

SESSION II.  
1918.  
NEW ZEALAND.

---

DEPARTMENT OF LANDS AND SURVEY:  
SURVEYS

(ANNUAL REPORT ON).

---

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

---

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

SIR,—

Wellington, 1st June, 1918.

I have the honour to present herewith the report on survey operations for the year ended 31st March, 1918.

I have, &c.,

E. H. WILMOT, Surveyor-General.

The Hon. D. H. Guthrie, Minister of Lands.

---

REPORT.

---

FOLLOWING the lines adopted for the last two years, this report will deal with survey operations for the year in a general way only, leaving details to be found in the tables attached, and in the reports supplied by the Chief Surveyors and filed as departmental records.

This year, under the heading "Rural Surveys," in Table B, an acreage of only 343,525 acres is shown as completed work, against 679,093 acres for last year. The decrease is chiefly in Auckland and Otago Districts, and is accounted for mainly by the surveyors having at the end of the year an unusually large acreage on hand of work only partially completed. Various causes have contributed to this. In Auckland surveyors have had to be taken off their blocks to attend to the urgent wants of soldiers' settlements; other surveyors have been employed on inspection work and in clearing up old unsatisfactory work. The returned acreage, moreover, includes a large number of isolated surveys, for want of which titles have been blocked for years past. These were urgently wanted, but the areas were small and the work correspondingly expensive. The two other factors mentioned in last year's report—viz., the depletion of the field staff by enlistments, and the difficulty in getting good field hands—have also operated.

The area of Native lands surveyed during the year shows an increase from 256,325 acres to 271,481 acres. The cost in each class has gone up, the average being about 1s. 6d. per acre in each. A summary of the work executed during the year will be found in Table A.

TABLE A.

Class of Work.	Area.	Average Cost.	Total Cost.
	Acres.		£ s. d.
Triangulation, by staff surveyors .. ..	73,000	0·73d. per acre	223 3 6
Topographical, by staff surveyors .. ..	22,500	1·33d. „	125 3 4
Rural, by staff surveyors .. ..	321,648	1·47s. „	23,743 6 4
Rural, by licensed surveyors .. ..	13,890	2·79s. „	1,935 19 1
Rural, by licensed surveyors (costs not available)	7,987	..	..
Village and suburban, by staff surveyors ..	1,004	14·65s. per acre	735 12 0
Village and suburban, by licensed surveyors (costs not available)	562	..	..
Town, by staff surveyors .. ..	223	50·36s. per section	513 13 6
	(in 204 sections)		
Town, by licensed surveyors .. ..	1·5	148·07s. „	44 8 6
	(in 6 sections)		
Town, by licensed surveyors (paid by applicants)	23	..	..
	(in 12 sections)		
Native Land Court, by staff surveyors ..	14,377	16·41d. per acre	983 4 8
Native Land Court, by licensed surveyors ..	246,332	18·48d. „	18,967 0 1
Native Land Court, by licensed surveyors (paid by applicants)	10,772	..	..
Mining, by licensed surveyors (paid by applicants)	996·5	..	..
	Miles.		
Roads, by staff surveyors.. ..	138	£18·75 per mile	2,595 11 3
Roads, by licensed surveyors .. ..	5·25	£22·2 „	116 10 7
Roads, by licensed surveyors (costs not available)	43·5	..	..

TABLE B.

Land District.	Rural Surveys.	Native Land Court Surveys.
	Acres.	Acres.
Auckland .. ..	54,749	159,925
Hawke's Bay .. ..	45,785	54,486
Taranaki .. ..	4,309	23,720
Wellington .. ..	11,602	30,780
Nelson .. ..	33,020	..
Marlborough .. ..	7,349	651
Westland .. ..	4,098	..
Canterbury .. ..	75,074	1,127
Otago .. ..	87,174	123
Southland .. ..	20,365	669
Totals .. ..	343,525	271,481

TRIANGULATION.

Although all work of this class except what is absolutely necessary for the proper location of and check on settlement work has been stopped, 73,000 acres are shown under this heading at a reasonable cost of under  $\frac{3}{4}$ d. per acre.

TOPOGRAPHICAL.

Only 22,500 acres, at a cost of 1·33d. per acre, are shown under this heading, all being in the Nelson and Westland Districts. This work is done as a preliminary to settlement surveys.

## STANDARD SURVEYS.

Work on these useful surveys has been continued by Messrs. C. A. Mountfort, W. T. Neill, and H. M. Kensington in Napier, Dunedin, and Auckland respectively. The high standard of accuracy which is essential in the performance of this work has been maintained, as shown by the closing-error being well under one-tenth of a link per mile. In Auckland 40·23 miles of streets have been completed at an average cost of £48·42 per mile. A certain amount of rural standard traverse has been done in Hawke's Bay by Mr. C. A. Mountfort.

## SETTLEMENT SURVEYS.

Of these, which comprise Crown lands, land for settlements, and land for discharged soldiers, the bulk appears under the heading of "Rural" in Table A, the acreage there shown being 343,525 acres, while the remainder includes village and suburban and town lands totalling 1,260 acres. In Table B the rural acreage has been allocated to the various land districts.

