

1929.
NEW ZEALAND.

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

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

CONTENTS.

GENERAL REPORT :—	PAGE	APPENDIX II— <i>continued.</i>	PAGE
Summary	1	Extracts from Chief Surveyors' Reports— <i>continued.</i>	
Minor Triangulation	2	Hawke's Bay	12
Settlement Surveys	2	Taranaki	13
Native Land Court Surveys	2	Wellington	14
Geodetic Triangulation	2	Marlborough	15
Standard Surveys	2	Nelson	15
Topographical Survey	2	Westland	16
Field Inspections	3	Canterbury	16
Tidal Survey	3	Otago	17
Magnetic Survey	4	Southland	18
Proposed Operations	5		
General	5	APPENDIX III :—	
Staff—		Survey Board	19
Retirements	6		
Resignations	6	TABLES :—	
Appreciation	6	Table A.—Field-work executed	2
		„ B.—Rural Surveys Area	2
APPENDIX I :—		„ C.—Tidal Harmonic Constants	3
Head Office, Draughting Branch	9	„ D.—Mean Values, Magnetic Elements	5
		„ 1.—Head Office Staff	6
APPENDIX II :—		„ 2.—Areas surveyed for Lands and Survey Department	7
Extracts from Chief Surveyors' Reports—		„ 3.—Areas surveyed for other Departments	8
North Auckland	10	„ 4.—Work on hand	8
Auckland	10	„ 5.—Office-work	9
Gisborne	11		

The SURVEYOR-GENERAL to the Hon. the MINISTER OF LANDS,
Wellington, 3rd September, 1929.
SIR,— I have the honour to present herewith the report on survey operations for the year ended
31st March, 1929. I have, &c.,
Hon. G. W. Forbes, Minister of Lands. H. E. WALSHE,
Surveyor-General.

REPORT.

THE main parts of the report for the year ended the 31st March, 1929, comprise a summary of the operations of the field parties, grouped under appropriate headings, a brief account of the office-work performed, and 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. Further details are given in the reports of the Chief Surveyors appended hereto.

The average costs as set out in Table A compare very favourably with previous years, the rural settlement surveys showing a small increase—of 3d. per acre—which is offset by a decrease of a similar amount in the Native Land Court surveys, while road survey costs are substantially lower at £27 per mile. Table B shows an increase of 31,575 acres in the total area of rural land surveyed over the figures of last year, and a decrease of 8,166 acres in the Native Land Court surveys.

TABLE A.

Class of Work.	Area, &c.	Average Cost.	Total Cost.
			£ s. d.
Minor triangulation, by staff	26,160 acres	1·93d. per acre	210 14 3
Contoured topographical, by staff	339·3 sq. m.	£6·27 per sq. m.	2,128 16 4
Rural, by staff	127,714 acres	1·80s. per acre	11,480 10 4
Suburban, by staff	868·8 „	20·84s. „	905 12 1
Town, by staff	555 sections	£2·36 per section	1,312 10 6
Town, by private surveyors	6 „	£4·62 „	29 15 0
Native Land Court, by staff	33,436 acres	1·02s. per acre	1,713 19 2
Native Land Court, by private surveyors	95,154 „	1·91s. „	9,116 9 9
Roads, by staff	212·25 miles	£26·80 per mile	5,689 7 11
Roads, by private surveyors	5·90 „	£27·56 „	162 12 4
Other work, by staff .. .. .	..	..	8,268 19 4
Total cost of completed work .. .. .	..	..	41,019 7 0

TABLE B.

Land District.	Rural Survey.	Native Land Court.
	Acres.	Acres.
North Auckland	14,144	790
Auckland	19,018	44,256
Gisborne	1,632	23,050
Hawke's Bay	11,560	35,693
Taranaki	856	2,127
Wellington	14,995	21,555
Marlborough	574	178
Nelson	15,880	16
Westland	593	..
Canterbury	26,671	603
Otago	21,333	113
Southland	458	209
Totals	127,714	128,590

MINOR TRIANGULATION.

Small areas in Wellington, Otago, and Southland Districts are returned under this heading at a cost of £210.

SETTLEMENT SURVEYS.

The Crown lands and lands-for-settlement areas surveyed during the year are set out in Table 2 under their appropriate headings for each land district, while details of the various areas are given in the reports of the Chief Surveyors appended.

NATIVE LAND SURVEYS.

This year has seen a decrease of 8,166 acres returned for this class of survey, and of this area 75 per cent. was made by private surveyors at the customary rates.

GEODETIC TRIANGULATION.

Progress on this work was much hampered by unfavourable weather and high-level stations, but the standard of closing-error has been maintained. The lighter instrument (a 5½" Wild) now used should enable the observer to show better progress during this year. Details will be found in the next volume of the *Records of the Survey of New Zealand*.

STANDARD SURVEYS.

Progress in this work has been good during the year in the Auckland metropolitan area, in New Plymouth, Timaru, and Invercargill, while rural standard surveys have been in progress in the Taranaki, Marlborough, and Canterbury Districts.

Many of the Chief Surveyors report that considerable time is involved in connection with permanent surfacing of sheets, necessitating watching and reinstatement of standard marks where required.

TOPOGRAPHICAL SURVEYS.

The contoured plane-table survey on the scale of 4 in. to 1 mile is being continued in the Auckland and Taranaki Districts, and during the year 339 square miles were completed in the field. Further details of these surveys are published in the *Records of the Survey of New Zealand*. A special survey with a smaller vertical interval is now being made of an area for developmental purposes.

FIELD INSPECTIONS.

Sixty-five field inspections have been made during the year by senior staff surveyors, and the work disclosed has, with two exceptions, been up to regulation standard. It is anticipated that more of these inspections will be made during the coming year, especially in those districts which have not had sufficient made during the year under review.

TIDAL SURVEY.

The operations for the year under report comprised the analysis of the tidal observations at the Port of Dunedin for 1927, together with two complete analyses of the observations at the Port of Lyttelton for 1926 and 1927. 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 ₀ = 5.72 ft.		Bluff. A ₀ = 5.27 ft.		Dunedin. A ₀ = 3.30 ft.		Lyttelton. A ₀ = 3.06 ft.		New Plymouth. A ₀ = 5.50 ft.		Wellington. A ₀ = 2.93 ft.		Westport. A ₀ = 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	0.013	71.77	0.019	21.79	0.011	90.77	0.002	354.03	0.011	78.04
S2	0.580	268.31	0.502	49.79	0.244	126.96	0.149	142.47	1.103	306.14	0.100	330.28	0.959	332.22
S4	0.019	331.83	0.009	223.42	0.006	312.97	0.008	196.61	0.008	352.33	0.004	215.90	0.007	32.75
S6	0.003	41.77	0.006	170.17	0.003	108.45	0.013	338.20	0.006	88.73	0.004	310.31	0.006	331.21
M1	0.009	144.71	0.011	127.33	0.008	52.73	0.009	119.85	0.008	71.92	0.006	22.11	0.012	143.08
M2	3.818	206.37	2.858	35.68	2.401	122.64	2.887	122.42	3.986	277.36	1.611	138.99	3.747	304.43
M3	0.039	199.21	0.011	272.74	0.012	264.53	0.013	170.18	0.030	151.30	0.019	175.72	0.021	208.15
M4	0.106	124.54	0.088	226.45	0.263	180.66	0.009	126.78	0.078	52.77	0.041	251.11	0.057	53.90
M6	0.026	314.33	0.086	79.53	0.061	1.85	0.022	62.85	0.023	262.35	0.012	98.61	0.026	36.82
O1	0.053	145.25	0.113	72.91	0.085	68.53	0.085	59.60	0.046	103.23	0.103	36.57	0.093	45.98
K1	0.235	169.17	0.058	115.68	0.077	94.21	0.151	58.08	0.205	186.06	0.082	84.49	0.073	184.39
K2	0.139	256.95	0.134	46.77	0.083	110.95	0.049	108.29	0.309	297.39	0.044	7.49	0.276	328.04
P1	0.077	163.91	0.023	105.44	0.023	93.39	0.048	89.55	0.063	179.23	0.032	77.13	0.022	133.91
J1	0.017	185.22	0.006	198.96	0.009	103.80	0.009	140.62	0.018	222.36	0.010	178.05	0.013	219.25
Q1	0.009	67.58	0.031	47.70	0.028	67.40	0.022	62.32	0.019	38.27	0.036	22.17	0.037	33.03
E2	0.108	219.79	0.109	32.44	0.185	120.62	0.083	169.54	0.122	278.28	0.029	156.82	0.097	285.41
N2	0.793	179.27	0.654	16.50	0.530	102.48	0.655	90.84	0.821	261.11	0.398	104.65	0.770	289.02
γ2	0.203	206.34	0.153	53.35	0.125	100.67	0.155	93.39	0.177	264.28	0.107	113.02	0.194	320.40
μ2	0.102	178.49	0.065	7.93	0.035	56.62	0.116	65.27	0.127	242.24	0.067	88.08	0.134	283.83
T2	0.057	294.82	0.020	89.11	0.018	269.28	0.026	237.96	0.078	316.01	0.031	280.97	0.053	9.08
(MS)4	0.173	195.31	0.081	2.78	0.104	141.94	0.107	110.38	0.095	258.14	0.035	133.28	0.105	294.78
(2SM)2	0.066	303.10	0.045	121.63	0.038	14.29	0.058	27.03	0.088	222.36	0.033	356.74	0.076	199.89
R2	0.015	211.16	0.014	111.90	0.029	185.73	0.017	167.18	0.032	300.05	0.011	138.68	0.035	178.80
<i>Long Period.</i>														
Mm	0.045	195.02	0.043	1.94	0.052	329.47	0.067	191.13	0.060	337.01	0.039	174.85	0.051	199.18
Mf	0.050	206.01	0.067	235.36	0.085	256.46	0.069	221.75	0.026	365.26	0.060	232.19	0.055	7.87
MSf	0.035	209.57	0.063	326.77	0.058	151.61	0.055	191.04	0.081	190.54	0.043	106.30	0.069	98.39
Sa	0.186	30.61	0.089	16.98	0.127	268.75	0.171	3.81	0.077	86.54	0.108	332.12	0.113	81.51
Ssa	0.071	164.94	0.115	82.05	0.094	231.27	0.069	240.81	0.084	43.84	0.073	111.04	0.116	111.03

The tide-tables for the year 1930 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 1st August, 1928, from the Hydrographer of 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.

