

TABLE Q.—AVAILABLE WATER-POWER IN NEW ZEALAND—continued.

Source of Power.	Position of Power-house.	Available Flow : Cubic Feet per Second.	Available Head.	Average Power on 50-per-cent. Load Factor.		Nearest City, Port, or Deep Water.	Distance.
Canterbury District—continued.			Ft.	H. p.	Kw.		Miles.
Rakaia River	Gorge Bridge ..	2,600	30	6,500	4,800	Christchurch..	50
Lake Heron	Rakaia River ..	300	200	5,000	3,750	Christchurch..	88
Opihi River	Opihi Gorge ..	200	400	6,700	5,000	Timaru ..	30
Pukaki Lake	Pukaki	5,000†	460	50,000	37,000	Timaru ..	85
Tekapo Lake	Fairlie	5,100†	900	400,000	300,000	Timaru ..	40
Ohau Lake	Waitaki River ..	5,000†	300	125,000	90,000	Timaru ..	85
Otago and Southland District—							
Ahuriri River	Waitaki River ..	600	200	10,000	7,500	Oamaru ..	62
Waitaki River	Waitaki River ..	15,000	30	37,000	28,000	Oamaru ..	60
Waipori Falls	Waipori River ..	230†	700	26,800	20,000	Dunedin ..	30
Lee Stream	Outram	15*	750	1,800	1,300	Dunedin ..	18
Deep Stream	Taieri River ..	110	900	8,400	6,300	Dunedin ..	20
Taieri River	Deep Stream ..	700	220	12,000	9,000	Dunedin ..	44
Talla Burn	Clutha River ..	30	890	2,200	1,600	Dunedin ..	60
Teviot River	Roxburgh	100†	1,900	30,000	21,000	Dunedin ..	90
Manuherika River ..	Chatto Creek ..	200	350	5,800	4,400	Dunedin ..	127
Hawea Lake	Wanaka Lake ..	2,500†	205	80,000	60,000	Dunedin ..	170
Shotover	Wakatipu Lake ..	500	250	10,000	7,500	Invercargill ..	112
Lake Hall	Doubtful Sound ..	220	2,625	48,000	36,000	On seaboard..	..
Lake Cecil	Lake Te Anau ..	200	900	15,000	11,200	On seaboard..	..
Lake Hilda	Lake Te Anau ..	550	1,190	55,000	41,080	On seaboard..	..
Lake Te Anau	George Sound ..	12,630	694	1,600,000	1,200,000	On seaboard..	..
Lake Manapouri	Smith Sound ..	8,400†	600	840,000	630,000	On seaboard..	..
Bowen Falls	Milford Sound ..	700	600	35,000	25,000	On seaboard..	..
Lake Monowai	Waiau River ..	500†	160	16,000	12,000	Invercargill ..	60
Lake Hauroto	Tewaewae Bay ..	2,300	514	100,000	75,000	Invercargill ..	51
Totals—South Island		..	..	4,110,950	3,074,430		

* Signifies daily storage available to utilize 50-per-cent. load-factor.

† Signifies seasonal storage made available.

APPENDIX E.

REPORT ON MODERN HIGHWAY CONSTRUCTION AND MAINTENANCE.

By A. TYNDALL, A.M.Inst.C.E., Assoc.M.Am.Soc.C.E.

INTRODUCTION.

This report is in the nature of a record of observations made, data collected, and opinions formed during twelve months' study of the construction and maintenance of rural highways abroad. The subject of street-construction in cities is not intended to be covered.

I had the opportunity of inspecting roads in the following countries : England, Scotland, France, Belgium, Holland, Switzerland, Italy, United States, Canada, Mexico, Hawaii, and Panama.

New Zealand's problems are very similar to those being faced in the more thinly populated of the United States of America. Although many millions of pounds have been spent on road-construction in the United States in recent years, it should be realized that the country claims only 374,000 miles of "good roads" out of a total mileage of about 2,800,000. The "good roads" comprise all the surfaced mileage, including at least 170,000 miles gravelled. It would appear, therefore, that New Zealand, with 23,000 miles surfaced out of a total of 59,000 miles, is well to the fore amongst the newer countries as regards the proportion of surfaced mileage (40 per cent. in New Zealand as against 13·4 per cent. in United States of America.)

The problem ahead is not so much to extend the system of surfaced roads as to bring up to a standard commensurate with the traffic the main thoroughfares of the Dominion, and also to learn to maintain the roads we have already built.