

1927.  
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.  
SURVEYS  
(ANNUAL REPORT ON).

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

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

SIR,—

Wellington, 2nd July, 1927.

I have the honour to present herewith the report on survey operations for the year ended 31st March, 1927.

I have, &c.,  
W. T. NEILL,  
Surveyor-General.

Hon. A. D. McLeod, Minister of Lands.

REPORT.

THE main parts of the report for the year ending the 31st March, 1927, comprise a summary of the operations of the field-parties, grouped under appropriate headings, a brief account of the office-work performed, together with extracts from the reports of the various Chief Surveyors.

The attached tables, A and B, and 1 to 5 inclusive, contain a concise summary of the amount of work completed during the year under review. Fuller details are given in the reports by the Chief Surveyors appended hereto.

A comparison of Table A with the similar table last year shows that, while the area of town and suburban lands has increased, the average costs have considerably decreased, and that the area of rural and Native lands have decreased considerably, the average costs per acre being practically unchanged.

Table B shows the areas of rural and of Native lands surveyed in the various land districts. Both these show a decrease on last year—the rural of 53,705 acres, and Native, 59,919 acres.

TABLE A.

Class of Work.	Area, &c.	Average Cost.	Total Cost.
Minor triangulation, by staff .. ..	53 sq. miles	£2·56 per mile	£ 136 0 0
Topographical (sketch), by staff .. ..	8,228 acres	11·51d. per acre	395 10 6
"          "      by private surveyors .. ..	16,759 "	8·13d. "	567 12 0
"          (contoured), by staff .. ..	72 sq. miles	£9·59 per mile	690 17 6
Rural, by staff .. ..	90,171 acres	1·95s. per acre	8,776 3 1
"      by private surveyors .. ..	12 "	"	6 0 0
Suburban, by staff .. ..	1,016 "	14·90s. per acre	756 19 3
"      by private surveyors .. ..	17 "	44·17s. "	37 11 0
Town, by staff .. ..	1,361 sections	£1·84 per section	2,504 10 3
Native Land Court, by staff .. ..	11,311 acres	2·59s. per acre	1,465 8 5
"          by private surveyors .. ..	68,139 "	2·75s. "	9,365 7 11
Roads, by staff .. ..	78 miles	£30·9 per mile	2,411 2 6

TABLE B.

Land District.	Rural Survey.	Native Land Court.
	Acres.	Acres
North Auckland .. ..	9,788	6,081
Auckland .. ..	14,556	43,391
Gisborne .. ..	11,850	15,580
Hawke's Bay .. ..	5,558	2,917
Taranaki .. ..	21,478	1,527
Wellington .. ..	1,902	7,592
Marlborough .. ..	862	405
Nelson .. ..	4,793	"
Westland .. ..	2,377	523
Canterbury .. ..	4,472	695
Otago .. ..	12,094	302
Southland .. ..	453	437
Totals .. ..	90,183	79,450

MINOR TRIANGULATION.

Two small areas were completed during the year—one in the Auckland District, and one in the Otago District.

SETTLEMENT SURVEYS.

The settlement surveys comprise Crown land and land for settlements, and are shown in Table 2 under their appropriate headings for each land district, and further details of each block or settlement is set out in the reports of the Chief Surveyors.

NATIVE-LAND SURVEYS.

A considerable decrease, of 59,919 acres, in the area returned for this class of survey for the year has already been noted. A very small proportion—less than 15 per cent.—of this work has been done by the staff, and only on those blocks in which the Crown has been directly interested.

GEODETIC TRIANGULATION.

One party, under Mr. H. M. Ross, has been engaged on this work during the year. Ten new stations have been occupied and observations taken, while the reconnaissance of the Hawke's Bay and part of the Wellington Districts has been completed. Details of this survey will be published in the "*Records of the Survey.*"

STANDARD SURVEYS.

Good progress has been made with these surveys during the year, and the usual high degree of accuracy maintained.

Mr. H. M. Kensington reports the completion of the Whangarei survey (both field and mapping), the extension and reinstatement of the Auckland City survey, and levelling of the Avondale Borough survey.

At New Plymouth Mr. A. C. Haase reports forty miles of streets measured and fifty new blocks placed, besides triangulation work to control the survey.

Mr. C. Otway has continued the field work of the Invercargill standard survey.

Mr. Clapperton completed the field work of the Blenheim standard survey.

Mr. Adams has revised 37½ miles of standard traverse in the suburbs of Christchurch, and is now engaged in completing the standard survey of Timaru.

Various minor repairs and reinstatements have been carried out in other districts, chiefly in connection with the permanent surfacing of roads and the consequent new formation required.

TOPOGRAPHICAL SURVEY.

The plane table survey on 4 in.-to-1-mile scale is being continued at Rotorua and Taranaki, while a start on a small area at Ngāruawāhia has been commenced. Details of these will be given in the “*Records of the Survey.*”

FIELD INSPECTIONS.

Inspections have been carried out generally throughout the districts by a senior staff officer. Usually these disclose that the surveyor is taking pains to turn out correct work, but in several instances the work has not been up to the standard required by the regulations, and the surveyors responsible have been called upon to make good any defects found.

Several of the districts, owing to shortage of staff and urgent settlement surveys, have not had sufficient inspections made, and steps are being taken to see that this important duty is properly and sufficiently carried out throughout the Dominion.

TIDAL SURVEY.

The work for the year under report comprised the completion of the analysis for the Port of Lyttelton for 1924, together with a complete fresh analysis for the Ports of New Plymouth (1920) and Dunedin (1925); also a portion of the analysis for the Port of Lyttelton for 1925. The constants derived therefrom, combined with previous determined values, are contained in Table C.

TABLE C.  
*Mean Values of the Harmonic Constants for Use in preparing Tide-tables.*

Tide Symbol.	Auckland. A <sub>0</sub> = 5·72 ft.		Bluff. A <sub>0</sub> = 5·27 ft.		Dunedin. A <sub>0</sub> = 3·23 ft.		Lyttelton. A <sub>0</sub> = 3·20 ft.		New Plymouth. A <sub>0</sub> = 5·50 ft.		Wellington. A <sub>0</sub> = 2·93 ft.		Westport. A <sub>0</sub> = 4·77 ft.	
	H.	K.	H.	K.	H.	K.	H.	K.	H.	K.	H.	K.	H.	K.
<i>Short Period.</i>	Ft.	°	Ft.	°	Ft.	°	Ft.	°	Ft.	°	Ft.	°	Ft.	°
S1	0·011	31·74	0·010	100·05	0·014	49·25	0·028	26·40	0·009	91·27	0·002	354·03	0·011	78·04
S2	0·580	268·31	0·502	49·79	0·252	128·63	0·167	141·96	1·094	306·40	0·100	330·28	0·959	332·22
S4	0·019	331·83	0·009	223·42	0·007	317·91	0·009	201·67	0·007	341·49	0·004	215·90	0·007	32·75
S6	0·003	41·77	0·006	170·17	0·002	119·29	0·015	341·69	0·006	87·89	0·004	310·31	0·006	331·21
M1	0·009	144·71	0·011	127·33	0·010	54·12	0·010	62·75	0·008	64·46	0·006	22·11	0·012	143·08
M2	3·818	206·37	2·858	35·68	2·438	122·54	2·888	124·31	3·989	277·21	1·611	138·99	3·747	304·43
M3	0·039	199·21	0·011	272·74	0·014	276·10	0·013	141·03	0·030	161·11	0·019	175·72	0·021	208·15
M4	0·106	124·54	0·088	226·45	0·264	179·09	0·013	92·11	0·080	51·27	0·041	251·11	0·057	53·90
M6	0·026	314·33	0·086	79·53	0·066	358·91	0·020	65·53	0·025	255·94	0·012	98·61	0·026	36·82
O1	0·053	145·25	0·113	72·91	0·089	70·26	0·087	61·61	0·048	106·48	0·103	36·57	0·093	45·98
K1	0·235	169·17	0·058	115·68	0·076	93·02	0·150	83·63	0·205	185·77	0·082	84·49	0·073	184·39
K2	0·139	256·95	0·134	46·77	0·089	118·09	0·055	104·38	0·304	298·03	0·044	7·49	0·276	328·04
P1	0·077	163·91	0·023	105·44	0·021	102·31	0·050	102·03	0·060	177·11	0·032	77·13	0·022	133·91
J1	0·017	185·22	0·006	198·96	0·005	74·09	0·006	163·11	0·019	228·96	0·010	178·05	0·013	219·25
Q1	0·009	67·58	0·031	47·70	0·027	76·05	0·022	58·32	0·018	34·58	0·036	22·17	0·037	33·03
L2	0·108	219·79	0·109	32·44	0·148	110·43	0·076	167·26	0·119	273·21	0·029	156·82	0·097	285·41
N2	0·793	179·27	0·654	16·50	0·520	103·50	0·649	94·34	0·810	259·40	0·398	104·65	0·770	289·02
V2	0·203	206·34	0·153	53·35	0·109	96·32	0·144	96·48	0·188	289·63	0·107	113·02	0·194	320·40
U2	0·102	178·49	0·065	7·93	0·032	57·82	0·103	61·72	0·139	251·55	0·067	88·08	0·134	283·83
T2	0·057	294·82	0·020	89·11	0·018	230·35	0·029	232·05	0·068	30·68	0·031	280·97	0·053	9·08
(MS)4	0·173	195·31	0·081	2·78	0·105	141·56	0·102	108·39	0·096	258·83	0·035	133·28	0·105	294·78
(2SM)2	0·066	303·10	0·045	121·63	0·045	13·29	0·061	29·09	0·083	217·38	0·033	356·74	0·076	199·89
R2	0·015	211·16	0·014	111·90	0·027	211·24	0·016	137·14	0·035	307·59	0·011	138·68	0·035	178·80
<i>Long Period.</i>														
Mm	0·045	195·02	0·043	1·94	0·057	359·75	0·049	122·12	0·062	354·67	0·039	174·85	0·051	199·18
Mf	0·050	206·01	0·067	235·36	0·088	236·03	0·066	183·24	0·028	353·73	0·060	232·19	0·055	7·87
MSf	0·035	209·57	0·063	326·77	0·080	78·63	0·098	144·29	0·041	148·95	0·043	106·30	0·069	98·39
Sa	0·186	30·61	0·089	16·98	0·139	286·69	0·121	296·28	0·083	80·95	0·108	332·12	0·113	81·51
Ssa	0·071	164·94	0·115	82·05	0·099	155·74	0·090	142·69	0·093	78·89	0·073	111·04	0·116	111·03

The tide-tables for the year 1928 for the seven New Zealand ports (Auckland, New Plymouth, Wellington, Lyttelton, Dunedin, Bluff, and Westport) for which tidal predictions are

published were received in Wellington on the 3rd August, 1926, from the Hydrographer to the Admiralty.

The work of measuring the times and heights of high and low water was again performed at the Tidal Institute, University of Liverpool, England.

MAGNETIC OBSERVATORY.