In addition to the above, the comparisons between the predicted times and heights of high and low water for the year 1927 at the following ports—Auckland, Wellington, Lyttelton, Dunedin, Bluff, and Westport—and the actual times and heights of high and low water as recorded by self-registering tide-gauges, were completed. Details of these comparisons have been published in Volume V, *Records of the Survey of New Zealand*.

For the Port of Greymouth mean high tide has been determined from automatic tide-gauge registrations for the years 1923 and 1924, and equals 9.87 ft. above the zero of the gauge.

MAGNETIC OBSERVATORY.

During the year 1928 the work of the Magnetic Observatory at Christchurch, with its substation at Amberley, has been carried on as usual. From the hourly measurements of the magnetograms of the magnetic declination, magnetic horizontal force, and magnetic vertical force there have been found mean hourly values of these elements, and tables of hourly values will be published, as previously, in the *Records of the Survey of New Zealand*, along with the customary seasonal and other curves.

The mean annual values of the magnetic elements for 1928 (Christchurch values) are as under :—

			Mean Value, 1928.	Change since 1927.	Change, 1926-27.
Magnetic declination (east)	..	..	17° 37'·4	+ 6'·1	+ 5'·3.
Magnetic horizontal force	..	..	0·22126	— 9 γ	— 6 γ .
Magnetic inclination (south = —)	..	..	— 68° 17'·3	— 1'·1	— 0'·6.
Northerly component	..	..	0·21088	— 20 γ	— 16 γ .
Easterly component	..	..	0·06699	+ 35 γ	+ 31 γ .
Vertical component	..	..	0·55566	+ 28 γ	— 13 γ .
Total magnetic force	..	..	0·59809	+ 21 γ	+ 10 γ .

Towards the end of the year absolute observations were made at Amberley to establish the value of the difference Christchurch-Amberley, with a view to ultimately making all absolute observations at Amberley. So far the observations show—

Christchurch-Amberley :—In declination, — 1'·5 ; in horizontal force, — 242 γ ; in vertical force, + 323 γ .

It was mentioned in last year's report that the rate of secular change in magnetic declination has been accelerated of late years. This increase has again been found, and is somewhat enhanced. Also the annual mean value of the magnetic horizontal force is again small, being only — 9 γ from 1927 to 1928, as compared with — 6 γ from 1926 to 1927. In the inclination the change from 1927 to 1928 has been — 1'·0, the same as the average annual change for the two years 1925-27.

The new electrograph-house, in which the Benndorf electrometer is now working, was not ready in 1928. Observations were continued in the temporary shelter in the Observatory grounds. The difficulties of operation in winter-time were large there, but some valuable records were obtained.

Electrically calm days appear to be rare here, and the records obtained had to be severely culled, but in the new house failure of record is the exception instead of the rule. The reduction factor is also reduced from 3·3 to very closely unity, a great advantage, arising chiefly from the absence of the tall trees.

All the electrograms have been measured and reduced, and the tabulated results will be published in *Records of the Survey of New Zealand*. The incidence of natural "storminess" of the electrical field here is large, and no record here as yet approaches fully the regularity of a "quiet day" in the magnetic field. The normal diurnal variation is not clearly shown by the curves, and only the systematic tabulation of the hourly values for a fairly long interval can be expected to show it accurately. As in other places, the occurrence of negative potential is comparatively rare, and it seldom persists, so that it occasionally happens that when both positive and negative excursions are large the average potential over an hour does not greatly differ from zero. The negative potential for such short intervals can hardly be due to a temporary superabundance of positive ions in the air: it is more probably due to movements of electricity in the higher regions, where the velocities are greater as a rule.

Details of the pilot-balloon flights obtained in the past few years will be published in the report for 1927-28.

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.	γ	C.G.S. Unit.	γ	° ' "	' "	
1902 ..	16 15.1		0.22694		0.55277		67 40.80		1912-13
1903 ..	16 18.3	+3.2	0.22669	-25	0.55286	+9	67 42.30	+1.50	1912-13
1904 ..	16 21.8	+3.5	0.22644	-25	0.55307	+21	67 44.10	+1.80	1912-13
		+3.6		-16		+41		+1.70	
1905 ..	16 25.4		0.22628		0.55348		67 45.80		1919-20
1906 ..	16 28.9	+3.5	0.22599	-29	..	+28	..	+1.80	†Vol. IV.
1907 ..	16 31.1	+2.2	..	-21	..	..	..	..	..
		+2.2		..		..		..
1908 ..	..	..	..	..	..	..	..	..	..
1909 ..	..	..	..	..	..	..	..	..	..
1910 ..	16 37.6		0.22515	..	0.55485	..	67 54.80	..	1920-21
		+1.4		-27		+12		+1.40	
1911 ..	16 39.0		0.22494		0.55497		67 56.20		..
1912 ..	..	+2.5	..	-23	..	-9	..	+1.00	..
1913 ..	16 44.0		0.22449	..	0.55478	..	67 58.20	..	1913-14
		+0.8		-35		-13		+1.60	
1914 ..	16 44.8		0.22414		0.55465		67 59.80		1914-15
1915 ..	16 47.0	+2.2	0.22387	-27	..	+7	..	+1.67	*Sept., 1918
1916 ..	16 49.8	+2.8	0.22355	-32	..	..	..	..	*Sept., 1918
		+3.2		-27		..		..
1917 ..	16 53.0		0.22328		0.55486		68 04.80		*Mar., 1921
1918 ..	16 55.7	+2.7	0.22304	-24	0.55516	+30	68 06.70	+1.90	1918-19
1919 ..	16 58.6	+2.9	0.22280	-24	0.55507	-9	68 07.80	+1.10	1919-20
		+3.1		-19		+18		+1.40	
1920 ..	17 01.7		0.22261		0.55525		68 09.20		†1920-21
1921 ..	17 04.6	+2.9	0.22241	-20	0.55528	+03	68 10.30	+1.10	†1921-22
1922 ..	17 08.3	+3.7	0.22217	-24	0.55507	-21	68 11.20	+0.90	†1922-23
		+3.4		-08		+19		+0.80	
1923 ..	17 11.7		0.22209		0.55526		68 12.00		†Vol. I.
1924 ..	17 16.4	+4.7	0.22188	-21	0.55508	-18	68 12.73	+0.73	†Vol. II.
1925 ..	17 21.1	+4.7	0.22166	-22	0.55522	-14	68 14.20	+1.47	†Vol. III.
		+4.9		-25		+3		+1.40	
1926 ..	17 26.0		0.22141		0.55525		68 15.60		†Vol. IV.
1927 ..	17 31.3	+5.3	0.22135	-06	0.55538	+13	68 16.20	+0.60	..
1928 ..	17 37.4	+6.1	0.22126	-09	0.55566	+28	68 17.30	+1.10	†Vol. V.

* Mean hourly values published in *New Zealand Journal of Science and Technology*.

† Special publication.

‡ Records of the Survey of New Zealand.

PROPOSED OPERATIONS, 1929-30.

Geodetic Triangulation.—South Island stations on the shore of Cook Strait will be located, and reconnaissance made for the extension of the triangulation over the northern portion of the South Island. Observations will be continued to link up the Kaingaroa and Wairarapa bases.

Precise Levelling.—It is proposed to scheme out the lines over which this work will be done, and, if possible, fundamental bench-marks will be established at the junction of the meshes and at suitable intervals along the lines.

Minor Triangulation.—A revision of a small area of work found faulty is to be undertaken, otherwise no new work is proposed, although it will probably be necessary to take up this work to control settlement areas.

Topographical Surveys.—The contoured topographical survey is to be continued in the Auckland and Taranaki Districts, and it is proposed to take up further work of this description during next season.

Standard Surveys.—The Auckland city and suburban survey is being continued, and Invercargill will be completed. Rural work in Taranaki, Marlborough, and Canterbury is to be continued, and it is proposed to commence new surveys in Gisborne, Wellington, and Southland Districts.

Town-section Surveys.—Small areas for town subdivisions are to be put in hand in various districts.

Rural Settlement.—It is anticipated that besides the work in sight (about 80,000 acres) considerable further areas will be made available for survey under the Land for Settlements Act.

Native Land Court Surveys.—Authority for the survey of 68,000 acres of Native land is in hand at the beginning of the year.

Office-work.—The routine examination and recording of plans, field inspections, photo-lithographic drawings, and the computations in connection with the geodetic, magnetic, and tidal surveys will be continued in addition to the above field-work. The recomputation and adjustment of minor triangulation in the Bay of Plenty and Poverty Bay circuits is also to be commenced.

GENERAL.

Map-publication.—In the Chief Draughtsman's report, appended hereto, will be found details of the maps published during the year.

It is again to be deplored that the standard maps on 1-mile-to-1-inch scale are falling into arrears, and it will be necessary to speed up the publication of these during the coming year.

Town Subdivisional Schemes.—Although the number of the schemes show a falling-off, the total area was almost exactly the same as last year. An analysis of the number submitted by the various districts, and of their division into classified areas, is given in the Chief Draughtsman's report.

Proclamation of Roads, &c.—During the year under review a number of applications for the proclamation of road-lines laid out 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, a warrant was issued closing an unformed and unused road intersecting or adjoining land acquired under the Act, in order that the area comprised therein could be incorporated in the allotment available for disposal.

Under the Land Transfer Act, 1915, 236 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.

Desiderata.—(1) Further equipment is required at the Magnetic Observatory for field instruments in order that repeat observations may be made at selected stations throughout the Dominion.

(2) Three component-recording seismographs should be installed at the Magnetic Observatory in place of the old Milne instrument, which is now nearly thirty years old.

(3) Lines of precise levelling should be run to connect up the tidal stations and main centres.

(4) The importance of a gravity survey is again brought to your notice.

(5) Further accommodation for the storage of litho stocks is required, the present attic being very congested.

International Geodetic and Geophysical Union.—The Department, although a member of the union, is not yet represented on the Permanent Committee of the Section of Geodesy, but it is anticipated that this representation will be arranged shortly.

International Geographical Union.—The Department became a member of this union in July last, and it will consequently be necessary to take in hand the formation of the national committee for working in co-operation with the other members of the union.