## NATIVE SURVEYS.

During the year staff surveyors completed the survey of 14,377 acres, while 257,104 acres was surveyed by private surveyors. The area surveyed in each land district is given in Table B. The surveys under this head have mostly been subdivision surveys of blocks of which the periphery surveys had been already completed.

## GOLD-MINING SURVEYS.

The area returned under this heading is very small, being only 788 acres. The surveys were all in Auckland or Westland, and were made by private surveyors, the fees being paid by applicants. The cost per acre cannot therefore be given.

## COAL-MINING SURVEYS.

The Chief Surveyor of Southland reports an increased activity in this class of mining, three areas totalling 209 acres having been surveyed for applicants.

## INSPECTIONS.

There being only one Inspector, the work of inspection has been carried on by Chief Draughtsmen and staff surveyors. In consequence there has not been so much of this very necessary work done as I could have wished. As pointed out in previous reports, absence of inspection has a tendency to induce carelessness in some surveyors, the more so as it is difficult for them to get good field hands. Generally speaking, I am pleased to note that the result of the inspections made has been to show that satisfactory work is being done, though in one district in particular it has made evident the carelessness alluded to.

## PROPOSED OPERATIONS FOR 1918-19.

*Triangulation.*—The depletion of our field staff and the urgent necessity for economy will preclude any triangulation work being undertaken except such as must be done in connection with settlement surveys.

*Standard Surveys.*—These will be restricted to Auckland, Dunedin, and Napier, and in respect of Dunedin and Napier will probably be discontinued early in the year. Rural standard surveys will be undertaken in the neighbourhood of Feilding.

*Settlement Surveys.*—At the close of the year there were in the hands of the staff and temporary surveyors 731,112 acres of settlement lands and 60,813 acres of Native lands, while in the hands of private surveyors there were 3,620 acres and 277,900 acres respectively. The allocation of this work among the several land districts is shown in Table 4. As is always the case, and more particularly so at the end of last year, for reasons already given, these figures include a large acreage of which the field-work has been completed, but of which the mapping will not be finished till July or August, during which months many of the surveyors will be called in from the field to the office. This work now in hand, together with the survey of estates that from time to time will be acquired for soldiers' settlements and for ordinary settlements, and of Crown lands to be offered for settlement, will occupy the staff surveyors fully for the ensuing year. As the urgency of providing land for discharged soldiers increases it will probably be necessary to supplement the efforts of the staff by placing contracts in the hands of private surveyors.

## HEAD OFFICE DRAUGHTING STAFF.

Probably the most outstanding feature of the year's work was the number of calls upon this staff for work for other Departments in the preparation of maps, descriptions, and in several similar kinds of assistance. The Representation Commission's work entailed the preparation of a very large number of detail foundation maps of the whole of New Zealand as well as of the originals for publication, and large-scale detail maps of the new electorates, over 250 copies of which alone were made. The town plans received are still much below pre-war conditions as to number and importance. The ten-mile map of New Zealand was issued during the year; and a

departure was made in connection with the City of Wellington map in sending it out by canvasser for sale, with satisfactory results. The state of staff in district offices prevents the supply of much data which are required to make the character of our publications more suitable to general needs, and owing to the large calls on our stock it has been necessary to reprint many maps without revision or redrawing as a temporary expedient. Serious work in preparation of the projected new series of two-mile territorial maps to supersede the county maps has not been possible yet, owing to this difficulty of staff. A notable change in the storage of map stock has been made by the transfer of it all from the custody of the Government Printer to this office. The rearrangement disorganized the supply temporarily, but enabled a remarkable number of obsolete maps to be discarded, and also resulted in the discovery of publications the existence of which had been lost sight of.

#### SURVEYORS' BOARD.

At the examination in September, 1917, the Board examined six candidates, of whom one only was sitting for the first time; the others were completing in various subjects from previous examinations. None of these, however, succeeded in passing. An unusual occurrence marked this examination in that the whole of the papers were lost at sea in the s.s. "Port Kembla," blown up by a mine off the coast, which delayed the sitting for a week.

At the examination in March of this year four candidates sat, two for the first time and two to complete. Again none passed the examination.

During the year two amendments have been made to the examination regulations, substituting the Matriculation Examination for the Public Service Senior as a preliminary qualification of candidates, and cutting out the subject of elementary mathematics from the syllabus, in order to come into line with the associated Boards.

#### DRAUGHTSMEN'S EXAMINATION.

An examination under the new regulations was held last August, for which a complete set of papers was prepared, although the only two candidates sitting were not taking the whole. Mr. H. W. Broadmore obtained a second-grade certificate in computing, and Mr. W. Stavely a second grade in draughting. The applications for the next examination now in indicate that some ten or twelve candidates will present themselves.

#### TIDAL SURVEY.

The work for the year comprised the predictions for the year 1919 at the ports of Auckland and Wellington. An additional harmonic analysis to determine the tidal constants for Wellington was completed, and one for Auckland was commenced. Mr. T. G. Gillespie was the officer engaged on the work during the year.

The work proposed for next year is the predictions for the year 1920 at Auckland and Wellington, a new analysis for the constants at Wellington and New Plymouth, and the completion of the analysis for Auckland. The computations will be continued by Messrs. Gillespie and Williams pending the appointment of a successor to Dr. Adams, who until recently has been in charge of this work, and who was responsible for its inception.