During the year the Eschenhagen magnetographs at Amberley and the Adie magnetographs at Christchurch have been kept in operation. The mean values for the year 1926 of the magnetic elements obtained from the hourly measurements of the magnetograms are as follows :—

				Mean Value, 1926.	Change since 1925.
Magnetic declination (east)	..	..	..	17° 26·0'	+ 4·87'
Magnetic horizontal force	..	..	..	0·22141 C.G.S.	—25 $\gamma$
Magnetic inclination (south)	..	..	..	68° 15·6'	+ 1·4'
Northerly component	..	..	..	0·21124 C.G.S.	—34 $\gamma$
Easterly component..	..	..	..	0·06633 „	+23 $\gamma$
Vertical component ..	..	..	..	0·55525 „	+ 3 $\gamma$
Total magnetic force	..	..	..	0·59777 „	—34 $\gamma$

The customary diagrams showing diurnal variations have been drawn for publication in the “*Records of the Survey of New Zealand*” and the coefficients of the first four terms in Fourier series have been computed for the seasonal and annual diurnal variations.

Milne seismograph No. 16 has been kept in operation, and the resulting seismograms measured for publication.

The customary daily meteorological observations have been made. In addition many observations of wind directions and velocities in the upper air have been made with apparatus lent by the New Zealand Institute. Mr. Baird, assistant, was on loan with the apparatus to the Scientific and Industrial Research Department during February for the purpose of making such observations at the Wigram Aerodrome, Sockburn, and it is expected shortly to publish records up to date of nearly one hundred balloon flights, since the Secretary of the Scientific and Industrial Research Department has kindly offered to allow the Sockburn observations to be included with the Christchurch series. This is contingent on the permission of the New Zealand Institute being obtained.

Mr. H. F. Baird and Mr. P. W. Glover have co-operated in the work, and beyond ordinary hours much labour has been expended upon this research.

Hourly values of magnetic elements for 1926 and 1906 are prepared for publication in the forthcoming volume IV of “*Records of the Survey of New Zealand.*”

The mean annual values of the magnetic elements, as far as they are available, are shown in Table D following.

TABLE D.  
*Mean Annual Values of the Magnetic Elements at Christchurch Observatory.*

Date.	Declination E. of N.	Annual Change.	Horizontal Force.	Annual Change.	Vertical Force.	Annual Change.	Inclination South.	Annual Change.	Hourly Values published in Annual Reports
	° /	/	C.G.S. Unit.	$\gamma$	C.G.S. Unit.	$\gamma$	° /	/	
1902 ..	16 15·1	+3·2	0·22694	—25	0·55277	+ 9	67 40·80	+1·50	1912–13
1903 ..	16 18·3	+3·5	0·22669	—25	0·55286	+21	67 42·30	+1·80	1912–13
1904 ..	16 21·8	+3·6	0·22644	—16	0·55307	+41	67 44·10	+1·70	1912–13
1905 ..	16 25·4	+2·4	0·22628	—23	0·55348	+28	67 45·80	+1·80	1919–20
1906 ..	..	..	..	..	..	..	..	..	..
1907 ..	16 31·1	..	..	..	..	..	..	..	..
1908 ..	..	..	..	..	..	..	..	..	..
1909 ..	..	..	..	..	..	..	..	..	..
1910 ..	16 37·6	+1·4	0·22515	—27	0·55485	+12	67 54·80	+1·40	1920–21
1911 ..	16 39·0	+2·5	0·22494	—23	0·55497	— 9	67 56·20	+1·00	..
1912 ..	..	..	..	..	..	..	..	..	..
1913 ..	16 44·0	+0·8	0·22449	—35	0·55478	—13	67 58·20	+1·60	1913–14
1914 ..	16 44·8	+2·2	0·22414	—27	0·55465	+ 7	67 59·80	+1·67	1914–15
1915 ..	16 47·0	+2·8	0·22387	—32	..	..	..	..	*Sept., 1918
1916 ..	16 49·8	+3·2	0·22355	—27	..	..	..	..	*Sept., 1918
1917 ..	16 53·0	+2·7	0·22328	—24	0·55486	+30	68 04·80	+1·90	*Mar., 1921
1918 ..	16 55·7	+2·9	0·22304	—24	0·55516	— 9	68 06·70	+1·10	1918–19
1919 ..	16 58·6	+3·1	0·22280	—19	0·55507	+18	68 07·80	+1·40	1919–20
1920 ..	17 01·7	+2·9	0·22261	—20	0·55525	+03	68 09·20	+1·10	†1920–21
1921 ..	17 04·6	+3·7	0·22241	—24	0·55528	—21	68 10·30	+0·90	†1921–22
1922 ..	17 08·3	+3·4	0·22217	—08	0·55507	+19	68 11·20	+0·80	†1922–23
1923 ..	17 11·7	+4·7	0·22209	—21	0·55526	—18	68 12·00	+0·73	†Vol. I.
1924 ..	17 16·4	+4·7	0·22188	—22	0·55508	—14	68 12·73	+1·47	†Vol. II.
1925 ..	17 21·1	+4·9	0·22166	—25	0·55522	+ 3	68 14·20	+1·4	†Vol. III.
1926 ..	17 26·0	..	0·22141	..	0·55525	..	68 15·60	..	..

\* Mean hourly values published in *New Zealand Journal of Science and Technology.* † Special publication. ‡ *Records of the Survey.*

## HONORARY GEOGRAPHIC BOARD.

(Provisionally constituted, 1924.)

The third annual meeting of the Board, convened by the Surveyor-General, was held in the office of the Under-Secretary for Lands, Government Buildings, on the 9th February, 1927.

The members present were—Sir Frederick R. Chapman (in the chair), the Ven. Archdeacon Herbert Williams, Messrs. W. T. Neill (Surveyor-General), Elsdon Best, and M. Crompton Smith.

Mr. J. C. Andersen was unavoidably absent, being at a conference of librarians at Wanganui.

*Lists of Names.*—Lists of doubtful and duplicated names supplied by the Chief Surveyors of Marlborough, Otago, Southland, and Westland were circulated among the members for their comments.

*Orthography.*—The following names, as being correct spelling, were submitted and confirmed: "Kaitaratahi" (railway-station, Gisborne district) and "Katiki" (railway-station near Hampden).

*Requests.*—Alterations to the names of the following were submitted, recommended, and confirmed: Name of "Kahukura" to "Tikitiki" for post-office; name of "Maungarei" to "Marama" for railway-station; name of "North East Harbour" to "Macandrew Bay" post-office; name of "Okehu" to "Maxwell" for railway-station.

*Protest.*—From the Rev. F. H. Spencer, against transfer of name of "Te Ngae" from the old post-office site to the new office at Rotokawa, and suggestion that the name of "Rotokawa" be applied to the new post-office. Resolved, That the new post-office be named "Rotokawa" and the name of "Te Ngae" be retained for the old site.

*Protest.*—From Mr. Lippe, against the obliteration of his name and the substitution of Mr. Talbot's for a peak in Milford Sound district. Resolved, That the present name should not be altered.

*Changes of Name.*—It was resolved that the Board expresses the wish that the Ministers and Heads of Departments refer all cases of proposed changes of names to the Board, and that the editor of the *Dominion* be asked to bring up before the forthcoming journalistic conference the question of urging the editors of the various papers to do their best to forward the interests of this Board in correct spelling of Maori names.

Correspondence from Mr. Brocket, the Minister of Internal Affairs, Railway Board, Postal Department, Messrs. G. M. Moir, R. S. M. Sinclair, E. P. Lee, M.P., J. Roberts, the Minister of Railways, Canon Nevill, and Professor J. Park was submitted and dealt with.

## PROPOSED OPERATIONS FOR 1927-28.

*Geodetic Triangulation.*—The coming year should see this triangulation extended over the Hawke's Bay and northern portion of the Wellington districts, and the connection with the Wairarapa base-line should not be far distant.

*Minor Triangulation.*—No work of this nature is contemplated at present, but a little may be found necessary to control settlement surveys as this work progresses.

*Topographical Surveys.*—The contoured topographical surveys now in progress in the Taupo County and in Taranaki (including the Egmont National Park) will be continued during the year, while that in the vicinity of Ngaruawahia will be completed early.

*Exploratory and Geographical Surveys.*—At the end of the year a party under the charge of Mr. Preston had fixed a number of positions in the West Coast Sounds by astronomic latitudes and wireless longitudes, and made topographical sketches of several of the Sounds and surrounding areas based on triangulation with a 4 in. theodolite. This work will be mapped during the year, and will form a check on the coast-line as at present charted, and which is supposed to be considerably in error. The report on this survey will be published in the "*Records of the Survey.*"

*Standard Surveys.*—The survey of the suburban boroughs around the City of Auckland will be continued, while that of the Borough of New Plymouth will be completed during the year. An extension of the survey of Westport is also expected to be completed, and the rural standard survey of the main road near Blenheim and Nelson will be again put in hand. The extension of the standard survey of Timaru will be completed early in the year, and Christchurch suburban survey continued as found necessary. The survey of Invercargill will be continued. The large increase in the urban population will necessitate a more rapid progress of this class of survey, and it is desirable that further surveys be put in hand as soon as surveyors are available.

*Town-section Surveys.*—The principal towns surveys for the ensuing year are those of the Orakei Garden Suburb, Auckland, and the Lower Hutt Valley. These will be continued and the sectionized portions made ready for placing on the market. Several other small areas in various land districts will also be cut up for disposal as towns.

*Rural Settlement Surveys.*—About 124,000 acres of rural land is or will become available for settlement during the year, and the survey of this area will be put in hand. This area consists chiefly of Native land purchased by the Crown, and is scattered throughout the Dominion.

*Native Land Court Surveys.*—Authorities for the survey of 143,671 acres of Native lands have been issued, and practically the whole of this work has been placed in the hands of private surveyors.

*Miscellaneous.*—In addition to the above-mentioned works there is the customary examination and recording of plans, the inspection of surveys, the compilation and drawing of maps for publication the computations in connection with the tidal, magnetic, and geodetic surveys, and the preparation of various tables in connection therewith.

## GENERAL.

*Map-publication.*—The total publications under this heading were 99, and the cost of printing was £1,880.

The maps comprised survey districts on a scale of 40 chains to an inch (12); survey districts on the 80-chain scale (39); counties, 1 mile to an inch (7); towns, on a scale of 8 to 10 chains to an inch (23); territorial maps on the 4-mile scale (5); general maps (10); and miscellaneous maps (3).

Although it will be noticed the printing-costs show a slight increase over last year's figures, it must be remembered that there were a greater number of the more expensive maps published, and it is fully anticipated the sales will justify the expenditure.

The cash sales of lithos from all districts amounted to £1,450, an increase of £340, or 30 per cent., on the previous year. This increase, while satisfactory, is in a large measure due to the special town maps, for which there is, and will be, a larger public demand.

*Town Subdivisional Schemes.*—The town schemes approved during the year numbered 316, a falling-off of twenty-four from last year's figures. The North Auckland district contributes the bulk of these, 56 per cent. being from this district; while Canterbury (18 per cent.), Wellington (12 per cent.), and Auckland (5 per cent.) are responsible for the greater portion of the remainder.

An analysis of the figures supplied shows that 4,539 acres was subdivided into residential lots outside of boroughs and town districts. Of this area, new roads account for 346 acres; road and access reserves, 31 acres; recreation and other public reserves, 305 acres; and area of lots, 3,857 acres.

*Proclamation of Roads, &c.*—During the past year a number of applications for the proclamation of road-lines laid out by the Native Land Court under sections 48, 49, 50, and 52 of the Native Land Amendment Act, 1913, were considered and dealt with. The statutory notices under section 15 of the Native Land Amendment Act, 1914, were forwarded to the local authorities of the districts concerned, and in the majority of cases no objections were raised to the proclamation of the road-lines as public highways.