STAFF.

Retirements.—W. T. Neill, Surveyor-General: Mr. Neill joined the Service in 1883 as a survey cadet, passing the examination of entry into his chosen profession as a surveyor five years later, his duties taking him into the roughest and most inaccessible districts of Otago, meeting with the difficult transport and living conditions which are invariably associated with the pioneers of surveying. He carried out many important surveys with meticulous care and accuracy, notably the detailed topographical survey of the country around Dunedin and the standard survey of Dunedin City. In 1918 he was appointed to the position of Chief Inspector of Surveys and Head Office computer, and two years later was appointed to the high office of Surveyor-General for the Dominion. Mr. Neill has been a keen student of surveying and kindred matters, and has kept in touch with the latest scientific methods of his work, besides contributing many highly technical papers for the benefit of the Department and the profession generally which will ever remain a monument to his profound knowledge and skill as a mathematician. It can be said, in conclusion, that by tact, courtesy, and fairness Mr. Neill endeared himself to the officers of the Department under him, and left a record that he can in his retirement look upon with pride and satisfaction.

John Stevenson, Commissioner of Crown Lands and Chief Surveyor, Marlborough: Mr. Stevenson joined the Department in 1892 as assistant surveyor, and was appointed District Surveyor in 1908, carrying out extensive and important surveys in Canterbury, Hawke's Bay, and Wellington Districts. In 1919 Mr. Stevenson was appointed to the position of Chief Draughtsman, Hokitika, and was promoted to the Blenheim office as Commissioner of Crown Lands and Chief Surveyor in 1923. Mr. Stevenson's work as Chairman of the Revaluation Board operating in the Nelson District is fully recognized, and his work generally in the Department has been of a high order of efficiency and loyalty.

R. R. Percival: Mr. Percival joined the Service in 1899 as a draughtsman in the Wellington District Office, and in 1917 was appointed to the position of draughtsman in charge of Native-land surveys, but owing to private reasons had to decline the appointment. Mr. Percival's duties as computing draughtsman and as secretary to the South Island Representative Commissioner were characterized by the capable and efficient manner in which they were at all times carried out.

Resignations.—Mr. J. Fletcher, surveyor, resigned to take up a position as surveyor in New Guinea, and Messrs. Armstrong, Welch, Tait, and Lowe, draughtsmen, left the Service for positions in Western Australia. Other draughtsmen who left during the year to take up other work were Messrs. Harkness, O'Brien, Stevens, Wilkins, and Mrs. Bramley.

Appreciation.—In conclusion, I wish to bring under your notice the appreciation of 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 technical staff, both indoors and field, for their good work.

H. E. WALSHE, Surveyor-General.

Table 1.—RETURN OF FIELD-WORK EXECUTED BY HEAD OFFICE STAFF FROM 1ST APRIL, 1928, TO 31ST MARCH, 1929.

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.
Auckland ..	}								
Gisborne ..									
Hawke's Bay ..		..	..	..	..	..	27,000	7,268 11 6	74 16 0
Wellington ..									
North Auckland ..	..	..	36	1,355 14 6	..	..	..	..	299 16 4
Taranaki ..	60	6,098 14 1	..	..	..	..	..	..	161 16 10
Southland ..	..	..	60	7,520 13 9	..	..	..	..	..

Table 2.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY THE LANDS AND SURVEY DEPARTMENT FROM 1ST APRIL, 1928, TO 31ST MARCH, 1929.

District.	Minor Triangulations.			Contoured Topographical Survey. 1—19340.			Rural.			Village and Suburban.			
	Acres.	Cost per Acre.	Total Cost.	Sq. Miles.	Cost per Mile.	Total Cost.	Acres.	Cost per Acre.	Total Cost.	Acres.	No. of Sections.	Cost per Acre.	Total Cost.
North Auckland	15,360	d. 1-88	£ s. d. 120 15 9	..	..	£ s. d. 1,326 16 7	13,502	s. 2-84	£ 1,918 14 7	235-05	18	s. 19-47	£ s. d. 228 17 4
Auckland	..	..	..	168-3	7-88	..	18,838	1-54	1,455 8 5	64-58	9	33-20	106 19 10
Gisborne	..	..	..	..	..	..	1,632	1-28	105 0 0	..	..	..	..
Hawke's Bay	..	..	..	..	..	..	11,560	1-15	666 0 0	..	..	..	..
Taranaki	..	..	..	171-0	4-69	801 19 9	856	0-82	35 0 0	63-00	8	11-61	36 11 6
Wellington	..	..	..	..	..	..	14,995	1-05	791 7 2	109-00	31	28-32	154 7 1
Marlborough	..	..	..	..	..	..	574	2-13	61 0 0	19-50	2	15-90	15 10 0
Nelson	..	..	..	..	..	..	15,880	4-78	3,788 11 2	2-66	1	180-25	24 12 1
Westland	..	..	..	..	..	..	593	3-19	94 17 0	65-00	9	24-16	78 10 9
Canterbury	3,600	2-00	30 17 3	..	..	..	6,845	1-49	508 6 4	13-25	2	10-57	7 0 0
Otago	7,200	1-97	59 1 3	..	..	..	21,333	1-46	1,551 19 11	10-50	1	20-00	10 10 0
Southland	..	..	..	..	..	..	458	3-51	80 7 3	225-82	27	12-35	139 9 6
Totals	26,160	1-93	210,14 3	339-3	6-27	2,128 16 4	107,066	2-06	11,056 11 10	808-36	108	19-85	802 8 1

District.	Town Section Survey.				Roads, Railways, and Water-races.			Other Work.		Total Cost of completed Work.	
	Acres.	No. of Sections.	Cost of Sections.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Cost.	Total Cost of completed Work.		
North Auckland	22-02	62	£ 3-90	£ s. d. 242 1 10	10-85	£ 47-76	£ 518 3 11	£ s. d. 2,677 16 8	£ s. d. 5,706 10 1		
Auckland	16-39	71	1-96	139 9 3	80-88	18-36	1,483 12 11	661 2 9	5,173 9 9		
Gisborne	55-00	21	1-25	26 5 0	15-00	33-77	505 13 2	43 5 0	680 3 2		
Hawke's Bay	39-00	34	2-30	78 0 0	2-00	36-00	72 0 0	115 0 0	931 0 0		
Taranaki	19-50	39	1-33	51 15 11	..	..	..	314 5 11	1,239 13 1	
Wellington	53-00	234	1-57	368 4 8	4-21	33-02	138 13 8	1,083 13 2	2,536 5 9		
Marlborough	..	..	..	..	52-00	31-11	1,617 15 1	82 19 0	1,777 4 1	
Nelson	2-41	11	5-48	60 5 5	5-33	35-94	191 6 1	111 3 6	4,175 18 3		
Westland	2-00	2	9-92	19 17 0	0-75	27-46	20 12 0	513 6 7	727 3 4		
Canterbury	2-12	12	2-42	29 0 0	6-75	13-36	90 3 1	1,810 18 10	2,445 8 3		
Otago	6-80	24	1-96	46 19 1	0-37	32-07	11 17 4	171 19 6	1,824 3 1		
Southland	6-85	24	2-29	55 0 0	..	..	..	349 3 10	683 1 10	
Totals	225-09	534	2-91	1,116 18 2	178-14	26-11	4,649 17 3	7,934 14 9	27,900 0 8		

Table 3.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS FROM 1ST APRIL, 1928, TO 31ST MARCH, 1929.

District.	Rural.			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	642	s. 1-87	£ s. d. 60 0 0	..	..	s. ..	£ s. d. ..	12-54	12	£ 7-52	£ s. d. 90 5 0
Auckland ..	180	4-73	42 10 6	21 33	4	48-38	51 12 0	13-70	8	12-28	98 4 0
Gisborne ..	..	..	..	..	..	..	..	..	..	..	..
Hawke's Bay ..	..	..	..	..	..	..	..	..	..	..	..
Taranaki ..	..	..	..	..	..	..	..	..	..	..	..
Wellington ..	..	..	..	..	..	..	..	..	..	..	..
Marlborough ..	..	..	..	11-25	5	25-60	14 8 0	1-00	4	1-37	5 10 0
Nelson ..	..	..	..	..	..	..	..	..	..	..	..
Westland ..	..	..	..	..	..	..	..	..	..	..	..
Canterbury ..	19,826	0-32	321 8 0	27-55	3	22-65	31 4 0	..	..	..	..
Otago ..	..	..	..	0-34	1	17-65	6 0 0	2-69	3	10-47	31 8 4
Southland ..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	20,648	0-41	423 18 6	60-47	13	34-11	103 4 0	29-93	27	8-35	225 7 4

District.	Native Land Survey.				Roads, Railways, and Water-races.			Other Work.	Total Cost of completed Work.
	Acres.	No. of Sections or Divisions.	Cost per Acre.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Cost.	
North Auckland	790	26	s. 3-98	£ s. d. 157 4 11	0-91	£ 34-37	£ s. d. 31 5 7	£ s. d. 45 2 3	£ s. d. 383 17 9
Auckland ..	44,256	240	1-61	3,570 14 0	24-00	26-47	634 15 4	289 2 4	4,686 18 2
Gisborne ..	23,050	154	2-65	3,061 15 9	..	..	..	..	3,061 15 9
Hawke's Bay ..	35,693	144	0-81	1,477 0 0	..	..	..	..	1,477 0 0
Taranaki ..	2,127	31	2-42	257 16 0	..	..	..	..	257 16 0
Wellington ..	21,555	128	1-80	1,940 16 5	0-25	60-00	15 0 0	..	1,955 16 5
Marlborough ..	178	16	8-63	77 12 6	..	..	..	..	97 10 6
Nelson ..	16	2	19-31	15 0 0	..	..	..	..	15 0 0
Westland ..	..	..	..	..	..	..	..	..	..
Canterbury ..	603	18	3-29	99 3 0	6-75	26-57	179 7 1	..	631 2 1
Otago ..	113	6	6-11	34 10 0	8-10	42-19	341 15 0	..	413 13 4
Southland ..	209	8	13-25	138 16 4	..	..	..	..	138 16 4
Totals ..	128,590	773	1-68	10,830 8 11	40-01	30-05	1,202 3 0	334 4 7	13,119 6 4

Table 4.—RETURN SHOWING SURVEYORS EMPLOYED AND WORK ON HAND ON 1ST APRIL, 1929.

