pleased to say for the year 1907-8 I will have three staff surveyors at work—viz., Messrs. Otway, Falkiner, and McPherson, whose proposed respective duties are more particularly detailed elsewhere. I again have pleasure in placing on record my thanks and appreciation of the willing co-operation and assistance rendered by my staff in carrying out the many duties pertaining to the year's work.

JOHN HAY,
Chief Surveyor.

APPENDIX II.

THE MAGNETIC OBSERVATORY AND THE MAGNETIC SURVEY.

DURING the year the usual routine observations have been made—magnetic, seismological, and meteorological.

The Observatory buildings have been repainted and the enclosing fence repaired in a durable manner, Australian jarrah timber being used. Minor repairs to the buildings and attachments were executed, so that the whole Observatory is now in thoroughly good order. The Observatory grounds, however, would be improved by levelling in some few places and by resowing with suitable grasses.

The work of reducing results would be greatly facilitated by the use of a comptometer, and I strongly recommend that one be provided of the best pattern.

THE ADIE MAGNETOGRAPHS.

These have been in operation throughout the year, and have worked satisfactorily. The damping-plates added to the vertical-force magnetograph have been instrumental in reducing the disturbing effects of tramway currents to a minimum, so that the curves yield satisfactory hourly values of this force. The disturbing effects on the declination and the horizontal-force magnetograms have been quite negligible. In this connection it is interesting to note that there is a proposal to operate the newly completed Fendalton tramway extension by petrol-driven cars. It is quite possible that these will prove cheaper to work and maintain than the electrically-driven cars.

The magnetograph driving-clock has been regulated at intervals, necessitated probably by its being provided with a wooden pendulum-rod.

The most important of the magnetograms showing magnetic storms are appended, viz.: 1906—15th May, 8th December, 22nd December; 1907—11th January, 14th–15th January, 7th February, 9th February, 10th–11th February, 14th February, 10th–11th March, 12th–13th March, 20th–21st March.

For purposes of comparing the fluctuations, it may be stated that the (original) base line has a scale value of 1 hour = 15.4 mm., and that the ordinates on the original have the following values:—

| | |
|--------------------------------|---------------------------------|
| Declination curve | +1 mm. = -1.125' arc. |
| Horizontal force curve | +1 mm. = -0.000047 c.g.s. unit. |
| Vertical force curve | +1 mm. = -0.000035 c.g.s. unit. |

Absolute observations for the purpose of standardizing the magnetograph curves were taken throughout the year.

The work of reducing and tabulating the hourly values of magnetic elements for each day has been proceeded with.

The Tables of Hourly Values of Magnetic Elements at Christchurch for the year 1902 will be published separately in June, and those for succeeding years are nearing completion, and will shortly follow.

MILNE SEISMOGRAPH No. 16.

This instrument has been kept in operation throughout the year, and has needed only occasional readjustment. The driving-clock was dismounted and cleaned on the 3rd August.

A list of quakes recorded during the year is appended.

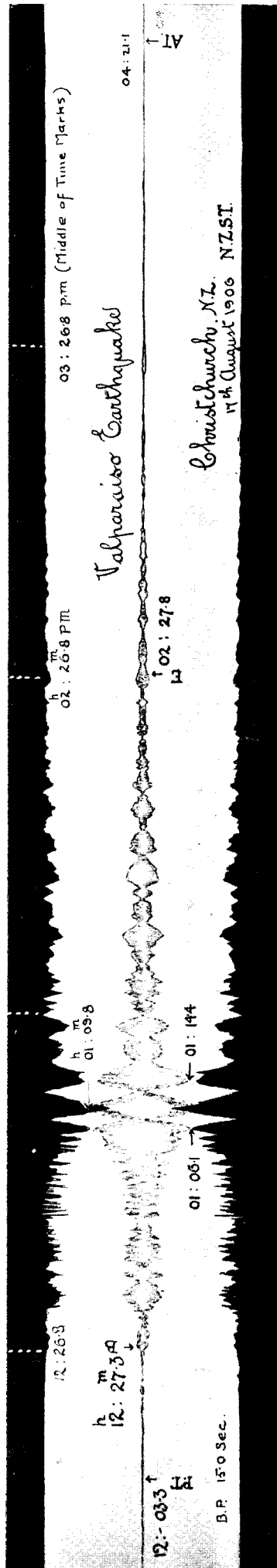
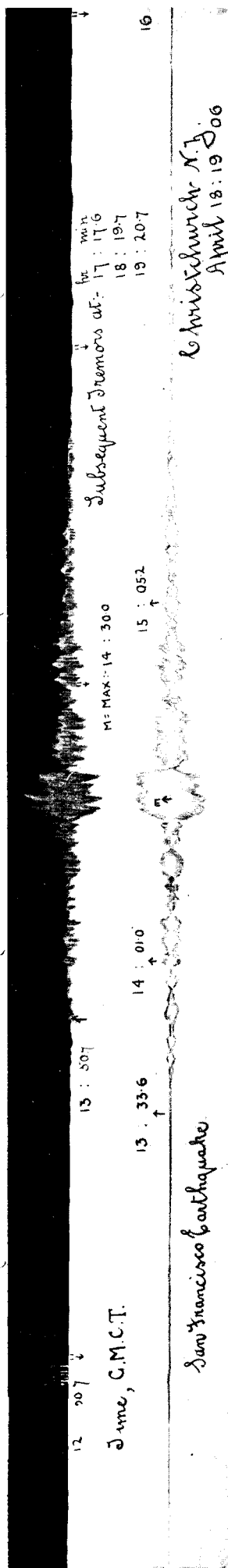
"Night tremors" still continue to give some trouble, and in few cases even mask the record of preliminary tremors and subsequent tremors. It is expected that light will be thrown upon the origin of these by a consideration of the rates of fall and rise of temperature indicated on the thermograms, which may lead to a means of diminishing the frequency of their occurrence.

The Christchurch seismograms of the San Francisco earthquake of the 18th April, 1906, and of the perhaps even larger Valparaiso earthquake of the 17th August, are appended. The times in the table given for the different phases are Greenwich mean civil time. The times noted on the reproduction of the Valparaiso quake are, however, New Zealand standard time (11½ hours ahead of Greenwich). These two earthquakes are probably being more extensively studied at the present time by leading seismologists than any of previous occurrence, the former especially so, since its place of origin is accurately disclosed by the formation of a great fault extending for over a hundred miles to the south of San Francisco. One great lesson learnt from the effects of the San Francisco quake has been that, for the purposes of reinforcing concrete used in building, wire ropes are immeasurably inferior to steel bars in preventing fracture during earthquakes.

METEOROLOGICAL OBSERVATIONS.

These comprise 9.30 a.m. observations of the temperature, pressure, and humidity of the air, its direction and velocity of motion, and the amount of cloud and rainfall, with observations of maxima and minima of temperature. By request a monthly abstract is furnished to the Meteorological Department, and the daily observations are published for the information of the public. The thermograph recording air-temperatures has now been placed in a separate screen, at the same height however above the ground as the screen containing the standard and self-recording thermometers. This arrangement will permit of a somewhat freer circulation of air around the apparatus, and yield the most reliable indications possible.

Appended will be found a tabular statement showing the rainfall as recorded at the Observatory since the year 1902.



MAGNETIC SURVEY.

The reduction of the observations made in the summer of 1906 has progressed, and it is expected before the end of the year to have the charts of the isomagnetism drawn for the whole of the main islands. It is hoped that it will be possible early next summer to visit and observe at the outlying islands. The loan of the field magnetometers has been courteously extended for this purpose by the committee of the National Physical Laboratory, and all the leading authorities and workers on terrestrial magnetism are earnestly desirous of observations being extended in that direction. Dr. Bauer, Director of the Department of Terrestrial Magnetism of the Carnegie Institution, and late Superintendent of the same department of the United States Coast and Geodetic Survey, is especially anxious for such observations to be made, in view of the fact that the Carnegie Institution is now carrying out an ocean magnetic survey in the northern and equatorial Pacific. It is expected to do this work in the course of the projected general scientific expedition which is being organized to proceed to the outlying islands, and which would do work of a biological and geological as well as a magnetic nature. The magnetic observations will be of great service to navigation.

Through the courtesy of the Observer and of the Telegraph Department, thirty-six time signals for chronometer-rating have been received from the Wellington Observatory during 1906. Both the chronometers in use at the Christchurch Observatory have proved reliable, and maintained good rates throughout the year.

I have to acknowledge with thanks the receipt of various valuable publications from other observatories, both British and foreign, too numerous to mention.

In conclusion, I wish to acknowledge the valuable services of my assistant, Mr. B. V. Pemberton, throughout the year.

HENRY F. SKEY, B.Sc.,
Magnetic Observer.

RECORDS OF MILNE SEISMOGRAPH NO. 16, AT CHRISTCHURCH.

Latitude: 43° 31' 50" S. Longitude: 172° 37' 18" E. Time employed: Greenwich Mean Civil Time.

Time: G.M.C.T., as stated above. P.T. = Preliminary tremors less than 2mm. complete range; A.T. = After-tremors less than 2mm. complete range; B.E. = Beginning and end of vibrations not less than 2mm.; Amp. = Half range in millimeters; B.P. = Boom period.

| Date. | P.T. from | B. | Maxima. | | Amp. | E. | A.T. till | B.P. | Remarks. |
|--------------|-----------------|-----------------|-----------------|-----------------|--------------|-----------------|-----------------|---------------|--|
| | | | From | To | | | | | |
| APRIL, 1906. | | | | | | | | | |
| 14 | H. m. 4 02.9 | H. m. 4 07.5 | H. m. 4 11.1 | H. m. 4 11.6 | Mm. 17.0+ | H. m. 4 34.4 | H. m. 5 59.2 | Sees. 15.1 | ? Origin New Hebrides. |
| 18 | 13 33.6 | 14 01.0 | 14 30.0 | .. | 6.7 | 15 05.2 | 16 54.8 | .. | Subsequent tremors at 17 17.6, 18 19.7, 19 20.7. |
| 19 | 6 15.4 | 6 21.6 | 7 10.3 | .. | 7.0 | 7 25.7 | 10 24.6 | .. | |
| 29 | 6 44.9 | .. | 6 47.0 | .. | 0.4 | .. | 7 23.2 | .. | |
| MAY, 1906. | | | | | | | | | |
| 2 | 13 18.1 | .. | 13 24.8 | .. | 1.4 | .. | 13 59.5 | .. | Small, and in middle of night tremors. |
| 12 | 8 11.5 | .. | 8 18.1 | .. | 0.45 | .. | 8 32.2 | .. | |
| 13 | .. | .. | 12 01.3 | .. | 0.55 | .. | .. | .. | |
| 15 | .. | .. | 13 23.2 | .. | 0.5 | .. | .. | .. | |
| 17 | 5 28.4 | .. | 5 34.6 | .. | 1.2 | .. | 6 10.8 | .. | |
| 18 | 23 41.9 | .. | 23 43.9 | .. | 0.9 | .. | 24 09.8 | .. | In middle of night tremors. |
| 19 | 0 41.9 | .. | 0 43.9 | .. | 0.45 | .. | 1 03.6 | .. | |
| 19 | 2 31.5 | .. | 2 32.6 | .. | 0.4 | .. | 2 57.4 | .. | |
| 19 | .. | .. | 11 38.8 | .. | 0.8 | .. | .. | .. | |
| 21 | 12 58.8 | .. | 13 16.9 | .. | 1.0 | .. | 13 44.3 | 15.1 | |
| JUNE, 1906. | | | | | | | | | |
| 1 | 4 40.2 | 5 01.4 | 5 02.9 | 5 19.5 | 3.5 | 5 44.3 | 7 43.3 | 15.0 | Thickening of line. A.T.s obscured by night tremors. |
| 2 | 4 29.8 | .. | 4 34.0 | .. | 0.5 | .. | 5 25.7 | .. | |
| 2 | 6 28.8 | .. | .. | .. | .. | .. | 6 46.4 | .. | |
| 2 | 14 43.2 | .. | 14 48.4 | .. | 0.9 | .. | Indefinite | .. | |
| 5 | 0 28.0 | .. | 0 32.2 | .. | 0.5 | .. | 1 16.6 | .. | Very slight. Very slight thickening. In middle of night tremors. |
| 6 | 0 00.1 | .. | .. | .. | .. | .. | 0 04.1 | .. | |
| 9 | 23 18.6 | .. | .. | .. | .. | .. | 23 22.9 | .. | |
| 22 | .. | .. | 12 35.2 | .. | 0.4 | .. | .. | .. | Thickening merely. |
| 24 | 7 38.1 | .. | 7 49.5 | .. | 0.35 | .. | 8 03.0 | .. | |
| 30 | 10 21.5 | .. | .. | .. | .. | .. | 10 26.7 | .. | |
| JULY, 1906. | | | | | | | | | |
| 12 | 10 21.5 | .. | 10 41.0 | .. | 0.1 | .. | 11 03.1 | .. | Very slight thickening. P.T. and A.T. obscured by night tremors. |
| 12 | .. | .. | 11 21.5 | .. | .. | .. | .. | .. | |
| 17 | Indefinite | .. | 15 45.7 | 15 52.9 | 0.4 | .. | Indefinite | .. | |
| 19 | 8 19.6 | .. | 8 24.7 | .. | 0.1 | .. | 8 38.0 | .. | Very slight. |
| 22 | 7 18.7 | .. | 7 25.9 | .. | 0.4 | .. | 7 35.1 | .. | |
| 22 | 8 14.1 | .. | .. | .. | .. | .. | 8 20.8 | .. | |
| 23 | 6 26.2 | .. | 6 41.6 | .. | 0.35 | .. | 7 08.8 | .. | |
| 31 | 11 32.5 | .. | 11 39.6 | .. | 0.45 | .. | 11 56.9 | .. | |

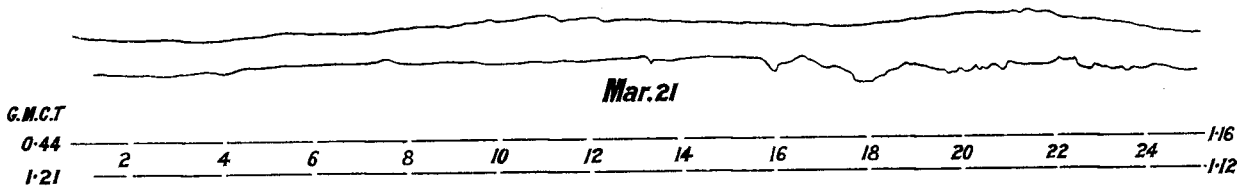
RECORDS OF MILNE SEISMOGRAPH NO. 16, AT CHRISTCHURCH—continued.

