

APPENDIX V.

TIDAL SURVEY.

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HARMONIC ANALYSIS.

THE harmonic tidal constants for the ports of Wellington and Auckland have been obtained by harmonic analysis from the hourly ordinates measured from the self-registering tide-gauges. In each case the period of observation was one year; Wellington for the year 1909, and Auckland for the year beginning 1908, December, 1.

Harmonic Tidal Constants.

—		Wellington.	Auckland.	—		Wellington.	Auckland.
Latitude	...	41° 17' S.	36° 50' S.	...	...	...	...
Longitude	...	174° 46' E.	174° 49' E.	...	...	...	...
A_0		37·931 ft.	9·237 ft.	...	...	...	...
S_1	H	0·005	0·006	Q	H	0·036 ft.	0·008 ft.
	κ	151·36	50·35		κ	26·35	56·64
S_2	H	0·112	0·583	L	H	0·093	0·221
	κ	332·98	264·36		κ	141·99	209·57
S_3	H	0·005	0·018	N	H	0·431	0·797
	κ	181·34	340·80		κ	95·47	173·55
S_6	H	0·005	0·002		H	0·125	0·236
	κ	298·67	27·47	ν	κ	107·37	152·81
M_1	H	0·007	0·011	μ	H	0·082	0·126
	κ	30·85	143·63		κ	81·28	178·00
M_2	H	1·594	3·814	R	H	0·024	0·024
	κ	133·65	203·73		κ	169·69	237·40
M_3	H	0·022	0·052	T	H	0·056	0·058
	κ	184·01	202·32		κ	317·20	102·91
M_4	H	0·030	0·113	MS	H	0·039	0·169
	κ	275·89	126·80		κ	137·58	194·56
M_6	H	0·013	0·026	2SM	H	0·039	0·064
	κ	76·55	282·96		κ	19·73	304·96
O	H	0·110	0·059	Mm	H	0·116	0·127
	κ	33·66	148·79		κ	260·23	291·98
K_1	H	0·078	0·233	Mf	H	0·048	0·072
	κ	77·59	168·93		κ	172·03	204·75
K_2	H	0·042	0·145	MSf	H	0·161	0·075
	κ	312·25	255·18		κ	60·87	122·80
P	H	0·023	0·068	Sa	H	0·049	0·091
	κ	53·04	166·21		κ	201·65	62·55
J	H	0·007	0·017	Ssa	H	0·073	0·028
	κ	143·21	196·39		κ	165·59	56·77

Values of H are in English feet, κ in degrees.

PREDICTION.

From the harmonic tidal constants the tides for Wellington and Auckland have been predicted, using the method described in the Tidal Survey Reports for 1910–11 and 1911–12. The tide-tables for these two ports for the year 1914 are given here. They are supplied to the British Admiralty and published in the Admiralty Tide-tables, and to the Marine Department and published in the New Zealand Nautical Almanac and Tide-tables.

The time used in the tide-tables is New Zealand civil mean time for the meridian 11 h. 30 m. east of Greenwich; 0 h is midnight, 12 h is noon; all hours less than 12 are in the forenoon (a.m.), all greater are in the afternoon (p.m.), and when diminished by 12 give the times after noon—for instance, 14 h. 11 m. is 2 h. 11 m. p.m.

WELLINGTON TIDE-TABLES FOR 1914.

The heights, in feet and tenths, are measured from a point 36·131 ft. above the city datum, and approximately 1·8 ft. below mean sea-level.