Chief Surveyors	Surveyors employed.		District.	Work on Hand.					
	Staff.	Contract.		Topo-graphical.	Settlement.	Native.	Roads.	Towns.	Standard Traverse.
O. N. Campbell ..	5	..	North Auckland	Sq. Miles.	Acres.	Acres.	Miles.	Acres.	Miles.
K. M. Graham ..	6	6	Auckland ..	..	14,282	5,506	11-0	2-0	..
E. H. Farnie ..	2	2	Gisborne ..	..	12,637	16,795	105-1	11-0	..
J. D. Thomson ..	1	1	Hawke's Bay ..	..	9,285	34,002	..	..	..
W. D. Armit ..	2	10	Taranaki ..	..	95	10	..	..	..
F. H. Waters ..	4	9	Wellington ..	1,000	..	1,394	..	..	50
P. R. Wilkinson ..	1	..	Marlborough ..	..	17,274	9,745	..	..	..
A. F. Waters ..	2	..	Nelson ..	..	250	400	34-0	..	..
W. T. Morpeth ..	1	..	Westland ..	..	760	..	1-0	90-0	..
W. Stewart ..	1	2	Canterbury ..	..	..	..	..	..	..
R. S. Galbraith ..	2	..	Otago ..	36	2,734	84	13-5	27-0	..
N. C. Kensington ..	2	1	Southland ..	..	21,260	60	..	50-0	..
Totals ..	29	31	..	580	..	106	..	..	..
Totals ..	29	31	..	2,091	78,577	68,102	164-6	180-0	50

Table 5.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1928, TO 31ST MARCH, 1929.

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, &c.		
	Leases, Licenses.	Freehold.											
North Auckland ..	498	374	188	8,982	5,030	112	15	618	162	13	67	£	s. d.
Auckland ..	917	212	798	2,903	1,793	43	104	267	131	7	103	248	3 5
Gisborne ..	64	..	632	694	694	11	53	47	30	..	5	41	9 0
Hawke's Bay ..	184	54	286	4,912	2,560	28	42	130	19	5	12	58	2 3
Taranaki ..	397	90	152	2,397	3,096	18	34	150	37	2	12	70	15 9
Wellington ..	700	852	299	8,597	3,316	43	56	500	133	1	54	168	12 6
Marlborough ..	32	22	32	1,204	441	19	15	42	40	..	1	25	12 6
Nelson ..	218	32	30	885	1,165	29	2	105	24	4	17	50	9 3
Westland ..	295	..	..	575	25	36	..	16	4	..	3	31	9 9
Canterbury ..	293	98	48	6,174	3,129	54	20	443	35	1	2	128	3 5
Otago ..	504	154	30	3,322	1,978	68	4	121	28	11	10	116	18 6
Southland ..	317	74	16	1,813	1,155	32	1	72	7	10	8	85	2 0
Head Office ..	..	..	..	..	..	..	..	..	..	20	..	517	2 7
Totals ..	4,419	1,962	2,511	42,458	24,382	493	346	2,511	650	74	294	1,685	8 2

APPENDIX I.

HEAD OFFICE, DRAUGHTING BRANCH.

Map-publication.—The total maps published during the year were 102, and the cost for printing £1,730. The maps comprised survey districts ($\frac{1}{2}$ mile to 1 in.), 22; survey districts (1 mile to 1 in.), 29; counties (1 mile to 1 in.), 7; towns (8 chains to 10 chains to 1 in.), 16; cadastral series (2 miles to 1 in.), 2; territorial (4 miles to 1 in.), 5; territorial (8 miles to 1 in.), 1; miscellaneous, 20. The total number of copies printed was 37,150.

Cash sales of litho maps from all districts amounted to £1,685, an increase of 22·5 per cent. on that of the preceding year.

Other Government Departments were supplied with maps to the value of £1,872.

The 4-miles series of maps is making good progress, and this useful series should be completed in two years' time. An 8-miles series is now in hand, featuring road information chiefly, and this should prove of value to motorists and road users generally.

Town Schemes.—The town schemes approved show a considerable falling-off in the numbers, 239 only being approved this year, as against 298 last year. This is partly accounted for by the extension of the boundaries of the City of Auckland. The percentage of the various districts were—North Auckland, 45·2; Canterbury, 17·6; Wellington, 11·7; Auckland, 9·67; Otago, 5·4.

Analysis of the schemes shows that 2,546 acres were subdivided into residential lots outside the boundaries of boroughs and town districts; and of this area new roads account for 248 acres, road and access reserves 11 acres, recreation and other public reserves, 142 acres, leaving a balance subdivided into lots available for sale of 2,145 acres.

Draughtsmen's and Computers' Examination.—The annual examination was held in December, 1928, thirty-seven candidates presenting themselves for examination. The results were as follows:—Draughting: First grade—eleven candidates, of whom four passed (Messrs. L. Harding, T. P. Mahony, A. V. Woodall, and H. R. Cochran); second grade—eleven candidates, of whom four passed (Miss N. E. Styles, and Messrs. P. D. Rhodes, A. W. Hampton, and K. V. Kennedy); Computing: First grade—one candidate, who failed; second grade—fourteen candidates, of whom five passed (Messrs. P. D. Rhodes, G. C. Wilson, W. Roberts, R. G. Galbreath, and J. C. Foster).

The outside examiners for the special subject of "photo-litho drawing" were again Messrs. M. Crompton Smith and G. N. Sturtevant.

Standard of Length.—During the year 67 bands were compared with the standards, the total length being 4 miles 71 chains. Of these, 44 were ordinary field surveyors' steel bands, of a length of 321 chains, and 20 were invar bands, of a length of 59 chains. The local ground standard was tested twice, as it is found that it is by no means stable.

Civic Survey Maps.—Special editions of town maps on a larger scale than our usual publications have been printed during the year, and others are in preparation. These maps are to form the basic map of the civic survey.

Topographical Maps.—Maps of four areas have been drawn and printed for military training, and one area is still in hand.

APPENDIX II.

EXTRACTS FROM THE ANNUAL REPORTS OF CHIEF SURVEYORS, 1928-29.

NORTH AUCKLAND LAND DISTRICT (O. N. CAMPBELL, Chief Surveyor).

Rural.—During the year 14,144 acres of rural land was surveyed by staff surveyors.

Minor Triangulations.—15,360 acres were surveyed in this section by a staff surveyor.

Town-section Surveys.—An area of 34.56 acres was subdivided into 73 sections by staff surveyors, and one small survey by a private surveyor.

Village and Suburban.—235 acres were surveyed in this section by staff surveyors.

Roads.—11.36 miles of road were surveyed by staff surveyors, and 0.4 miles by a private surveyor.

Native.—With the exception of one small survey, the area of 790 acres, which is the year's total, was surveyed by private surveyors.

Other Work.—Inspection surveys comprised the greater part of the work in this section. During the year Mr. Traill, the senior surveyor in the district, carried out 25 inspections in terms of Technical Circular No. 28 of the 22nd June, 1928. These inspections disclosed that, generally speaking, the work at present being carried out is of a reasonably good standard, although in a few cases the ground marking was not all that could be desired. Mr. Till carried out numerous inspections and investigations in connection with Land Transfer surveys. Work on the Orakei Block included engineering surveys, schemes of subdivision, and repegging after street-formation. The general work included levels, gum-washing areas, Waipu Cemetery grave-plots, compass surveys, levels of tide-gauge, Hokianga Harbour, &c.

Office-work.—303 plans were received during the year, and 274 were examined and approved; 113 scheme plans were dealt with; 93 plans were compiled in the office; 9 survey-district maps and 4 town-district maps for photo-lithographic reproduction were drawn, and 5 survey-district maps revised; 26 block-sheets were drawn, 119 revised, and 110 examined; 67 sale plans were drawn; 1,231 tracings prepared; 498 leases and 374 certificates of title endorsed; 1,195 plans recorded; 247 Proclamations entered. General office-work comprised mounting and colouring lithos, searching, sun-prints, recording *Gazette* notices and Land Board transactions, reports, correspondence.

Standard Surveys: 30 standard plans have been drawn during the year, additions made to 61, 12 examined; 10 tracings made and 11 examined; preparation of data, computations, &c.

Native Land Branch: 16 survey plans have been received during the year, and 15 examined and approved; 14 compiled plans were received, and 8 examined and approved; 20 surveyors' bills of cost were apportioned over 116 subdivisions; 1 caveat lodged, 1 Native Land Court attended; 94 Court orders were endorsed in duplicate, 6 tracings made, and 10 ordinary compilations.

Land Transfer Branch: 574 plans were received, and 618 examined and approved.

Proposed Operations for 1929-30.—Staff surveyors have authority to survey 14,282 acres of rural land, 5,506 acres of Native land, 11 miles of road, and 2 acres of town surveys. Mr. Traill will continue the surveys in connection with the Orakei Garden Suburb as necessary, and in addition will carry out inspection surveys.

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

Topographical Survey.—For the past year one surveyor and one assistant surveyor have been engaged on this class of survey. The assistant surveyor has been employed wholly in the Rotorua District, and has completed 60 square miles during the year, at a cost of £417 13s. 6d., being an average cost of £6.96 per square mile. The total area surveyed in the Rotorua County is now 679 square miles, costing £4,594 14s. 9d., at an average cost to date of £6.76 per square mile. The surveyor has completed the topographical survey at Ngaurawahia, the total area being 108.3 square miles, at a cost of £1,247 1s. 1d., or an average cost of £8.43 per square mile. This survey shows contours at 25 ft. intervals, and was done for the Defence Department.

Rural Surveys.—An area of 18,838 acres was completed by staff surveyors, at a cost of £1,455 8s. 5d., being an average cost of 1.54s. per acre.

Village and Suburban.—An area of 86 acres was subdivided during the year. This comprised 13 sections in different parts of the district. The total cost was £158 11s. 10d., being an average cost of 36.8s. per acre.

Town-section Surveys.—There were 79 town sections surveyed, comprising an area of 30 acres, at a cost of £237 13s. 3d., being an average cost of £3 per section.

Native-land Surveys.—An area of 43,043 acres was surveyed, comprising 239 subdivisions. These surveys were carried out by contract surveyors at schedule rates. The total cost was £3,564 2s., being an average cost of 1.66s. per acre.