#### MAGNETIC OBSERVATORY.

The routine work of the observatory at Christchurch and the substation at Amberley has been carried on by the Director, Mr. H. F. Skey, B.Sc., who reports as follows:—

"The self-recording instruments have been in constant operation throughout the year. The measurement of the resulting curves at hourly intervals gives the following mean values of the magnetic elements for 1917: Magnetic declination,  $16^{\circ} 52' 95''$  E.; inclination or dip,  $68^{\circ} 04' 8''$  S.; horizontal magnetic force, 0.223277 C.G.S. unit; total magnetic force, 0.598100 C.G.S. unit; northerly component, 0.213654 C.G.S. unit; easterly component, 0.064842 C.G.S. unit; vertical component, 0.554861 C.G.S. unit.

"Vector diagrams for the year and the seasons have been prepared, and mean monthly diurnal curves are also ready for publication.

"The usual meteorological and seismological work has been continued, but shortage of staff and the undertaking of certain work in connection with the evaluation of the magnetic results of Mawson's expedition has greatly delayed the measurement of the seismograms."

The mean monthly hour-values from the magnetic curves for the years 1915 and 1916 will be published in the *New Zealand Journal of Science and Technology*, and it is intended to publish therein other results of scientific and public interest as they become available.

#### EXPLORATION.

As an appendix there will be found a report by Mr. District Surveyor Macpherson on an interesting exploration of the country between Lake Te Anau and the west coast. The gentlemen mentioned in the report had previously been through the country, and it was on the request of one of them, Mr. Henry Fowler, that Mr. Macpherson was sent out with them so that a map of the country might be prepared by him embodying information of use in filling in our official maps.

GENERAL.

During the past year the staff (field and office) has been further depleted by the enlistments of officers, comprising two surveyors, two survey cadets, nine draughtsmen, and eight draughting cadets. Their names will be found in the report by the Under-Secretary. Temporary officers have been employed in place of the draughtsmen, and amongst these have been several discharged soldiers. As more of our soldiers return from the front it is hoped that some of our officers will be amongst them and fit to resume work in the Department. Some, I am pleased to say, have already done so. Thus the most urgent work has been kept going, but, as I reported last year, our public maps are suffering for want of officers to keep them up to date. The difficulty in obtaining field hands is still very acute and hampers the surveyors greatly.

During the year the following names have been added to the roll of honour: Surveyor F. W. Watson, Survey Cadet L. W. B. Hall, Engineer's Assistant Alan Morpeth, and Draughtsman R. C. O'Reilly—all fine young officers.

The departmental list for 31st March, 1918, shows that the field staff numbered eighty-two, but at that date twenty-five were away with the Expeditionary Forces, leaving an available number of fifty-seven. They comprise one Inspector, forty-three staff surveyors, seven temporary surveyors, three cadets, two staff assistants, and one temporary assistant; and of these leave to join has been granted to three staff surveyors and two cadets. Of the twenty-five away with the Forces or in camp fourteen were staff surveyors and eleven were cadets. At the outbreak of the war the field staff numbered ninety-six, and comprised five Inspectors, sixty-five staff surveyors, fourteen cadets, six temporary surveyors, three staff assistants, and three temporary assistants.

In conclusion, I would say that the reports from the various Chief Surveyors all bear testimony to the cheerful and efficient service rendered by the officers, both field and office men, under them, and I desire to express my own appreciation of their good work, as also of the work of the Head Office staff.

Table 1.—RETURN OF FIELD-WORK EXECUTED BY HEAD OFFICE STAFF FROM 1ST APRIL, 1917, TO 31ST MARCH, 1918.

Laud District.	Standard Surveys.				Rural Standard Surveys.				Other Work.
	Completed.		In Progress.		Completed.		In Progress.		
	Miles.	Cost per Mile.	Miles.	Cost per Mile.	Miles.	Cost per Mile.	Miles.	Cost per Mile.	
Auckland .. .. .	40·23	£ 48·42	..	£ ..	..	£ ..	..	£ ..	£ ..
Hawke's Bay .. .. .	..	..	40	34·95	..	..	45	26·31	80



**Table 3.**—RETURN OF FIELD-WORK EXECUTED BY STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY OTHER DEPARTMENTS FROM 1ST APRIL, 1917, TO 31ST MARCH, 1918.

