

1914.  
NEW ZEALAND.

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# RANGITAIKI LAND DRAINAGE:

REPORT FOR THE YEAR ENDED 31<sup>ST</sup> MARCH, 1914; TOGETHER WITH STATEMENT  
OF ACCOUNTS.

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*Presented to both Houses of the General Assembly pursuant to Section 10 of the Rangitaiki  
Land Drainage Act, 1910.*

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SIR,—

Department of Lands and Survey, Wellington, 2nd June, 1914.

I have the honour to submit herewith the report upon the drainage operations in the Rangitaiki Plains for the year ended 31st March, 1914, pursuant to the provisions of the Rangitaiki Land Drainage Act, 1910.

The total area affected by the Act is 87,100 acres, the greater part of which is either freehold, leasehold, or Native land.

The excavation of the Rangitaiki River diversion was vigorously prosecuted by the Department throughout the year, and in May of this year the new outlet was successfully opened. So far as is known at present the cut has proved most satisfactory, and will be of immense benefit to the drainage of the plains.

The expenditure to date has been as follows:—

				£	s.	d.
For the year ended 31st March, 1912	...	...	...	12,140	0	0
"                    "          1913	...	...	...	15,203	0	0
"                    "          1914	...	...	...	17,873	3	6
Total	...	...	...	£45,216	3	6

In the attached report the Land Drainage Engineer (Mr. J. B. Thompson) sets forth details of the operations throughout the year, which have been carried out under the able supervision of his assistant (Mr. O. N. Campbell). The greatest credit is due to all members of the Land Drainage Branch who assisted in the operations on the Rangitaiki Plains during the past twelve months.

I hope to visit the works at an early date.

The accompanying statement of accounts shows the expenditure for the year.

I have, &c.,

JAS. MACKENZIE,

The Right Hon. W. F. Massey, Minister of Lands.

Under-Secretary for Lands.

STATEMENT OF ACCOUNTS (AS REQUIRED BY SECTION 10 OF THE RANGITAIKI LAND DRAINAGE ACT, 1910) FOR THE YEAR ENDED 31ST MARCH, 1914.

<i>Receipts.</i>			<i>Expenditure.</i>		
	£	s. d.		£	s. d.
1st April, 1913.			31st March, 1914.		
To Balance—			By Expenditure—		
Cash in Public Account .. ..	7,914	8 2	Payments for liabilities of old Board..	8	4 2
Imprest advances.. ..	1,684	6 3	New works by contract and day labour	11,932	8 8
			Purchase, equipment, and maintenance of dredges .. ..	5,643	5 1
8th October, 1913.			Travelling allowance and expenses, camp allowances, and general administration expenses .. ..	289	5 7
Advances from State-guaranteed Advances Office .. ..	5,000	0 0	Balance—Cash in Public Account ..	1,835	13 10
6th March, 1914.					
Debentures issued under New Zealand Loans Act, 1908 .. ..	5,000	0 0			
31st March, 1913.					
"Thirds" received under section 9 of the Rangitaiki Land Drainage Act, 1910 .. ..	110	2 11			
	<u>£19,708</u>	<u>17 4</u>		<u>£19,708</u>	<u>17 4</u>
<i>Loan Account.</i>					
	£	s. d.		£	s. d.
31st March, 1914.			31st March, 1914.		
To Balance .. ..	44,044	7 6	By Advances made by the New Zealand State-guaranteed Advances Office—		
			No. 1 Loan—Balance .. ..	24,109	7 6
			No. 2 „ „ .. ..	9,935	0 0
			No. 3 „ „ .. ..	5,000	0 0
			Debentures raised under New Zealand Loans Act, 1908 .. ..	5,000	0 0
	<u>£44,044</u>	<u>7 6</u>		<u>44,044</u>	<u>7 6</u>

SIR,—

REPORT BY THE LAND DRAINAGE ENGINEER.

I have the honour, in accordance with the provisions of the Rangitaiki Land Drainage Act, 1910, to report on the various operations carried out during the past financial year.

This year has seen a very marked advance in the condition of the lands within this drainage district, and with the brighter prospects of still greater changes during the coming year, the future prosperity of this area becomes very apparent. Settlers right throughout the district are now happy and contented with the outlook, and in the majority of cases are settling on and improving their holdings. I think I can safely say that there is not one settler who is not at present in a position to start the breaking-in of his section, and in many cases settlers are already beginning to discard drains which have done their work of breaking-in and are now of no further use.