Roads, &c.—A total length of 105 miles of roads, &c., was surveyed during the year, at a cost of £2,118 8s. 3d., being at the rate of £20.17 per mile. Of this total, 44 miles were surveyed in connection with Hauraki Plains for the Land Drainage Branch, 16 miles of a special traverse of the Tongariro River in connection with the Taupo fisheries for the Internal Affairs Department, and 8 miles in connection with various deviations carried out for the Public Works Department.

Other Work.—A large proportion of this work comprises reports, investigations, and inspections of various surveys, principally Land Transfer, costing £592. The balance comprises miscellaneous engineering work on the Hauraki Plains for the Land Drainage Branch. The whole cost of other work was £661 2s. 9d.

Lake Taupo Fisheries.—This survey, for the Internal Affairs Department, was concluded during the year. The main work has been the traversing of rivers that flow into Lake Taupo, and marking the fishing reserves along these same rivers. There was also a survey of the Tongariro River. This survey located well-known fishing-pools, rapids, and islands in this river. Both banks were traversed and a special large-scale map prepared. In connection with the whole work there were 60 miles of theodolite traverse and 30 miles of rough measurements. The total cost was £2,142 16s. 3d., being at the rate of £23·8 per mile.

Traverse Closures.—The mean traverse closures for the past year as supplied by staff surveyors show an error of 0·21 links per mile on the meridian and 0·51 links per mile on the perpendicular.

Office and General Work.—Land Transfer Branch: A total of 242 plans were received for examination, and 267 plans were examined and approved, 1,793 deeds and other instruments were prepared, and 2,903 diagrams from plans were endorsed on certificates of title; 53 tracings were made; 10 new plans for recording thereon the position of areas covered by Land Transfer surveys; and 242 plans were recorded. A considerable number of certified copies of old Land Transfer plans have been made during the year in order to preserve the information shown thereon. The accumulation of unchecked plans has been cleared off, and the plans on hand at present only represent a normal number. Additional officers are put on to this work immediately it shown signs of becoming in arrears. A considerable number of complicated diagrams have been compiled in connection with the issue of provisional Land Transfer titles in the conversion of titles from Deeds Registration to Land Transfer.

Native Branch: A total of 104 plans were received for examination, and 104 plans were examined and approved; 35 plans were compiled; 180 survey costs examined and apportioned; 544 Court orders were endorsed; 175 tracings and 35 sun-prints were made; 66 authorities issued for surveys; 29 caveats lodged; 192 charging-orders obtained; and 6 Native Land Courts attended. A considerable amount of work has been undertaken by this branch in the preparation of compilations, tracings, &c., for the Native Consolidated Land Commission.

Roads and Crown Lands Branch: A total of 201 plans were received for examination and approval, and 174 plans were examined and approved; 68 plans were compiled and 103 sale plans prepared; 1,131 tracings made; 358 plans recorded; 120 Proclamations entered; 256 chain-lengths tested; 1,129 diagrams endorsed on titles; 24 scheme plans dealt with; 7 maps were drawn for standard publication; and 41 survey blocks were completed on the 20-chain record maps. The draughting staff employed on this work will be increased during the coming year and an effort made to bring the record maps up to date.

A considerable amount of miscellaneous work has been completed during the year, consisting of searches of titles, investigations, preparation of reports, providing Field Inspectors with folding pocket county tenure maps, and plane-table sheets for topographical surveys. A special series of maps of the Borough of Hamilton and surrounding districts, for town-planning purposes, were completed during the year and forwarded to Head Office for reproduction.

Proposed Operations, 1929-30.—One assistant surveyor will be employed on topographical surveys in the Rotorua County, and one surveyor for part of the time. A special survey over an area of about 35,000 square acres already completed is being carried out to show more detailed information with a view to utilizing some of the land for settlement purposes. I anticipate that the topographical survey of open land in the Rotorua County will, in addition to the special survey, be completed during the year.

One surveyor will be employed on the Hauraki Plains on miscellaneous and rural surveys, levels, and engineering work; also a standard traverse of certain Hauraki Plains constructed roads, with concrete reference blocks establishing boundaries.

Three surveyors will be employed on miscellaneous work, comprising school-sites, road-deviations, new roads, railway land plan surveys, rural settlement, and Land Transfer and inspectional surveys. There is a large amount of the above class of work required in this district.

Contract surveyors have in hand the survey of 16,596 acres of Native land.

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

Minor Triangulation.—No work of this nature has been executed during the year. I would again urge the need for a systematic revision of the minor-triangulation work throughout this district. The work is old and not up to the standard of accuracy required under modern conditions.

Standard Surveys.—The only work carried out under this heading has been the raising of two iron covers to the new footpath level, owing to reconditioning of streets.

Rural standard traverses of the main roads through the Poverty Bay flats should be undertaken when there is a surveyor available. At present many of these roads are being tar-sealed, and to preserve the old marks and pipes established, principally in connection with Land Transfer surveys, I have had these points offset with iron tubes. These points should now be connected by standard traverse as opportunity offers.

Topographical.—About 11,500 acres of Native land has been covered by topographical survey for the information of the Native Land Court in connection with the Tuparoa consolidation scheme.

Township Sections.—An area comprising 55 acres at Hicks Bay was subdivided into 21 sections, at a cost of £1·5 per section.

Roads.—A total length of 15 miles of formed road was surveyed in various parts of the district, most of the work being in the nature of deviation surveys.

Rural.—During the year 1,631 acres were surveyed by staff surveyors, comprising 16 lots in the Waioeka and Urutawa districts, and 1,051 acres by private surveyors.

Native Land Court Surveys.—During the year 15,097 acres were surveyed by contract surveyors, and 5,804 acres by staff surveyors, comprising 171 subdivisions, at a cost of £2.65 per acre.

Field Inspections.—One field inspection was made during the year, and I hope to have further inspections made during the current year.

Work in Progress.—Several road-deviations in the Motu and Tuahu districts are at present under survey. The subdivision of the Poroporo Block, defining the Crown and Native interests, is well in hand, and will be completed during the current year. The survey of the balance of the Crown's interests in the Ngamoe, Mataroa, and Matarau Blocks will also be completed during the year.

Office-work.—Land Transfer Branch: During the year 52 new plans were received for examination, and 47 were approved, containing 120 lots, of an area 14,979 acres; 56 traverse sheets were examined; 566 diagrams were endorsed on certificates of title; 69 certificates of title were amended, due to Proclamations and Orders in Council; and 59 lease diagrams were examined. Townships for approval under the Town-planning Act: 2 plans were received and approved.

Native Land Court plans: During the year 40 plans were approved, comprising 209 subdivisions, of a total area of 31,118 acres; 13 plans were compiled in office; 116 traverse sheets were examined; 632 diagrams were endorsed on Court orders; 25 authorities were issued; and 34 certificates of cost were made out, for an amount of £3,969.

Statutory plans: Under this heading 30 plans were examined and approved, representing 44 miles of road; 66 traverse sheets were examined; 2 plans were compiled in office.

Crown plans: Under this heading 11 plans were examined and approved, comprising an area of 8,973 acres, containing 116 lots; 16 traverse sheets were examined.

Other Work.—Under this heading 214 tracings were prepared for the Valuation Department, field surveyors, reports, gazetting purposes, and Native Land Court.

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

Minor Triangulation.—No work under this heading was undertaken during the year.

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 has been exercised in watching the operations of local bodies in raising street-levels, and the consequent effect on standard blocks. A number of blocks have been raised and adjustments made to ensure the permanency, and to eliminate interference by traffic, &c.

Topographical Survey for Schemes of Subdivision.—Nothing under this heading was undertaken during the year.

Rural.—Under this heading an area of 11,560 acres was dealt with, at a cost of 1.15s. per acre, the principal item being an area of about 6,000 acres of Native land purchased for settlement and known as Waimarama. The block is divided into 6 sections, varying from about 500 to 700 acres. The lands were ballotted for on the 13th February last.

Native Land Court Surveys.—Under this heading there is an area of 35,693 acres surveyed, at a cost of 0.81s. per acre, the principal block being the partition survey of Tutira for the definition of the Crown and Native awards. This is a considerable advance on last year's operations, when 3,911 acres were surveyed, at a cost of 2.1s. per acre.

Roads.—Under this heading there is only 2 miles, at a cost of £36 per mile.

Village and Suburban.—Nothing was done under this heading.

Town-section Survey.—Under this heading there is an area of 39 acres divided into 34 sections, at a total cost of £78, or £2 per section. The work comprises redefinition work in the Tarawera Township and a new township at Putorino.

Field Inspections.—Nothing was done under this heading during the year.

Work in Progress.—There is only one small item on hand, comprising the redefinition of boundaries of an education reserve of 95 acres.

Office Work.—Land Transfer Branch: During the year 130 plans, comprising 516 lots and containing an area of 20,600 acres, were examined and approved; 208 traverse sheets were examined; 4,912 diagrams were placed on instruments of title; 2,560 deeds and other instruments were examined and passed; 150 plans were recorded, and 6 new plans for recording purposes were made. Seven township plans were approved during the year.

Native Land Court surveys: During the year 42 plans, comprising 144 lots, containing an area of 35,693 acres, at a cost of £1,477, or 0.81s. per acre, were examined and approved; 73 traverse sheets were examined; 13 plans were compiled; 41 tracings were made for the Valuer-General; 286 diagrams were endorsed on Court orders; 43 authorities for survey were issued; 42 certificates of costs were made out, for an amount of £1,477. Amount of survey liens paid, £1,547 10s. 9d.

Statutory plans: 19 plans, having 27 lots, consisting of 6 miles railway and road, an area of 238 acres, were approved; 22 traverse sheets were examined. For the examination of plans and for tracings, &c., local bodies have paid £6 9s. 6d.

Crown plans: 30 plans, containing 82 lots and comprising 24,450 acres, were approved (includes number of compiled plans); 19 traverse sheets were examined; 50 diagrams have been endorsed for recording on settlers' files; tracings for Valuer-General, gazetting purposes, settlers, Field Inspectors, and general, 1,788; reductions, 1,462 (for district and other map); sun-prints, 66; tracings for sale posters, 12; diagrams on certificates of title and warrants, 239. Fees collected for sale of lithos, £58 2s. 3d.