Land District.	Rural.			Village and Suburban.			Town.			Roads, &c.		Native Land Survey.			Mining.		Other Work (Cost).	Total Cost of Completed Work from 1st April, 1917, to 31st March, 1918.
	Acres.	Cost per Acre.	Number of Sections.	Acres.	Number of Sections.	Cost per Section.	Miles.	Cost per Mile.	Acres.	Number of Sub-divisions.	Cost per Acre.	Acres.	Number of Sections.	Cost per Section.				
Auckland..	195	s. 4.72	..	..	..	s. ..	13.25	£ 26.25	149,153	1,265	d. 17.67	..	..	..	..	£ s. d. 415 14 3	11,799 11 4	
Hawke's Bay	..	..	..	..	..	181.06	..	..	54,486	332	17.90	..	..	..	..	99 14 3	4,174 7 6	
Taranaki ..	..	..	..	..	..	..	..	..	23,720	299	17.08	..	..	..	..	..	1,688 2 7	
Wellington	..	..	..	..	..	143.75	..	..	30,780	204	21.21	..	..	..	..	..	2,749 2 4	
Nelson ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Marlborough	..	..	..	..	..	..	..	..	651	11	16.69	..	..	..	..	..	45 5 6	
Westland..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Canterbury	..	..	..	..	..	..	..	..	1,127	73	73.00	..	..	..	..	..	342 16 3	
Otago ..	..	..	..	..	..	..	..	..	123	7	45.62	..	..	..	..	..	23 7 7	
Southland	..	..	28	2	5.7	..	..	..	669	6	29.15	..	..	..	..	..	89 6 0	
Means and totals ..	195	4.72	28	2	5.7	1.51	13.25	26.25	260,709	2,197	18.37	..	..	..	..	515 8 6	20,911 19 1	
Licensed surveyors (paid by applicants)	7,914	..	562	..	..	23.00	2.75	..	10,772	94	..	996.5	12	..	..	..	..	
Grand totals	8,109	..	590	..	..	24.51	16.00	..	271,481	2,291	..	996.5	12	..	..	..	..	

Table 4.—RETURN SHOWING SURVEYORS EMPLOYED AND THE WORK ON HAND ON 1ST APRIL, 1918.

Chief Surveyors.	Surveyors employed.			Work on Hand.						
	Staff.	Tempo- rary.	Contract.	Land District.	Trig.	Topo- graphy.	Settle- ment.	Town.	Native- land Sur- vey.	Roads.
H. M. Skeet ..	15	5	47	Auckland ..	Sq. Miles. 25	Acres. ..	Acres. 193,848	Acres. 93	Acres. 234,315	Miles. 195
W. F. Marsh ..	5	..	10	Hawke's Bay ..	..	..	42,234	..	36,278	7
G. H. Bullard ..	3	1	8	Taranaki ..	42	..	59,383	46	18,016	8·25
G. H. M. McClure ..	3	..	12	Wellington ..	..	..	8,000	173·5	40,092	1·9
F. A. Thompson ..	4	..	3	Nelson ..	..	32,000	22,556	10	4,600	5
H. D. McKellar ..	1	1	1	Marlborough ..	..	..	2,757	..	2,484	..
T. Brook ..	1	..	..	Westland ..	..	..	18,740	..	..	..
W. H. Skinner ..	3	..	..	Canterbury ..	..	..	122,130	..	..	10
R. T. Sadd ..	4	..	..	Otago ..	..	..	237,516	..	..	..
H. D. M. Haszard ..	3	..	4	Southland ..	..	..	27,568	..	2,928	..
Total staff sur- veyors	42	7	85	..	67	32,000	734,732	322·5	338,713	227·15

Table 5.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1917, TO 31ST MARCH, 1918.

District.	Plans placed on Instruments of Title.			Deeds and other Instruments passed.	Plans examined.	Deeds or other Instruments.	Maps drawn.		Lithos published.	Lithos sold.
	Leases and Licenses.	Freehold.	Miscellaneous.				Standard Publications.	Sale Plans.		
Auckland ..	1,458	8,531	5,712	2,929	1,441	..	..	180	..	£ s. d. 136 5 1
Hawke's Bay ..	209	2,304	1,340	1,305	546	306	..	16	..	22 7 6
Taranaki ..	259	1,116	1,666	2,391	227	233	1	8	8	25 15 10
Wellington ..	469	4,637	843	2,219	459	783	16	22	..	19 8 8
Nelson ..	388	440	14	164	112	300	..	10	..	20 9 8
Marlborough ..	87	197	90	..	69	..	..	2	..	..
Westland ..	94	162	132	..	60	7	2	2	..	..
Canterbury ..	292	2,359	133	1,500	247	..	..	8	..	18 10 6
Otago ..	666	950	10	..	122	666	12	20	657	59 18 9
Southland ..	398	1,028	36	520	98	412	..	22	..	21 12 2
Totals ..	4,320	21,774	9,976	11,028	3,381	2,707	31	290	665	324 8 2



## APPENDIX.

REPORT ON EXPLORATION, SOUTH FIORD (LAKE TE ANAU) TO GAER ARM,  
DOUBTFUL SOUND.

THE following is a report by Mr. District Surveyor Macpherson upon an interesting exploration made from Lake Te Anau towards the west coast, and is accompanied by a map. (For earlier explorations see report of the Department for the year 1898-99, page 136.)

"Acting on instructions I met Messrs. Fowler brothers at Centre Bush on the 6th January, and motored with them to Te Anau the same day. The party comprised Mr. Henry Fowler, his son Alan, Mr. James Fowler, Mr. Martin of the Railway Department (all of whom had been over part of the route on previous occasions), and myself.

"The Tourist Department's steamer 'Tawera' put us up to head of South Fiord and provided us with a boat, and I was fortunate in being able to arrange with Captain Roberts to take barometric readings morning and night of each day on Lake Te Anau, which enabled me to adjust barometric heights with tolerable accuracy.