Under the Land for Settlements Act, 1925 (section 106), five warrants were issued closing unformed and unused roads intersecting or adjoining land acquired under the Act, in order that the areas comprised therein could be incorporated in the allotments available for disposal.

Under the Land Transfer Act, 196 warrants for the issue of certificates of title were examined and certified to in terms of section 13 of the Act. A number of applications to bring land under the Land Transfer Act were also considered and approved in pursuance of section 19 of the Act.

*The Survey Bill.*—A Bill to consolidate the laws relating to surveyors and surveys generally has been drafted, and will shortly be printed. Besides the consolidation of existing laws, it provides for the constitution of a Geographic Board, whose function will be to determine the naming of places within the Dominion, and of an Alignment Board to fix the true alignment of streets and frontages. Provisions dealing with town surveys are also more clearly laid down than at present, and the functions of the Survey Branch of the Department are clearly set forth.

*Office Accommodation.*—Accommodation for the increasing number of lithographs stocked in the Head Office is very badly needed, and with the present congested room not sufficient oversight can be done. This is bound to result in a want of efficiency and waste unless quickly remedied.

*Magnetic Survey.*—A repeat magnetic survey, especially of the important seaports, should receive early attention.

## STAFF.

*Retirements.*—Mr. H. J. Lowe, Chief Surveyor, North Auckland, who was born in 1862, joined the Public Service in the year 1880, entering the office of the then Prime Minister (the late Sir John Hall) as a cadet. Desiring to follow the profession of a surveyor, he applied and was appointed to a cadetship in the Survey Department in 1882. Passing his examination as a surveyor, he soon made his mark in his chosen profession, and was recognized as a keen, painstaking officer of marked ability. He executed many important settlement surveys in the hinterland of the Wellington District, his work very often being carried out under most trying and difficult conditions. Mr. Lowe's triangulation surveys were of commendable accuracy, and to-day stand as a monument to his professional skill and an example to others. In respect to town-planning he has shown a keen interest and perception of the requirements of this important branch of the Department's activities. His far-seeing wisdom in setting apart suitable areas in town subdivisions for children's playing-grounds will be appreciated more and more as time advances. It may be said, in conclusion, that Mr. Lowe ever held the high encomiums of his staff, and by assiduous and tactful attention to his official duties he has shown marked ability and powers of discrimination.

Mr. D'Arcy Irvine joined the Department as a survey cadet at Napier in the year 1878. Passing his examination, he was appointed Government Surveyor, Napier, in 1881, and was engaged in field practice in the Hawke's Bay District for six and a half years. Resigning from the service, he journeyed to Australia, where he passed further examinations in his profession. Returning to New Zealand, he was reappointed to the permanent staff of the Department and carried out further surveys with credit and distinction. In 1917 Mr. Irvine was appointed to the office staff as draughtsman and computer, a position he held at the time of his retirement.

Mr. J. G. Wilson joined the Department, in 1903, as a survey cadet in the Napier Office. As a surveyor he carried out many surveys in the Hawke's Bay District. About fifteen years ago he was transferred to Christchurch as draughtsman and computer, a position he held at the time of his retirement. Mr. Wilson was a careful and industrious officer whose work was outstanding for meticulous care and accuracy.

Mr. J. Y. Dixon joined the Department as a draughting cadet, rising to the position of draughtsman in charge of the road-legalization and Crown-grant branch of the North Auckland office. In his official career he showed ability and tact, and carried out his duties with credit to himself and the Department.

Mr. A. J. Morrison joined the service as a draughtsman in 1886. During the whole of his official career he was stationed in the Dunedin office. His work as a photo-litho draughtsman was of high order, and he carried out his official duties in a most conscientious manner. He was a high-class photographer and artist, and his services in that capacity were often made use of by the Department.

Mr. F. J. Halse was appointed to the Department in 1879 as a draughting cadet, showing marked aptitude in his work. He was a zealous and painstaking officer, and at the time of his retirement was lithographic draughtsman in the Wellington office.

*Appointment, Transfers, &c.*—Mr. A. W. Craig was appointed Chief Draughtsman and Land Transfer draughtsman, Nelson (1/9/26); Mr. F. R. Burnley, Land Transfer draughtsman, was appointed to the position of Chief Draughtsman, North Auckland (1/1/27); Mr. L. J. Poff, surveyor, Wellington, appointed Land Transfer draughtsman, North Auckland.

*Obituary.*—It is with regret that I have to record the passing-away of the late J. H. W. Parsons, draughtsman, of the Auckland office. Mr. Parsons, who joined the Department in 1906, was a keen, zealous officer, courteous and painstaking in the discharge of his official duties. The sympathy of the Department is extended to his widow and family in their sad loss.

*Appreciation.*—In conclusion, I am pleased to bring under your notice and to place on record the appreciation by the various Chief Surveyors of the manner in which their officers have carried out their duties during the year, and I desire to convey my thanks to the whole of the Survey staff for their good work.

W. T. NEILL, Surveyor-General.

Table 1.—RETURN OF FIELD-WORK EXECUTED BY HEAD OFFICE STAFF FROM 1ST APRIL, 1926 TO 31ST MARCH, 1927.

District.	Standard Surveys.				Geodetic Triangulation.				Other Work.
	Completed.		In Progress.		Completed.		In Progress.		
	Miles.	Cost.	Miles.	Cost.	Square Miles.	Cost.	Square Miles.	Cost.	
		£ s. d.		£ s. d.		£ s. d.		£ s. d.	£ s. d.
North Auckland ..	23	1,215 13 3	13	531 10 3	..	..	..	..	623 10 5
Auckland ..	}	..	..	..	..	..	7,200	6,564 18 0	..
Gisborne ..		..	60	4,392 16 8	..	..	..	..	..
Taranaki ..		..	60	4,570 2 10	..	..	..	..	..
Southland ..	..	..							

Table 2.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY LANDS AND SURVEY DEPARTMENT, FROM 1ST APRIL, 1926, TO 31ST MARCH, 1927.

District.	Minor Triangulation.			Topographical Survey for Selection as Unserved Land.			Topographical Survey Contoured.			Rural.		
	Acres.	Cost per Acre.	Total Cost.	Acres.	Cost per Acre.	Total Cost.	Sq. Miles.	Cost per Sq. Mile.	Total Cost.	Acres.	Cost per Acre.	Total Cost.
North Auckland ..	..	..	£ s. d.	..	d.	£ s. d.	..	£	£ s. d.	9,788	s.	£ s. d.
Auckland ..	14,700	0.5	29 0 0	..	..	..	72	9.59	696 17 6	14,556	0.78	2,576 13 11
Gisborne ..	..	..	..	..	..	..	..	..	..	11,850	1.15	567 0 3
Hawke's Bay ..	..	..	..	7,850	10.8	354 0 0	..	..	..	5,558	0.90	686 7 0
Taranaki ..	..	..	..	..	..	..	97	3.91	379 8 8	21,478	0.90	244 0 0
Wellington ..	..	..	..	378	26.4	41 10 6	..	..	..	1,902	4.80	967 2 4
Marlborough ..	..	..	..	..	..	..	..	..	..	862	1.16	456 17 7
Nelson ..	..	..	..	..	..	..	..	..	..	4,793	2.50	50 13 6
Westland ..	..	..	..	..	..	..	..	..	..	2,377	8.13	583 2 7
Carterbury ..	..	..	..	..	..	..	..	..	..	4,472	1.33	967 0 0
Otago ..	18,000	1.4	107 0 0	..	..	..	..	..	..	12,094	2.03	296 8 5
Southland ..	..	..	..	..	..	..	..	..	..	453	7.02	1,227 18 0
Totals ..	32,700	1.0	136 0 0	8,228	11.5	395 10 6	169	6.33	1,070 6 2	90,183	1.94	158 19 6
Totals ..	..	..	..	..	..	..	..	..	..	..	..	8,782 3 1

District.	Village and Suburban.			Town Section Survey.			Roads, Railways, and Water-races.			Other Work.		Total Cost of Completed Work.
	Acres.	No. of Sections.	Cost per Acre.	Total Cost.	Acres.	No. of Sections.	Cost of Sections.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	
North Auckland ..	23.2	5	£ s. d.	£ s. d.	149.5	226	£	£ s. d.	6.8	26.59	180 12 3	£ s. d.
Auckland ..	161.3	15	43 19 0	561 11 10	54.8	234	2.48	636 11 10	26.5	28.00	742 3 1	1,761 7 8
Gisborne ..	..	..	211 15 4	..	..	..	2.72	..	4.2	30.59	130 0 0	1,678 15 9
Hawke's Bay ..	..	..	..	..	..	..	..	..	0.9	24.00	19 3 0	43 3 2
Taranaki ..	124.5	16	103 4 0	..	..	..	..	..	1.0	20.62	19 3 0	136 0 0
Wellington ..	31.0	1	19 5 0	775 2 3	165.0	668	1.16	..	0.9	33.30	119 5 2	277 14 5
Marlborough ..	..	..	..	..	..	..	..	..	3.6	53.75	43 0 0	531 11 11
Nelson ..	5.5	3	25 7 0	..	..	..	..	..	0.8	53.90	121 9 8	1,049 15 0*
Westland ..	97.0	18	153 15 0	370 0 0	49.0	141	2.62	..	2.3	38.00	9 10 0	252 15 9
Carterbury ..	4.1	3	24 0 0	76 0 0	18.8	77	0.99	..	0.3	44.45	71 2 6	111 10 0
Otago ..	..	..	..	15 14 11	2.3	3	5.25	22.30	1.6	22.30	232 10 6	1,210 0 9†
Southland ..	551.9	35	132 13 2	26 14 5	1.7	7	3.75	..	10.4	28.10	120 2 3	45 14 5
Totals ..	998.5	96	713 18 6	2,461 15 3	441.1	1,356	1.81	..	4.3	28.91	1,812 18 5	7,426 16 3
Totals ..	..	..	..	..	..	..	..	..	62.7	28.91	1,812 18 5	22,799 8 2

\* Other work includes 30 miles of standard traverse at £56 per mile. † Other work includes 37.3 miles of standard traverse at £29.4 per mile



**Table 3.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY OTHER DEPARTMENTS, FROM 1ST APRIL, 1926, TO 31ST MARCH, 1927.**

District.	Topographical Survey.			Village and Suburban.				Town Section Survey.			
	Acres.	Cost per Acre.	Total Cost.	Acres.	No. of Sections.	Cost per Acre.	Total Cost.	Acres.	No. of Sections.	Cost of Sections.	Total Cost.
North Auckland	..	d.	£ s. d.	7.5	4	s.	£ s. d.	0.5	1	£	£ s. d.
Auckland	..	..	..	27.8	4	48.20	18 0 0	..	..	15.00	15 0 0
Gisborne	16,759	8.13	567 12 0	..	..	41.00	57 0 0	4.2	2	7.87	15 15 0
Hawke's Bay	..	..	..	..	..	..	..	..	..	..	..
Taranaki	..	..	..	..	..	..	..	..	..	..	..
Wellington	..	..	..	..	..	..	..	..	..	..	..
Marlborough	..	..	..	..	..	..	..	..	..	..	..
Nelson	..	..	..	0.3	1	372.5	5 11 9	0.3	2	6.00	12 0 0
Westland	..	..	..	..	..	..	..	..	..	..	..
Canterbury	..	..	..	..	..	..	..	..	..	..	..
Otago	..	..	..	..	..	..	..	..	..	..	..
Southland	..	..	..	..	..	..	..	..	..	..	..
Totals	16,759	8.13	567 12 0	35.6	9	45.27	80 11 9	5.0	5	8.55	42 15 0