Future Operations.—There are several areas of land in this district purchased from the funds of the Native Land Settlement Account but which cannot be dealt with at present owing to being clothed with leases of varying periods. However, it is possible that within the next year the Mangatoro

Block, of about 3,000 acres, will be subdivided for settlement; also a consolidation of about 1,500 acres of purchased land at Takapau may be completed during the year. The Crown award on Tutira Block, about 23,000 acres, has been defined; but this will not be available until 1937, owing to the Native lease covering same.

Standard Lithography.—Good progress has been made during the year with this class of work. The Napier Borough map was completed; also 5 district 40-chain drawings, with 3 nearly complete and 3 others on hand. When these latter are complete about three-quarters of the district will be covered. The Hawke's Bay County map has been revised, and a Napier Borough pull has been filled in in black with additional data in the nature of letter-boxes, telephone-stands, fire-alarms, parking-areas, &c., has been sent on for printing.

Land Transfer Index Maps.—No progress has been made with these during the year, owing to the amount of routine work the staff has been called upon to carry out. A lot of assistance has been given in endorsing diagrams of limited titles, but it is believed that this work will be completed at the end of April, 1929. It is then proposed to give attention to extension of Land Transfer index maps already complete, 30 in. by 30 in. sheets, and to recondition others and fulfil urgent needs.

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

Standard Surveys.—(a) Borough: The standard survey of the Borough of New Plymouth was continued during the year by Mr. A. C. Haase, acting under the direct control of the Surveyor-General. The field-work for this survey was completed, and the preparation of plans is now well forward.

(b) Rural: Rural standard traverses have been carried on during the year by Mr. J. W. McIntyre and Mr. A. C. Haase.

Mr. McIntyre has been engaged the whole year on the rural standard survey of the main roads in Hawera, Waimate, Kaupokonui, Opunake, and Cape Survey Districts. He has completed the field-work of 50 miles of traverse from Hawera towards New Plymouth via Opunake, and will reach New Plymouth during the coming year.

Mr. Haase commenced the traverse of the main road from New Plymouth to Hawera, via Lepperton, in December, and has completed the field-work of 12½ miles of this stretch. He will junction with Mr. McIntyre's survey at Hawera during the coming year, thus completing the circuit of Mount Egmont.

In connection with this work several of the main trig. stations have been repaired, and the whole work will be of great value to practising surveyors and the public generally.

Topographical Survey.—The topographical survey of portion of the land district was continued during the year by Mr. A. V. Adams with two assistants. He returns 171 square miles completed and mapped, while another 82 square miles are completed in the field but not yet finally mapped. Returns at the 31st March, 1929, show a grand total of 545 square miles completed in the field, of which 463 square miles have been mapped.

For the year under review the completed cost runs out at £4.69 per square mile, a little more than last year, this being accounted for by the rough nature of a portion of the area surveyed. The topographers are now working in easier country, and costs should decrease.

A further 4 square miles of the contour survey of Egmont National Park were executed, and this work is now nearing completion.

77 miles of levels were run during the year and 11 bench-marks inserted, making a grand total of 314 miles of levels run and 138 bench-marks inserted since the commencement of this survey. The total cost of these levelling-operations runs out at £410, or £1.3 per mile, including bench-marking.

Rural.—A total of 856 acres is returned under this heading, the area consisting mainly of alterations to existing leases and subdivision of abandoned properties.

Native Land Court Surveys.—The total area of Native Land Court surveys completed during the year amounted to 2,127 acres, the whole of which was executed by licensed surveyors under authority from the Department. The total cost amounted to £257 16s., or at a rate of 3.11s. per acre. Authorities have been issued for a total area of 1,394 acres, and these surveys are now in the hands of licensed surveyors.

Roads and Railways.—No work was undertaken during the year under this heading.

Other Work.—An expenditure of £314 5s. 11d. has been incurred under this heading during the year, the chief items being timber appraisements, boundary-redefinitions at Egmont National Park, inspection surveys, levelling for topographical survey, and miscellaneous.

Inspection Surveys.—These have been attended to during the year, and an inspection of the work of each licensed surveyor in active practice made. The general standard of work has been excellent, and it has not been necessary to report any surveyor to the Surveyor-General for inferior work.

Office-work.—Land Transfer Branch: During the year a total of 150 plans, comprising 565 lots, of 18,734 acres, were examined, approved, and reported on to the District Land Registrar; 2,553 diagrams were placed on instruments of title, while 48 leases, 397 Crown leases, and 86 Native Land Court partition orders were examined and passed; 75 old deposited plans were remounted and reconditioned. 15 index maps and 6 deeds plans were prepared for the Lands and Deeds Department, while 146 tracings were prepared for the Valuation Department.

Computing Branch: In this branch a total of 89 plans were examined and approved. These plans included 18 plans of Crown subdivisions, totalling 2,670 acres; 34 plans of Native Land Court partitions, totalling 2,550 acres; 23 plans of road-deviations; and 14 miscellaneous.

Native Land Branch: The authorities to survey issued during the year for West Coast Settlement and ordinary Native lands total 17, covering 41 subdivisions, of an area of 2,990 acres, at an estimated cost of £402. The total area on hand under authority by surveyors at the 31st March, 1929, is 1,394 acres. Of authorities issued prior to the 31st March, 1928, an area of 518 acres, covering 17 subdivisions, held by 6 authorities, have been completed and plans received during the year.

The total area of Native Land Court surveys completed during the year amounts to 2,127 acres. The number of plans endorsed to comply with Judge's instructions was 104; of these, 88 have been forwarded to the Registrar, Native Land Court, for attachment to partition orders. The area of Native land placed on diagrams amounts to 3,386 acres. 368 plans have been forwarded for use at Native Land Courts. The survey costs (including cost of examination of plans and interest due) collected for ordinary Native Land Court and West Coast Settlement surveys amounted to £357 3s. 3d.

The outward correspondence entailed the writing of 470 letters. Eight vouchers, amounting to £221 10s. 9d., covering 23 subdivisions and totalling 1,882 acres, have been prepared in this branch and sent on to the Accountant for payment to contract surveyors.

When necessary, an officer has attended the sittings of the Native Land Court for the purpose of obtaining charging-orders, giving assistance to the Court, and carrying out usual detail work.

Twenty-five applications for charging-orders and 25 certificates of cost, amounting to £213 12s. 9d., were forwarded to the Native Land Court, and 39 liens, amounting to £279 5s. 10d., covering 39 subdivisions, were released. Five plans covering an area of 671 acres were compiled for Native Land Court use. Two plans for office record have also been made in this branch during the year.

General Draughting Branch: 7 index maps, on a scale of 20 chains to an inch, were drawn of 27 survey blocks in Ngaere and Hawera Survey Districts, and these districts are now nearly completed, the plan of the remaining 4 blocks in Hawera Survey District being well under way. In addition, an index plan of Toko Township was also drawn. New drawings of Heao and Cape and Wairau districts, on a 40-chain scale, were completed, while a new road record and 20-chain index map of Paritutu Survey District is now well forward. 20 sheets of the New Plymouth standard survey were completed, 830 tracings for office and departmental use were prepared, while 6 compilations were executed. The usual recording and other routine work has been kept up to date.

Proposed Operations in Field for 1929-30.—Mr. McIntyre will continue the rural standard survey from Opunake to New Plymouth, while Mr. Haase will continue from New Plymouth to Hawera. Mr. Adams will continue the topographical survey with two assistants, and will also execute any settlement surveys as required.

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

Triangulation.—No work under this heading was undertaken during the year.

Rural.—Subdivisions of Mataikona, Moroa, and Westella Settlements; surveys of Sections 11, 44, 45, and 46, Block VIII, Kaitieke Survey District; Sections 8, Block VI, and 102, Block IX, Waiohine Survey District; subdivisions, Chatham Islands; surveys old bed of Ruamahanga River; Section 14, Block VIII, Tiffin Survey District; and at Tongariro National Park—a total of 32 sections, of an area of 14,995 acres.

Village and Suburban.—Subdivisions, Town of Owenga (Chatham Islands) and Town of Castlepoint No. 1, a total of 31 sections, of an area of 109 acres, were completed during the year.

Town.—Surveys of Lansdowne School site, two sections of Town of Otaki, and subdivisions of Hutt Valley Settlement—234 sections, of an area of 53 acres.

Native Land Court.—16 chains of road in Section 19, Hutt District, were surveyed by Mr. Strawbridge.

Native.—51 authorities for 146 partitions, representing an area of 23,680 acres (approximately), at an estimated cost of £3,045; 48 plans and duplicate tracings have been received from surveyors for 163 partitions, an area of 21,519 acres, at a cost of £1,899 8s. 2d.; 1,043 diagrams have been endorsed and forwarded to Native Land Courts; 342 applications for charging-orders have been prepared and forwarded to Courts; 68 vouchers prepared, checked, and passed for payment, amounting to £1,779 6s. 9d.; liens totalling £1,619 17s. 6d. have been received, and notices of release have been forwarded to Native Land Courts; plans have been forwarded to the various Courts sitting in this district.

Roads and Railways.—Comprise surveys of tram-line Raketapauma Block; deviation, Tauherenikau Valley Road; road reserve, Waiwhetu River; and road-deviation, Taita Gorge—a total of 4.2 miles.

Other Work.—Includes survey, Kairanga Settlement drainage; taking land for road purposes, Porirua, Paremata, and Hutt districts; report on road-deviations, Chatham Islands; accretion, Hutt River; repegging sections Hutt Valley Settlement and Heretaunga Settlement; Bell Road extension, Hutt Valley Settlement; location of pegs, D.P. 1987 and D.P. 3916; investigation of boundary between Taraketi and Rangitikei Blocks; report on river erosion, Section 1s, Nesdale Settlement; revision survey, Trentham Manœuvre Area; Tongariro National Park surveys; investigation of boundaries, Section 20, Harbour District, and of boundaries D.P. 1771; compass surveys 20 chains road between Porirua and Paremata for State Fire Insurance Department, bush area, Sections 8 and 12, Block XIII, Akatarawa Survey District; and part Hutt River Bank, Melling Estate; survey of old post-office site, Marton; various minor surveys, Hutt Valley Settlement; compass survey, Central Development Farm, Weraroa.