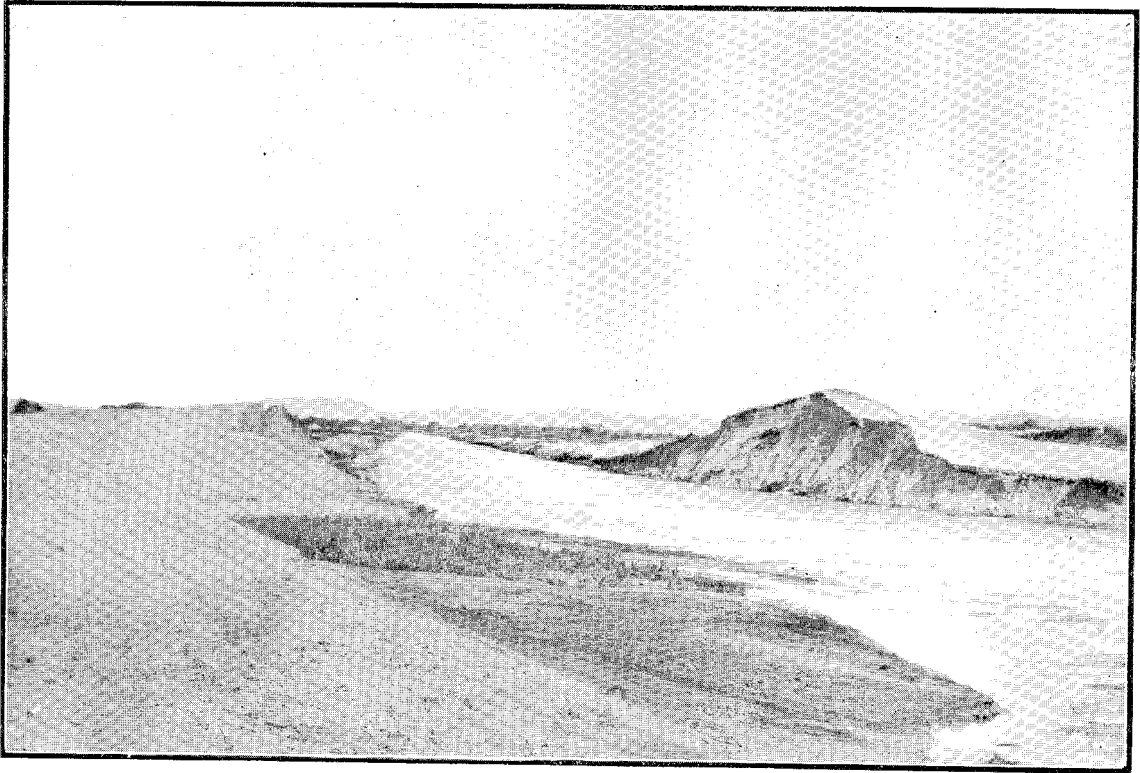
The amount of butter-fat produced is increasing daily. The co-operative cheese-factory on the Hallett Estate is already on a payable footing, and the butter-factories at Matata and Whakatane are also drawing increasing supplies from this district. However, for a year or two yet, until the farms become more thoroughly broken in, cattle raising and fattening will be the principal industry. It is estimated that during the past three months alone £11,000 worth of fat bullocks have been driven off. These have chiefly gone to the Auckland markets, but one shipload went as far as the freezing-works at Whangarei.

The ease with which the land is brought in and the fattening properties of the country, which is as yet only surface sown, speak volumes for the fertility of the soil and the future of the district. Land-values are moving up particularly fast, and the settlers are talking of £26 per acre for unimproved country. One of the most recent sales was a block of low-lying unimproved country at £20 10s. per acre cash. Since the inauguration of the works it is estimated that the increase in the unimproved value of the district amounts to £1,000,000—and this is a conservative estimate. This increase for a total expenditure to date of £45,000 is most gratifying, and makes these works one of the most payable propositions in New Zealand at the present day.

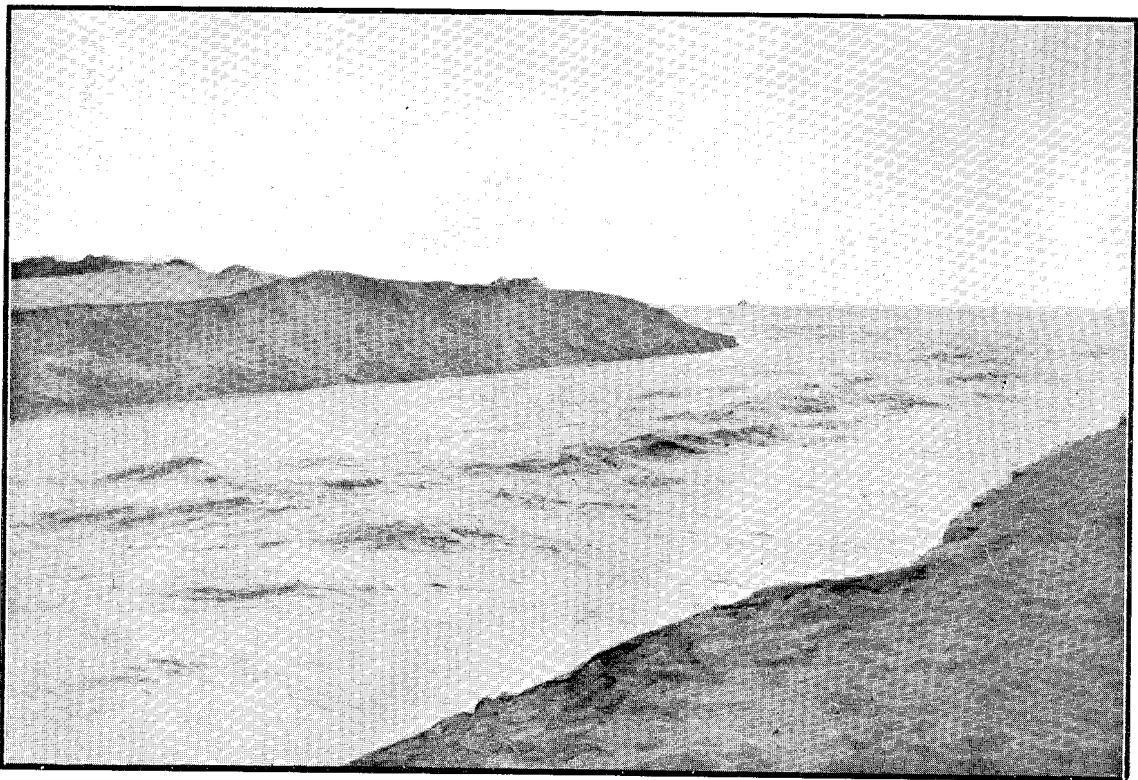
DREDGERS.