"We left a tent and flag at mouth of Gorge Burn with some of our clothes and provisions, and in the afternoon, with fairly heavy swags, made our way up south side of Gorge Burn to No. 2 lake (1,700 ft.) where we camped. Next morning we continued on to Boomerang Lake, where we pitched camp, and in the afternoon went via Martin Burn—which for first quarter of a mile is a stiff pull—by south-eastern shoulder, from which a fine view can be obtained, up to the summit of Mount Baird (4,960 ft.), an easy and safe climb. The highest point of Mount Baird is 6 or 8 chains farther west, and is about 20 ft. higher, but, as it was separated by a deep gulch, which appeared unclimbable or at least unsafe, we did not attempt it. This part appeared easily accessible from near Fowler's Pass. The view from Mount Baird amply repaid us; the ranges west to the ocean were spread at our feet. What I took to be Gaer Arm was visible about nine miles distant and at a magnetic bearing of 262°. Immediately below us to the north, and appearing flat, lay what I will call, at your suggestion, Macpherson's Pass, with its three lakes, and the streams leading westward and north-west to Camelot River. After I had taken a few bearings bad weather came up from the north, and we had to beat a retreat, arriving very wet at camp.

"Next morning we continued round the western shore of Boomerang Lake, which was steep and slow climbing, until held up by a bluff close to entrance of Gorge Burn. This bluff seems unclimbable, and some of the party were for going back round by the other side of the lake. As the morning was far spent we decided to try fording near mouth of stream. The chief obstacle was deep slime, apparently bottomless; but Mr. Martin was the hero of the occasion, and we soon had our swags across, the depth being to the shoulders. The eastern side of this lake appears practicable.

"Boomerang Lake, like Lake Ada, is a comparatively recent formation, as the trees are still standing below surface of water. Above this the walking is slow—steep rises with huge rocks—until open ground along stream is reached. Lakes Eva and Ione are of considerable depth, and of an emerald-green colour. Turning to the west a small lake is passed, which drains underground into Lake Eva, then a short easy rise to the pass (3,120 ft.).

"On the western face the ground falls away rapidly, and the bush-line comes right up to the pass. The stream-bed is fair going until falls and a deep gorge are encountered. We first tried the northern face, but were cut off by high bluffs and had to return, and were successful in negotiating the southern face, where there is a rapid drop of about 1,000 ft. The stream then runs more evenly, and we camped about half a mile above junction.

"Next day we continued down to junction where we left a cache, then on down this, the main stream, past open toetoe flats, until the Marble Gorge is reached. Here the stream rushes into a series of rapids and falls, and finally down a gorge about half a chain in width and about 100 ft. to 150 ft. in depth. We cut a track along the left side of this, but think now that the right side would probably be better going, as it appears unbroken by bluffs. After emerging the main Camelot River is soon reached, with Mount Wera immediately in front—a high mountain of dark-green colouring. Only the shoulder is visible from this vicinity, the higher peak being seen from higher up the valley.

"The Camelot River was spelt 'Camlet' on map, but I find Webster allows 'Camlet' as an abbreviation of 'Camelot,' while in Tennyson the spelling is 'Camelot.' This river is a fine stream; the travelling is good both along river-bed and in the bush. Rapids, and a fine fall of 140 ft., which I have named Bevedere Fall, led into a huge pool at its base, with an immense gravel-bank thrown up, and evidence of very high flood-marks on either side.

"A short distance below this we camped, and in the morning, leaving camp and sleeping-bags, set off for the sound, which we hoped would not be far distant. However, it was half past 1 before we reached it. From a scenic point of view Gaer Arm is disappointing, as a quick turn to the right cuts out the main sound, and, the tide being out, there was a great expanse of gravel-flat with wiwi and toetoe edging. We came down the northern side of the river, which was a mistake, as a huge bluff falls into the river. Returning, we attempted a short-cut on south side with dire results, as we

got into an interminable swamp. The river-bank, though, would have been good walking. About two miles up the river we found two totara-trees cut down, and an old camp, probably fifteen or twenty years old. There are some nice flats up the river, of no great width, with mixed bush. Where the flat is any width it has the usual west-coast swamp.

"On the following day we returned without incident to our cache at junction, I making a rough prismatic traverse up river-bed, from about half a mile below falls; this I continued right up and over Fowler's Pass to Boomerang Lake: so that this portion, at any rate, will be fairly accurately represented. On the rest I just took the general bearings of the valley, and did my best to estimate distances. From the junction we tried to strike a new route via Lake Tuaraki. We passed the stream from this lake, and got up on face of mountain above the Scott Burn, where we could see a fall some 40 or 50 chains below Lake Tuaraki, and made over to it through the bush. From this fall the going is partly open and partly bush, the latter being slow and rough, the stream-bed being the best walking.

"Lake Tuaraki is a very fine lake, with an island in the centre. High bluffs fall sheer into the lake on each side. We tried the northern face, and managed to get round by a snow-grass ledge high up, the only piece of climbing of any difficulty we encountered on the route. Fowler's Pass (3,660 ft.) is easy snow-grass climbing for about 430 ft. going down north-east side; thence to Boomerang Lake is plain sailing.

"Leaving Boomerang Lake the following day we had a very wet trip down to the lake; and on the 15th, after pottering about to the Eask and Della Burns until about noon, we pulled down the arm to Te Anau, coming straight on to Manapouri.

"With regard to the scenic aspect of the trip: the scenery, as with all these valleys, is beautiful throughout, but I would not class it with the Clinton and Arthur Valleys. The falls (we saw them at their worst) are nothing out of the ordinary. The Camelot River is very similar in its lower reaches to the Clinton River near Glade House—the same colouring with rather more volume.