Inspections.—Messrs. W. G. Nelson and G. I. Martin carried out 9 inspections of Land Transfer and Native-land surveys during the year.

Land Transfer Branch.—485 plans were received, 536 plans examined, 500 plans approved, 1 plan compiled, 22 applications were examined, 3,316 transfers and other dealings were examined and passed, 8,597 diagrams were endorsed on new certificates of title, whilst the usual indexing, recording, and dispatching have been undertaken.

Statutory Branch.—128 plans were received, 134 plans examined, 45 plans sent to surveyors for amendment, 133 plans were approved, 126 plans were sent forward for Proclamation purposes, 132 plans were recorded, 139 Proclamations were gazetted and received, action was completed on 92 plans, and 13 plans were compiled for Proclamation purposes. Other work includes general and

special searches, recording alterations to local bodies' boundaries, preparation of information for the issue of title to closed roads or other lands dealt with by Warrant, technical descriptions of lands to be reserved or exchanged or otherwise dealt with under the various statutes, the preparation of plans and documents, and the obtaining of consents in connection with legalization work undertaken by the Branch.

Crown and Native.—50 Crown and 44 Native plans of 407 subdivisions, of a total area of 39,270 acres, were received, and 43 Crown and 56 Native plans of 437 subdivisions, of a total area of 48,270 acres, were approved.

Office-work.—12 plans were compiled, 54 tracings prepared for photo-lithography, 852 diagrams were endorsed on Warrants, 700 diagrams on Crown leases, and 299 diagrams on Native Land Court orders. In addition, the usual large amount of miscellaneous tracings, searching, recording, and general draughting was carried out.

MARLBOROUGH LAND DISTRICT (P. R. WILKINSON, Chief Surveyor).

Rural Surveys.—574 acres are returned under this heading, surveyed at a cost of 2.13s. per acre. The area comprises several small surveys in various parts of the district.

Village and Suburban.—30½ acres are returned under this heading, comprising 7 small sections costing 19.5s. an acre to survey, the high price being due to heavy travelling-costs incurred in comparison with the small areas surveyed.

Roads and Railways.—3½ miles of road were surveyed, at a cost of £12 per mile.

Rural Road Standard.—48½ miles are returned under this heading, surveyed at a cost of £32.49 per mile. This amount includes the cost of carrying a line of levels connecting each standard block.

Native Land Court Surveys.—A number of small surveys, comprising 16 subdivisions and 178 acres, were executed by staff and contract surveyors during the year, the average cost being at the rate of 8.63s. per acre. With the exception of one area of 68 acres, these surveys comprise small areas of land within or adjacent to the Native villages.

Other Work.—Under this heading are returned a number of miscellaneous survey operations, executed at a cost of £82 19s., comprising 7 survey inspections, a road exploration, and other surveys of a like nature.

Proposed Operations for 1929-30.—Mr. Clapperton will complete the standard road-surveys of the Nelson-Blenheim Main Highway, of which some 30 miles remain to be done. Several small Native-land surveys will be put in hand during the year, and there are some 5 miles of road-deviation surveys in the Inner Clarence Valley awaiting action. Some small scattered surveys will be executed by the office staff as circumstances permit.

Office-work.—74 plans were received by the Survey Branch for check, of which 19 were Crown, 15 Native land, and 40 road and other Department surveys; 21 diagrams were placed on leases, 22 on Native Land Court orders, and 11 on miscellaneous documents; 47 working-plans were prepared by the office staff, comprising a number of the standard road-survey plans; 54 plans were copied, and 273 tracings made; 1 sale plan was prepared and several original drawings brought up to date for photo-litho purposes; and work was done in connection with the 20-chain road and Land Transfer record maps.

Land Transfer Branch.—In this district office this work is carried out in conjunction with the ordinary Survey Office work. During the year 42 plans, comprising 208 lots, aggregating 22,216 acres, were examined and approved, 1,204 diagrams were placed on certificates of title, and 441 deeds and other instruments examined and passed.

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

Rural Surveys.—The survey has been completed of a total area of 14,852 acres, which has been cut into 42 sections. The major work in this connection was that of the Brighton Block, to the south of Westport, the remainder being the cutting-out of odd areas to define applications in various parts of the land district. One small subdivisional survey of 15 acres was completed for the Native Land Court.

Village and Suburban.—Only one section was marked off under this heading, and, as it was an isolated survey, involving fairly heavy travelling-expenses, the cost is rather high. It is impossible to avoid this under such circumstances, however.

Town-section Survey.—An area of a little over 2 acres was cut into 6 building-lots in the City of Nelson.

Roads.—A total length of 5.33 miles was completed under this heading. This work involved no new roads giving access to Crown lands, but comprised deviations required by the Public Works Department.

Other Work.—Included under this heading are the laying-off of boat-shed sites on the shores of Lake Rotoiti, renewing old pegs, survey for the Police Department of the scene of a fatal collision on the main road, reference points for shifting of standard blocks, &c.

Inspections.—Five inspections of Land Transfer surveys were carried out during the year. These showed that the general character of the work done by private surveyors was satisfactory, except that there was some laxity in regard to the ground-marking, to which the attention of the surveyors concerned has been called.

Office-work.—Land Transfer Branch: 105 plans, representing an aggregate area of 2,084 acres and showing 263 lots, were examined and approved; 1,135 documents and titles were dealt with.

Crown Lands Branch : 55 plans were examined and approved ; 38 plans compiled in the office ; 17 sale plans were prepared ; 549 tracings made ; 1,104 plans recorded ; 22 record maps prepared ; 2 drawings for map publications were made of survey districts ; 2 revisions of old drawings were completed ; 1 borough map and 1 town-district map were prepared.

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

Field Operations.—During the year 15 plans were handed in by the field staff, representing field-work completed of 593 acres rural, 65 acres village and suburban, 2 acres town land, and miscellaneous surveys and inspections.

The areas dealt with were scattered, the rural surveys generally representing small areas of unsurveyed land applied for from time to time for settlement under mining district land occupation or regulation licenses. The miscellaneous work represented a number of land inspections and valuations, including valuations and reports on lands offered to the Crown for closer settlement.

One inspection of a town survey was made, and the work found satisfactory. Further inspections will be made during the ensuing year. A good standard of work is being maintained by the surveyors, both staff and private.

Office-work.—Plans examined and approved during the year numbered 56, classified as follows : Land Transfer, 16 ; settlement, 20 ; statutory, 8 ; mining, 2 ; and miscellaneous, 10 ; also, 16 plans were compiled ; 397 general tracings and 64 tracings in connection with timber applications were prepared ; 111 lithographs, principally for the information of the Warden in connection with land applications, were coloured, and 48 lithographs and plans mounted ; 52 20-chain record maps were completed, making a total of 75 completed to date ; diagrams indorsed on instruments of title numbered 865.

Excellent progress has been made with the preparation of the 20-chain record maps, as the figures returned indicate. These maps, as regards the more extensively subdivided districts, are now in general use. Although 114 of these maps yet remain to be prepared, the districts involved are sparsely subdivided and could be completed without difficulty before the end of the ensuing year.

With the completion of the 20-chain record maps, and with a view to having further 40-chain survey district lithographs issued, it is suggested that the preparation of further photo-lithographic tracings of individual survey districts be put in hand where such is warranted by the extent to which the survey district has been subdivided and settled. This class of lithograph is popular with the public and meets with a ready sale, in addition to being an economical map for office use.

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

Standard Surveys.—The standard survey of the Borough of Timaru has been completed during the year by Mr. H. A. Adams. The survey comprises 26.45 miles, and a special report on the work has been sent forward. Mr. Adams also carried out rural extensions both north and south of Timaru, but owing to his transfer to Dunedin and a staff surveyor not being available this work has not been completed. I might state in connection with standard surveys and permanent survey marks that extensive trenching operations and permanent road-surfacing have been carried out in the city and suburbs by the various local authorities, and every endeavour has been made to preserve or reinstate these marks, although I am of opinion that it would require almost the full time of one surveyor to do justice to this work.

Field Staff.—The present field staff consists of Mr. H. R. Mottram, who was transferred to this district during the past year, Mr. W. Paora having been transferred to Auckland and Mr. H. A. Adams being appointed Land Transfer draughtsman at Dunedin. During the year 48 plans were handed in by the field staff, representing field-work completed of 26,670 acres of rural, 2 acres town sections, 8 miles of road, 11½ miles drainage surveys, 41 acres village and suburban, and 136 acres Native reserves ; of these plans three represented comparatively large areas of land being acquired by the State Forest Service for tree-planting operations, one was a large education reserve surveyed for lease and title purposes, and the remainder consisted of small education reserves, resubdivision of settlements for allotment to adjoining lessees, Native-reserve partitions, small township blocks, road-deviations, &c.

The work in hand consists of 2,734 acres of rural, being several resubdivisions of settlements, several education reserves, 27 acres of township sections to meet the increased demand for week-end and holiday accommodation, 13½ miles of road-deviation, 84 acres Native partition surveys, and 36 square miles of topographical work. A very high standard of efficiency was shown by the traverse closures returned, the average for rural surveys over circuits of 38¾ miles, representing 170 stations, being 0.24 on the meridian and 0.18 on the perpendicular.

Town Surveys.—These represent 12 sections, of a total area of approximately 2 acres, and comprise two surveys in Hanmer to open up building sections and one survey of the Provincial Council Chamber site.

Road Surveys.—These consist of three surveys of approximately 8 miles, and were carried out at a cost of £14 9s. per mile.

Rural Surveys.—These consist of four surveys for the State Forest Service, three education reserves, six resubdivisions of settlements, and one exchange survey ; total area, 26,670 acres.

Native Surveys.—These consist of three surveys, of a total area of approximately 137 acres, carried out under Native Land Court partition orders.

Other Work.—This consists of a drainage-levels survey of approximately $11\frac{1}{2}$ miles, defining boundaries of a forest reserve and amending boundaries thereof, supervision of standard stones and other permanent marks due to trenching and other road operations, revision of standard work in Timaru, Timaru standard extension (see special report of this work), and general.

Inspection Surveys.—Several inspections of surveyors' work were carried out during the year, and although in two cases, which have already been reported to Head Office, the work was not found to be satisfactory, taken on the whole the work is well up to the necessary standard. Further inspections will be made during the coming year.