The two Priestman dredgers which arrived just at the end of the last financial year, and also the Hammond bucket dredge, have been working constantly during the year. Altogether some 272,370 cubic yards of spoil has been dredged, at a cost of 3·07d. per yard. The materials dredged included all classes of soil, from peat to clay and sand, with a predominance of the latter, which with this class of plant is most difficult to dredge. The prices work out most satisfactorily, and demonstrate the suitability of the plants for all classes of works such as have to be undertaken in drainage-works of this nature. Pumping plants have had to be installed on the two Priestman dredgers in order to pass the sand through the automatic steel chutes. They are each 3 in. centrifugal pumps driven by 4 horse-power oil-engines, and, as they have already saved their cost many times over, are a valuable acquisition to the dredges.

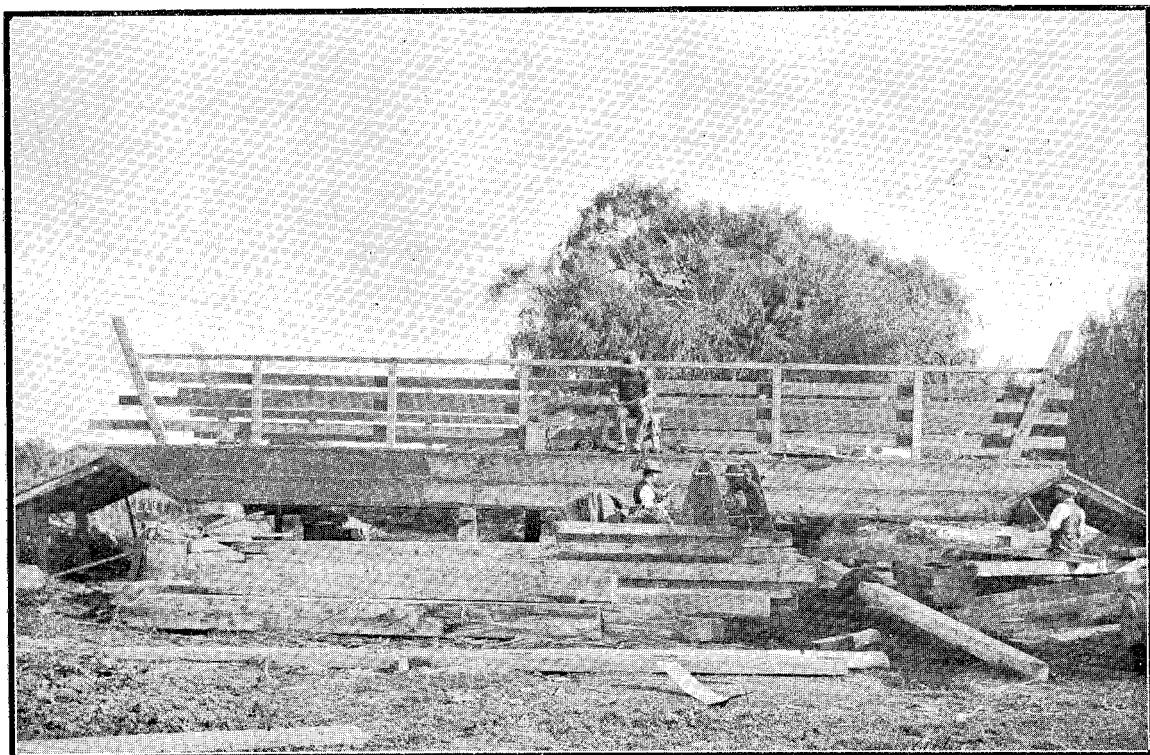
The dredgers have been employed on the excavations for the Rangitaiki River diversion, Te Rahu-Mangaroa outfall, and in improving the Tarawera River.



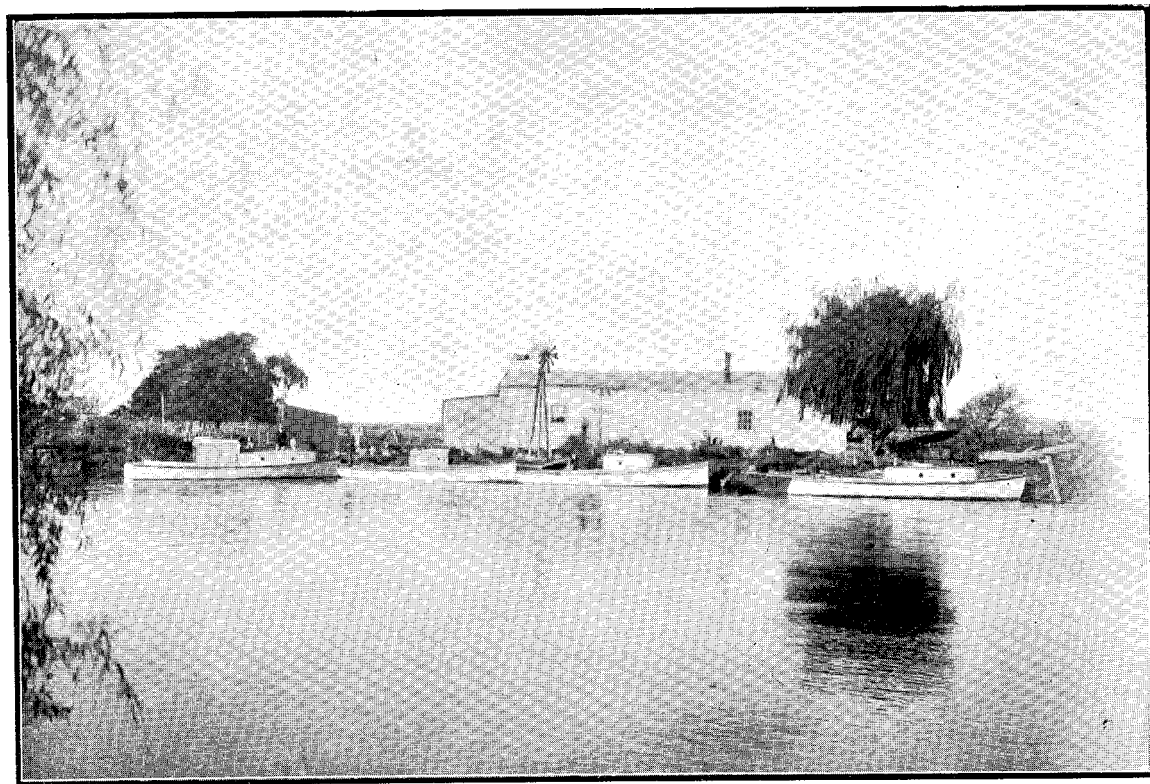
LOOKING UP DIVERSION FROM SANDHILLS, WITH INTAKE IN DISTANCE.