District.	Native Land Survey.				Roads, Railways, and Water-races.			Other Work.	Total Cost.
	Acres.	No. of Sections or Divisions.	Cost per Acre.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Cost.	
North Auckland	6,081	106	s.	£ s. d.		£	£ s. d.	£ s. d.	£ s. d.
Auckland ..	43,391	285	2.64	803 2 2	..	..	..	..	836 2 2
Gisborne ..	15,580	190	2.10	4,557 10 2	14.8	40.4	598 4 1	..	5,228 9 3
Hawke's Bay	2,917	101	2.72	2,120 2 10	..	..	..	..	2,687 14 10
Taranaki ..	1,527	31	4.20	611 0 0	..	..	..	..	611 0 0
Wellington ..	1,527	31	4.10	312 11 11	..	..	..	..	312 11 11
Wellington ..	7,592	140	4.50	1,706 10 11	..	..	..	197 16 8	1,904 7 7
Marlborough	405	9	3.92	79 7 0	..	..	..	..	79 7 0
Nelson ..	..	..	..	..	..	..	..	..	17 11 9
Westland ..	523	5	4.58	120 0 0	..	..	..	..	120 0 0
Canterbury ..	695	35	5.78	201 0 0	..	..	..	..	201 0 0
Otago ..	302	83	15.10	228 6 1	..	..	..	..	228 6 1
Southland ..	437	13	4.18	91 5 3	..	..	..	..	91 5 3
Totals ..	79,450	998	2.72	10,830 16 4	14.8	40.4	598 4 1	197 16 8	12,317 15 10

**Table 4.—RETURN SHOWING SURVEYORS EMPLOYED AND WORK ON HAND ON 1ST APRIL, 1927.**

Chief Surveyors.	Surveyors employed.		District.	Work on Hand.					
	Staff.	Contract.		Topographical.	Settlement.	Native.	Roads.	Towns.	Standard Traverse.
O. N. Campbell	5	..	North Auckland	Sq. Miles.	Acres.	Acres.	Miles.	Acres.	Miles.
K. M. Graham	8	10	Auckland	..	22,946	..	6	37	..
E. H. Farnie	2	..	Gisborne	1,155	22,205	46,842	45	5	..
J. D. Thomson	1	..	Hawke's Bay	..	17,338	86,000	..	..	..
W. D. Armit	2	6	Taranaki	1,100	9,000	..	1	..	..
F. H. Waters	2	9	Wellington	..	1,455	3,966	16	..	..
J. Stevenson	1	..	Marlborough	..	193	6,097	2	..	..
A. F. Waters	2	..	Nelson	..	300	200	20	50	100
W. T. Morpeth	2	..	Westland	..	12,029	..	1	7	..
W. Stewart	2	..	Canterbury	100	475	112	7	..	..
R. S. Galbraith	2	..	Otago	..	17,234	215	8	27	15
N. C. Kensington	2	1	Southland	..	11,800	155	..	..	..
Totals	31	26	..	2,355	124,035	143,671	106	126	115

Table 5.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1926, TO 31ST MARCH, 1927.

District.	Plans placed on Instruments of Title.				Deeds and other Instruments passed.	Plans examined and passed.				Maps drawn for Lithography.		Lithographs, &c., sold.
	Crown.		Native Land.	Land Transfer.		Crown.	Native.	Land Transfer.	Other Departments.	Standard Publications.	Sale Plans.	
	Leases, Licenses.	Freehold.										
North Auckland	478	336	222	10,642	4,981	62	41	794	165	6	124	£ s. d.
Auckland ..	442	270	1,004	2,549	1,080	116	115	230	90	1	27	211 18 0
Gisborne ..	25	..	666	1,619	..	7	51	59	27	3	1	135 7 6
Hawke's Bay ..	90	38	330	3,543	1,885	20	33	181	27	2	7	15 6 6
Taranaki ..	216	96	198	1,508	1,779	31	23	150	35	3	17	57 5 6
Wellington ..	384	337	482	11,028	3,605	40	74	577	108	..	25	48 16 0
Marlborough ..	50	12	18	1,033	477	19	8	59	24	..	1	57 19 0
Nelson ..	219	120	..	187	538	19	..	146	19	7	8	43 18 11
Westland ..	359	..	47	966	28	50	7	23	4	5	11	35 13 9
Canterbury ..	308	116	28	9,726	2,844	26	28	521	26	3	..	19 14 0
Otago ..	462	164	88	3,114	566	77	5	121	11	11	35	248 0 3
Southland ..	89	66	26	2,162	1,316	26	2	99	15	15	4	75 17 10
Head Office ..	..	..	..	..	..	..	..	..	..	..	..	79 8 0
Totals ..	..	..	..	..	..	..	..	..	..	..	..	669 3 5
Totals ..	..	..	..	..	..	..	..	..	..	..	..	1,698 8 8

APPENDIX I.

HEAD OFFICE, DRAUGHTING BRANCH.

REPORT BY H. E. WALSHE, CHIEF DRAUGHTSMAN.

*Map-publication.*—The total maps published during the year were 99, and the cost of printing £1,880. The maps comprised survey districts ( $\frac{1}{2}$  mile to 1 inch), 12; survey districts (1 mile to 1 inch) 39; counties (1 mile to 1 inch), 7; towns (8 chains and 10 chains to 1 inch), 23; territorial (4 miles to 1 inch), 5; small-scale general maps, 10; and miscellaneous, 3. The larger proportionate cost this year is due to the greater number of the more expensive town maps published, and consequently the standard 1-mile maps were allowed to fall into arrears.

The cash sales of lithos from all districts amounted to £1,450, an increase of £340, or 30 per cent., on the previous year. This increase, while satisfactory, is in a large measure due to special town maps, for which there is a larger public demand, being published during the year.

Other Government Departments were supplied with maps to the value of £750, a considerable increase on the normal year's demands.

Three sheets of the 4-miles series territorial maps were published during the year, two more were in proof stage, and the drawing of six more partly completed.

*Town Schemes*—The town schemes approved during the year numbered 316, a falling-off of 24 from the number the previous year. The North Auckland District contributes a little more than half of these, 56 per cent. being from that district, while Canterbury (18 per cent), Wellington (12 per cent.), and Auckland (5 per cent.) are responsible for bulk of the remainder. An analysis of the figures supplied shows that 4,539 acres was subdivided into residential lots outside of boroughs and town districts, and of this area new roads account for 346 acres; road and access reserves, 31 acres; recreation and other public reserves, 305 acres; and area of lots, 3,857 acres.

*Draughtsmen and Computer's Examination.*—This examination was held early in December, 1926, when nineteen draughtsmen and eleven computers presented themselves. The results were as follows: Draughting: first grade (five)—Messrs. R. P. Fletcher, K. H. Melvin, P. B. Wright, F. L. Rossiter, and J. L. Martin; second grade (nine)—Messrs. H. W. Rickard, A. J. Dry, W. A. Nicholson, A. E. Christian, H. J. Fletcher, B. E. Andrewes, N. A. Stevens, W. J. Barker, J. L. Climie. Computing: second grade (eight)—Messrs. N. A. Stevens, W. J. Barker, F. Rochfort, J. W. Beagley, W. G. Pratt, C. B. Hodge, J. L. Climie, H. H. E. Knight.

Officers are now recognizing that this examination is one which it is to their advantage to pass, and the number of entrants is rapidly increasing from year to year.

*Standard of Length.*—During the year a testing-bench has been erected in one of the corridors in the basement of Parliament House, and consequently there is now no delay in waiting on the weather. Temperature-changes are also reduced to a minimum, and the general accuracy of the comparisons is largely increased. The total length of the bands compared with the standard was 283 chains, being double that of the previous year. Of 1-chain standards 3 invar and 7 steel were tested, and of working-bands 6 invar (of a total length of 30 chains) and 33 steel (of a total length of 234 chains) were tested; 6 steel bands, each 100 ft., were also compared, and the ground standard in Bowen Street was tested and re-marked.

## APPENDIX II.

## EXTRACTS FROM THE ANNUAL REPORTS OF CHIEF SURVEYORS.

NORTH AUCKLAND LAND DISTRICT (H. J. LOWE (retired 31st March, 1927), O. N. CAMPBELL, Chief Surveyors).

*Rural*.—During the year 9,776 acres of rural land were surveyed by staff surveyors, and 12 acres by private surveyors.

*Topographical*.—There has been little work in this section, an area of 32 acres only being carried out by staff surveyors.

*Town-section Surveys*.—Staff surveyors subdivided an area of 163·3 acres into town sections.

*Village and Suburban*.—An area of 19 acres was surveyed by staff surveyors in this section, and 4 acres by a private surveyor.

*Roads*.—Staff surveyors completed 12·3 miles of road surveys.

*Native*.—Most of the work in this section was carried out by private surveyors, 6,071 acres being the total for the year. Nine acres were surveyed by a staff surveyor.

*Other Work*.—This work included inspections of Land Transfer surveys, investigation surveys, reports and schemes of subdivision, locating and grading roads, surveys for Police Department, intersections on standard blocks, engineering surveys, &c. In addition, good progress has been made with the preliminary surveys in connection with the Orakei Garden Suburb, and the final survey and road-construction have advanced sufficiently to enable us to contemplate putting the first portion on the market at an early date.

*Office-work*.—During the year 204 plans were received, and 227 were examined and approved; 208 scheme plans have been dealt with; 31 plans were compiled in the office; 6 maps were drawn for photo-lithographic reproduction; 30 block-sheets were drawn; 6 survey district and 2 county maps were revised; 124 sale plans were drawn; 876 tracings were prepared; 478 leases and 336 certificates of title were endorsed; 220 Proclamations were entered; 893 plans were recorded. The year's work has also included a large amount of general work, sun-prints, colouring lithos, mounting, recording Land Board transactions, and *Gazette* notices, searching, correspondence, reports, and general office-work. It will be noted that, notwithstanding the present dull state of the market, 208 scheme plans were dealt with, showing a very slight falling-off from last year.

Steady progress has again been made in respect to the preparation of maps for photo-lithographic reproduction, a pleasing feature being the number of up-to-date survey-district maps of the northern portion of the district now available for sale and office purposes. A long-felt want is also being supplied in the production of 2-chain record sheets of the various boroughs and town districts, a considerable number of which have now been completed.

The draughting-work is maintaining a high standard, and it is creditable that during the year. first-class draughting certificates were obtained by Messrs. P. B. Wright, R. P. Fletcher, and K. H. Melvin. The success of these officers will, no doubt, act as an incentive to the younger members of the staff.

*Standard Surveys*.—During the year the office-work in connection with the branch, carried out by the Crown Lands Branch staff, has included 28 sheets drawn, additions to 8, 36 examined; 23 sheets have been traced, 1 checked, and 17 traverse sheets checked; also work of a general nature, field data, &c.

*Native Land Branch*.—In this branch the year's returns show a total of 25 survey plans and 5 compiled plans received, 49 plans examined and approved; 112 schedules of cost were checked, 7 caveats lodged, 6 Native Land Courts attended, 17 tracings made, 3 compilations; also general work, searching, correspondence, and general office-work. In addition, the officers of this branch have been busily engaged during the later part of the year in preparing and assembling data for the Crown Solicitor to place before the Royal Commission *re* Native grievances. The work has entailed extensive detailed searches of old files and records, and the preparation of illustrative maps.