| Date. | P.T. from | B. | Maxima. | | Amp. | E. | A.T. till | B.P. | Remarks. |
|------------------|-----------------|-------------|---|--|------------|-------------|-----------------|---------------|--|
| | | | From | To | | | | | |
| AUGUST, 1906. | | | | | | | | | |
| 3 | H. m. 3 20·3 | H. m. .. | H. m. 3 21·8 | H. m. .. | Mm. 0·9 | H. m. .. | H. m. 4 01·7 | Secs. 15·0 | Slight swelling. |
| 3 | .. | .. | 4 53·4 | .. | .. | .. | .. | .. | |
| 5 | 1 24·0 | 2 27·1 | 1 28·6 | .. | 3·4 | 1 30·2 | 2 21·9 | .. | |
| 7 | 22 46·8 | .. | 22 48·8 | .. | 0·35 | .. | 22 58·1 | .. | |
| 8 | 1 13·6 | .. | 1 18·8 | .. | 0·25 | .. | 1 31·2 | .. | |
| 9 | 11 20·1 | .. | 11 23·2 | .. | 0·6 | .. | 11 34·6 | .. | { Subsequent tremors:— 6 33·0 to 7 14·0, minute; 7 41·0 to 8 07·0, " 9 22·0 to 10 12·0, " 13 23·0 to 13 25·0, large; and minute to 14 15·2. |
| 12 | 6 25·8 | .. | 6 27·8 | .. | 0·2 | .. | 6 40·1 | 15·0 | |
| 12 | 9 25·8 | .. | 9 36·0 | .. | 0·25 | .. | 9 56·0 | .. | |
| 17 | 0 33·3 | 0 57·3 | { (a) 1 36·1 (b) 1 39·8 | (c) 1 44·4 (Valparaiso earthquake.) | 12·0 | 2 57·8 | 4 51·1 | .. | |
| 18 | 6 56·8 | 7 01·5 | 7 03·5 | .. | 1·85 | 7 23·2 | 8 35·6 | .. | |
| 22 | Indefinite | 19 45·6 | 19 48·7 | .. | 5·4 | 19 54·4 | Indefinite | .. | P.T.s and A.T.s obscured by continuous tremors. |
| 23 | 1 44·6 | .. | 1 48·8 | .. | 0·8 | .. | 2 05·2 | .. | P.T.s and A.T.s obscured by continuous tremors. |
| 23 | Indefinite | 16 29·6 | 16 30·6 | .. | 1·25 | 16 33·8 | Indefinite | .. | |
| 26 | 6 16·7 | 6 30·7 | 6 34·8 and 6 45·2 | .. | 3·3 | 6 51·9 | 8 40·0 | .. | Preceded and followed by continuous small tremors. |
| 30 | 3 03·5 | 3 38·7 | 3 46·5 | .. | 1·4 | 3 48·0 | 4 31·4 | .. | |
| SEPTEMBER, 1906. | | | | | | | | | |
| 6 | 19 06·0 | 19 11·2 | 19 11·7 | .. | 2·4 | 19 16·3 | 20 53·6 | .. | Preceded by small night tremors. |
| 14 | 13 34·8 | .. | 13 53·0 | .. | 0·8 | .. | Indefinite | .. | A.T. obscured by night tremors. |
| 14 | 16 12·1 | 16 19·3 | 16 30·2 16 31·7 to 16 33·8 16 35·9 to 16 36·9 | .. | 20·0 | 17 40·0 | " | .. | Ditto. |
| 15 | 2 43·2 | .. | .. | .. | .. | .. | 2 46·3 | .. | Minute swelling. |
| 16 | 4 24·2 | .. | 4 26·8 | .. | 0·4 | .. | 4 36·6 | .. | A.T. obscured by night tremors. |
| 17 | 8 52·8 | 9 02·6 | 9 06·2 | .. | 3·2 | 9 17·0 | Indefinite | .. | |
| 21 | 1 28·0 | 1 49·7 | 1 53·3 | .. | 1·7 | 1 54·9 | 2 37·8 | .. | Minute tremor. Shock note at 20 10·0 at Christchurch, Cheviot, and Kaikoura. |
| 21 | .. | .. | 20 08·2 | .. | .. | .. | .. | .. | |
| 29 | Indefinite | .. | 14 12·7 | .. | 0·8 | .. | Indefinite | .. | Probably night tremor. |
| OCTOBER, 1906. | | | | | | | | | |
| 2 | 0 10·2 | .. | 0 13·8 | .. | 0·3 | .. | 0 43·3 | .. | { Subsequent tremors:— 5 56·7 to 6 17·9, small; 6 34·0 to 6 45·4, " 7 07·1 to 7 10·7, minute; 7 32·9 to 7 40·2, small. |
| 2 | 1 59·8 | 2 07·1 | 2 22·1 | 2 23·6 | 17·0+ | 3 18·5 | 5 17·9 | .. | |
| 2 | Indefinite | .. | 12 34·0 | .. | 0·85 | .. | Indefinite | .. | |
| 2 | .. | .. | 14 51·6 | .. | 0·85 | .. | .. | .. | |
| 3 | 0 18·1 | .. | 0 29·4 and 0 45·5 | .. | 0·4 | .. | 1 21·2 | .. | |
| 4 | 5 06·5 | .. | .. | .. | .. | .. | 5 16·8 | .. | Thickening of line. |
| 11 | 5 18·8 | .. | 5 36·9 | .. | 0·4 | .. | 6 15·2 | .. | Thickening of line. |
| 18 | 3 06·3 | .. | .. | .. | .. | .. | 3 25·5 | .. | |
| 27 | 3 52·5 | .. | 4 08·0 | .. | 0·45 | .. | 4 22·5 | .. | |
| 29 | 1 33·9 | .. | 1 58·5 | .. | 0·4 | .. | 2 29·3 | 15·0 | |
| NOVEMBER, 1906. | | | | | | | | | |
| 5 | 23 06·2 | .. | 23 34·2 | .. | 0·95 | .. | 24 21·7 | 15·0 | P.T. and A.T. obscured by night tremors. |
| 9 | Indefinite | 15 09·6 | 15 11·5 | .. | 2·8 | 15 14·0 | Indefinite | .. | |
| 10 | 5 16·2 | .. | 5 26·5 | .. | 1·1 | .. | 5 56·9 | .. | P.T. and A.T. obscured by night tremors. |
| 12 | 4 12·5 | .. | 4 14·6 | .. | 2·5 | .. | 4 21·8 | .. | |
| 14 | Indefinite | 17 50·2 | 17 57·9 | .. | 5·6 | 18 07·2 | Indefinite | .. | |
| 19 | 7 31·0 | 7 39·6 | 8 01·7 | 8 07·3 | 10·0 | 8 49·9 | 10 58·1 | .. | |
| 19 | 22 05·6 | .. | 22 10·7 | .. | 1·2 | .. | 22 57·9 | .. | |
| DECEMBER, 1906. | | | | | | | | | |
| 7 | 23 51·1 | .. | 23 52·1 | .. | 0·9 | .. | 24 01·4 | .. | Thickening of line. |
| 15 | 3 12·2 | .. | .. | .. | .. | .. | 3 41·2 | .. | |
| 17 | 22 09·4 | .. | 22 12·5 | .. | 0·75 | .. | 23 08·3 | .. | In middle of continuous tremors. |
| 18 | Indefinite | 20 30·1 | 20 30·6 and 20 35·7 | .. | 2·5 | 21 00·0 | Indefinite | .. | |
| 19 | 0 31·6 | 0 36·8 | 0 44·5 | .. | 8·5 | 1 40·9 | 3 49·2 | .. | |
| JANUARY, 1907. | | | | | | | | | |
| 4 | 5 31·9 | 5 43·4 | 6 07·0 and 6 12·2 | 6 22·6 | 4·5 | 7 31·9 | 9 26·7 | .. | P.T. and A.T. obscured by night tremors. |
| 7 | Indefinite | 13 59·5 | 14 02·7 | .. | 14·0 | 14 20·3 | Indefinite | .. | |
| 8 | 5 42·0 | .. | 6 21·3 | .. | 0·5 | .. | 7 18·2 | .. | |
| 14 | 9 54·7 | .. | 9 56·8 | .. | 1·0 | .. | 10 32·0 | .. | |

Dec. Chch.

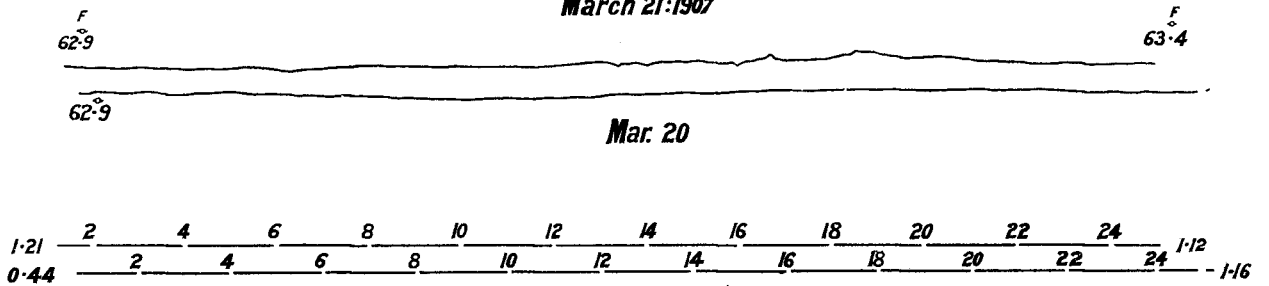
C-1A.

March 20: 1907



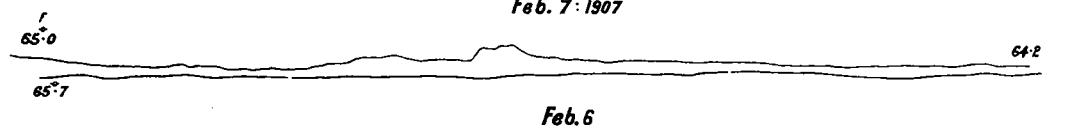
V. F. Chch.

March 21: 1907



V.F. Chch.

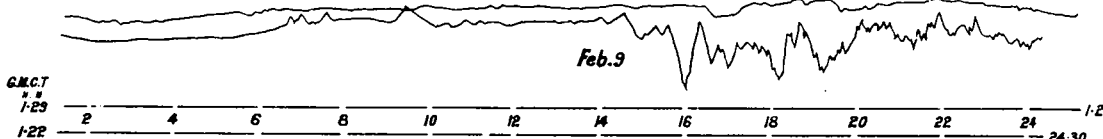
Feb. 7: 1907



Feb. 6

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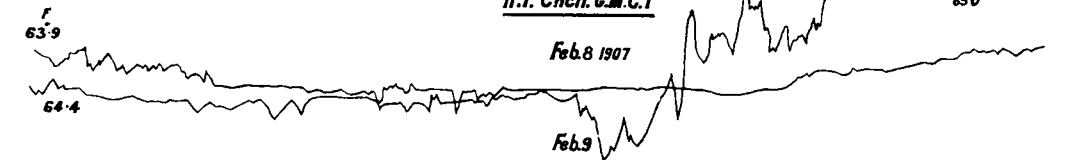
Feb. 8 1907



Feb. 9

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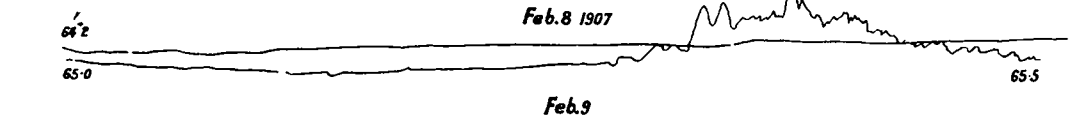
Feb. 8 1907



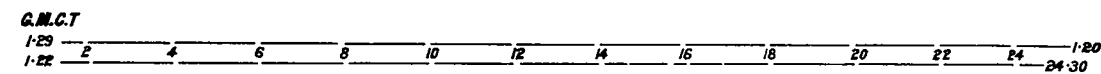
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V.F. Chch.

Feb. 8 1907

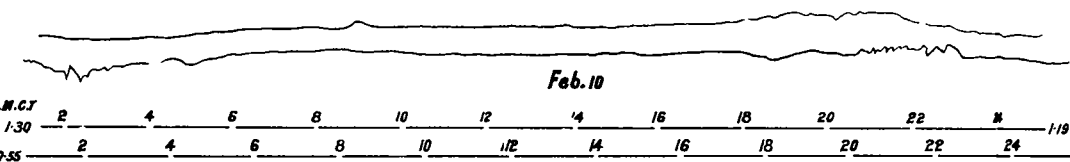


Feb. 9



Dec. Chch.

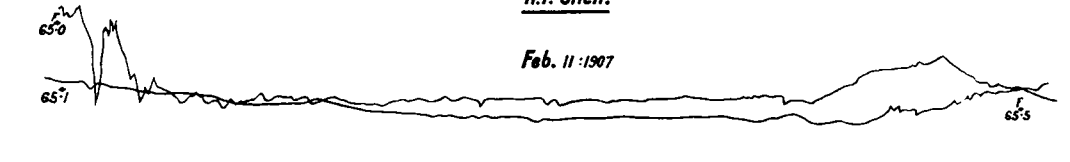
Feb. 11 1907



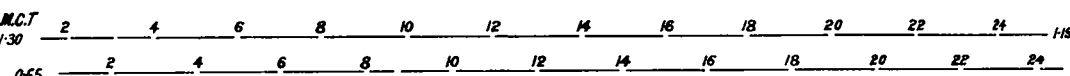
Feb. 10

H.F. Chch.