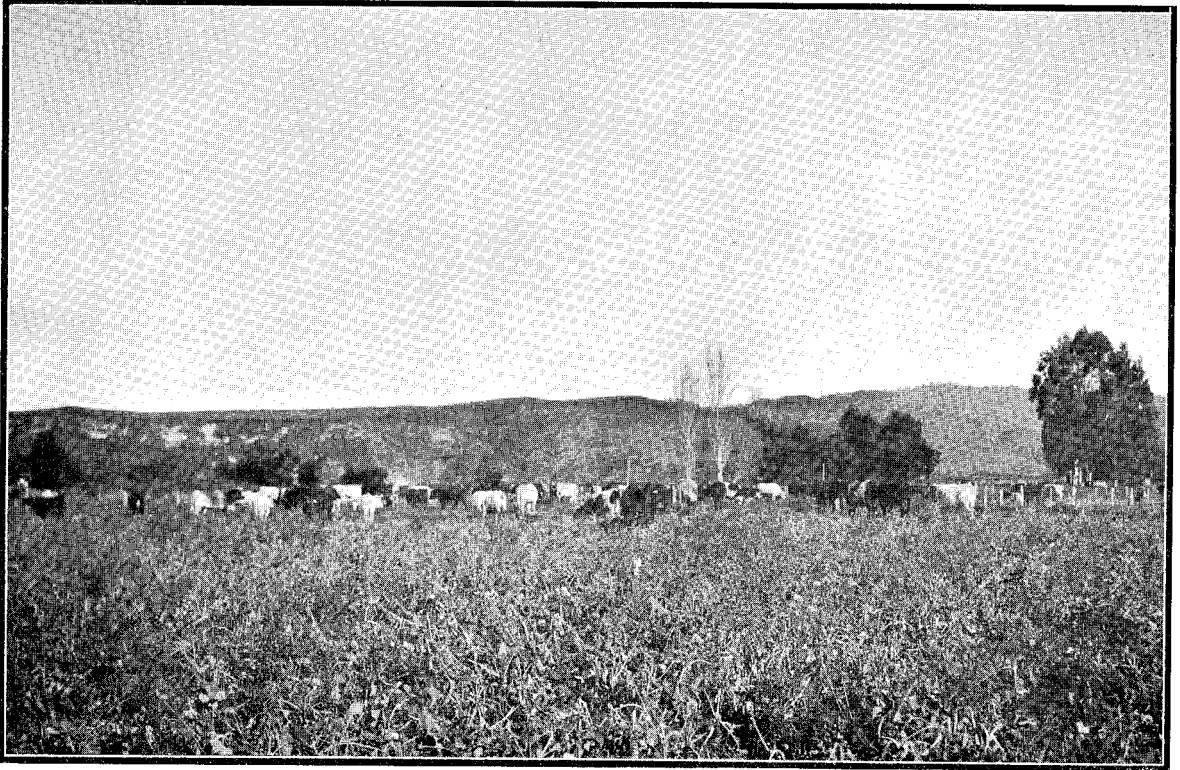
MOUTH OF RANGITAHI RIVER DIVERSION.