*Land Transfer Branch*.—885 plans received during the year, and 794 were examined and approved.

*Proposed Operations for 1927-28*.—Mr. Traill will continue the survey of Orakei Garden Suburb. Other staff surveyors have been authorized to survey 22,300 acres of rural land, 36·5 acres of town surveys, and 62 miles of road. Contract surveys on hand include 3,063 acres of Native land and 8 miles of road survey. Office-work will, as usual, include the drawing of survey-district, town-district, and borough maps, and the 20-chain record maps.

*General*.—The past year has been marked by a number of changes in the staff, and we have had to bid regretful farewell to three senior officers of long service—viz., Messrs. H. J. Lowe, Chief Surveyor; A. H. Vickerman, Chief Draughtsman; and J. Y. Dixon, Roads Legalization Branch. Their positions have been filled by the appointment of Messrs. O. N. Campbell, F. R. Burnley, and R. A. R. Enting; while Mr. C. G. D. Maher, of the Auckland staff, succeeded Mr. Enting as Officer in Charge of the General Draughting Branch. Two officers resigned during the year, two were transferred on promotion, one officer was transferred from Drainage Branch, and one from Head Office. Three new cadets have been appointed, the staff now numbering thirty-nine.

AUCKLAND LAND DISTRICT (K. M. GRAHAM, Chief Surveyor).

*Minor Triangulation*.—An area of 23 square miles was covered by minor triangulation in the Maungakawa, Wairere, and Cambridge Survey Districts in connection with the re-establishment of Trig. 144.

*Topographical Survey.*—For the past year two surveyors' assistants have been engaged on this class of survey; one of them has been employed for part of his time in the Rotorua County, and the other has been six months in that county, whilst for the remainder of the year he has been employed at Ngaruawahia carrying out a topographical survey of approximately 54 square miles for the Defence Department. The field-work in the Rotorua County completed during the year comprises 72 square miles, costing £690 17s. 6d.; an average of £9 12s. per square mile. The total area surveyed in the Rotorua County is now 560 square miles, costing £3,720 3s.

*Rural Surveys.*—An area of 14,556 acres was completed by staff surveyors at a cost of £567, an average of 9·3d. per acre.

*Village and Suburban Surveys.*—An area of 161 acres was subdivided during the year, comprising 15 sections scattered in all parts of the District, at a cost of £211 15s. 4d.; the average being £14 2s. 8d. per section.

*Town-section Surveys.*—There were 234 town sections surveyed during the year, situated mostly in Te Aroha, costing £636 11s. 10d., an average of £2 14s. 5d. per section.

*Native-land Surveys.*—An area of 43,391 acres was surveyed, comprising 285 sections, this work being carried out by private surveyors at schedule rates, the total cost being £4,557 10s. 2d.; averaging 2·1s. per acre.

*Roads, Canals, and Railways.*—A total length of 41 miles was surveyed during the year, scattered in various parts of the District, and costing £1,340, an average of £32 13s. 6d. per mile.

*Other Work.*—The Arapuni Lake survey was completed during the year, with plans, comprising 31 miles of road and levels around the water-level of the proposed lake; also surveys necessary of lands taken. Most of the plans, which were of an intricate nature, were completed by office draughtsmen. The total cost of this work is £1,250 6s. 11d. A considerable amount of levelling and miscellaneous work was carried out on the Hauraki Plains for the Land Drainage Branch, at a cost of £450. The balance of other work comprised survey inspections, timber-measurements, various reports and valuations, and collecting soil samples, costing £789 4s. 8d.

*Lake Taupo Fisheries Reserves Surveys.*—A start has been made with this survey. One staff surveyor has been employed in the meantime, and another surveyor will be put on as soon as possible. This work has cost £381 14s. 3d. to date.

*Traverse Closures.*—The mean traverse closures for the past year as supplied by staff surveyors shows an error of 0·65 links per mile on the meridian and 0·17 links per mile on the perpendicular.

*Office and General Work.*—Land Transfer Branch: A total of 243 plans were received for examination; 230 were examined and approved; 1,080 deeds and other instruments were prepared; 2,549 diagrams from plans were placed on certificates of title. A considerable number of unchecked plans have accumulated, principally from the North Auckland District, but an endeavour is being made by the additional staff to have this congestion overtaken.

Native Branch: A total of 110 plans were received for examination, and 115 plans examined and approved; plans compiled, 105; and 290 survey accounts checked, 790 Court orders endorsed, 7 Courts attended; 123 tracings made, and 76 authorities issued for survey. The compilations included the Crown's title to the portion of the Urewera Block purchased, containing an area of 486,104 acres; the plans were drawn on a scale of 20 chains to 1 inch, and involved considerable work.

Crown Lands Branch: In this branch 198 plans were received for examination, and 206 examined and approved; plans compiled total 63, 27 sale plans were prepared, 786 tracings made, 113 Proclamations entered, 305 plans recorded, 710 diagrams placed on titles, 318 chain lengths tested, and 17 town-scheme plans were dealt with. Very little photo-litho draughting-work was carried out during the year, on account of the quantity of other work. A map of the Town of Taupo was completed and published, maps of Rotorua and Hamilton are nearing completion. A considerable amount of work was done in connection with the preparation of 20-chain maps for the topographical surveys; a certain amount of this work will be utilized for the 20-chain record maps, four of the latter being completed during the year. An atlas of county lithos was prepared showing the formed and metalled roads in the land district, this information being obtained from the Public Works and County Councils. A series of maps was prepared showing all Crown lands in the land district for ready reference. Seven county maps, in duplicate, were renewed and brought up to date as far as possible, one set showing tenures and the other local-body boundaries.

*Proposed Operations, 1927–28.*—One surveyor and one assistant will be employed on topographical surveys in the Rotorua County, and the area for the Defence Department at Ngaruawahia, Waikato County; the latter will be completed during the year. Four surveyors will be employed on miscellaneous surveys all over the district. One surveyor will be employed on the Taupo fisheries, and, if possible, one of the above-mentioned four will be put on to expedite the completion of this latter work. One surveyor will be employed almost exclusively by the Land Drainage Branch on the Hauraki Plains.

Contract surveyors have in hand the survey of 47,304 acres of Native lands.

During the year several changes eventuated, Mr. J. H. W. Parsons, draughtsman, died on the 16th December, 1926. He was a capable officer, and his death was greatly regretted. Mr. F. R. Burnley was promoted to the position of Chief Draughtsman, North Auckland, the position of Land Transfer Draughtsman being taken by Mr. L. J. Poff, surveyor, of Wellington. Mr. H. W. Rickard, draughtsman, was transferred to New Plymouth, his place being exchanged by Mr. G. H. Ennis of that office.

It is noted that expenditure is recoverable for the major portion of the work done by the field surveyors and a portion of the work done by the office staff for other departments, local bodies, &c.

In conclusion, I wish to place on record my appreciation of the manner in which the officers of this Department carried out their duties during the past year.

## GISBORNE LAND DISTRICT (E. H. FARNIE, Chief Surveyor).

*Triangulation.*—Minor : There has been nothing undertaken in this class of work during the year, but on the completion of the secondary work the revision and extension of the minor should be put in hand, as it is urgently required to enable traverse work to be checked to accord with the limit of error now required. Subsidiary : 9 square miles were executed in connection with the Ruakituri-Waimana Road survey.

*Standard Traverses.*—There has been nothing done under this heading, but the roads intersecting the Poverty Bay flats should be undertaken when there is a surveyor available for the work.

*Rural and Suburban.*—During the year 12,395 acres of rural land were surveyed, comprising seven sections ; re-subdivisions of Small Grazing-runs 37 and 38.

*Native Land Court Surveys.*—Under the above heading 15,582 acres, comprising 363 subdivisions, were surveyed by staff and contract surveyors, at a cost of 2-16s. per acre.

*Work in Progress.*—The subdivision of Small Grazing-runs 37 and 38, comprising 11,850 acres, has been completed.

The Te Wera Estate, recently purchased by the Crown, comprising 10,000 acres, is at present being subdivided, and the field-work is expected to be completed about the middle of May.

The subdivision of Tapuwaeroa 2A1 Block, comprising an area 2,402 acres, will be completed during the month, an area of approximately 800 acres being added to an adjoining holding.

With regard to the Tuparoa consolidation, embracing (roughly) an area of 93,000 acres, in which the Crown has interests amounting to 7,000 acres, most of the exchanges have been completed, and an area of 3,647 acres has been surveyed and will be open for selection during the coming year. An area of 26,213 acres, including Native and Crown interests, have been dealt with under the consolidation scheme, and of which all field-work and most of the plans have been completed.

*Office-work.*—Land Transfer Branch : During the year 61 new plans were received for examination, and 59 were approved, containing 236 lots, of an area of 10,972½ acres ; 102 traverse sheets were examined, and 1,462 diagrams endorsed on certificates of title, and 68 leases and Proclamations were examined.

Native Land Court plans : During the year 41 plans were received and 51 approved, comprising 263 subdivisions, of a total area of 32,441 acres ; 10 plans were compiled in the office ; 71 traverse sheets were examined ; 666 diagrams endorsed on Court orders ; 26 authorities were issued to surveyors, 2 staff surveyors and 24 contract surveyors ; and 38 certificates of costs were issued.

Statutory plans : During the year 27 plans were approved, representing 28 miles 16 chains of road, and 2 lots representing 4 acres ; 50 traverse sheets were examined. Three of the above plans were compiled in the office.

Crown plans : Under this heading 7 plans were examined and approved, comprising 10 lots, with an area of 12,385 acres. Ten traverse sheets were examined and 2 plans were compiled in the office.

Record maps : During the year 30 maps on 20-chain scale were prepared, and 7 on the 10-chain scale.

Miscellaneous tracings : During the year 259 tracings were prepared for the Valuation Department, gazetting purposes, reports, surveyors' field data, and Native Land Court ; 32 sun-prints were made, and 24 plans and 52 lithos mounted.

Lithographic plans : A lithographic plan of the Borough of Opotiki was prepared and forwarded for printing. Lithographic plans for the Patutahi, Hangaroa, and Tuahu Survey Districts have been completed.

*Transfers, &c.*—Mr. E. W. Pickford, of the draughting staff, exchanged positions with Mr. G. Raillton, of the Dunedin office.

In conclusion, I desire to thank the staff, both field and office, for their able assistance, willingly rendered, in carrying out the work of the Department during the past year.

## HAWKE'S BAY LAND DISTRICT (J. D. THOMSON, Chief Surveyor).

*Standard Surveys.*—It was hoped that during the year it might have been possible to carry out additional standard work in the Boroughs of Dannevirke and Hastings. Great care is being taken in watching the operations of the local bodies in raising street-levels, and the consequent effect on standard blocks. A number of blocks in the Borough of Napier have been raised and generally adjusted and reconditioned during the year. This work was carried out by Mr. Refardt, of Head Office. Standard Blocks 26 and 27 in the Borough of Wairoa were reinstated, and standard points on the Napier-Hastings Road were relocated prior to road-construction work being put in hand.

*Topographical Survey for Schemes of Subdivision.*—Under this heading is an area of 7,850 acres, at a cost of 10-8d. per acre. The work was very carefully done and plotted down, and will be found useful for future reference. The area is made up of the Waimarama, Pukekura, and Te Awa-o-Totara Blocks.