Feb. 11: 1907

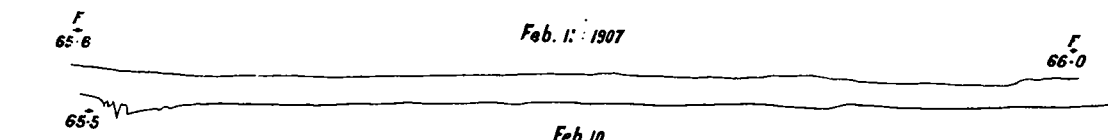


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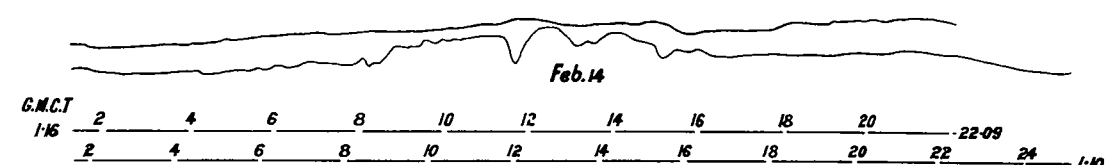
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Feb. 10

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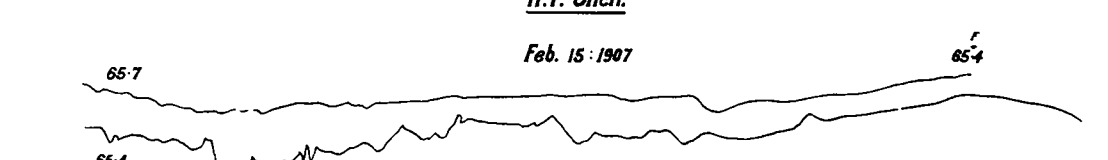
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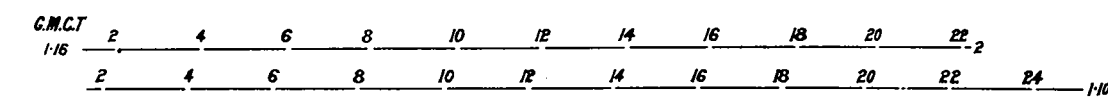
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H.F. Chch.

Feb. 15: 1907

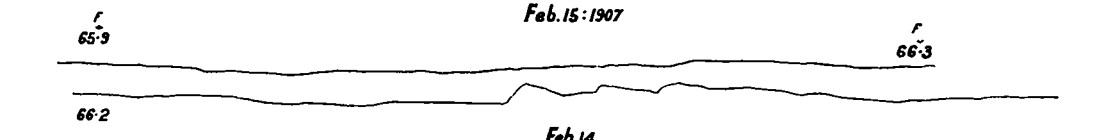


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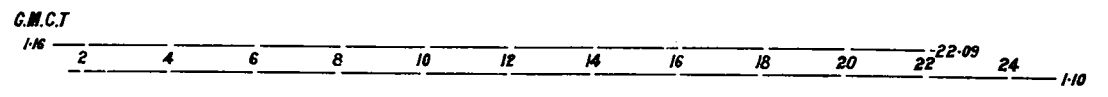


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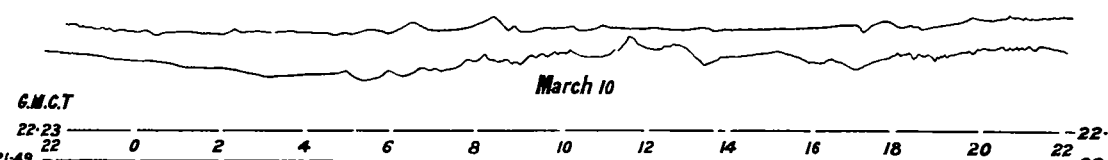


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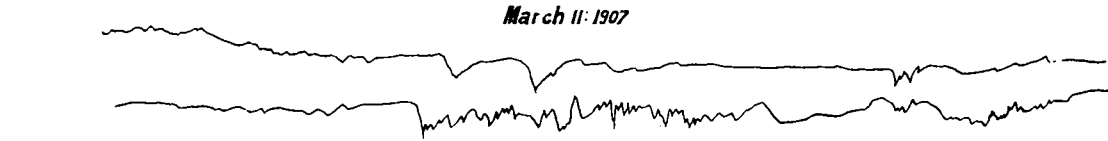
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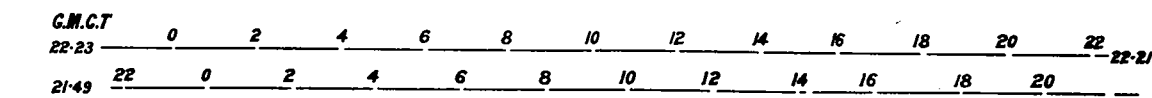
March 10

H.F. Chch.

March 11: 1907

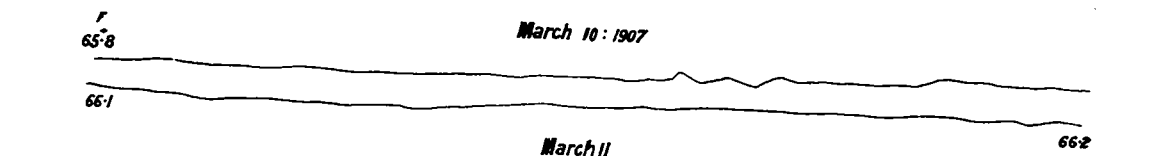


March 10

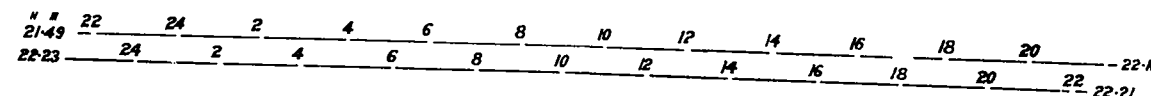


V.F. Chch. G.M.C.T

March 10: 1907

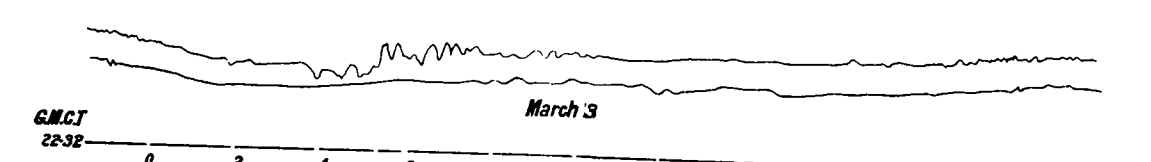


March 11

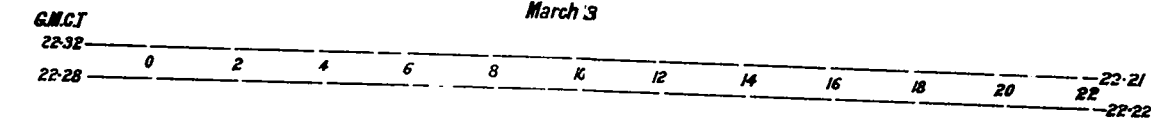


Dec. Chch.

March 12: 1907

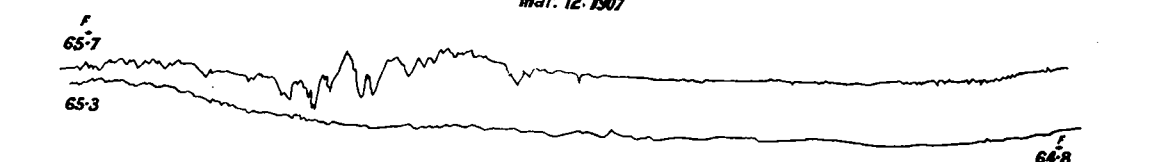


March 13

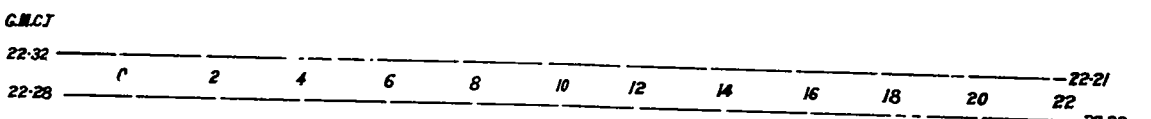


H.F. Chch.

Mar. 12: 1907

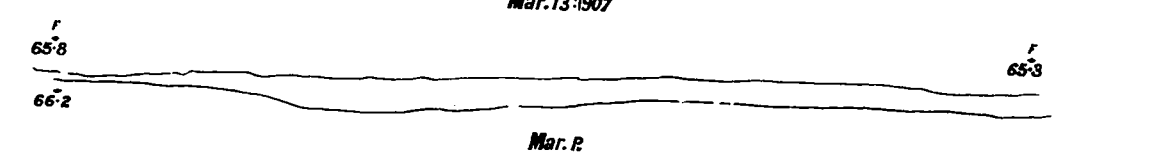


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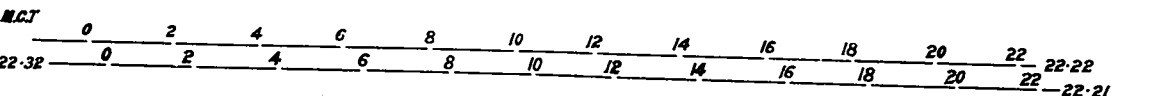


V.F. Chch.

Mar. 13: 1907

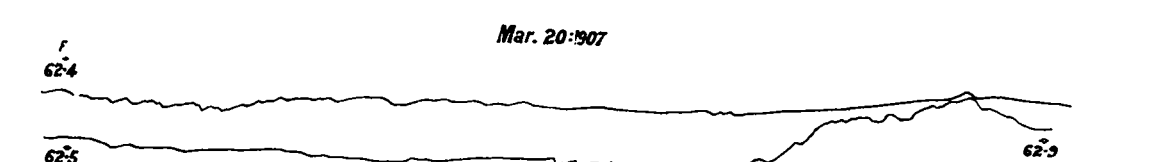


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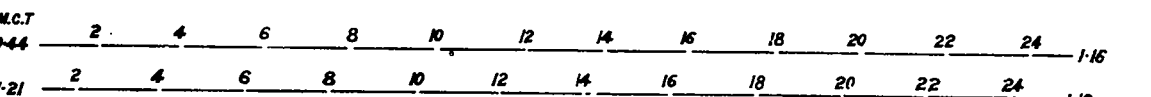


H.F. Chch.

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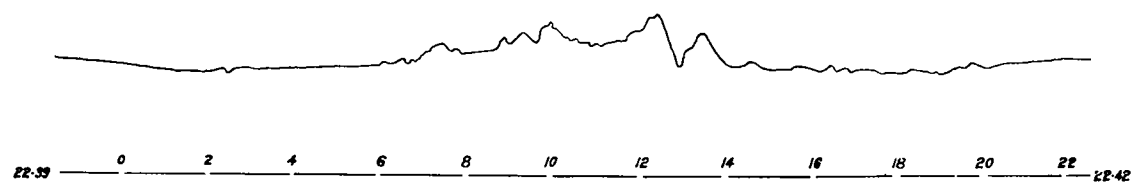


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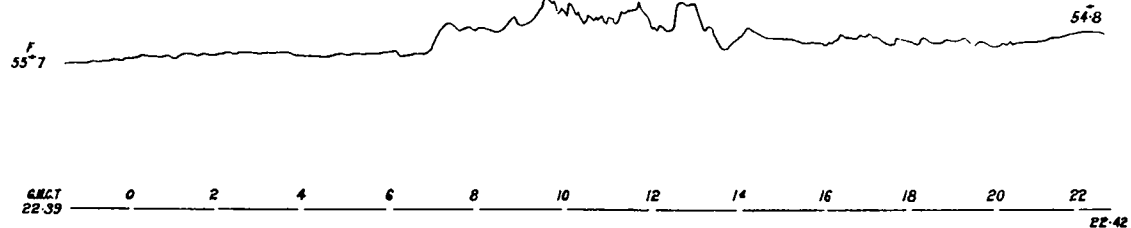


Dec. Chch.

May 15, 1906. G.M.C.T.

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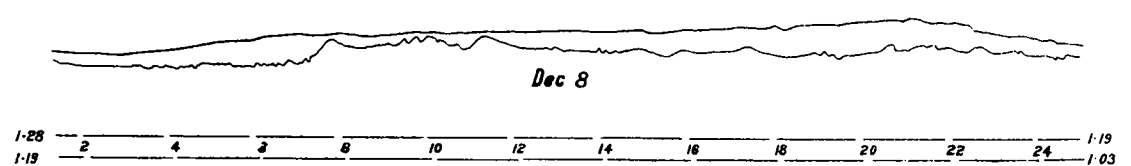
May 15 1906

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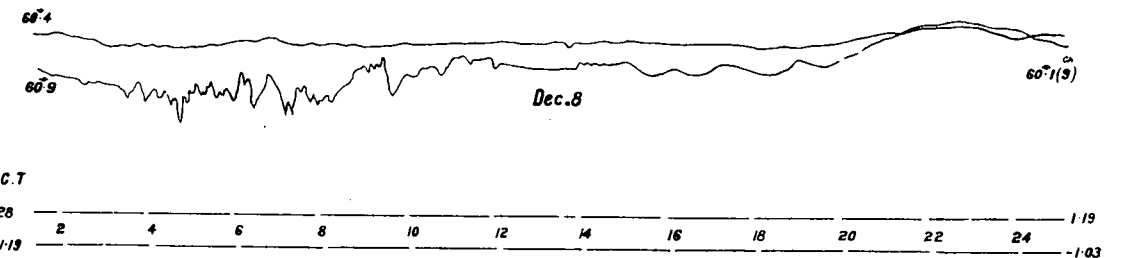
May 15 1906.

Dec. Chch.

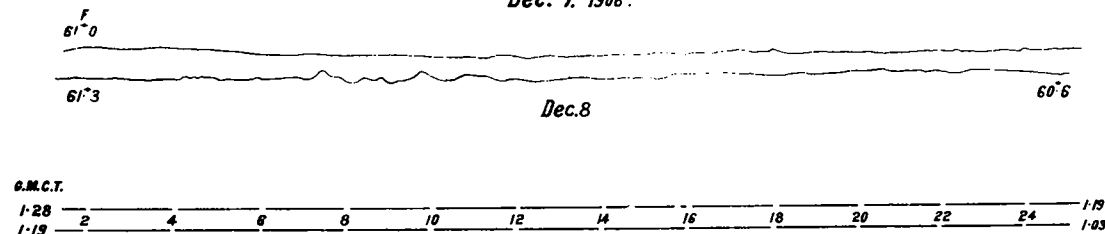
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H.F. Chch.

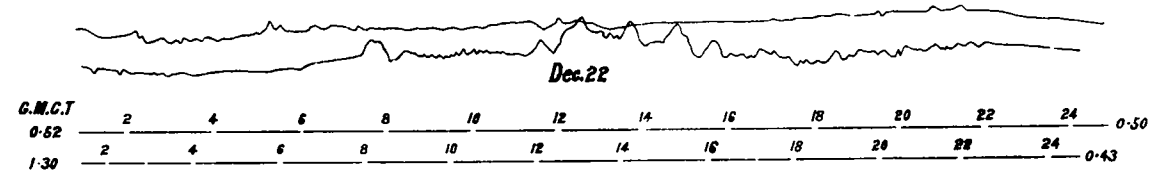
Dec. 7 1906.