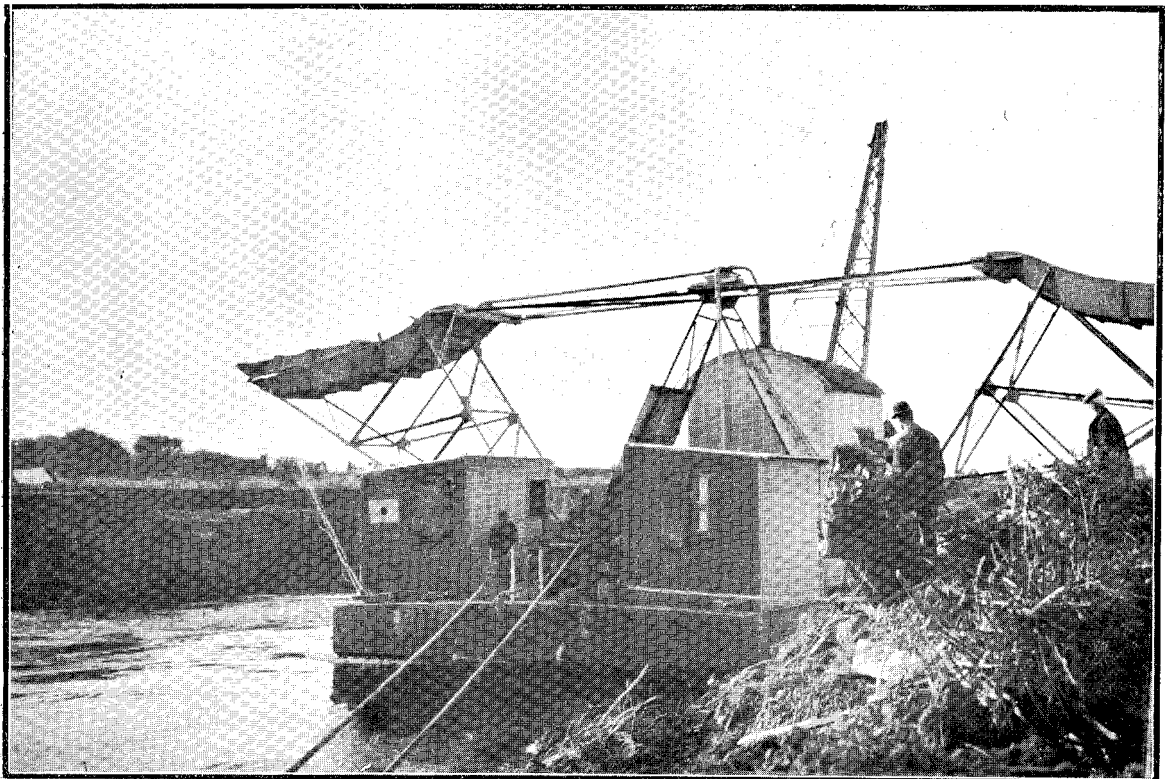
BUILDING FERRY PUNT FOR RIVER-DIVERSION.



LOOKING ACROSS RANGITAIKI RIVER ABOVE INTAKE TO DIVERSION.

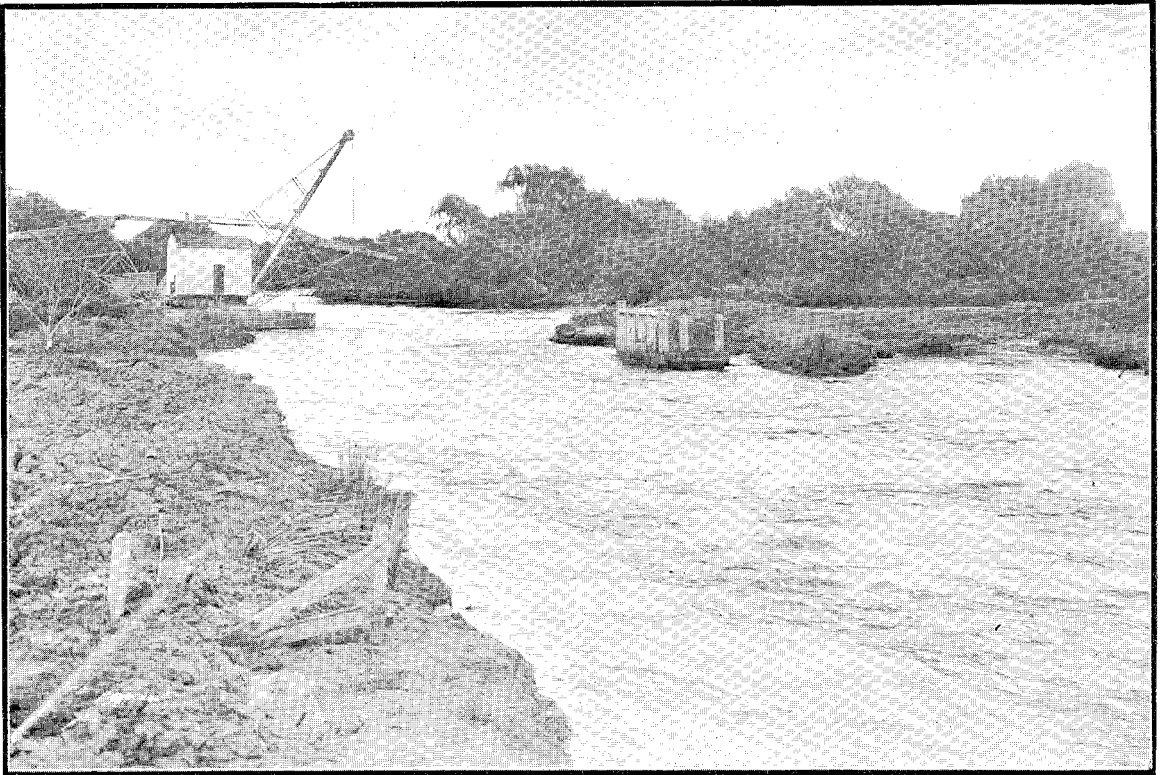


MR. SUTHERLAND'S FARM, MANGAROA.—PORTION OF SWAMP LAND DRAINED.