"We obtained a fine view of Lake Hall and two small lakes adjoining it at lower end. The exit appears to be not into Lake Cecil, as Mr. Hall shows, but a good deal lower down, near, and I think below, No. 1 lake (I did not actually see the confluence). Mr. Hall was, of course, wrong in thinking that the water that was, I understand, reported by the Maori Te Au as seen from mountain to north-west of Lake Hall, and identified by him as the sound close down below him, was the sound, as it must still have been some ten miles to westward. The water would probably be Lakes Eva, Ione, and Boomerang, and the land between would probably be shut out by intervening shoulder. Otherwise, and except distances are naturally greatly exaggerated, Mr. Hall's sketch-plan seems accurate.

"I would say that three bushmen could hook out a passable track in three or four weeks, which would enable the average man to do the trip comfortably in two days. We were three and a half days going, and the same returning.

"In conclusion, I would like to place on record the help and companionship extended to me by the Messrs. Fowler and Martin. They are men who have year after year devoted a large amount of their time to exploring and roughing it in these solitary places, a life that does not appeal to most men. I could not have wished for better companions. They took numerous photographs, of which I hope to get a few to send in with my plan."

*Approximate Cost of Paper.*—Preparation, not given; printing (1,100 copies, including illustrations and map), £31 10s.

By Authority: MARCUS F. MARKS, Government Printer, Wellington.—1918.

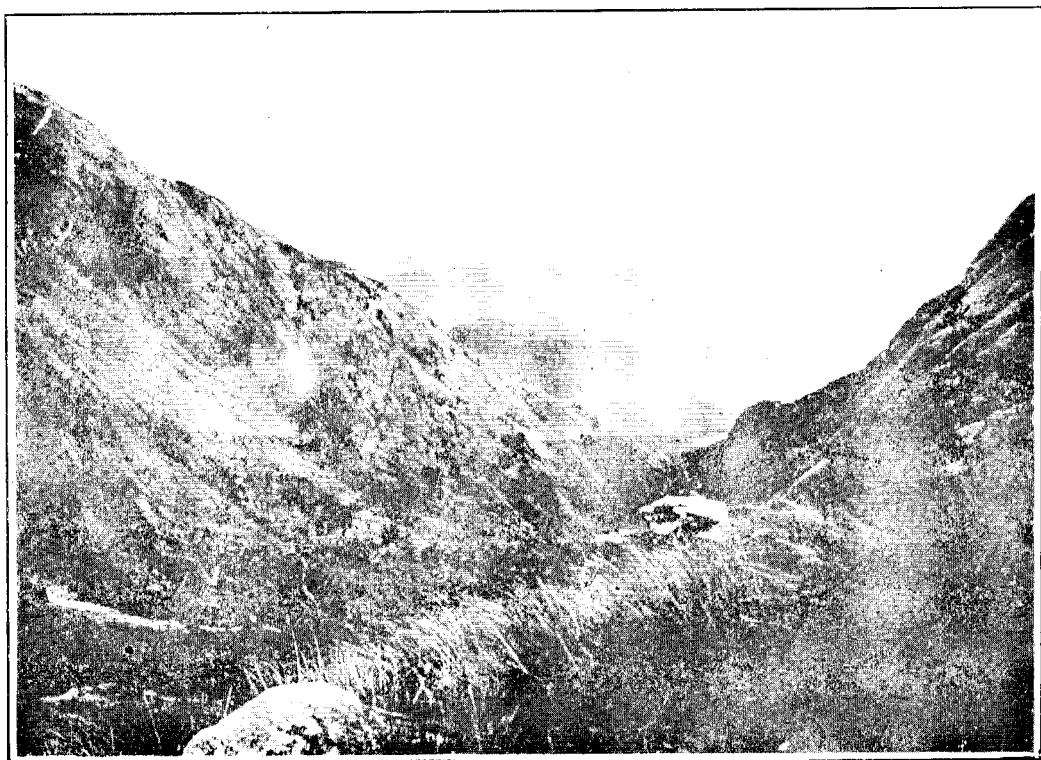
Price 9d.]