V.F. Chch.

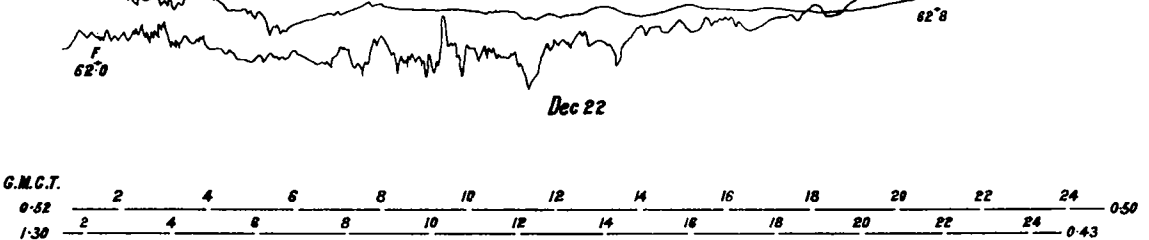
Dec. 7, 1906.

Dec. Chch.

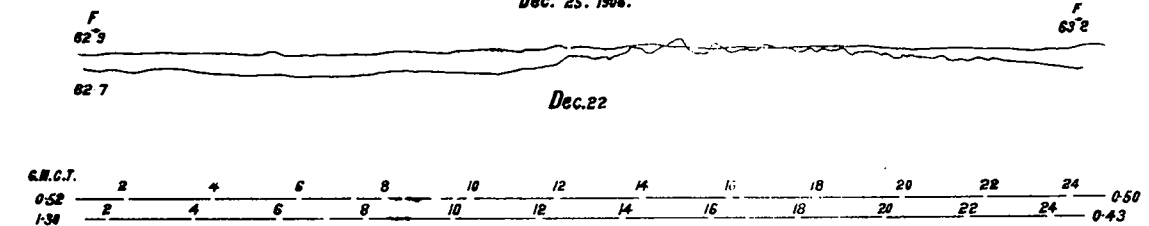
Dec. 23, 1906.

H.F. Chch.

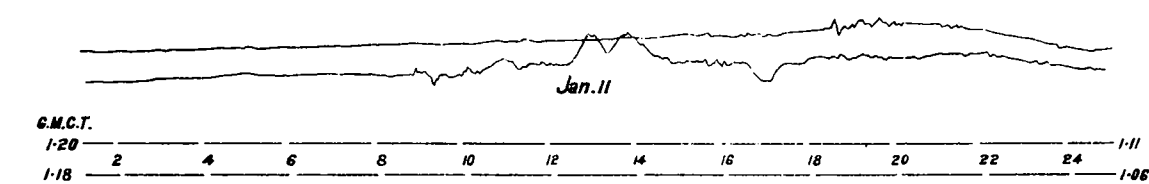
Dec. 23, 1906.

V.F. Chch.

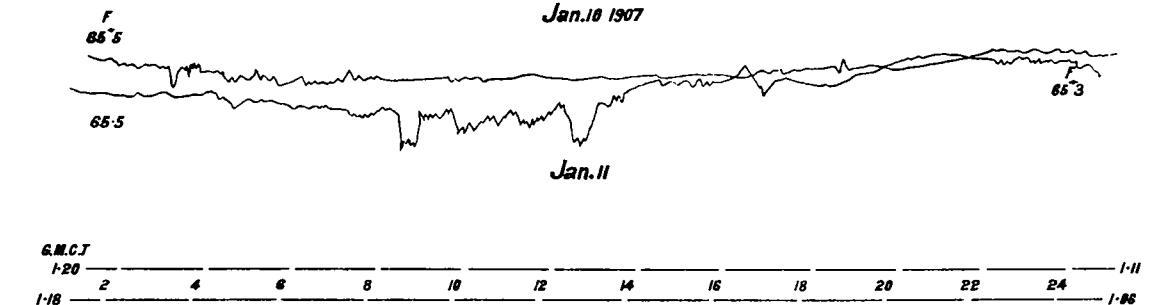
Dec. 25, 1906.

Dec. Chch.

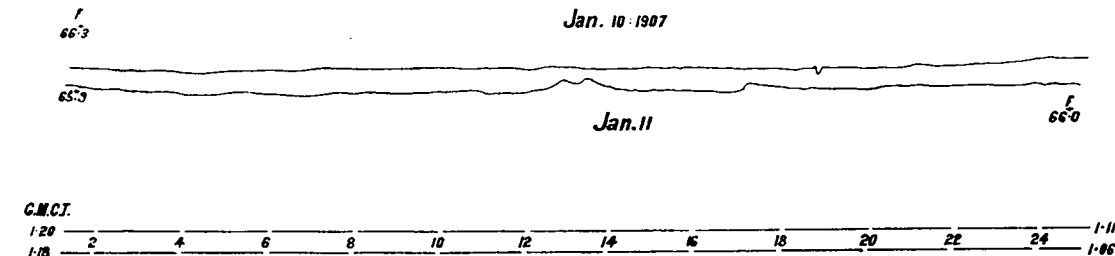
Jan. 10 1907.

H.F. Chch.

Jan. 10 1907

V.F. Chch.

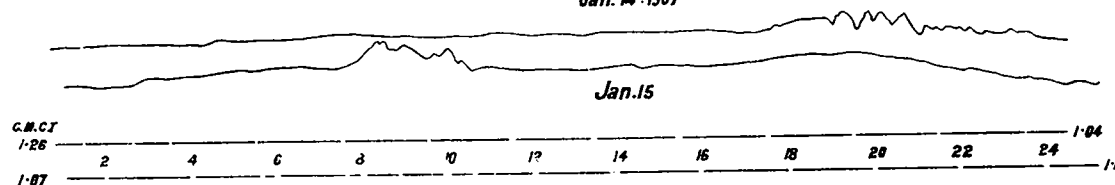
Jan. 10 1907



Jan. 11

Dec. Chch.

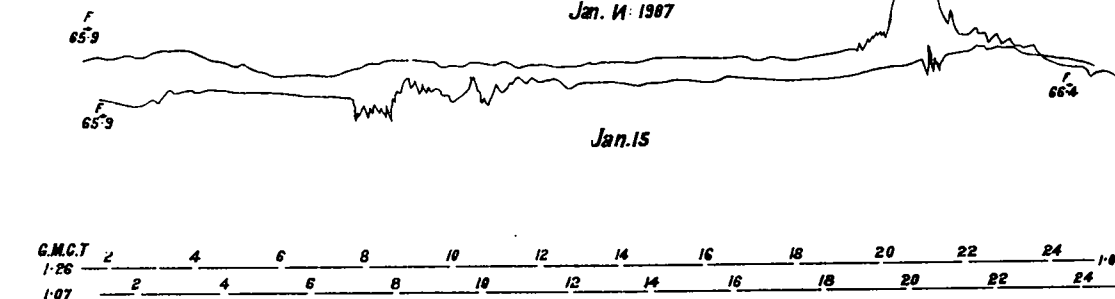
Jan. 14 1907



Jan. 15

H.F. Chch.

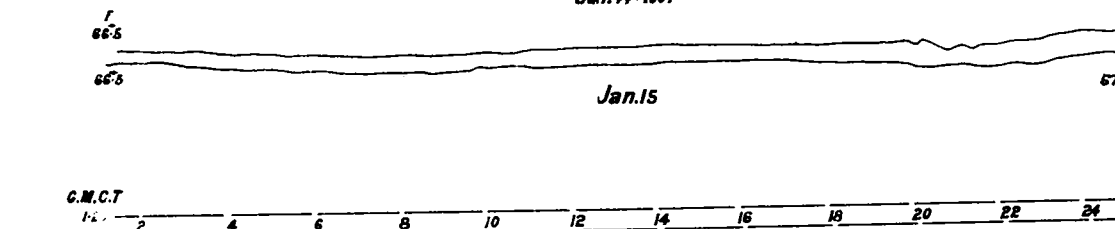
Jan. 14 1907



Jan. 15

V.F. Chch.

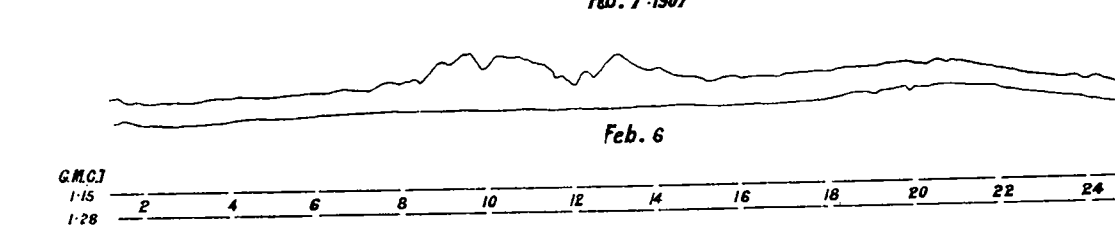
Jan. 14 1907



Jan. 15

Dec. Chch.

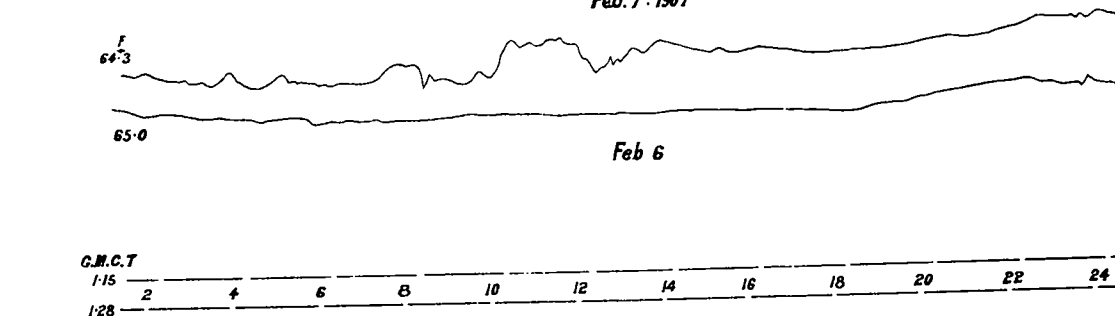
Feb. 7 1907



Feb. 6

H.F. Chch.

Feb. 7 1907



Feb 6

RECORDS OF MILNE SEISMOGRAPH No. 16, AT CHRISTCHURCH—*continued*.

| Date. | P.T. from | B. | Maxima. | | Amp. | E. | A.T. till | B.P. | Remarks. |
|-----------------|---------------------|------------------|-------------------|-------------|-------------|------------------|---------------------|-------------|---|
| | | | From | To | | | | | |
| FEBRUARY, 1907. | | | | | | | | | |
| 8 | H. m. Indefinite | H. m. 20 01·3 | H. m. 20 01·8 | H. m. .. | Mm. 2·05 | H. m. 20 10·6 | H. m. Indefinite | Secs. .. | P.T. and A.T. obscured by night tremors. |
| 16 | 21 23·4 | 21 29·1 | 21 31·7 | .. | 4·5 | 21 34·8 | 22 55·5 | .. | |
| 27 | .. | .. | 9 19·1 and 9 21·1 | .. | .. | .. | .. | .. | Very small. |
| MARCH, 1907. | | | | | | | | | |
| 13 | 1 31·3 | .. | .. | .. | .. | .. | 1 36·9 | .. | Thickening of line merely. |
| 15 | 0 46·3 | .. | .. | .. | .. | .. | 1 49·4 | .. | |
| 18 | 5 08·4 | .. | 5 10·0 | .. | .. | .. | 5 15·6 | .. | Very slight. " |
| 18 | 7 34·9 | .. | .. | .. | .. | .. | 7 45·2 | .. | Minute. |
| 27 | 0 59·1 | .. | .. | .. | .. | .. | 1 31·2 | .. | Minute swellings. |
| 29 | 6 06·8 | .. | 6 08·6 | .. | 1·25 | .. | 6 14·7 | .. | |
| 31 | Indefinite | 22 13·8 | 22 17·9 | .. | 2·5 | 22 32·4 | Indefinite | 15·0 | In middle of night tremors. |

RAINFALL RECORDED AT THE MAGNETIC OBSERVATORY, CHRISTCHURCH, from 1902 to 1907.

| Month. | | | | 1902. | 1903. | 1904. | 1905. | 1906. | 1907. |
|-----------|-----|-----|-----|--------|--------|--------|--------|--------|-------|
| | | | | In. | In. | In. | In. | In. | In. |
| January | ... | ... | ... | ... | 2·469 | 1·742 | 1·648 | 2·569 | 0·931 |
| February | ... | ... | ... | 0·810 | 1·413 | 1·974 | 2·385 | 3·974 | 0·375 |
| March | ... | ... | ... | 5·365 | 1·009 | 2·837 | 1·785 | 4·237 | 1·801 |
| April | ... | ... | ... | 2·490 | 2·596 | 0·423 | 1·355 | 2·253 | ... |
| May | ... | ... | ... | 2·270 | 3·326 | 3·041 | 0·984 | 2·822 | ... |
| June | ... | ... | ... | 1·860 | 1·311 | 2·819 | 5·000 | 3·478 | ... |
| July | ... | ... | ... | 1·250 | 1·527 | 2·204 | 1·860 | 3·935 | ... |
| August | ... | ... | ... | 1·548 | 1·586 | 2·550 | 1·027 | 1·582 | ... |
| September | ... | ... | ... | 2·582 | 1·396 | 4·080 | 5·522 | 1·311 | ... |
| October | ... | ... | ... | 1·175 | 0·381 | 6·229 | 3·231 | 0·249 | ... |
| November | ... | ... | ... | 0·987 | 1·671 | 1·386 | 2·294 | 2·308 | ... |
| December | ... | ... | ... | 7·973 | 0·313 | 4·066 | 1·349 | 0·778 | ... |
| Inches | | | | 28·310 | 18·998 | 33·351 | 28·440 | 29·496 | ... |

Average rainfall per year = 27·719 inches.