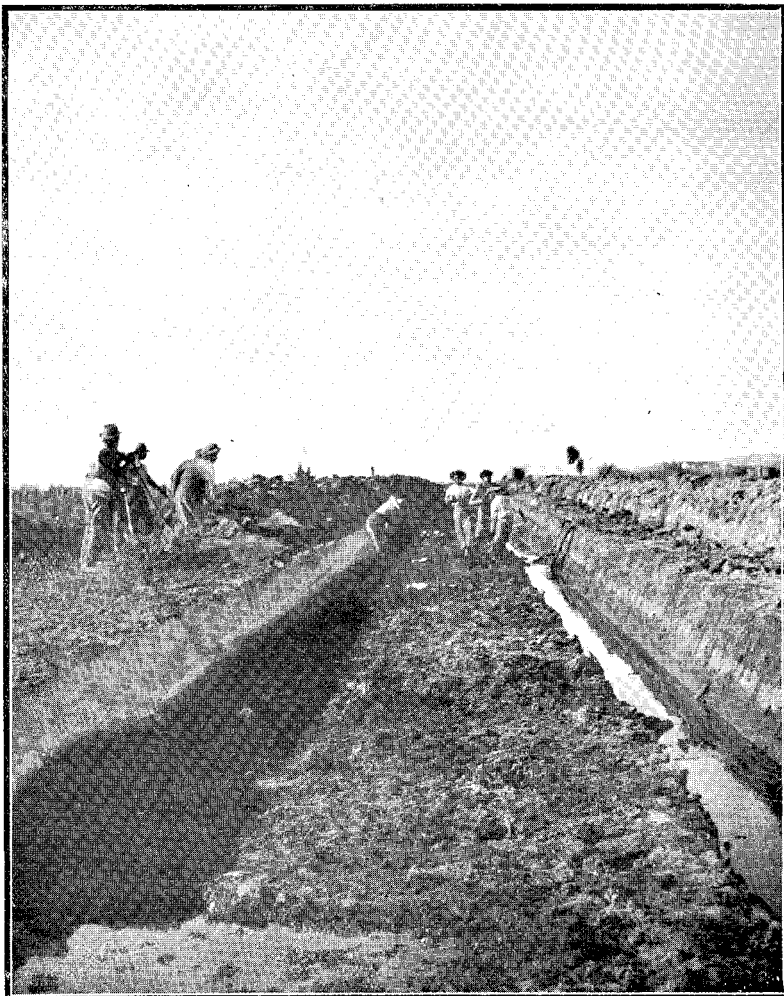


PRIESTMAN DREDGER IN RIVER-DIVERSION.





INTAKE (UNFENCED) TO RANGITAHI RIVER DIVERSION.



EXCAVATING WHAKAIRE OUTFALL.

Work completed & partly completed shown thus

<i>Proposed works</i>	...	....	....	"	—————
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#### TARAWERA RIVER.

The results of the works in this river are now becoming apparent, the lowering of the waters being, if anything, slightly better than our anticipations. The head of the works is now a mile and a quarter up the river, and the surface of the water has dropped 2 ft. 6 in. This rate of drop will not be maintained throughout the next mile, but will be picked up again, and probably increased in the following one, making our original estimate a conservative one.

Throughout this year a total of 70,860 cubic yards has been excavated by the Hammond pony bucket dredge, and at a cost of 3'1d. per yard, which is very satisfactory. On the Upper Tarawera nothing further has been done. The river is still lowering its bed and completing its channel, and altogether the works have been most successful. The former water-logged country through which the river flowed, and even the old bed itself, is now high and dry.

#### RANGITAIKI RIVER DIVERSION.

As mentioned before, this work is now almost an accomplished fact, and the diversion will be opened in May. During the year Priestman dredge No. 4 engaged on this work excavated 82,850 cubic yards of spoil, principally sand and alluvial silt, at a cost of 3'9d. per yard. In the sandhills 35,650 cubic yards of sand have been moved by wheeled scoop teams at a cost of approximately 6d. per yard.

As mentioned in my last report, we took these works over from the contractors on the 11th March of last year, and, realizing the economic importance of the undertaking, pushed the work on with all expedition, and, despite the many difficulties that had to be overcome, will succeed in completing the works up to the estimated time.

#### TE RAHU-MANGAROA OUTFALL.

This work, started at the beginning of the year, is now well forward. Priestman dredge No. 3 engaged upon it has excavated a distance of 2 miles 59 chains, comprising 118,660 cubic yards, at a cost of 2'4d. per yard. This price leaves little to be desired, and reflects great credit on the dredge-masters in charge of the plant. The final benefits from this important portion of the scheme are already becoming apparent, and many hundreds of acres already affected by it are now being laid down in grasses and turned to good account. I am hoping to have this work out of hand by the end of September next, when the plant will be transferred to the next important work in the vicinity—the Kopeopeo outfall.

#### KOPEOPEO OUTFALL.

Anticipating the completion of the Te Rahu-Mangaroa outfall, and the starting of dredging operations on this work, I am carrying out the necessary preliminary works of clearing and scooping. The location of the outfall for the first half-mile follows an old creek-bed which is completely overgrown and choked with willows. These have now all been "blown" out, and the scooping of the high and dry portions is now well in hand.

#### AWAITI BEND DIVERSION.

This work has been completed, and is now carrying practically all the river-water. The cut has been scoured well, and the bend is fast silting up. This cut alone has to a very great extent minimized the flood overflow in the Rangitaiki River above, and settlers felt the benefit immediately it was opened.

#### DRAINS IN OPERATION.

Up to date we have 54 miles 72 chains of drains in operation. This total includes outlet drains only, and is quite independent of drains constructed by us solely for road purposes, and by settlers for subdivisional draining. Approximately four-fifths of our proposed outlet drains are now in operation, so that from now onwards the yearly total of new drains constructed will gradually diminish. The greater portion of the remaining work will be deepening, which is being undertaken as the main dredged outlets are being completed.

During this year 5 miles 63 chains of new drains have been constructed, and 21 miles 64 chains have been cleaned and deepened.