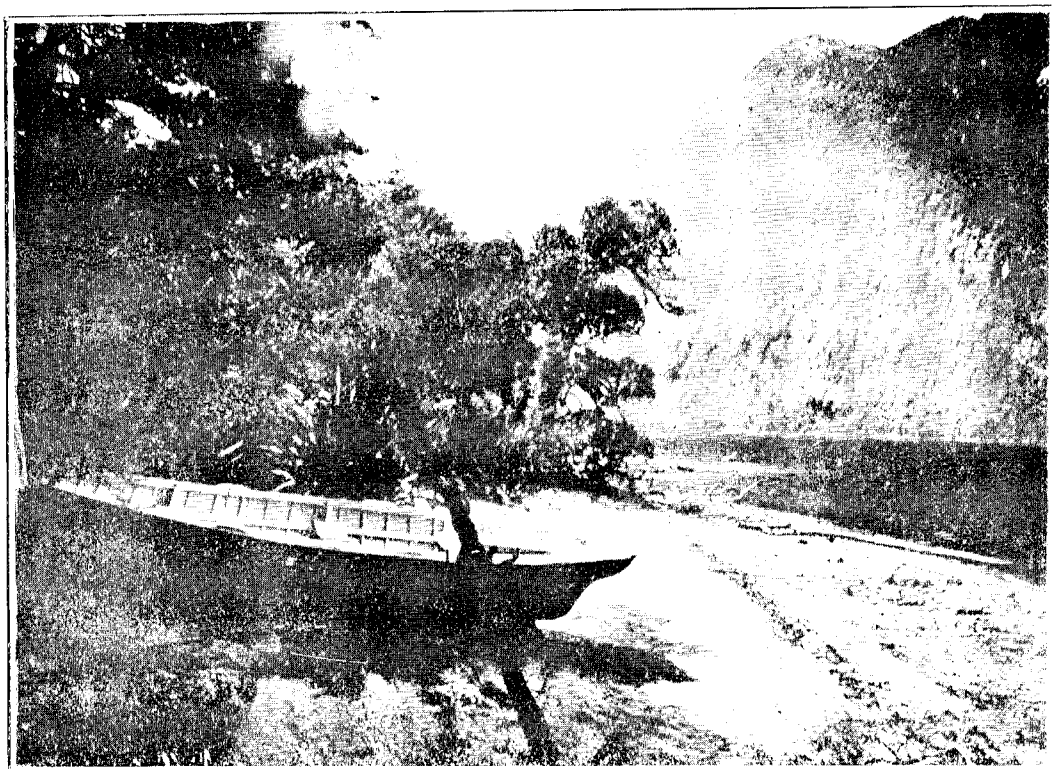
VIEW FROM NEAR NARROWS, SOUTH ARM, THE ANAPOLIS RIVER.



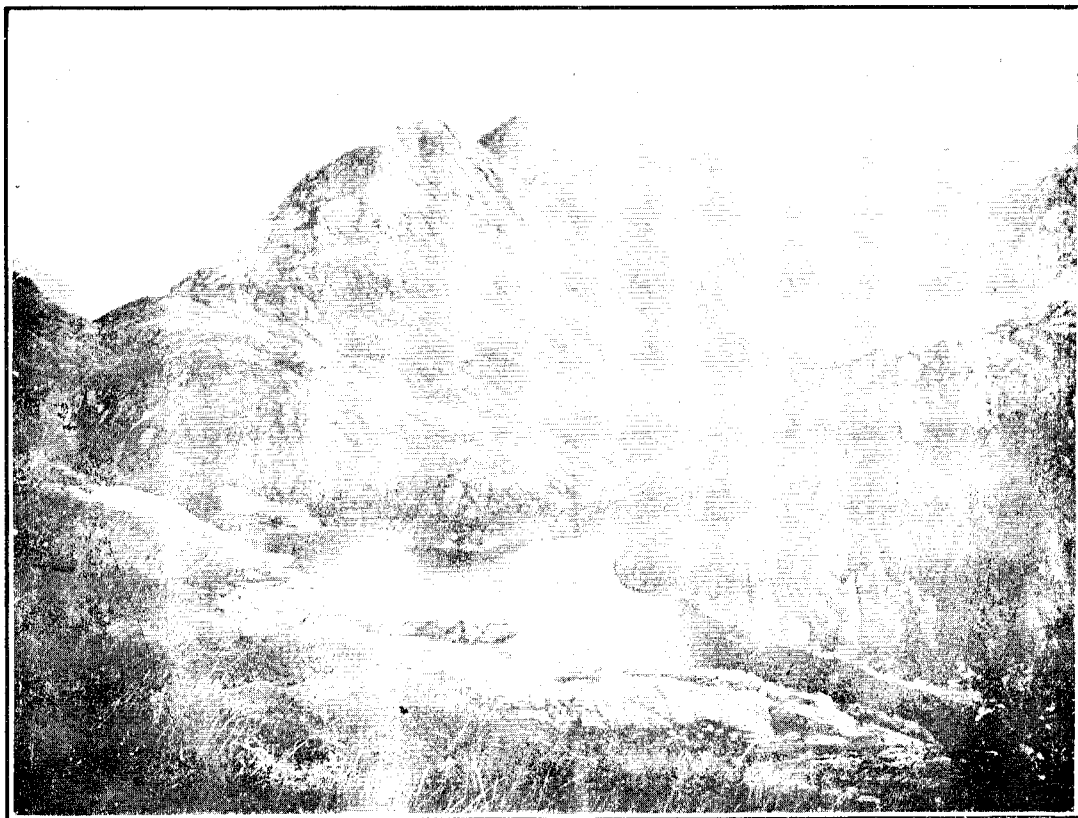
FREEMAN VALLEY.