Table 1.—SUMMARY of FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907.

| Land District. | Minor Triangulation and Topographical Survey. | | Topographical Survey. | | Topographical Survey for Selection as "Unsurveyed Land." | | Rural and Suburban. | | | Town Section Survey. | | | Native Land Court and Native Land Board Survey. | | | Gold-mining Survey. | | | Roads, Railways, and Water-race | | Other Work. | | Total Cost of Surveyors and Parties from 1st April, 1906 to 31st March, 1907. |
|------------------|---|----------------|-----------------------|----------------|--|----------------|---------------------|------------------|-------------------|----------------------|--------------------|---------------------|---|----------------------|----------------|---------------------|------------------|----------------|---------------------------------|----------------|--------------------|-------------|---|
| | Acres. | Cost per Acre. | Acres. | Cost per Acre. | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Section. | Acres. | No. of Allotments. | Cost per Allotment. | Acres. | No. of Sees or Divs. | Cost per Acre. | Acres. | No. of Sections. | Cost per Acre. | Miles. | Cost per Mile. | Cost. | | |
| Auckland .. | 25,123 | 1.36 | .. | d. .. | 110,113 | 2.30 | 117,503 | 415 | s. 2.02 | 165.19 | 354 | 20.22 | 200,855 | 188 | d. 2.92 | 1,963 | 24 | s. 5.95 | 57.88 | £ 25.40 | £ s. d. 3,197 19 2 | 17,884 8 11 | |
| Hawke's Bay .. | .. | .. | 7,918 | 0.87 | .. | .. | 44,410 | 79 | 1.20 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 23.25 | 25.63 | £ s. d. 1,319 2 9 | 4,105 8 11 | |
| Taranaki .. | 70,500 | 1.97 | .. | .. | .. | .. | 50,556 | 151 | 2.25 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 17.63 | 16.81 | £ s. d. 527 8 11 | 7,417 14 1 | |
| Wellington .. | .. | .. | .. | .. | 78,879 | 4.97 | 76,961 | 361 | 19.59 | 193 | 211 | 28.0 | 32,001 | 151 | 4.4 | .. | .. | .. | 34.02 | 20.74 | £ s. d. 1,447 9 2 | 7,702 18 2 | |
| Nelson .. | 4,600 | 1.5 | 3,860 | 0.96 | .. | .. | 25,674 | 99 | 1.42 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 26.57 | 11.02 | £ s. d. 1,143 12 2 | 7,177 0 11 | |
| Marlborough.. | 9,000 | 1.2 | .. | .. | .. | .. | 19,330 | 96 | 2.08 | 8 | 22 | 44.0 | 4,524 | 55 | 30.0 | .. | .. | .. | 43.80 | 21.36 | £ s. d. 174 0 0 | 3,100 10 10 | |
| Westland .. | .. | .. | 217,860 | 1.23 | 11,523 | 1.66 | 10,967 | 76 | 3.92 | .. | .. | .. | .. | .. | .. | 512 | 4 | 2.45 | 45.75 | 11.75 | £ s. d. 1,016 0 7 | 7,446 14 0 | |
| Canterbury .. | .. | .. | .. | .. | .. | .. | 13,396 | 15 | 0.67 | 37.75 | 138 | 10.57 | .. | .. | .. | .. | .. | .. | .. | .. | £ s. d. 304 16 9 | 1,471 12 2 | |
| Otago .. | 21,200 | 0.6 | 106,300 | 0.84 | .. | .. | 38,302 | 160 | 0.89 | 4.13 | 21 | 17.95 | .. | .. | .. | .. | .. | .. | 15.84 | 15.26 | £ s. d. 421 19 11 | 3,056 14 1 | |
| Southland .. | .. | .. | .. | .. | .. | .. | 10,625 | 67 | 1.69 | 94 | 219 | 10.0 | .. | .. | .. | 566 | 9 | 4.40 | 24.10 | 23.1 | £ s. d. 37 7 4 | 904 7 9 | |
| Means and totals | 130,423 | 1.56 | 335,938 | 1.05 | 200,515 | 4.37 | 407,724 | 1,519 | 1.74 | 494.07 | 965 | 18.71 | 237,380 | 394 | 5.43 | 2,240 | 37 | 4.70 | 288.84 | 18.58 | £ s. d. 9,589 16 9 | 60,267 9 10 | |

Table 1.—RETURN of FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907.

| Surveyor and District. | Minor Triangulation and Topographical Survey. | | Rural and Suburban. | | Town Section Survey. | | Native Land Court Survey. | | Gold-mining Surveys. | | | Roads, Railways, and Water-races. | | Other Work. | | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. |
|--|---|----------------|---------------------|------------------|----------------------|--------|---------------------------|---------------------|----------------------|------------------|----------------|-----------------------------------|----------------|-------------|------------|--|--|
| | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Acre. | Acres. | No. of Allotments. | Cost per Allotment. | Acres. | No. of Sections. | Cost per Acre. | Miles. | Cost per Mile. | Cost. | | | |
| LAND DISTRICT OF AUCKLAND. | | | | | | | | | | | | | | | | | |
| Staff Surveyors. | | | | | | | | | | | | | | | | | |
| J. Langmuir. Auckland, &c. | .. | d. | .. | s. | .. | .. | .. | d. | .. | .. | £ | s. d. | £ | s. d. | 756 1 9 | 756 1 9 | Chiefly inspection; preliminary work; Auckland City standards, &c. |
| G. A. Martin. Tutamoe, Ruakaka, &c. | .. | .. | 2,462 | 19 | 1.60 | .. | .. | .. | .. | .. | 1.88 | 29.26 | 118 13 0 | 775 7 8 | 775 7 8 | Open and forest; scattered surveys. "Other work" is Puhipuhi timber reports, &c. | |
| W. J. Wheeler. Punakitere, &c. | .. | .. | 206 | 2 | 0.87 | 1.00 | 1 | 200.040, 649 | 23 | 3.16 | .. | 6.50 | 11.85 | 86 12 7 | 1,054 0 0 | 1,054 0 0 | Chiefly open country; "Native Land Court" is sketch surveys for Tokerau Maori Land Board. "Other work" is chiefly reports, &c. |
| H. D. M. Haszard. Waihou, Waitoa, &c. | *70,000 | 1.06 | 7,683 | 31 | 0.90 | 15.15 | 56 | 12.43 | .. | .. | .. | .. | .. | 253 19 3 | 821 17 3 | 821 17 3 | Chiefly open and swamp. "Other work" is various reports; flax, timber, &c. Included in total area is 4,777 acres; repegging and cutting side lines of section, cost £47 17s. 2d.; labour provided by selectors. Cadet Clarke assisting till his death, 24/12/06. |
| D. I. Barron. Rotoma, &c. | .. | .. | 16,000 | 13 | 0.80 | .. | .. | .. | .. | .. | .. | .. | .. | 15 17 4 | 131 0 0 | 131 0 0 | Open and forest; balance of work returned last year. Transferred to Otago in July. |
| R. S. Galbraith. Awakino, N. and E., Puniu | .. | .. | 4,310 | 80 | 3.65 | 11.35 | 48 | 6.69 | .. | .. | 2.50 | 13.07 | 26 5 1 | 696 9 10 | 696 9 10 | Rough bush and open. "Town" is portion of Teesdale Settlement. "Other work" is road exploration and various reports. | |
| H. F. Edgecumbe. Tapapa | .. | .. | 16,532 | 27 | 1.17 | .. | .. | .. | .. | .. | .. | .. | .. | 54 18 8 | 763 10 10 | 763 10 10 | Open and forest, undulating. "Other work" is 7 miles road deviations for Roads Department. Cadet Sherratt assisting. |
| A. G. Allom. Waioeka, Waiawa, &c. | 16,623 | 0.90 | 43 | 2 | 16.16 | .. | .. | .. | .. | .. | .. | .. | .. | 247 6 6 | 1,124 8 8 | 1,124 8 8 | Chiefly rough bush country; Waimana estate supervision. "Other work" is reports, &c. |
| W. C. O'Neill. Maungataniwha, &c. | .. | .. | 2,375 | 15 | 4.83 | .. | .. | .. | .. | .. | 5.00 | 30.07 | 30 19 2 | 754 16 0 | 754 16 0 | Undulating to broken forest country. "Other work" is timber estimates, &c. | |
| Temporary Staff. | | | | | | | | | | | | | | | | | |
| H. T. Mitchell. Waioeka, &c. | 8,500 | 2.25 | 13,528 | 21 | 2.09 | 4.00 | 5 | 52.60 | 20,000 | 18 | 0.25 | .. | .. | 181 16 7 | 575 9 0 | 575 9 0 | Chiefly rough mountainous forest country. "Town" is sections in Rotorua. "Other work" is repairs to pack-tracks, Waioeka, and reports, &c. "Native Land Court" is sketch surveys for Waikari Maori Land Board. |
| J. B. Thompson. Tapapa, &c. | *8,240 | 1.32 | 6,095 | 36 | 1.28 | 66.32 | 163 | 18.86 | .. | .. | 2.75 | 9.97 | 369 3 8 | 1,132 15 0 | 1,132 15 0 | Open undulating country. "Town sections" are Carroll and Cadman Settlements. "Other work" is various duties, Mangawhero, Mangapouri, Selwyn Settlements, &c. Cadet Campbell assisting. | |

* Provisional settlement surveys.

Table 1.—RETURN of FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907—continued.

| Surveyor and District. | Minor Triangulation and Topographical Survey. | | Rural and Suburban. | | Town Section Survey. | | Native Land Court Survey. | | Gold-mining Surveys. | | Roads, Railways, and Water-races. | | Other Work. | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. |
|------------------------|---|----------------|---------------------|------------------|----------------------|--------------------|---------------------------|--------------|----------------------|--------|-----------------------------------|----------------|-------------|---|----------|
| | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Acre. | No. of Allotments. | Acres. | No. of Divs. | Cost per Acre. | Acres. | No. of Section. | Cost per Mile. | | | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|--------------------|--------------|---------|-----|-------|--------|-----|--------|--------|-------|------|-------|-------|-----------------------|---|
| LAND DISTRICT OF AUCKLAND—continued. | | | | | | | | | | | | | | | |
| Temporary Staff. | | | | | | | | | | | | | | | |
| A. Wilson. Otanake, &c. | .. | .. | 431 | 5 | 2-52 | .. | .. | .. | .. | .. | .. | 20-00 | 35-06 | £ s. d. 796 11 5 | Open and forest. "Road" is Te Kumi-Maeroa Road. "Other work" is chiefly reports. |
| A. A. Seaton. Waioeka .. | .. | .. | 5,334 | 5 | 2-65 | .. | .. | .. | .. | .. | .. | .. | .. | 852 10 7 | Very rough forest country. "Other work" is road-exploration, trig. renewals, &c. |
| A. J. Mountfort. Kawhia N., &c. | .. | .. | 2,076 | 18 | 2-65 | .. | .. | 249 | 5 | 31-86 | .. | 14-00 | 19-00 | 770 1 9 | Open and forest, principally Crown awards, road access, and deviations. "Other work" is chiefly Selwyn traverses mapped by other surveyors. |
| H. M. Kensington. Punakitere, Tapapa, &c. | .. | .. | 13,432 | 33 | 1-69 | 52-37 | 66 | 38-29 | .. | .. | .. | .. | .. | 699 15 1 | Undulating, open, and forest. "Town Sections" are Prescott Settlement. |
| L. Jackson. Tutamoe, &c. | .. | .. | 5,024 | 24 | 5-45 | .. | .. | .. | .. | .. | .. | 4-75 | 31-85 | 560 7 5 | Rough bush country. "Other work" is road-exploration, &c. |
| V. I. Blake. Muriwhenua, &c. | .. | .. | .. | .. | .. | .. | .. | 61,814 | 27 | 0-99 | .. | .. | .. | 795 6 1 | Open undulating country. "Native Land Court" is surveys for Tokerau Maori Land Board. |
| J. L. D'Arcy Irvine. Rotorua, Maketu | .. | .. | 7,905 | 17 | 2-84 | .. | .. | .. | .. | .. | .. | .. | .. | 823 1 0 | Rough forest country. |
| F. E. Byrne. Waioeka S., &c. | *3,200 | 1-44 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 730 4 9 | Provisional survey. Has 7,000 acres rough bush country in progress. "Other work" is reports, &c. |
| J. Reilly. Coromandel .. | .. | .. | 22 | 2 | 63-13 | .. | .. | .. | .. | .. | .. | .. | .. | 653 4 6 | Open, undulating. 12-86 miles, Kikowhaka-rere Bay-Cabbage Bay Road, complete in field. |
| P. W. Barlow. Waioeka, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 320 9 0 | Very rough forest country. 3,300 acres in progress. Joined temporary staff November, 1906. |
| A. Stretton. Opotiki, &c. | .. | .. | 4,749 | 6 | 4-00 | .. | .. | .. | .. | .. | .. | .. | .. | 717 8 6 | Very rough forest country. Selections under Bush and Swamp Act. |
| F. J. Hosking. Te Kuri | .. | .. | 572 | 20 | 2-64 | 15-00 | 15 | 5-00 | .. | .. | .. | 0-50 | 18-90 | 88 14 3 | Open and swamp. Includes Mapou Village sections. |
| Means and totals .. | 25,123 *110,113 | 2-30 1-36 | 108,779 | 376 | 2-04 | 165-19 | 354 | 20-22 | 122712 | 73 | 1-65 | 57-88 | 25-40 | 3,197 19 216,393 10 4 | |

| <i>Contract Surveyors.</i> | | | | | | | | | | <i>Lawry and Koolston No. 2</i> | | | | | | | | | |
|----------------------------------|----|----|----|----|----|----|----|----|----|---------------------------------|----|----|----|----|----|----|----|----|----|
| E. F. Adams. Thames, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| W. M. Atkinson. Whangarei, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| P. Beddington. Hukerenui | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| R. Campbell. Kao | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| P. Chambers. Tuhua, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| P. E. Cheal. Tuhua, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| M. R. Creagh. Pakamanu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| E. de C. Drury. Puniu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| E. J. Fairburn. Piako | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| A. L. Foster. Colville, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| J. W. Harrison. Puniu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| M. F. Haszard. Ohinemuri, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| N. F. J. Haszard. Ohinemuri, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| F. J. Hosking. Maungaru | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| R. C. Jordan. Waihi South | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| A. M. and F. V. Kelly. Coro- | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| mandel, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| T. W. Kenny. Ohinemuri, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| H. W. Mitchell. Maketu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| T. J. Mountain. Tairua, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| G. F. R. Neumann. Omarepe | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| A. D. Newton. Pirongia, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| C. C. Otway. Hapuaokohe | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| A. O'N. O'Donahoo. Piopotea, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| F. Pavitt. Waihou | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| F. B. Sewell. Opotiki, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| L. Simpson. Maketu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| D. Stubbing. Mangaorongo, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| A. C. Turner. Whakatane | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| P. Ward. Pakamanu, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Wilson and Jackson. Tuhua, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| G. Whitcombe. Kawhia North | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Means and totals | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Grand means and totals | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |

* Provisional settlement surveys. † Costs not available.