#### ROAD-FORMATION.

The total length of formed roads constructed to date is 22 miles 77 chains, and of this total 16 miles 47 chains was formed during this year. These roads are being formed from Government grants and accrued "thirds" only, and are not a charge against the drainage-works loan.

The road question is fast becoming a serious matter in this area, and at the present time our drainage operations are considerably in advance of the roading. Settlers in various portions of the district, I regret to say, are experiencing great difficulty and hardship in getting in their building and fencing materials, and also in shifting their stock.

#### BRIDGES.

Two three-span bridges, one across the Orini Stream and the other across the Te Rahu-Mangaroa outfall, have been erected during the year, and fresh piles have been driven under the Otarakuti Stream bridge, on the main Rotorua Road. This latter work was rendered necessary owing to our diversion of the Upper Tarawera River into the stream, and the consequent enlarging of the bed.

#### FLOATING PLANT.

This consists of two Priestman dredgers, one Hammond pony bucket dredge, one suction dredge (incomplete), two oil-launches, three pontoons, one ferry punt, and sundry small punts and boats, all in good repair and in constant use.

## FENCING.

A start has been made with the fencing of the main outfalls, but as yet only 1 mile 76 chains has been erected. Now that the country is being heavily stocked, the erection of these fences will have to be pushed on vigorously during the coming year.

## ARTESIAN BORES.

A firm of artesian borers have been steadily at work within the district for the past nine months, sinking for water. The prosperity of a district depends to a very great extent on the success or otherwise of its water-supply, and, though these borings are in no way connected with the scheme of drainage, still it is very pleasing to be able to report the success that has been experienced with them. Bores have been sunk in all parts of the district without a failure, and excellent flows have been obtained at depths varying from 70 ft. to 300 ft. The water is of the best, being only very slightly mineralized, and even quite fit for human consumption.

## SUMMARY OF WORKS PERFORMED.

During the past year the following works have been carried out:—						M.	ch.
New drains	...	...	...	...	...	5	63
Cleaning and deepening drains	...	...	...	...	...	21	64
Roads formed	...	...	...	...	...	16	47
Stop-banks erected	...	...	...	...	...	1	1
River-banks protected	...	...	...	...	...	0	27
Fencing outlets	...	...	...	...	...	1	76
Snagging rivers	...	...	...	...	...	3	0
						50	38
						Cubic Yards.	
Spoil removed by dredges	...	...	...	...	...	272,370	
Spoil removed by scoop teams	...	...	...	...	...	48,250	
Pile bridges erected	...	...	...	...	...	2	
Temporary sill bridges erected	...	...	...	...	...	2	
Fresh piles driven under Otarakuti Stream bridge.							
General maintenance and improvements to existing works, and many minor works too numerous to mention.							

A daily average of about 110 men—principally Maoris—have been employed on the works during the year. These Natives make excellent drainers, and are very much at home in the water, but they are very much averse to constant employment, and it is seldom you get one with full time to his credit in any one month. As it is, suitable labour is very scarce, and it is indeed fortunate for us that this district carries such a large Native population.

## PROPOSED WORKS.

The principal works to be carried out during the coming financial year are as follows:—

- (1.) Completion Te Rahu-Mangaroa outfall and Rangitaiki River diversion.
- (2.) Starting work on Kopeopeo outfall.
- (3.) Continuation of Lower Tarawera River improvements.
- (4.) Deepening of drains as outlets are completed, and general maintenance and improvements to existing works.
- (5.) Bridging outfalls.
- (6.) Continuation of road-formation.

## SURVEYS.

During the greater portion of the year a survey party has been actively engaged on the necessary land and engineering surveys in connection with the works. These surveys are now well up to date.

## WORKS EXPENDITURE FOR THE YEAR.

On account of piecework contracts and day labour of all descriptions employed upon drainage operations, pontoon building, erection of buildings, engineering surveys, &c., the sum of £14,119 3s. 4d. was paid out of local impest.

In connection with road-construction and river-bank protection out of special votes, the sum of £2,062 12s. 9d. was paid from local impest.

## OFFICE.

The books in connection with this work are kept at the Thames office.

Many road and engineering plans and tracings were made.

The Assistant Land Drainage Engineer, Mr. O. N. Campbell, who is in local charge of the works, has done his utmost to ensure success of all operations, and my thanks are due to him for his assiduous attention to all matters. Mr. G. Tuck, foreman dredgemaster, has also laboured hard in connection with the building of pontoons and erection of machinery.

The accompanying plan shows the works in hand and those proposed.

