

1916.  
NEW ZEALAND.

# MINES DEPARTMENT. GEOLOGICAL SURVEY BRANCH

(TENTH ANNUAL REPORT (NEW SERIES) OF THE).

*Laid on the Table of the House of Representatives by Leave.*

## CONTENTS.

	Page		Page
Letter of Transmittal .. .. .	2	<i>Special Reports—continued.</i>	
<i>Director's Report.</i>		5. Water-supply for Kaikoura Township— <i>continued.</i>	
Summary of Field Operations .. .. .	2	III. Possibility of Artesian Water on Kaikoura	
Egmont Subdivision .. .. .	2	Plain .. .. .	14
Gisborne and Whatatutu Subdivisions .. .. .	2	Artesian Structure .. .. .	14
Tuaapeka District .. .. .	2	Conclusion .. .. .	14
Oamaru District .. .. .	2	6. Soft-limestone Deposits of Cape Campbell, Ward	
Limestone and Phosphate Deposits .. .. .	2	and Waikari Districts. (By P. G. Morgan)	15
Palaeontological Work .. .. .	3	Introduction .. .. .	15
Publications .. .. .	3	I. Cape Campbell District .. .. .	15
Office and Miscellaneous Indoor Work .. .. .	3	II. Ward District .. .. .	15
Maps, &c. .. .. .	3	III. Waikari District .. .. .	16
Staff .. .. .	3	Origin of Soft-limestone Deposits .. .. .	17
Conclusion .. .. .	4	Quality and Quantity of Soft Limestone .. .. .	17
<i>Special Reports.</i>		7. Notes of a Visit to Marlborough and North	
1. Egmont Subdivision. (By P. G. Morgan) .. .. .	4	Canterbury, with especial Reference to Un-	
Physiography .. .. .	4	conformities post-dating the Amuri Lime-	
General Geology .. .. .	5	stone. (By P. G. Morgan) .. .. .	17
Table of Formations .. .. .	5	Introductory .. .. .	17
General Description .. .. .	5	Cape Campbell—Ward District .. .. .	18
Economic Geology .. .. .	6	Faults .. .. .	19
Soils .. .. .	6	Economic Geology .. .. .	19
Metallic Ores .. .. .	6	Limestone .. .. .	19
Limestone and Calcareous Sinter .. .. .	6	Phosphate .. .. .	19
Road-making Materials .. .. .	7	Kaikoura District .. .. .	19
Petroleum .. .. .	7	Physiography .. .. .	19
Water-power .. .. .	7	General Geology .. .. .	20
2. Gisborne and Whatatutu Subdivisions. (By J.		Geological Map .. .. .	21
Henderson and M. Ongley) .. .. .	7	Minor Folds or Corrugations of Limestone .. .. .	21
Topography .. .. .	7	Unconformities .. .. .	22
General Geology .. .. .	7	Economic Geology .. .. .	23
Mangatu Series .. .. .	7	Limestone .. .. .	23
Waikohu Series .. .. .	8	Phosphate .. .. .	23
Turanganui Series .. .. .	8	Oil-indications .. .. .	23
Tawhiti Series .. .. .	8	Miscellaneous .. .. .	23
Waipaoa Series .. .. .	8	Amuri Bluff, Hundalee, Conway River, &c. .. .. .	23
Recent Deposits .. .. .	8	Raised Beaches .. .. .	24
Volcanic Rocks .. .. .	8	Upper Tertiary Beds ("Great Marlborough	
Economic Geology .. .. .	8	Conglomerate") .. .. .	24
Macadamizing-material .. .. .	9	Relation of Conglomerate to Grey Marl .. .. .	24
3. Waihi. (By P. G. Morgan) .. .. .	9	Unconformity above Amuri Limestone .. .. .	25
Waihi Mine .. .. .	9	Economic Geology .. .. .	25
Grand Junction Mine .. .. .	10	Waipara, Weka Pass, and Waikari Districts .. .. .	25
Water .. .. .	10	Unconformities .. .. .	26
4. Kaipara District, North Auckland. (By P. G.		(1.) Amuri Limestone and Weka Pass Stone	
Morgan) .. .. .	11	Contact .. .. .	26
Physiography .. .. .	11	(2.) Contact of Grey Marl and Mount	
General Geology .. .. .	11	Brown Beds .. .. .	26
Unconformity between Miocene and Cretaceous		(3.) Unconformities post-dating Mount	
Rocks .. .. .	11	Brown Beds .. .. .	27
Economic Geology .. .. .	11	Faults .. .. .	27
Coal .. .. .	11	Economic Geology .. .. .	28
Rock Phosphate .. .. .	12	Discussion of Unconformities .. .. .	28
Limestone .. .. .	12	Literature .. .. .	28
Roadmaking Material .. .. .	12	8. Scheelite and Wolfram (Tungsten Ores) in New	
5. Water-supply for Kaikoura Township. (By P. G.		Zealand. (By P. G. Morgan) .. .. .	29
Morgan) .. .. .	13	9. Notes on the Limestones of the Manawatu Gorge	
I. Streams from Mount Fyffe .. .. .	13	and of Mauriceville. (By J. Henderson) .. .. .	30
(1.) Luke's Creek .. .. .	13	10. Notes on the Huntly District, Waikato. (By	
(2.) Waimangarara Stream .. .. .	13	J. Henderson) .. .. .	31
II. Springs on Kaikoura Plain .. .. .	13		
		<i>Maps.</i>	Facing
		1. Sketch-map of Kaikoura District .. .. .	Page
		2. " Huntly District .. .. .	25
			31