Table 1.—RETURN OF FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907—continued.

| Surveyor and District. | Minor Triangulation and Topographical Survey. | | Rural and Suburban. | | Town Section Survey. | | Native Land Court Survey. | | Gold-mining Surveys. | | Roads, Railways, and Water-races. | | Other Work. | | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. | |
|---|---|----------------|---------------------|------------------|----------------------|--------------------|---------------------------|-----------------------|----------------------|-----------------|-----------------------------------|--------|----------------|------------------|---|--|--|
| | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Acre. | No. of Allotments. | Acres. | No. of Secs. or Divs. | Acres. | No. of Section. | Cost per Acre. | Miles. | Cost per Mile. | Cost. | | | |
| | | | | | | | | | | | | | | | | | |
| LAND DISTRICT OF HAWKE'S BAY. | | | | | | | | | | | | | | | | | |
| <i>District Surveyors.</i> | | | | | | | | | | | | | | | | | |
| T. N. Brodrick. Poverty Bay .. | .. | d. .. | 23 | 1 | s. 13 04 | .. | .. | .. | .. | .. | .. | 0 50 | 30 55 | £ s. d. 468 13 2 | £ s. d. 498 18 8 | District Survey and Land Offices, Poverty Bay. "Other work" refers to field-inspections, departmental duties, and costs of removal from Timaru to Gisborne. Duties commenced 9th July. | |
| Thos. Brook. Te Mata, Tongolo, Norsewood, Matapiro S.D. | *7,918 0 87 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 0 50 | 20 55 | 280 12 11 | 709 12 0 | Chiefly open hill country, some bush. "Other work" includes cost of preliminary survey of Abbottsford Estate, field-inspections, and obtaining information for Justice Department. | |
| <i>Assistant Surveyor.</i> | | | | | | | | | | | | | | | | | |
| W. C. Wall. Matapiro, Tarawera, Pourerere, Tahoraite S.D. | .. | .. | 7,068 | 29 | 1 20 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 476 12 7 | Appointed Assistant Surveyor Hawke's Bay 1st August, 1906. Chiefly easy open country, 1,248 acres; Tamaki Settlement being flat bush. | |
| <i>Temporary Surveyors.</i> | | | | | | | | | | | | | | | | | |
| E. H. Farnie. Norsewood, Tuahu, Hikurangi S.D. | .. | .. | 3,057 | 24 | 2 47 | .. | .. | .. | .. | .. | .. | 14 00 | 24 03 | 273 17 4 | 820 13 11 | Mixed, level, and broken heavy-bush country. "Other work" redefining old run boundaries, field-inspection, &c. | |
| J. Roddick. Waikohu, Motu S.D. | .. | .. | 31,810 | 20 | 0 39 | .. | .. | .. | .. | .. | .. | .. | .. | 27 0 0 | 761 19 3 | High, broken, heavy-bush country. "Other work" refers to reports on Waikohu Road and ranging section-lines in Ngatapa Survey District. | |
| J. G. Wilson. Waipua, Waimarama | .. | .. | 2,452 | 5 | 3 70 | .. | .. | .. | .. | .. | .. | 8 25 | 28 36 | 132 14 0 | 475 6 0 | Broken bush country; isolated road surveys. "Other work" preparing sketch, subdivisional plan and descriptions 33,000 acres, Waimarama Block, and attending Native Land Courts. | |
| T. W. Hughes .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 136 5 4 | 362 6 6 | Transferred from Westland, and commenced duties 11th October, 1906. "Other work" refers to costs of transfer from Westland and sick-leave. No plans lodged. | |
| Means and totals .. | 7,918 0 87 | 44,410 | 79 | 1 20 | .. | .. | .. | .. | .. | .. | .. | 23 25 | 25 63 1 | 319 2 9 | 4,105 8 11 | | |

| | | | | | | | | | | | | | | | | | |
|--|--------|------|--------|-----|------|----|----|----|----|----|----|----|-------|-------|----------|------------|---|
| G. H. Bullard. Mahoe, Pouatu, Tangitu, Mapara | .. | .. | 4,138 | 11 | 2-03 | .. | .. | .. | .. | .. | .. | .. | 9-70 | 19-03 | 357 15 9 | 1,330 9 3 | Hilly forest country, difficult of access. "Other work" consists of exploration re- roading through Native lands in Rangitoto Tuhua, and Taumatamahoe Blocks, and exploring and grading roads in Mr. Gillett's block. |
| W. T. Morpeth. Aria, Hawera | 38,000 | 2-81 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 42 2 8 | 873 19 0 | Rough forest country. "Other work" consists of preliminary survey re scenery reserve, Otaki Gorge. |
| <i>Additional Surveyors.</i> | | | | | | | | | | | | | | | | | |
| W. Laing (temporary). Waro | .. | .. | 8,796 | 20 | 2-58 | .. | .. | .. | .. | .. | .. | .. | 1-50 | 20-00 | 24 2 0 | 779 15 6 | "Other work" consists of redefining and pegging road and section boundaries in the Mimi Survey District. |
| E. O. Weir (temporary). Totoro, Aria | 18,000 | 1-00 | 18,769 | 47 | 2-07 | .. | .. | .. | .. | .. | .. | .. | 0-53 | 26-86 | .. | 735 10 9 | Rough forest. |
| N. C. Kensington (temporary). Ohura | .. | .. | 2,047 | 9 | 1-67 | .. | .. | .. | .. | .. | .. | .. | 1-50 | 6-67 | .. | 861 13 3 | All rough forest country. |
| E. F. Halse (temporary). Ohura, Cape, Ngaire, Omona | .. | .. | 870 | 5 | 1-56 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 19 6 | 664 16 3 | "Other work" consists of survey of scenery reserve, Cape Survey District. Sectional work in rough forest country. |
| N. Gillett (temporary). Pouatu, Mahoe, Upper Waitara | 14,500 | 1-00 | 15,294 | 34 | 2-27 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 808 10 2 | Work in broken forest country. Mr. Gillett resigns from Department as from 17th April, 1907. |
| T. G. Sole (office surveyor). Hawera, Omona, Paritutu, Waitara | .. | .. | 598 | 20 | 6-60 | .. | .. | .. | .. | .. | .. | .. | 0-70 | 27-89 | 1 6 0 | 182 19 11 | Comprises small isolated surveys scattered throughout the district, accounting for high cost. |
| Means and totals .. | 70,500 | 1-97 | 50,556 | 151 | 2-25 | .. | .. | .. | .. | .. | .. | .. | 17-63 | 16-81 | 527 8 11 | 7,417 14 1 | |

LAND DISTRICT OF WELLINGTON.

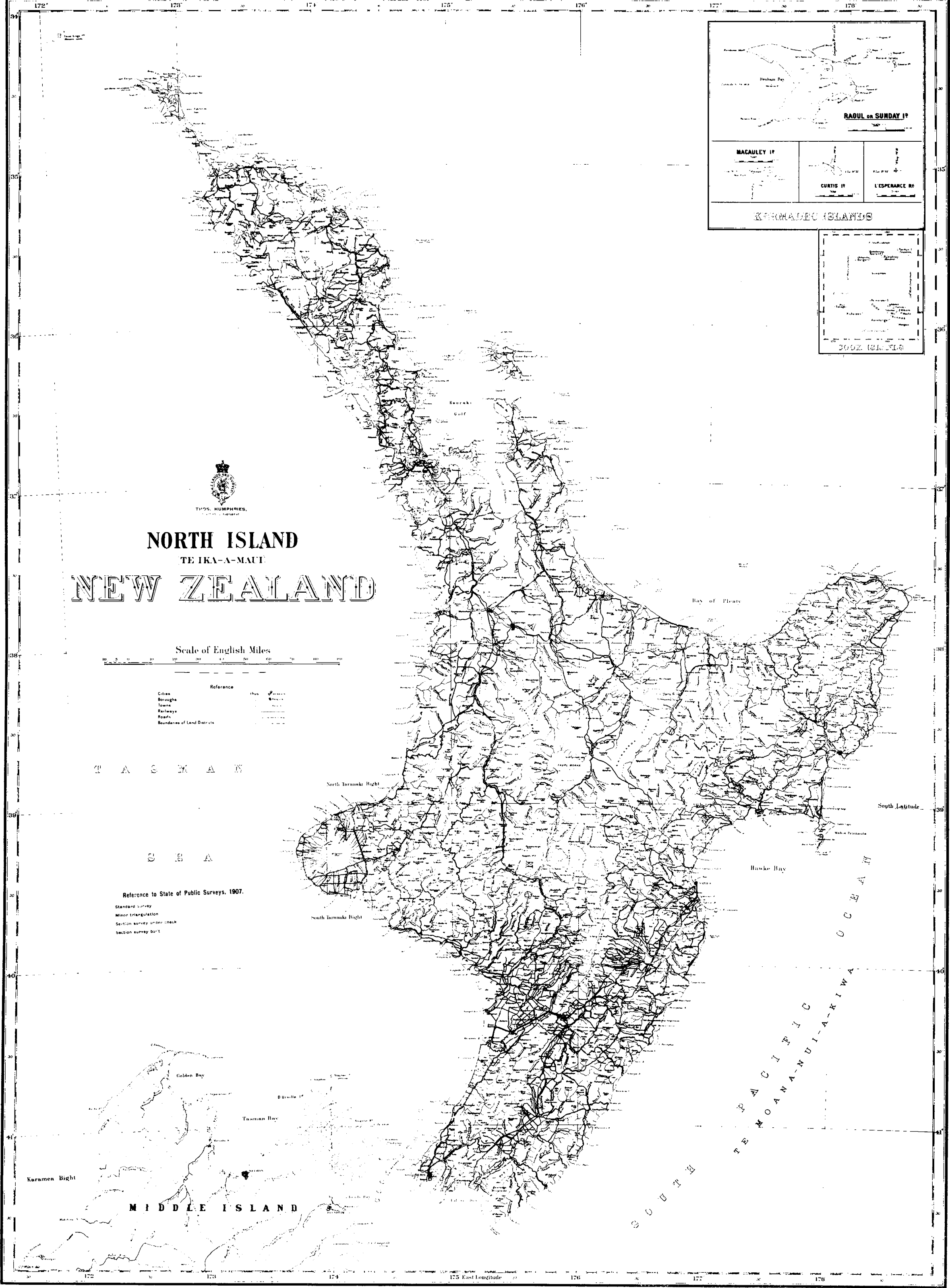
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|---|----|----|--------|-----|-------|-------|-----|-------|--------|----|------|----|----|----|----|----------|-----------|--|
| Climie, J. D. General | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 226 10 2 | 729 17 8 | Fifteen inspections, miscellaneous work £296 10s. 2d. |
| Thompson, F. A. Kaitieke | .. | .. | 8,000 | 11 | 26-24 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 24 0 4 | 1,131 7 7 | "Other work" includes adjustment homestead-sites, inspections, &c. Cadet assisting five months. |
| Lowe, H. J. Hunua, Kaitieke | .. | .. | 32,184 | 39 | 18-60 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 51 11 4 | 596 6 8 | Surveys in rough, hilly, bush country. |
| McKay, J. Ngamatea, Karioi, Haurangi, Kaitieke | .. | .. | 6,064 | 141 | 15-60 | 177-5 | 194 | 29-40 | .. | .. | .. | .. | .. | .. | .. | 63 13 8 | 680 3 2 | £197 0s. 6d. is carried forward to next year, and will have to be apportioned to the surveyors who may complete the work under which this is incurred. Mr. McKay resigned on the 31st March, 1907. |
| Carkeek, M. Tauakira, Makotuku | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 116 17 6 | £116 17s. 6d. was incurred for the completion of the Ohotu plans. Transferred to Marlborough 1st June, 1906. |
| Strachan, J. R. Huangarua, Mangane, Nukumarua, Wairarapa | .. | .. | 7,961 | 44 | 13-70 | 15-5 | 17 | 12-20 | .. | .. | .. | .. | .. | .. | .. | 174 17 2 | 715 15 6 | Surveys in rough, hilly, bush country, and partly in open and in flat scrubby land with swamps. |
| Girdlestone, H. E. Huangarua, Wainuioru, Tauakira, Manganui | .. | .. | 4,881 | 11 | 11-50 | .. | .. | .. | 11,640 | 4 | 4-30 | .. | .. | .. | .. | 7 7 8 | 709 4 8 | The sum of £208 4s. 1d. was incurred in grouping subdivisions and providing road-access in the Tauakira Block, and was undertaken for the Aotea Maori Council. Surveys in easy to fairly steep slopes in grass country to fairly rough bush country. |

Table 1.—RETURN of FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907—continued.

| Surveyor and District. | Minor Triangulation and Topographical Survey. | | Rural and Suburban. | | Town Section Survey. | | Native Land Court Survey. | | Gold-mining Surveys. | | Roads, Railways, and Water-races. | | Other Work. | | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. | |
|--|---|----------------|---------------------|------------------|----------------------|--------|---------------------------|---------------------|----------------------|------------------|-----------------------------------|--------|----------------|-----------|---|--|--|
| | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Section. | Acres. | No. of Allotments. | Cost per Allotment. | Acres. | No. of Sections. | Cost per Section. | Miles. | Cost per Mile. | Cost. | | | |
| LAND DISTRICT OF WELLINGTON—continued. | | | | | | | | | | | | | | | | | |
| Staff Surveyors—continued. | | | | | | | | | | | | | | | | | |
| Marchant, E. A. Katieke, Belmont, Huangarua | .. | d. | 7,434 | 100 | s. 26-50 | .. | .. | s. | .. | .. | .. | .. | £ | 203 19 9 | £ s. d. 327 3 2 | “Other work” comprised small surveys in and around Wellington. Resigned from Department 31st October, 1906. | |
| Stewart, W. Whirinaki .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 18 14 6 | 334 9 6 | Mr. Stewart took charge of party on 1st November, 1906. Survey in rough bush country. | |
| Johnston, T. A. Karioi, Makotuku | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 64 11 9 | 64 11 9 | Transferred from Canterbury, and joined Wellington staff 1st March, 1907. | |
| Means and totals .. | .. | .. | 66,524 | 346 | 18-77 | 193-0 | 211 | 28-00 | 11,640 | 4 | 4-30 | 33-02 | 20-80 | 835 6 4 | 5,405 17 2 | | |
| Temporary Staff. | | | | | | | | | | | | | | | | | |
| Mountfort, C. A. General, Wairoa, Aohanga, Puketoi | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 513 1 11 | 642 19 7 | Eight field inspections and miscellaneous duties. Surveys in flat to hilly undulating country. | |
| Stevenson, J. Makotuku, Rarete | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 895 4 2 | All in broken forest-clad country, intersected by several very rough gorges. | |
| Roberts, A. M. Katieke, Taurira, Ngamatea | .. | .. | 10,436 | 15 | 21-32 | .. | .. | .. | .. | .. | .. | 1-00 | 19-95 | 99 0 11 | 758 17 3 | Sectional work in rough, hilly, bush country. Sectional work includes £287 6s., cost of work done by Mr. Lowe. | |
| Licensed Surveyors | .. | .. | .. | .. | .. | .. | .. | .. | 20,361 | 147 | 4-50 | .. | .. | .. | .. | | |
| Means and totals .. | .. | .. | 76,961 | 361 | 19-59 | 193-0 | 211 | 28-00 | 32,001 | 151 | 4-42 | 34-02 | 20-74 | 1,447 9 2 | 7,702 18 2 | | |
| LAND DISTRICT OF NELSON. | | | | | | | | | | | | | | | | | |
| Staff Surveyors. | | | | | | | | | | | | | | | | | |
| J. A. Montgomerie. Reefton, &c. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 24-70 | 10-10 | 479 14 4 | 1,074 10 10 | “Other work” includes office-work; estimates, Brown Creek Road; plans, Maruia Road; and services for Public Works Department; work, and reports. | |
| M. Carkeek. D'Urville Island | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 108 13 0 | Began land survey of D'Urville Island; eleven trig. stations erected. Total cost includes travelling-expenses, £36 19s. | |