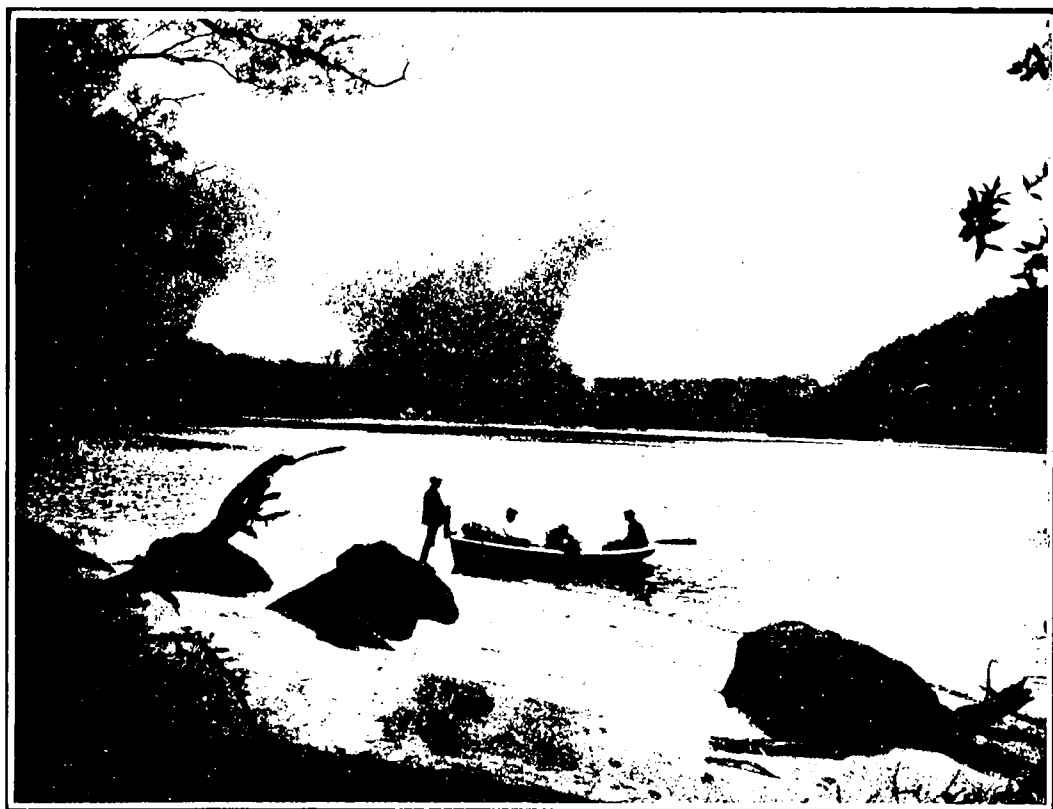


VIEW FROM NEAR FOWLER'S CAIRN, LOOKING EAST.

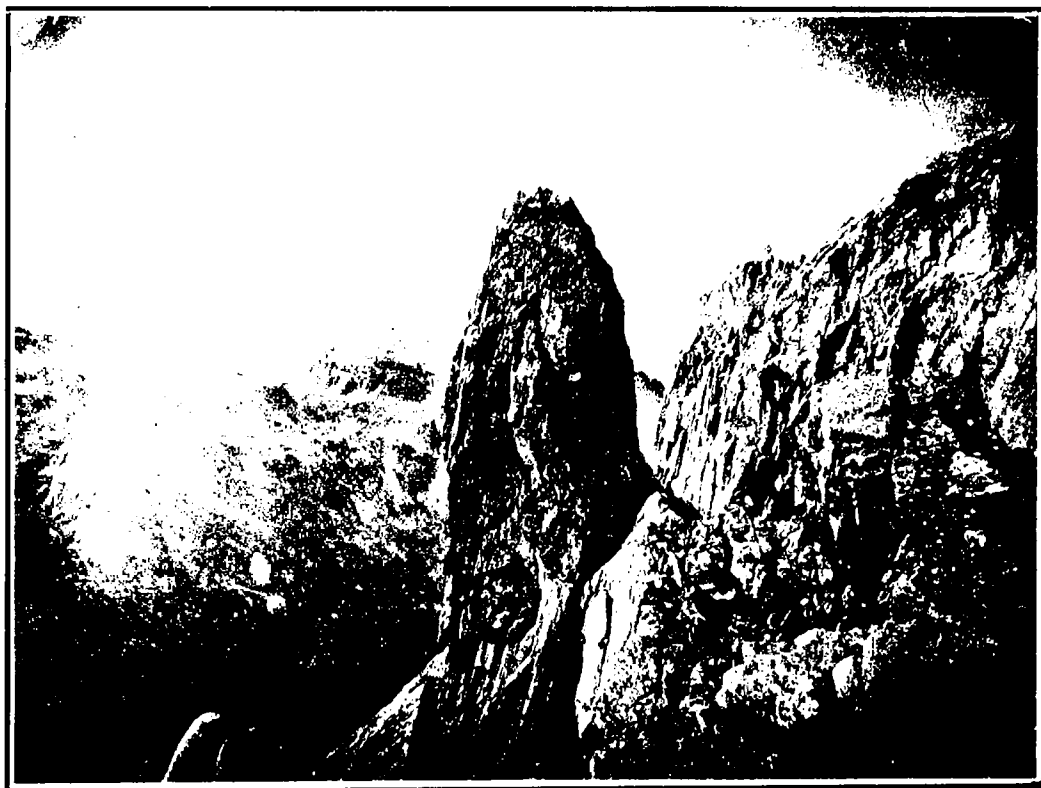


LANDING, SOUTH ARM, ABOVE NARROWS.





FROM SOUTH ARM, TE ANAU, LOOKING WEST.



OBELISK ON MOUNT BAIRD.







Sketch of snow-capped