*Rural.*—Under this heading is an area of 5,558 acres, at a cost of 0-9s. per acre. The principal block is the Hereheretau Block of Crown lands, between Wairoa and Waikokopu, and consists of about 2,784 acres. The remaining areas consists of a resubdivision on Beattie Settlement, and three sections in central Hawke's Bay.

*Native Land Court Surveys.*—Under this heading there is an area of 2,917 acres, carried out at a cost of 4-2s. per acre.

The areas are principally located in the more settled Native lands, and the subdivisions are of small blocks and of an intense nature.

*Roads.*—There is only one item, of 82 chains, at a cost of £23 4s. per mile. This was an additional access road to the Hereheretau Block referred to under the heading of " Rural."

*Field Inspections.*—Five inspections were carried out during the year—three Land Transfer, and two Native.

*Other Work.*—Under this heading there is an amount of £136, made up of principally of inspections, measuring up scrub-cutting areas, redefinition surveys, &c.

*Work in Progress.*—At the present time the staff surveyor has the subdivision of the Wainarama Crown Lands in hand, and access road to same. The survey will be undertaken shortly of the redefinition of the coast-line along the beach at Pourerere, survey of four small road-deviations in the Wairoa district, and a topographical survey of the Tatara-o-te-Raubina Block of Crown lands (5,000 acres), about 25 miles north of Napier. The lease to this expires in March next, and it is proposed some time subsequent to that date to offer the land for selection.

*Office-work.*—Land Transfer Branch: During the year 186 plans were received for examination; 181 plans, comprising 602 lots and containing an area of 32,687 acres, were approved; 247 traverse sheets were examined; 1,885 instruments of transfer, lease, and mortgages, &c., have been examined and reported upon to the District Land Registrar; 3,543 have been placed on certificates of title and examined; 195 plans have been recorded and 6 new plans made for record purposes under the new Act. Diagrams in connection with this branch were endorsed by the technical staff as a whole.

Townships for approval under the Land Act: 6 plans were received and approved.

Native Land Court surveys: During the year 33 plans, consisting of 101 lots and containing an area of 2,917 acres, were received and approved; 30 traverse sheets were examined (the above includes 9 compiled plans); 33 tracings were made for the Valuer-General; 330 diagrams were endorsed on Court orders; 37 authorities for survey were issued, and comprised 3,438 acres; amount of outstanding survey costs collected, £1,772; 33 certificates of costs were prepared for an amount of £611.

Statutory plans: 27 statutory plans, having 66 lots and 18½ miles railway, and containing an area of 518 acres, were approved; 66 traverse sheets were examined; for the examination of plans and for tracings, &c., local bodies have paid £139 7s. 10d.

Crown plans: 20 plans, containing 40 lots and comprising 3,625 acres, were approved; 36 traverse sheets were examined; 101 diagrams have been endorsed for recording on settlers' files; fees from sales of lithographs, £57 5s. 6d.; 4 new district maps in course of construction; miscellaneous tracings for Valuer-General, 1,412 (gazetting purposes, settlers, Field Inspectors', and general purposes); sun-prints, 41; 7 tracings were prepared for sale posters; reductions for district lithos and other purposes, 416.

*Future Operations.*—There are some large areas in this district which have been purchased from the funds of the Native Land Settlement Account, but which cannot be dealt with for some time owing to the purchases being subject to leases of varying periods.

*Standard Lithography.*—Good progress has been made during the year with this work, and it is hoped to do still better during the current year. Routine work, however, is steadily increasing, and it is very often found necessary to divert the officers usually undertaking this work. The cadets and junior draughtsmen are making excellent progress, and are becoming very useful. Three of them are now able to undertake district litho drawing, and this work should now progress rapidly. I am anxious that the new Borough of Napier drawing be completed at an early date. There is still, however, a lot to be done by way of completing the 1-mile district maps. This work is of great urgency, owing to the old county drawings being incapable of further revision. To date 12 new district drawings have been completed, and, on account of their being entirely up to date, have been a great boon.

*Land Transfer Index Maps.*—It has not been found possible to make much progress with this class of map. Twenty-three maps have been drawn, and Heretaunga maps are now in the course of construction. The maps of this district are most urgently required, owing to the present large roll maps falling into disrepair. It is expected that good progress will be made during the current year.

*General.*—In a general review of the work it will be seen that it has been well maintained throughout the year. This is principally noticeable in regard to the office-work. Present indications are that the technical staff will be called upon to meet a further increase during the year. The large amount of intense subdivisional work was done by contract surveyors on requisition from the Native Land Court.

*Staff.*—During the year Mr. C. B. Hodge succeeded in passing the Computer's Examination (second grade). The staff have carried out their duties in a most satisfactory manner, and generally have given efficient and loyal service. I have pleasure in mentioning the high standard maintained throughout, and I particularly refer to the progress made by the cadets and younger officers, and their keenness to become efficient and useful officers. Cadet Cunningham joined the staff during the year.

TARANAKI LAND DISTRICT (W. D. ARMIT, Chief Surveyor).

*Standard Surveys.*—The standard survey of the Borough of New Plymouth has been continued by Mr. Haase, acting under the direct control of the Surveyor-General. A start is shortly to be made with the drawing of the new standard plans.

The need for rural standard traverses has been stressed during the year by the local branch of the Institute of Surveyors. There is no doubt that this work is much needed in this district, owing to the great amount of tar-sealing which has made redefinition work difficult. Owing, also, to the nature of the country in the more settled areas, plantations have caused many of the trigs to have become useless, so that it is hoped to have something in the nature of rural standard traverses done in the near future.

*Topographical Survey.*—For selection: 6 sections, comprising 666 acres, were surveyed. General: The general topographical survey of part of the district was continued by Mr. Adams, who returns

97 square miles completed and mapped, while another 88 square miles is completed in the field but not completely mapped. Returns at 31st March, 1927, show a grand total of 247 square miles completed in the field, of which 159 square miles have been mapped. For the year under review the completed cost runs out at £3 18s. per square mile. This work includes 12 square miles of the contour survey of Egmont National Park. In addition 73 miles of levels were run in connection with the above survey.

*Rural.*—An area of 21,478 acres is returned under this heading. This area includes a 17,800-acre Crown Land block and scenic reserve, surveyed in the Heao Valley by Staff Surveyor McIntyre at a cost of £884.

*Village and Suburban.*—16 sections, comprising 124½ acres, were surveyed at a cost of £103 4s.

*Native Land Court Surveys.*—The total area of Native Land Court surveys completed during the year amounted to 1,527 acres, the whole of which was done by private surveyors under authority. An area of 3,966 acres is now under survey by contract surveyors.

*Roads.*—Only two surveys, totalling 0·94 mile, were carried out during the year.

*Other work.*—This expenditure amounted to £265 0s. 11d., in which is included two timber appraisements, and boundary redefinitions by Mr. McIntyre; also the survey of grave-plots, Tongaporutu, and redefinitions of boundaries of National Park by Mr. Adams.

*Inspections.*—Inspections of surveys in Opunake Survey District and Town of New Plymouth were carried out by Mr. McCabe, and in Paritutu Survey District by Mr. Ellis.

*Office-work.*—Land Transfer Branch: In this branch 150 plans were examined and approved, comprising 541 lots and 6,730 acres, a slight increase on last year; 1,518 diagrams were examined and placed on instruments of title; and 551 Land Transfer leases, Native Court orders, Crown leases, &c., were examined and passed. The diagrams drawn included 558 certificates under the Compulsory Registration Act, being largely compilations of rural areas. 150 tracings of Land Transfer plans were prepared for the Valuation Department. In addition to current recording, a complete set of 75 index maps of the Borough of New Plymouth were compiled on a scale of 1 chain to an inch, and 4 index maps on a 20-chain scale of districts, were drawn for the Lands and Deeds Department. All index maps are of 30 in.-by-30 in. size.

*Native Land Branch.*—Sixteen authorities for 37 partitions, representing an area of 4,980 acres, at an estimated cost of £570, were issued during the year to private surveyors; 12 plans and duplicate tracings for 31 partitions of an area of 1,527 acres were received and approved for the year; also 6 compilations with duplicate tracings of 15 partitions, of an area of 1,380 acres, were drawn in the office for Native Land Court use. The survey costs (including cost of checking plans and interest due) collected amounted to £718 17s. 1d. 112 diagrams were endorsed for attachment to partition orders; 25 applications for charging orders and 25 certificates of cost were forwarded to the Native Land Court; 49 liens, amounting to £503 16s. 1d., were released; 10 vouchers for survey costs amounting to £252 14s. 7d., covering 23 subdivisions and totalling 1,296 acres, have been prepared in this branch and forwarded for payment to contract surveyors; 264 plans were forwarded for use at Native Land Courts, and, when necessary, the Native Land draughtsman has attended the various Courts in the district. Owing to the sittings of the Native Lands Confiscation Commission a large amount of work devolved upon this branch. In connection with the various petitions, 27 plans and 14 reports were prepared and presented before the Commission by the Native Land draughtsman who attended the commission at its sittings at New Plymouth and Waitara.

*Draughting Division:* For photo-lithography, maps of Boroughs of Hawera and Stratford were prepared and forwarded for reproduction, and those of the Boroughs of Eltham and Waitara were commenced. 20 sale plans were prepared; 10 compiled plans were prepared for Native Land Court and for road-closure procedure; in addition, 6 index maps of various villages and 1 map of part Waitara Survey District were prepared.

*Miscellaneous:* The usual tracing-work has required constant attention during the year, and the colouring of lithographs and maps for the Native Lands Confiscation Commission and supply of maps for the Deteriorated Lands Revaluation Committees may also be included under this heading. The supply of information to the general public, selectors' tracings, surveyors' data, diagrams and tracings to illustrate letters, and general Proclamation tracings and tracings other than Land Transfer for the Valuation Department required a total of 663 tracings. In addition, 640 tracings were prepared for the Deteriorated Lands Committees. The standard of draughting has shown improvement during the year, and at the last Draughtsmen's and Computers' Examination Mr. H. W. Rickard obtained a partial first-class pass, and Mr. A. E. Christian obtained a second-class certificate. Mr. W. Conway obtained a partial pass in computing. From this return it will be noted that the general work of the office shows a substantial increase, and with the staff at its present strength it has been fairly difficult to cope with the current work and at the same time keep the necessary lithographic and index work up to date.

*Computing Branch:* The total number of plans checked under all headings in the Computing Branch amount to 89, comprising 143 sections and totalling 6,591 acres. In addition 54 Proclamation duplicate plan-tracings were examined. Of the above, Crown settlement represented 20 plans of 30 subdivisions, covering 3,359 acres. The greater portion of this area was made up of alterations to existing leases. Native Land Court surveys were represented by 18 plans, of which 6 were compiled. The area of surveyed blocks was 1,527 acres, and of the compilations 1,380 acres. The balance of the plans were mostly road and other takings under the Public Works, totalling 32 plans. The remaining plans were office compilations and boundary-redefinition plans, &c.

*Proposed Operations in Field for 1927-28.*—Mr. McIntyre will carry out suburban subdivisions at Matiere, a foreshore survey along coast near Patea, complete the mapping of the Egmont National Park roads, and carry out surveys as required. Mr. Adams will continue the topographical survey of portion of the Taranaki District, including Egmont National Park. He will also undertake any small surveys as required.