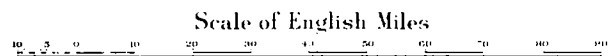
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| Surveyor and District. | Minor Triangulation and Topographical Survey. | | Rural and Suburban. | | | Town Section Survey. | | | Native Land Court Survey. | | | Gold-mining Surveys. | | Roads, Railways, and Water-races. | | Other Work. | | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. | |
|---|---|----------------|---------------------|------------------|-------------------|----------------------|--------------------|---------------------|---------------------------|-----------------------|----------------|----------------------|----------------|-----------------------------------|-----------------|--|--|---|----------|--|
| | Acres. | Cost per Acre. | Acres. | No. of Sections. | Cost per Section. | Acres. | No. of Allotments. | Cost per Allotment. | Acres. | No. of Secs. or Divs. | Cost per Acre. | Miles. | Cost per Mile. | Cost. | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| LAND DISTRICT OF WESTLAND. | | | | | | | | | | | | | | | | | | | | |
| W. Wilson. General .. | .. | d. .. | .. | .. | s. .. | .. | .. | s. .. | .. | .. | .. | .. | £ .. | £ s. d. 376 0 0 | £ s. d. 376 0 0 | £291 17s. 6d. recovered from other Departments. The balance is cost of inspections, plans, reports, &c., in connection with roads in Runanga Township, protective works, Wanganui River, &c., survey, inspections, various reports, and general office-work. | | | | |
| H. Maitland. Ahaura .. | †1,973 | 3-10 | 237 | 6 | 4-75 | .. | .. | .. | .. | .. | .. | 1-25 | 8-00 | .. | 370 14 8 | Area returned as provisional has been completed as to field-work and plans, and is ready for being thrown open. Chiefly bush country, with open pakihī. Mr. Maitland was employed from 1st April to 15th October, 6½ months. | | | | |
| A. N. Harrop. Waimea, Otira, Turi-whate | .. | .. | 1,053 | 15 | 5-00 | .. | .. | .. | .. | .. | .. | 1-00 | 15-50 | 373 1 7 | 983 7 10 | Mr. Harrop's work was of a very varied and broken nature—isolated sections involving a lot of dead work, which accounts for the small returns of finished work. Principal items in "Other Work" are £95 9s. 2d. for preliminary survey of Paroa-Graymouth Mining Block, and £38 16s. 3d. for reports to Warden which has been recovered from the Mines Department. | | | | |
| C. H. Morison. Ahaura, Waiwhero, Mawheranui, Mawheraiti | *2,000 | 3-00 | 1,895 | 14 | 6-10 | .. | .. | .. | .. | .. | .. | 14-00 | 13-70 | 173 17 2 | 968 17 5 | Mostly heavy-bush country. Isolated sections involving considerable camp-shifting, and a large amount of dead work in connections and revision of adjacent work, which in many cases is very faulty. | | | | |
| W. F. Robinson. Toaroha, Wai-taha, Kanieri, Totara | †175,000 | 0-47 | 393 | 8 | 8-00 | .. | .. | .. | .. | .. | 400 | 17-00 | 8-45 | 74 17 10 | 955 15 6 | Rough bush country and high snow tops. Delayed by fog and bad weather. Spotting surveys widely separated, involving much camp-shifting. | | | | |
| S. T. Burton. Karangarua | †13,000 | 4-00 | 1,315 | 6 | 3-90 | .. | .. | .. | .. | .. | .. | 9-50 | 10-00 | .. | 871 18 0 | Mostly heavy-bush land. | | | | |
| John Cunningham. Okuru, Cascade, Matakitaki | *5,160 | 6-00 | 2,750 | 12 | 3-00 | .. | .. | .. | .. | .. | .. | 3-00 | 17-00 | 184 0 0 | 882 9 0 | Heavy-bush land and swamp. "Other work" comprises £18 4s. repairing trig. stations. | | | | |
| P. E. Webb. Poerua, Wataroa, Mount Bonar, Waitangi, Taona | *2,700 | 6-00 | 3,324 | 15 | 2-60 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 819 6 0 | Partly open river-bed and partly forest land. | | | | |



THOS. HUMPHRIES,
Surveyor-General

NORTH ISLAND TE IKA-A-MAUI NEW ZEALAND



- Reference
- Cities
 - Boroughs
 - Towns
 - Railways
 - Rivers
 - Boundaries of Land Districts

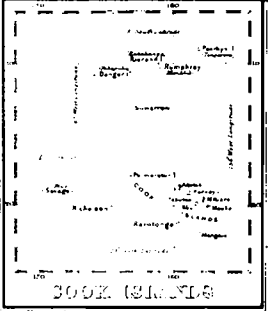
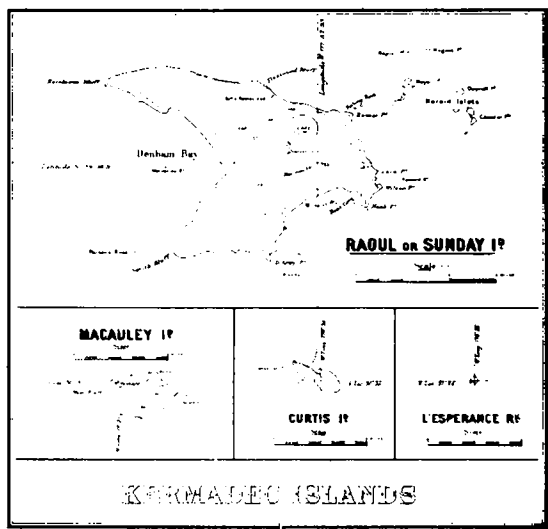
T A S M A N

S E A

Reference to State of Public Surveys, 1907.

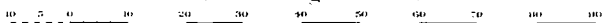
- Standard survey
- Minor triangulation
- Section survey under check
- Section survey built

MIDDLE ISLAND




SOUTH ISLAND
(TE IKA-A-MAUI)
NEW ZEALAND

Scale of English Miles



Reference

- Cities
- Boroughs
- Towns
- Railways
- Roads
- Boundaries of Land Districts

- Standard survey
- Minor triangulation
- Section survey under check
- Section survey built

T A S M A N I A N S E A

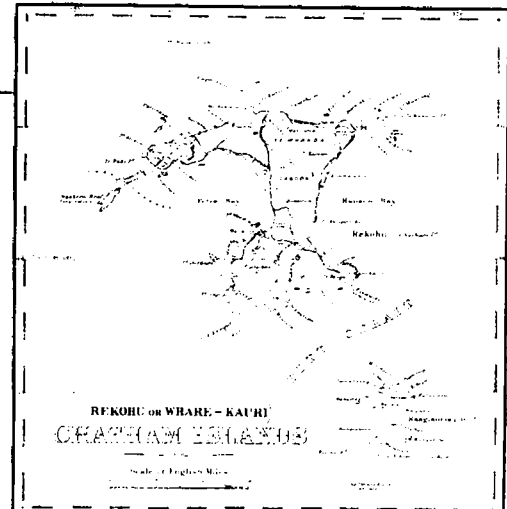
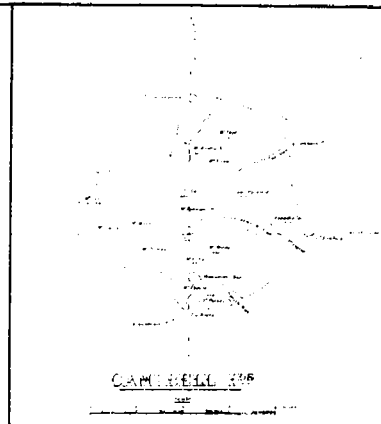
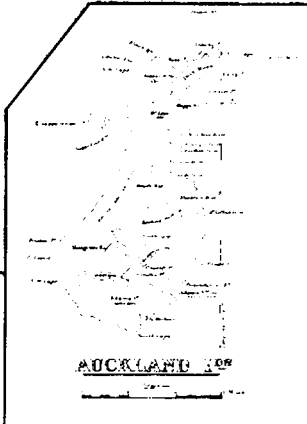
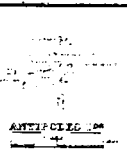
South Latitude

S O U T H P A C I F I C

(TE MOANA-NUI-A-KIWA)

O C E A N

Stewart Island



| | | | | | | | | | | | | | | | | | |
|--------------------------------------|-------------|-----------|------|----|----|----|----|----|----|----|----|----|----|----|----|------------|---|
| T. W. Hughes. Punakaikai, Wai-whero | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 388 16 4 | Rough forest country. Roads, coast, and rivers all traversed, awaiting subdivision. |
| J. H. Buttress. Abbey Rocks | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 467 9 9 | Heavy bush. Mr. Buttress was employed from 1st April to 21st October—nearly seven months. The cost of work done includes £53 5s. brought forward from last year, and covers cost of shifting camp from Hokitika to South Westland and back. |
| C. E. Douglas. Central Westland. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 337 5 0 | |
| <i>Authorized Surveyor.</i> | | | | | | | | | | | | | | | | | |
| J. W. Spence. Waitohero, Ma-wheranui | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 24 14 6 | |
| Means and totals .. | 217,860 123 | 10,967 76 | 3-92 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7,446 14 0 | |
| | 11,523 1-66 | | | | | | | | | | | | | | | | |

Provisional survey.

Topographical.

* Exploration for settlement.

LAND DISTRICT OF CANTERBURY.

| | | | | | | | | | | | | | | | | | | |
|--|----|-----------|------|-------|-----|-------|----|----|----|----|----|----|----|----|----|----------|------------|---|
| T. N. Brodriok. Arowhenua, Patiti, Hnti | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 235 9 3 | Hill bush country, surveyed in midwinter, and a long way from Timaru. "Other work," inspecting transfer survey and miscellaneous office-work. Promoted and transferred to Gisborne, 9th July. Cadet assisting two months. |
| G. H. M. McClure. Akaroa, Christchurch, Halswell, Hororata, Arowhenua, Patiti, Rakaiia | .. | 2,666 5 | 0-60 | 30-50 | 118 | 10-78 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 263 4 6 | 891 0 10 | Chiefly hilly country, bush and open. Cadet assisting. "Other work," altering section boundaries, traversing part of Hurunui River, reporting 72 land-exchange, and extra work on plans. £212 5s. 5d. chargeable against work done in Otago and Westland Districts. |
| T. A. Johnston. Hororata, Sumner, Westerfield | .. | 10,643 9 | 0-61 | 7-25 | 20 | 9-30 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 8 12 3 | 345 2 1 | Small grazing-runs and reserves, comprising hilly pastoral country; abutting freeholds required resurvey and pegging. "Other work," verifying position of a replaced trig. station. Engaged in this district seven months. |
| Means and totals .. | .. | 13,396 15 | 0-67 | 37-75 | 138 | 10-57 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 304 16 9 | 1,471 12 2 | |

LAND DISTRICT OF OTAGO.

| | | | | | | | | | | | | | | | | | | |
|--|------------|--------|------|----|----|--------|----|----|----|----|----|----|----|----|----|--------|----------|--|
| E. H. Wilmot. Steward, Teviot, Shotover, Benger, &c. | 21,200 0-6 | 408 32 | 3-00 | 1 | 1 | 100-00 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 26 2 6 | 199 14 5 | Triangulation revision of part of Waitahuna West District. Rural and suburban spotting surveys. Water-race survey finished by Mr. McClure. |
| G. H. M. McClure. Steward Settlement | .. | 11 2 | 7-54 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 195 0 5 | Land and engineering survey of water-race through Steward Settlement commenced by Mr. Wilmot and finished by Mr. McClure. |

Table 1.—RETURN of FIELD-WORK executed by the STAFF and CONTRACT SURVEYORS, from 1st April, 1906, to 31st March, 1907—continued.