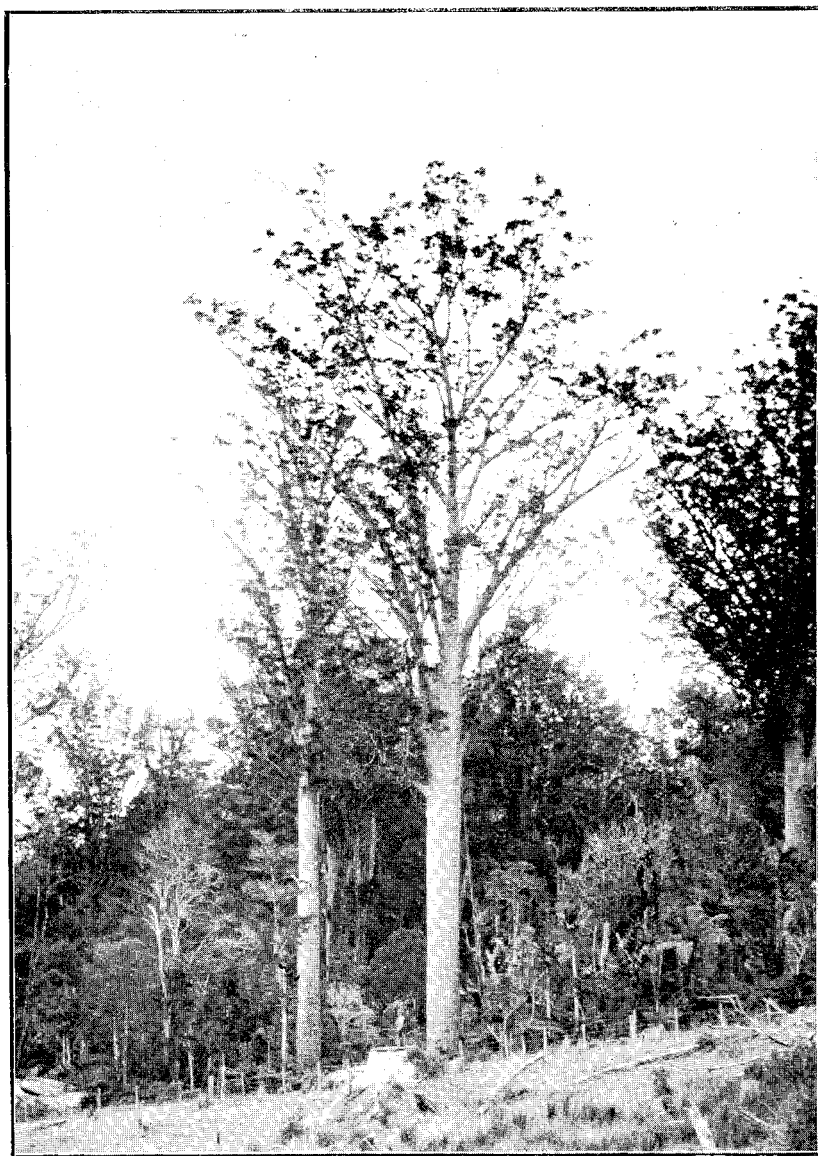
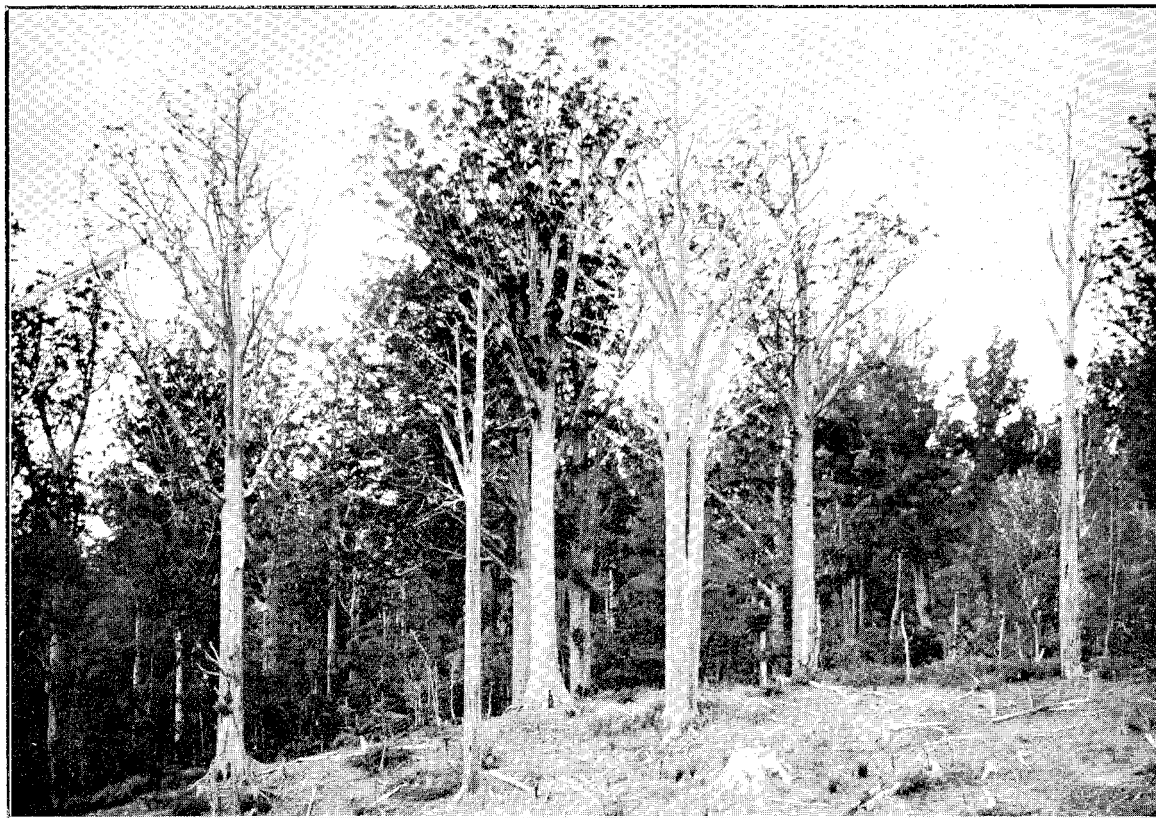
I have, &c.,

J. B. THOMPSON,

Land Drainage Engineer.

*Approximate Cost of Paper.*—Preparation, not given; printing (1,700 copies, including plan and illustrations), £24.





THE MAJESTIC KAURI: FONS LABORS ET ORIGO.