Office-work.—General: A notable increase in plans examined and passed is shown for this year, being a total of 109, as against 67 for last year. The number of diagrams placed on instruments of title shows a slight falling-off, being a total of 439, as against 458 for last year. 1,100 miscellaneous tracings were prepared during the year, showing a marked increase, but township schemes dealt with show a decline, being 43, as against 70 for last year. Very little lithographic work was done during the year, there being only two sale plans and one standard publication, that of Westerfield Survey District. Nine county sheets and 3 survey districts were revised, and 2 county sheets and 1 survey district are in hand; 6 20-chain record maps were completed during the year, and 4 are in hand. The usual routine work, such as recording, searching, compiling, &c., has been well maintained, and this work shows a steady increase. Mr. Pfankuch completed the second sheet of the map of the City of Christchurch during the year, and it is anticipated that the third and final sheet will be completed by June next.

Land Transfer.—In this branch 443 plans were examined and passed, 6,174 diagrams were placed on instruments of title, and 3,129 deeds and other instruments examined and passed. The diagrams drawn include 909 certificates under the Compulsory Registration Act. 165 tracings were prepared for the Valuation Department. In addition to current recording of plans, road dealings, Proclamations, &c., 3 new record maps were prepared, besides renewing 12 worn maps, and various tracings were prepared for the purpose of special notice, &c.

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

Triangulation.—A small area of 3,600 acres was done by Mr. Greig, consisting of reestablishing stations and connecting up an isolated survey. I have to again draw attention to the need of a systematic revision of the trigonometrical work of Otago, much of which is very old and not up to the standard of modern requirements.

Settlement Surveys.—Messrs. Phillipps and Greig handled an area of 21,333 acres, of which the former did 5,330 acres and the latter 15,803 acres. Mr. Phillipps's principal work was the subdivision of the Last Chance Block, of 4,800 acres, in Fraser Survey District, which has since been thrown open for selection. Mr. Greig has been engaged upon the surveying of various runs the lessees of which are converting their titles from the small-grazing-run to the renewable-lease tenure. Of this work, 6,600 acres was done in the Upper Taieri Survey District, 3,900 acres in Tarras Survey District, and 2,400 acres in Maruenua and Domet Survey Districts. In addition, both surveyors have dealt with a quantity of miscellaneous work, such as small areas of Crown lands surveyed for applicants, and education reserves being brought under the Land Transfer Act. During December, January, and February Mr. Greig was engaged upon work for the Public Works Department in connection with the Waitaki hydro-electric scheme at Kurow.

Standard Surveys.—During the year a number of standard stones in the city were inspected, and the level of 11 was altered to conform with the street-formation. On account of street-regrading and trenching operations by local bodies there is always more or less interference with the standard-survey marks.

There are several portions of the City of Dunedin which have not yet been included in the standard survey, and it is very desirable that authority should be given to put this work in hand. The Borough of St. Kilda, also, has not been touched. The standard survey of Mansford Town, Port Chalmers, will be started by Mr. Greig as soon as his present programme of rural work is completed.

Native Surveys.—An area of 113 acres was done under Court orders for subdivisions in the Otakou and Moeraki Native Reserves.

Roads.—About 8.5 miles of road work was done by the staff, being partly new road and partly deviations put through to give better access to Crown leases. Two deviations on the Dunedin to Christchurch Main Highway were done by Mr. Greig at the request of the Public Works Department. The usual amount of road-deviation work was done by private surveyors for local bodies, &c.

Inspections.—One inspection of a private surveyor's work was made by Mr. Greig.

Office-work.—The draughting staff have been well occupied during the year in the various kinds of routine work, the total output being well up to the average. I am pleased to report that good progress is being made with the new photo-litho map of Dunedin and suburbs. The first half-sheet, which covers the centre of the city and contains much detail, is completed, and the second is well under way. All the Dunedin standard-survey sheets with the exception of 10 have now been copied for counter use. Good progress is being made with the Land Transfer record maps, 20 having been completed since my last report. The value of these maps fully justifies the time spent in their preparation. The photo-litho work done comprises 10 sale posters, a new map of the Town of Clinton, and 9 survey districts and towns revised for publication. The general draughting work includes 3 Land Office maps, 16 road Proclamation plans, and 54 working-plans of various kinds. The total number of general tracings made was 845, in addition to 105 deposited plans traced for the Valuation Department and 279 diagrams of land transactions. Diagrams were placed on instruments of title

as follows : Warrant certificates of title, 154 ; leases, 494 ; Native partition orders, 30 ; and soldiers' mortgages, 10. The work of the computing branch has been well maintained, 100 plans, consisting of 53 rural, 32 road, and 15 others, having been examined for approval. The Land Transfer draughtsman reports 121 plans examined, 3,250 diagrams put on certificates of title, and 330 other documents examined. Maps mounted number 724 ; books bound, 122 ; and 10,010 forms printed. I am pleased to report that a start has now been made with the numbering and indexing of the plans in the safe, and during the coming year considerable headway should be made with this very necessary work.

Proposed Operations for 1929-30.—Mr. Phillipps will complete the repegging of the 260 Crown sections in the Town of Pembroke, and then do the subdivision of the Pisa Flats and various spotting surveys. On resuming in the spring he will undertake the survey of Run 223N, Lauder Survey District. Mr. Greig will carry on with the 9,700 acres in Tiger Hill Survey District, and, after completing some spotting work, commence the Mansford Town standard survey.

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

Standard Surveys.—The standard survey of the Borough of Invercargill has been continued by Mr. Otway, acting under the direct control of the Surveyor-General. The field-work of this survey is now almost completed, and good progress has been made with the preparation of the plans.

Triangulation.—The work carried out under this heading was the revision of the triangulation and reestablishment of lost stations where the Survey Districts of Wyndham and Oteramika adjoin. This survey covered an area of 7,200 acres and established the convergence between the two districts, which are in separate meridional circuits and separated by the Mataura River. The revision is of great value in the checking of surveys in both districts adjoining the Mataura River.

Rural.—Four surveys were completed, of 458 acres, divided into 6 sections, and comprised settlement, education-reserve, and Crown land.

Native Land Court Surveys.—One Native Land Court survey, containing 209 acres, divided into 8 subdivisions, was carried out by a private surveyor.

Village and Suburban.—Under this section 5 surveys, totalling 226 acres, were divided into 27 sections, and comprised Crown and education-reserve land.

Town-section Surveys.—24 sections were laid off in 4 surveys, with a total area of 6·8 acres. This includes Waikiwi Township Extension No. 1, a subdivision of an education reserve situated close to the Borough of Invercargill.

Other Work.—Included under this heading are 4 redefinition surveys of boundaries, levels of two areas for drainage purposes, a river-boundary survey to show losses by flood, chainage between two trigonometrical stations, survey of foreshore, subdivision of 2 Crown sections into firewood areas, reopening 7 miles of road and section lines for settlement purposes, and exploring and grading 2 miles of new road, valuation of sections opened for selection, repegging of sections in Town of Clifden, survey fixing occupation of a section, 2 surveys of land to be taken for road, and further plotting on plans of Sounds topographical survey. Mr. Preston spent four months in the field on the topographical survey in the vicinity of Dusky Sound.

Inspection Surveys.—Two inspections of Land Transfer surveys and one of a Native survey were made during the year. One of the Land Transfer surveys was very unsatisfactory, and after reference to Head Office the surveyor was compelled to repeg the whole survey. The other two inspections disclosed quite satisfactory work.

Traverse Closures.—A summary of some of the staff surveys carried out by Mr. Preston shows that 9·8 miles, controlled by 83 stations, closed on an average to 0·14 links per mile on the meridian and 0·12 links per mile on the perpendicular.

Proposed Operations.—Mr. Preston will complete the mapping of the Sounds topographical survey, covering an area of approximately 580 square miles, and will undertake surveys as required.

Office-work.—During the year 72 Land Transfer plans, with a total area of 3,088 acres, divided into 254 lots, and 40 Survey Office plans of various descriptions, totalling 8,572 acres, were examined and approved ; 143 traverse sheets, 23 tracings, and 32 schedules for road takings and closings were examined ; 317 diagrams were endorsed on Crown leases, 16 on Native partition orders, and 74 on Crown grants ; 1,813 diagrams were endorsed on certificates of title for Land Transfer purposes, and diagrams on 956 Land Transfer instruments of title were examined and passed ; 307 working, 148 ordinary, 8 poster, and 76 valuation tracings were made, being a total of 539 tracings ; 14 Survey Office plans were compiled, and 3 plans, 5 tracings, and 259 lithographs were mounted and 157 lithographs were coloured ; 2 plans were redrawn ; 1 Land Transfer record sheet, 4 application maps, and 3 Crown-grant record maps were drawn ; 5 application maps were coloured, and 275 plans were recorded on various maps ; 1 plan and 8 tracings were drawn for photo-lithographic reproduction, and 9 standard publications were revised ; 19 plans of the standard survey of Invercargill were drawn, and 2 wall-maps of parts of the land district on 80-chain scale were made ; 37 index maps of the Borough of Invercargill were revised for the Valuation Department. The compilation of the new plan register has been steadily proceeded with.

APPENDIX III.

THE SURVEY BOARD.—ANNUAL REPORT, YEAR ENDED 31st MARCH, 1929.

By the Surveyors Registration Act, 1928, the Surveyors Board of previous years became the Survey Board, with identical functions and personnel. The purpose of the new Act is to enable the Board to draw closer to the similar Boards established in Australian States in the interests of reciprocity in examination, qualification, and practice.

Advantage was taken of the opportunity to amend and define the disciplinary clauses of the Act.

The first function of the new Board became the re-registration of all licensed surveyors, which is proceeding as applications come in.

The usual two examinations were held. At that in September, 1928, set by the Victorian Board, twenty-eight candidates presented themselves, of whom six passed; at the March examination, set by the South Australian Board, twenty-one candidates presented themselves, for post-examination only, of whom five passed.

In addition to the change in the Act, an event of the year was the completion and approval by the New Zealand University of a diploma course in surveying.

The personnel of the Board was altered by the retirement of the Surveyor-General, Mr. W. T. Neill, from that position, his successor now being Chairman.

New examination regulations have been drawn up under the new Act, but are not yet promulgated.

H. E. WALSH, Chairman.
M. C. SMITH, Secretary.

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