## WELLINGTON LAND DISTRICT (F. H. WATERS, Chief Surveyor).

*Rural.*—Mr. G. I. Martin completed surveys of Lots 1 to 5 of 8s, Lots 1 and 2 of 12s, and Lot 1 of 22s, Pihauatea Settlement—a total of eight lots, of an area of 145 acres. Mr. W. G. Nelson completed surveys of Sections 1 to 3, Tupurupuru Settlement; three sections, Haunui Settlement; four sections, Te Whiti Settlement; two sections, Cloverlea Settlement; two sections, Greystoke Settlement; three sections, Arawhata Settlement; three sections in Block II, Hunua S.D.; five sections in Block IV, Kaitieke S.D.; two sections in Block IX, Hautapu S.D.; two sections, Block I, Arawaru S.D.; and four sections in Block XVI, Manganui S.D.—a total of thirty-three sections, of an approximate area of 1,757 acres.

*Village and Suburban.*—Mr. L. J. Poff completed a survey of scenic reserve, part Section 420, Block XV, Akatarawa S.D., an area of 31 acres.

*Town.*—Mr. L. J. Poff completed surveys of 138 sections, of an area of 55 acres, Hutt Valley Settlement, and 132 sections, of an area of 26 acres, Wilford Settlement. Mr. G. I. Martin completed surveys of 363 sections, of an area of 80 acres, Hutt Valley Settlement. Mr. W. G. Nelson surveyed thirty-five sections, of an area of 5 acres, Hutt Valley Settlement.

*Roads and Railways.*—The Railway Workshops site, and area of 8 acres, was surveyed by Mr. L. J. Poff. Te Mutu Road, of  $2\frac{1}{2}$  miles, and road access to Section 4, Block III, Momahaki S.D., of  $1\frac{1}{2}$  miles, were surveyed by Mr. W. G. Nelson. Various minor surveys in connection with Hutt Valley Railway duplications were completed by Mr. L. J. Poff.

*Inspections.*—An inspection of Mr. P. R. Earle's survey of Tokorangi Block (W.D. 3912) was carried out by Mr. W. G. Nelson.

*Topographical.*—260 acres of topographical survey, Watts Peninsula, was completed by Mr. G. I. Martin. 117 acres, Hutt Valley Settlement, was completed by Mr. W. G. Nelson.

*Other Work.*—The fixing of Standard XC, Hutt Road, and report of Trig. 11, Watts Peninsula, by Mr. L. J. Poff. Investigation of boundaries, Branda Quarries; homestead-site, Block II, Tiffin S.D.; site for telephone exchange, Miramar; fixing telegraph-lines, Hutt Valley Settlement; redefinition of boundaries, Haruatai Block and Pukehou Block; exchange of land for road, Metter's Block, Hutt Valley Settlement; redefinition of boundaries, Block-house site, Wallaceville; redefinition of boundaries, Sections 25 and 26, Block IV, Kaitieke S.D.; and investigation survey of the course of Rangitikei River, Ohinepuhiawe Block, by Mr. W. G. Nelson.

*Office-work.*—15 plans were compiled, 25 photo-lithographic tracings were prepared, 337 diagrams were endorsed on warrants, 384 diagrams on Crown leases, and 482 diagrams were endorsed on Native Land Court orders. In addition, the compilation of road record maps and 40-chain distant maps has been proceeded with, and the plan index completed. A large amount of miscellaneous draughting, tracing, and searching has been carried out.

*Crown and Native.*—117 plans of 785 subdivisions of an area of 103,281 acres were received, and 114 plans of 1,059 subdivisions of an area of 31,733 acres were approved.

*Land Transfer Branch.*—607 plans were received, 560 plans checked, 577 plans approved, 12 plans compiled, 34 applications were examined, 3,605 transfers and other dealings were examined, 130 titles amended, and 11,028 diagrams were endorsed on new certificates of title. In addition, items such as receiving, despatching, attendance on public, and general supervision, indexing, and recording have been attended to.

*Statutory Branch.*—118 plans received, 128 plans examined, 108 plans approved, and 104 plans were sent forward for Proclamation purposes, 106 plans were recorded, 114 Proclamations gazetted and received, whilst final action was taken on 77 plans. Other work includes general and special searches, recording alterations to local bodies' boundaries, preparation of information for issue of title to closed roads, technical description of lands to be reserved or exchanged, preparation of information in connection with loading for roads in loan blocks, preparation of plans and documents and the obtaining of consents in connection with legalization work of this Department.

*Changes of Staff.*—Mr. L. J. Poff, transferred to Auckland; Mr. W. E. Potts, transferred to Dunedin; Mr. F. H. Jennings, transferred to Head Office; Mr. E. W. Harkness, transferred to Auckland; Mr. J. M. Grant, transferred to Hokitika; Mr. N. L. D. Smith, retired; Mr. I. A. Cromie, resigned; Messrs. J. D. Watt, J. Meale, F. Cooper, E. Ngahuia, and W. Lindsay joined the draughting staff; and Messrs. Strawbridge and J. Fletcher joined the field staff during the year.

*Native.*—67 authorities for 181 partitions, representing (approximately) an area of 12,214 acres, at an estimated cost of £2,532; 68 plans and duplicate tracings have been received from surveyors for 242 partitions, an area of (approximately) 30,874 acres, at a cost of £4,113 13s. 4d.; 694 diagrams were endorsed and forwarded to Native Land Courts; 252 applications for charging-orders were prepared and forwarded; 68 vouchers prepared, checked, and passed for payment, amounting to £4,113 13s. 4d.; liens totalling £1,743 7s. 9d. have been received, and receipt forms made out for Receiver of Land Revenue. This entailed the preparation of 108 debit notes and notices of release of liens. Native Land Court plans have been forwarded to the various Courts. Attendance has been made at different Courts for the purpose of obtaining confirmation. In order to protect the Crown's interests, caveats have been lodged against titles where it is found that alienation is to be applied for. Under the West Coast Settlement Reserves Act two purchases were completed. The acquisition by the lessees of the freehold in Taupo No. 2 Block (Plimmerton Extension, No. 4), which was acquired by the Crown, was also dealt with. There are forty lots in the subdivision and almost all lessees have completed their purchases. Balances were made for 1925–26. The actual accounting portion of the liens is now being taken over by the Accountant.



## MARLBOROUGH LAND DISTRICT (J. STEVENSON, Chief Surveyor).

*Rural Surveys.*—One survey of 862 acres returned under this heading.

*Roads and Railway.*—Two small road surveys, aggregating  $\frac{3}{4}$  mile, returned under this heading.

*Native Land Court Surveys.*—4 surveys, comprising 9 subdivisions of 405 acres, returned under this heading. Two were executed by the staff, and two by private surveyors.

*Other Work.*—Several small surveys in various parts of the district returned under this heading. Expenses incurred by Staff Surveyor Clapperton in proceeding to Wellington on official business are also included.

*Contract Surveys.*—The only surveys under this heading are the two small Native-land surveys enumerated above.

*Standard Surveys.*—During the year Mr. Staff Surveyor Clapperton completed 27 miles of the Blenheim Borough standard survey, the total cost of the field-work, including the levels of each block, working out at £56 per mile. The field-work of this survey is now completed.

*Inspection Surveys.*—During the year inspections of three surveys at the southern end of the district were made. The work, especially in regard to the ground-marking, was not found to be satisfactory. The surveyors concerned have been requested to bring their work up to standard requirements.

*Proposed Operations for 1926-27.*—Proceed with the rural standard work of the district when Staff Surveyor Clapperton returns to the district. Subdivisions for seaside residences in the Marlborough Sounds also contemplated. About 20 miles of road surveys for the Public Works Department are to be executed as circumstances permit; also Crown and Native-land surveys as required.

*Office-work.*—The total number of plans received by the Survey Branch was 51, of which 19 were Crown-land plans, 8 Native Land Court, and 24 road and other departmental plans. 62 diagrams were placed on leases and other documents, and 18 on Native Land Court orders. 39 original plans were prepared by the office staff, and 322 tracings made. One officer's time was engaged on the preparation of the Blenheim Borough standard plans, which have not been returned under any of the above headings. These consist of 20 sheets, and the completion of these is well in sight.

*Land Transfer Branch.*—59 plans were received for checking, 1,045 plans placed on certificates of title, and 475 deeds and other instruments examined and passed.

*Staff and General.*—Towards the end of the present year Draughting Cadet McLeod resigned to take up work outside the Department, and his place has not yet been filled. The past year has been an exceedingly busy one for myself and staff, due principally to the absence of the Chief Surveyor (Mr. Stevenson) since August on Deteriorated Land Commission work, and to the increase in the Land Transfer work, the operation of the Borough standard survey, and the increase in work performed for other Departments and local bodies.

In conclusion, I have to thank my staff for their cordial co-operation and strict attention to business during the period under review.

## NELSON LAND DISTRICT (A. F. WATERS, Chief Surveyor).

*Field Operations.*—Surveys completed in this district for the year ending 31st March last have been confined almost wholly to rural work. They have been of comparatively small areas, and have been scattered about the district, so that the cost of the work has been somewhat increased through heavy travelling-expenses charges. Taking this fact into consideration, the rate per acre works out at quite a reasonable figure, and considerably less than the schedule rates laid down. A few small road-deviation surveys for the Public Works Department have been made and five town lots pegged off in various parts of the district. In the case of two surveys of quarter-acre sections as post-office site and Courthouse site, advantage was taken of the presence of a licensed surveyor in the district to get the work done by contract, and this proved quite satisfactory and economical for the Department. A hush block of 12,000 acres to the south of Westport is in hand, but owing to the rough nature of the country the work of the subdivisional survey is slow and it is unlikely that the field-work will be completed before the end of next year. The close shown on new field-work averages a link to the mile, which is very satisfactory considering that there are rises of over 3,000 ft. in many of the sections traversed, and shows that the surveyors are careful in the performance of their work.

*Draughting and General Office-work.*—The report from this branch indicates that there were rather fewer plans examined and approved than the previous year, the figures being 184 and 214 respectively. Similarly, fewer diagrams were endorsed on instruments of title, the number being 538 for this year as against 589 for last year. Good progress has been made with the district litho work, and seven standard publications were completed during the year. This brings the lithographic maps of the district well up to date, and, judging from the maintained sale to the public, the productions are duly appreciated by the community. I have not had the staff available to do much on the road record maps during the past year, as it was considered more advisable to concentrate on the district maps, most of which required redrawing. It is hoped to be able to pay more attention to the road records in the current year.

*Staff.*—Mr. J. L. D'Arcy Irvine, Land Transfer draughtsman, retired on superannuation as from the 31st December, 1926, and the numerical strength of the office was maintained by the appointment of a new Cadet.

In conclusion, I have also to express my appreciation of the manner in which the officers of the staff have completed their varied duties and of their general interest in the work undertaken.

## WESTLAND LAND DISTRICT (W. T. MORPETH, Chief Surveyor).

*Field Staff.*—During the year 40 plans were handed in by the field staff, representing field-work completed of 2,377 acres rural, 49 acres town, 97 acres village suburban, 523 acres Native reserve,  $\frac{1}{4}$  mile of road, and miscellaneous surveys.

The settlement surveys comprised generally small scattered areas surveyed from time to time to meet applications received for unsurveyed lands and granted on regulation or mining land district occupation licenses. No large blocks were dealt with and the amount of time involved in frequent shifting of camps and parties to demark the areas dealt with has increased ordinary costs under this heading by quite an appreciable amount.