| Surveyor and District. | Minor Triangulation and Topographical Survey. | | | Rural and Suburban. | | | Town Section Survey. | | | Native Land Court Survey. | | | Gold-mining Surveys. | | | Roads, Railways, and Water-races. | | Other Work. | | Total Cost of Surveyor and Party from 1st April, 1906, to 31st March, 1907. | Remarks. | |
|--|---|----------------|--------|---------------------|------------------|----------------|----------------------|--------------------|---------------------|---------------------------|--------------|----------------|----------------------|-----------------|----------------|-----------------------------------|----------------|-------------|----|---|------------|---|
| | Acres. | Cost per Acre. | d. | Acres. | No. of Sections. | Cost per Acre. | Acres. | No. of Allotments. | Cost per Allotment. | Acres. | No. of Divs. | Cost per Acre. | Acres. | No. of Section. | Cost per Acre. | Miles. | Cost per Mile. | £. | s. | | | d. |
| | | | | | | | | | | | | | | | | | | | | | | |
| LAND DISTRICT OF OTAGO—continued. | | | | | | | | | | | | | | | | | | | | | | |
| D. M. Calder. Blackstone, Lauder, and Strath-Tateri | *106,300 | 0·84 | 16,927 | 17 | 0·53 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 75 | 5 | 7 | 892 2 9 | Topographical survey, subdivision of Home Hills and Lauder Runs. Rural subdivision of Blackstone Hill. "Other work," office attendance and irrigation-work. |
| W. T. Neill. Steward Settlement and Dunedin | .. | .. | 11,100 | 40 | 0·92 | 3 | 19 | 12·53 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 310 | 13 | 4 | 387 16 7 | £443 9s. 9d. brought from last year against cost of Steward Settlement survey. "Other work" includes preliminary W. R. survey, field-inspection, and office-work, &c. |
| D. Innes Barron. Oamaru, &c. .. | .. | .. | 9,800 | 64 | 1·36 | 0·13 | 1 | 39·00 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 761 3 8 | Subdivision of three land for settlement estates. |
| D. Macpherson. Lee Stream .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 467 11 4 | Cost of party includes expenses of transfer and work not yet completed. |
| C. McFarland. Lauder .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 136 0 11 | No work yet completed. Cost to be carried forward. |
| Licensed Surveyors. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 9 | 18 | 6 | 17 4 0 | Two small surveys and two mining inspections. |
| G. Mackenzie. Kawarau, Tarras | .. | .. | 44 | 2 | 3·33 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | Two small surveys for fees deposited by the applicants. |
| L. D. Macgeorge (private surveyor) | .. | .. | 12 | 3 | 13·66 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | |
| Means and totals .. | 21,200 | 0·6 | 38,302 | 160 | 0·89 | 4·13 | 21 | 17·95 | .. | .. | .. | .. | .. | .. | .. | 15·84 | 15·26 | 421 | 19 | 11 | 3,056 14 1 | |
| | *106,300 | 0·84 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | |
| Mining Surveys by Private Surveyors for Fees deposited by the Applicant. | | | | | | | | | | | | | | | | | | | | | | |
| L. D. Macgeorge | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 608 | 13 | 3·93 | .. | .. | .. | .. | .. | .. | |
| L. O. Beal | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 178 | 5 | 4·28 | .. | .. | .. | .. | .. | .. | |
| John Edie | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 119 | 4 | 6·28 | .. | .. | .. | .. | .. | .. | |
| C. C. Ware | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 164 | 3 | 3·91 | .. | .. | .. | .. | .. | .. | |
| James Blaikie | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 63 | 1 | 4·63 | .. | .. | .. | .. | .. | .. | |
| Means and totals .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1,132 | 26 | 4·31 | .. | .. | .. | .. | .. | .. | |

* Topographical survey.

Table 2.—Showing SURVEYORS EMPLOYED and the WORK on HAND on 1st April, 1907.

| Chief Surveyors. | Surveyors employed. | | Work on Hand. | | | | | | |
|---------------------------|---------------------|-----------------|----------------|---------|------------------|-----------------------|---------------|--------|----------------------------------|
| | Staff. | Tempo- rary. | District. | Trig. | Settle- ment. | Native Blocks, &c. | Roads, &c. | Town. | Mining and Mineral Leases. |
| | | | | Sq. Mi. | Acres. | Acres. | Miles. | Acres. | Acres. |
| J. Mackenzie .. | 8 | 13 | Auckland .. | .. | 164,841 | 37,637 | 206 | 7 | .. |
| Henry Trent .. | 3 | 4 | Hawke's Bay .. | .. | 35,107 | 25,000 | 20 | .. | 1,018 |
| F. Simpson .. | 3 | 5 | Taranaki .. | 424 | 101,812 | .. | 36.5 | 50 | .. |
| John Strauchon .. | 7 | 3 | Wellington .. | .. | 83,300 | .. | 30 | 1,208 | .. |
| T.M. Grant (acting) | 6 | 4 | Nelson .. | 774 | 54,802 | 40,000 | 10 | 50 | .. |
| F. Stephenson Smith .. | 1 | 2 | Marlborough .. | 200 | 12,000 | .. | 59 | .. | .. |
| G. J. Roberts .. | 1 | 6 | Westland .. | .. | 22,000 | .. | .. | 350 | .. |
| E. C. Gold Smith .. | 1 | .. | Canterbury .. | .. | 1,716 | .. | .. | .. | .. |
| D. Barron .. | 3 | 2 | Otago .. | 110 | 38,524 | 57 | 0.5 | 23 | .. |
| John Hay .. | .. | 1 | Southland .. | .. | 19,370 | .. | .. | .. | .. |
| Totals .. | 33 | 40 | .. | 1,508 | 533,472 | 102,694 | 362 | 1,688 | 1,018 |

Table 3. — PLANS placed on CROWN GRANTS and other INSTRUMENTS of TITLE from the Crown from 1st April, 1906, to 31st March, 1907.

| District. | Number. | | | | | Cost. |
|----------------|---------|---------------|----------------|-------------------|---------------|----------|
| | Singly. | In Duplicate. | In Triplicate. | In Quadruplicate. | Total Copies. | |
| | | | | | | £ s. d. |
| Auckland .. | 20 | 142 | 422 | 341 | 2,934 | 197 12 0 |
| Hawke's Bay .. | .. | 58 | 49 | 70 | 543 | 37 2 3 |
| Taranaki .. | 5 | 5 | 67 | 74 | 512 | 45 2 3 |
| Wellington .. | 100 | 37 | 329 | 110 | 1,601 | 80 1 0 |
| Nelson .. | 1 | 93 | 116 | 126 | 1,039 | 103 18 0 |
| Marlborough .. | 2 | 38 | 15 | 62 | 371 | 78 16 8 |
| Westland .. | 15 | 32 | 26 | 126 | 661 | 63 15 9 |
| Canterbury .. | 56 | 70 | 19 | 102 | 661 | 82 1 3 |
| Otago .. | .. | 99 | 169 | .. | 705 | 148 0 0 |
| Southland .. | 35 | 32 | 205 | 88 | 1,066 | 92 9 0 |
| Totals .. | 234 | 606 | 1,417 | 1,099 | 10,093 | 928 18 2 |

Table 4. — WORK DONE under the LAND TRANSFER ACT, &c., from 1st April, 1906, to 31st March, 1907.

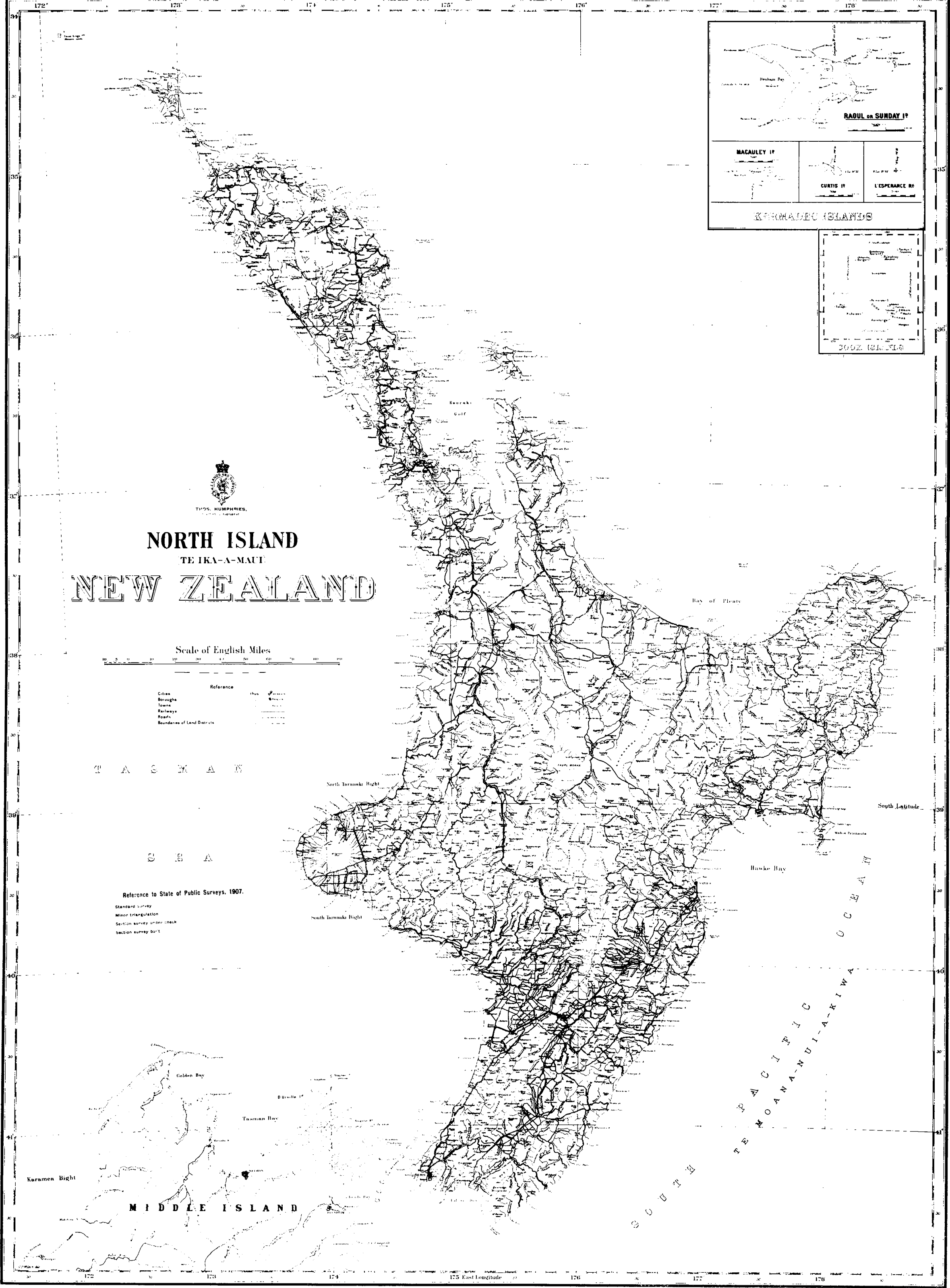
| District. | No. of Plans passed. | Deeds and other Instruments passed. | Number of Plans placed on Certificates of Title. | | | Miscellaneous Plans drawn or compiled. | Cost. |
|----------------|----------------------|-------------------------------------|--|---------------|----------------|--|------------|
| | | | Singly. | In Duplicate. | In Triplicate. | | |
| | | | | | | | £ s. d. |
| Auckland .. | 300 | .. | .. | .. | .. | 59 | 1,492 12 6 |
| Hawke's Bay .. | 321 | 243 | 12 | 777 | 98 | 6 | 588 19 6 |
| Taranaki .. | 118 | .. | 5 | 330 | 95 | .. | 275 1 2 |
| Wellington .. | 340 | 3,150 | 50 | 3,012 | .. | 20 | 1,527 11 0 |
| Nelson .. | 65 | 162 | .. | 134 | .. | .. | 135 12 10 |
| Marlborough .. | 16 | .. | 3 | 52 | .. | .. | 16 15 5 |
| Westland .. | 24 | 261 | 5 | 35 | 62 | .. | 104 15 0 |
| Canterbury .. | 360 | 2,433 | 41 | 2,064 | 11 | 37 | 1,038 15 9 |
| Otago .. | 52 | 1,220 | 15 | 649 | .. | 8 | 316 16 3 |
| Southland .. | 83 | 36 | 13 | 487 | 8 | .. | 280 0 0 |
| Totals .. | 1,679 | 7,505 | 144 | 7,600 | 274 | 130 | 5,776 19 5 |

* Information not available.

Table 5. — LITHOGRAPHS and PHOTOGRAPHS printed and sold, from 1st April, 1906, to 31st March, 1907.

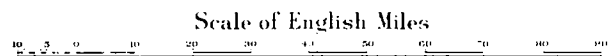
| District. | Number of Lithographs printed. | Number of Photographs printed. | Amount of Fees received from Sale of Maps and Lithographs. |
|----------------|--------------------------------|--------------------------------|--|
| | | | £ s. d. |
| Auckland .. | 5,460 | .. | 118 14 2 |
| Hawke's Bay .. | .. | .. | 66 17 7 |
| Taranaki .. | .. | .. | 76 7 10 |
| Wellington .. | .. | .. | 61 0 2 |
| Nelson .. | .. | .. | 27 2 3 |
| Marlborough .. | .. | .. | 21 12 6 |
| Westland .. | .. | .. | 4 9 6 |
| Canterbury .. | 400 | .. | 49 3 2 |
| Otago .. | 250 | .. | 51 11 0 |
| Southland .. | .. | .. | 35 2 4 |
| Totals .. | 6,050 | .. | 512 0 6 |

Approximate Cost of Paper.—Preparation, not given; printing (2,000 copies, including maps, &c.), £84 7s. 6d.



THOS. HUMPHRIES,
Surveyor-General

NORTH ISLAND TE IKA-A-MAUI NEW ZEALAND



- Reference
- Cities
 - Boroughs
 - Towns
 - Railways
 - Rivers
 - Boundaries of Land Districts

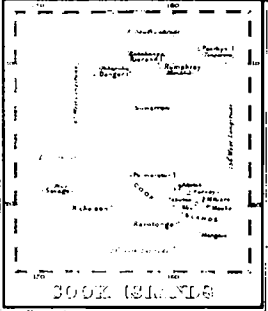
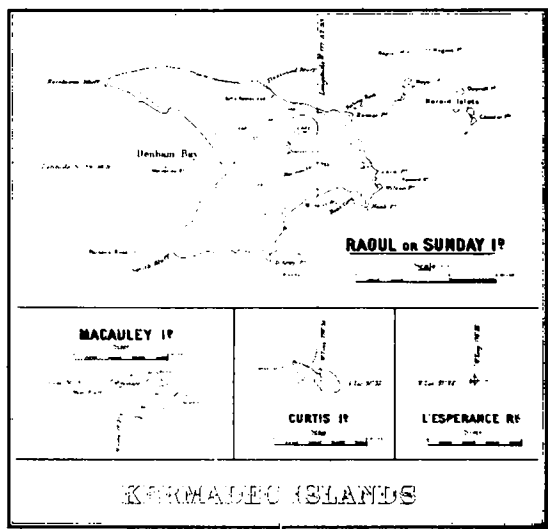
T A S M A N

S E A

Reference to State of Public Surveys, 1907.

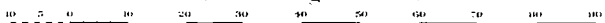
- Standard survey
- Minor triangulation
- Section survey under check
- Section survey built

MIDDLE ISLAND




SOUTH ISLAND
(TE IKA-A-MAUI)
NEW ZEALAND

Scale of English Miles



Reference

- Cities
- Boroughs
- Towns
- Railways
- Roads
- Boundaries of Land Districts

- Standard survey
- Minor triangulation
- Section survey under check
- Section survey built

T A S M A N I A N S E A

South Latitude

S O U T H P A C I F I C

(TE MOANA-NUI-A-KIWA)

O C E A N

Stewart Island