The work on hand includes some 10 miles of the Maruia Road, in the Lewis Survey District, and 6 small settlement surveys; also the plan work of 7 miles of completed road survey which will be completed during the coming winter in conjunction with other plans of field-work on hand. Traverse closures were returned for varying distances totalling 27 miles, 115 stations being required, the total error being 7.6 links on the meridian and 5.1 links on the perpendicular, representing a reduced error of 0.28 and 0.19 links per mile respectively. The nature of the country covered ranged from steep hill-face to flat, about one-half being under bush.

The staff has been kept fully engaged on field-work and the completion of the necessary plans, and with the work on hand and the usual applications to be expected for unsurveyed areas a continuance of the present activities may be anticipated.

*Draughting Staff.*—Plans approved during the year numbered 84, classified as follows: Land Transfer, 23; settlement, 31; statutory, 10; Native reserve, 7; town, 5; miscellaneous, 8. Also, 11 plans were compiled by the office staff, 407 tracings of various descriptions prepared, 92 lithographs coloured, 20 lithographs mounted, 30 plans repaired and mounted, 7 20-chain record maps and 6 40-chain application maps prepared. Diagrams placed on instruments of title numbered 1,372, of which 11 represented land dealt with by Proclamation. Timber applications dealt with and recorded on the timber maps numbered 37.

It is satisfactory to record that the photo-lithographic tracing of the Town of Greymouth was completed towards the end of the period, and the finished prints are expected shortly. The photo-lithographic tracings of the Grey and Westland County sheets were also revised and amended where necessary.

Owing to special efforts by the staff, practically all diagrams required in connection with the Land Transfer (Compulsory Registration of Titles) Act have now been completed, and very little more remains to be done in this direction so far as the Westland District is concerned.

During the ensuing period special attention will be paid to the preparation of additional 20-chain record maps and necessary replacements of worn-out application maps, which, with ordinary routine work, it is expected will more than fully engage the attention of the staff for the next twelve months.

## CANTERBURY LAND DISTRICT (W. STEWART, Chief Surveyor).

*Field Staff.*—The work in this district during the past year was carried out by Staff Surveyors H. A. Adams and W. Paora. With the exception of a few resubdivisions of settlement lands and the necessary survey of several education reserves, there was very little rural surveying. Mr. Adams, apart from the survey of four education reserves, was engaged principally on the revision of standard surveys in the suburbs of Christchurch, a total length of  $37\frac{1}{2}$  miles being returned at a cost of approximately £29 10s. per mile. The closing results in this work, on which an invar band was used, were very satisfactory, the mean error on fifteen circuits being 0.062 and 0.068 link per mile. Mr. Adams is now engaged completing the standard survey of the Town of Timaru.

Mr. Paora's work comprised resubdivisions for the Native Land Court, resubdivision of settlement lands, and surveys of education reserves, besides attending to the safeguarding of permanent survey marks in connection with road-reconstruction work and drainage-works in Christchurch. Although every endeavour has been made to work in with local bodies in connection with road-reconstruction work, so as to safeguard permanent survey marks, I regret that these bodies have not in all cases sent in notice of their intention to carry out such works. Fortunately, so far, no great harm has been done, but it might be advisable to anticipate these works and put in permanent marks off the possible line of permanent surfacing, connecting same with present surveys.

*Office Work.*—Land Transfer Branch: The past year's work shows a considerable increase both in the number of plans examined and also in the diagrams placed on instruments of title, the respective numbers being 521, an increase of 45, and 9,226, an increase of 1,856, the increase being due to the Compulsory Registration of Titles Act, which has also given the staff extra work in connection with the searching of titles, &c.

General Office-work: 100 plans were received and checked during the year, of which 26 were Crown, 28 Native, 26 other Departments and local bodies, and 20 miscellaneous; 67 town-plan schemes were received and examined; 8 20-chain record maps were prepared, and 6 are in hand; 3 district maps were revised and brought up to date for lithographic purposes; and a new plan of the Waimate Borough is well in hand. The usual routine work, diagrams on leases and Native Land Court orders, tracings, Proclamation endorsements, searches, &c., has occupied a large amount of the staff's time.

*Staff Changes.*—During the year Mr. J. G. Wilson retired after long and faithful service with the Department; Miss Pirritt returned to Auckland; Mr. C. Fowler was appointed a survey cadet with Staff Surveyor Adams; Mr. E. T. Kensington, temporary computer, resigned; Mr. N. R. Stanton was transferred from the Lands and Deeds staff; and two new draughting cadets (Messrs. E. R. Simpson and A. V. Brown) were appointed. Frequent interchange of duties have been given to the junior officers, and I would like to record my appreciation of the work done by the staff during the past year.

### OTAGO LAND DISTRICT (R. S. GALBRAITH, Chief Surveyor).

*Triangulation.*—No further field-work has been done during the year. In 1924, Mr. A. L. H. Hay re-established some stations in Hawksbury and Moeraki which had been destroyed, but owing to his illness he was not able to complete his plans until last December. There is urgent need for the systematic revision of the triangulation throughout Otago. All the work with one or two exceptions is very old and not up to the present standard, and many stations have disappeared completely.

*Native Surveys.*—The area under this head was 302 acres, consisting of Court partition orders for areas in Otakou and Waikouaiti Native Reserves.

*Settlement Surveys.*—The total area dealt with was 12,094 acres. Mr. Phillipps has been engaged on the completion of the subdivision of the Bannockburn and Manuherikia Settlements, work left unfinished by the late Mr. Burton. Both these surveys were of an exceptionally intricate nature, and were correspondingly costly. Mr. Greig has completed the resubdivision of Wairuna and Clifton settlements, and is now completing the subdivision of the Tuapeka Commonage. Mr. Phillipps has been engaged upon the subdivision of 4,430 acres governed by the Last Chance irrigation scheme, in Fraser Survey District. Both surveyors have also dealt with a quantity of small spotting surveys.

*Mining.*—All surveys of this class have been done by private surveyors under arrangement with the applicants.

*Roads.*—Small road-deviation surveys were done by the staff to the extent of 10 miles. All other roadwork has been carried out by the various local bodies.

*Field Inspection.*—Mr. Phillipps inspected Mr. Lilly's subdivision of an area in Block I, Leaning Rock.

*Office-work.*—The members of the draughting staff have been steadily engaged during the year with their various duties, and the volume of work handled has been well up to the average. A total of 214 plans was examined and approved, of which 121 were Land Transfer; 714 diagrams were placed on various instruments of title in addition to certificates of title; 3,114 diagrams made by the Land Transfer draughtsman's staff. The preparation of plans for photo-litho has gone on steadily, 5 new plans being drawn, in addition to 6 revised; 35 sale-poster plans were also made. The revision of the Land Transfer record maps, which were much out of date, is going on steadily, 15 being dealt with during the year; and 2 new Crown-grant record maps were drawn to replace those worn out. The renewal of the Land Office maps is constantly going on, 8 fresh ones being prepared. A total of 1,105 working and other tracings were made, also 319 diagrams of land transactions for the Valuation Department, and 92 Land Transfer plans were traced for the same Department. The tracing of the Dunedin standard survey plans for counter use has been done as opportunity offered, 17 having been dealt with; 21 Proclamation tracings and schedules in duplicate or triplicate also were made, as well as 30 working-plans. Maps mounted numbered 874, books bound 199, and forms printed 6,906.

*Proposed Operations for 1927-28.*—Mr. T. G. Phillipps is at present engaged upon the repegging of the areas under the control of the Wanaka Domain Board at Pembroke. Upon the completion of this he will resume the First Chance irrigation scheme, and the subdivision of Runs 325 C and D, Bannockburn. Mr. D. M. Greig has in hand the subdivision of Tuapeka Commonage and the survey of Run 51 B. In the spring he will proceed with the survey of Run 17, Maruwenua, and some Native and spotting surveys.

*Personal.*—Mr. A. J. Morrison, Senior Draughtsman, retired after forty years' service. He was a very good lithographic draughtsman of recognized ability, and most industrious and conscientious. He was always very willing to instruct the younger officers, and there are many of these in the service who owe their artistic style to the time and trouble Mr. Morrison expended on their instruction.

### SOUTHLAND LAND DISTRICT (N. C. KENSINGTON, Chief Surveyor).

*Rural.*—452·91 acres were subdivided into 8 sections at a total cost of £158 19s. 6d., or 7·02s. per acre.

*Native Land Court Surveys.*—Two Native Land Court surveys, having 13 allotments in all, and containing 436·63 acres, were carried out by private surveyors at an average cost of 4·18s. per acre. One of these was really suburban, the sections ranging up to 1·5 acres in area.

*Village and Suburban.*—551·83 acres were subdivided into 35 sections at a total cost of £132 13s. 2d. or 4·81s. per acre. In addition to the above, the Chief Draughtsman made a survey of a school reserve of 5 acres into 2 sections, no staff surveyor being available at the time.

*Town-section Surveys.*—Seven sections were laid off in three surveys comprising 1·71 acres in the Towns of Invercargill, Gore, and Oraka.

*Roads and Railways.*—4·27 miles of access roads and road-deviations were surveyed at an average cost of £28·1 per mile.

*Inspection Surveys.*—The Chief Draughtsman made two inspections of private surveyors' work during the year. In one case the work was very satisfactory; in the other the surveyor was called upon to do some repegging and make some small adjustments in his field-work.

*Traverse Closures.*—A summary of some of the staff surveys carried out by Mr. Preston shows that 10·29 miles, controlled by 97 stations, closed on an average to 0·16 and 0·18 links per mile. The plans sent in by private surveyors also show closures well within the limit of error.

*Proposed Operations in Field.*—Messrs. Otway and Preston to complete work scheduled as in hand.

*Office-work.*—During the year ending 31st March, 1927, 99 Land Transfer plans, with a total area of 2,174 acres, and 43 Survey Office plans of various descriptions, totalling 15,769 acres, were examined and approved; 255 diagrams were placed on Crown leases and other various documents; 2,088

diagrams were placed on certificates of title for Land Transfer purposes, and diagrams on 1,192 Land Transfer instruments of title were examined and passed; 363 working, 79 ordinary, 4 poster, and 105 valuation tracings were made, being a total of 551 tracings; 13 Survey Office plans were compiled; 15 plans, 12 tracings, and 207 lithographs were mounted, and 117 lithographs coloured; 4 working-plans were redrawn; 15 Land Transfer record maps were drawn, and 115 plans recorded on various maps; 6 maps were drawn for publication, and 9 standard publications were revised; 7 application maps were drawn and checked, and 15 standard plans were drawn; a large wall map, 9 ft. by 9 ft., of the Southland Land District and two wall maps 6 ft. by 4 ft. of the Chattels Registration District all on 80-chain scale, were mounted; 6 town-scheme plans were received for the Governor-General's approval. Stock was taken of technical stores, lithographs, stationery, &c., and entered in the ledgers.

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### APPENDIX III.

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#### SURVEYORS BOARD.

THE Board held two examinations as required by the Act—in September, 1926, and March, 1927. At the former eleven new and nineteen partial-pass candidates sat, of whom five passed. At the March examination, when only candidates with partial passes are accepted, twenty-two presented themselves, of whom sixteen passed.

A matter of importance dealt with during the year was the submission to the Senate of the University of New Zealand of a syllabus, and request for a course and degree in surveying. This matter is now in process of consideration and report by the University Boards.

The papers for the next September examination are to be prepared by the New Zealand Board in its turn.

W. T. NEILL, Chairman.  
M. C. SMITH, Secretary.

*Approximate Cost of Paper.*—Preparation, not given; printing (1,025 copies), £30.

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