

TABLE C.

Mean Values of the Harmonic Constants for Use in preparing the Tide-tables.

Tide Symbol.	Auckland. A ₀ = 5.74 ft.		Bluff. A ₀ = 5.27 ft.		Dunedin. A ₀ = 3.23 ft.		Lyttelton. A ₀ = 3.20 ft.		Wellington. A ₀ = 2.93 ft.		Westport. A ₀ = 4.77 ft.	
	H.	K.	H.	K.	H.	K.	H.	K.	H.	K.	H.	K.
Short Period.	Ft.	°	Ft.	°	Ft.	°	Ft.	°	Ft.	°	Ft.	°
S1	0.011	11.61	0.010	100.05	0.015	14.41	0.035	31.91	0.002	327.99	0.011	78.04
S2	0.577	267.73	0.502	49.79	0.245	129.50	0.179	143.04	0.101	330.48	0.959	332.22
S4	0.017	329.51	0.009	223.42	0.007	318.52	0.009	202.78	0.004	225.46	0.007	32.75
S6	0.003	59.53	0.006	170.17	0.003	115.92	0.015	344.95	0.004	307.40	0.006	331.21
M1	0.009	111.11	0.011	127.33	0.010	108.52	0.010	99.40	0.005	23.12	0.012	143.08
M2	3.815	206.15	2.858	35.68	2.485	122.39	2.879	125.63	1.608	139.02	3.747	304.43
M3	0.036	194.31	0.011	272.74	0.016	262.98	0.016	112.80	0.019	172.05	0.021	208.15
M4	0.101	124.01	0.088	226.45	0.261	177.75	0.016	80.19	0.041	250.90	0.057	53.90
M6	0.025	316.01	0.086	79.53	0.072	357.87	0.022	68.96	0.012	99.73	0.026	36.82
O1	0.051	146.07	0.113	72.91	0.088	72.39	0.088	61.46	0.103	36.51	0.093	45.98
K1	0.235	168.40	0.058	115.68	0.074	90.24	0.148	82.58	0.082	85.35	0.073	184.39
K2	0.140	256.42	0.134	46.77	0.091	122.50	0.054	102.88	0.046	7.69	0.276	328.04
P1	0.076	162.90	0.023	105.44	0.023	94.68	0.051	112.04	0.032	79.01	0.022	133.91
J1	0.020	180.76	0.006	198.96	0.004	78.86	0.007	146.39	0.009	173.01	0.013	219.25
Q1	0.009	75.19	0.031	47.70	0.028	76.62	0.021	43.38	0.037	20.69	0.037	33.03
L2	0.109	211.10	0.109	32.44	0.155	102.59	0.088	148.45	0.028	149.18	0.097	285.41
N2	0.802	178.79	0.654	16.50	0.537	104.34	0.663	95.31	0.402	104.71	0.770	289.02
V2	0.192	218.23	0.153	53.35	0.099	114.97	0.148	122.05	0.124	126.10	0.194	320.40
U2	0.103	180.78	0.065	7.93	0.029	46.38	0.091	59.29	0.065	89.62	0.134	283.83
T2	0.056	294.90	0.020	89.11	0.017	231.08	0.030	219.85	0.029	274.37	0.053	9.08
(MS)4	0.180	187.66	0.081	2.78	0.108	140.91	0.102	123.98	0.035	134.93	0.105	294.78
(2SM)2	0.065	300.51	0.045	121.63	0.046	8.44	0.066	25.99	0.032	355.14	0.076	199.89
R2	0.016	210.66	0.014	111.90	0.014	198.62	0.013	150.12	0.010	116.63	0.035	178.80
Long Period.												
Mm	0.049	176.42	0.043	1.94	0.056	69.33	0.048	137.29	0.030	197.55	0.051	199.18
Mf	0.038	203.39	0.067	235.36	0.068	184.30	0.063	183.39	0.029	187.39	0.055	7.87
MSf	0.035	175.40	0.063	326.77	0.089	137.64	0.129	156.38	0.042	98.83	0.069	98.39
Sa	0.195	18.15	0.089	16.98	0.135	267.26	0.097	246.56	0.092	343.71	0.113	81.51
Ssa	0.077	151.87	0.115	82.05	0.073	104.27	0.085	139.91	0.078	133.80	0.116	111.03

The tide-tables for the year 1925 of the six New Zealand ports for which predictions are published were received in Wellington on the 6th December, 1922, from the Director, National Physical Laboratory, Teddington, where the tidal predictions have been prepared satisfactorily since 1921. The removal of the tide-predicting machine from the National Physical Laboratory to India left the firm of Messrs. Edward Roberts and Sons the sole source of supply of harmonic predictions within the Empire, with the exception of India, until an alternative source of supply was developed at the Tidal Institute University of Liverpool, due to funds generously provided by Sir A. A. Booth and Mr. C. Booth in the first place, with Professor Proudman as honorary director. The primary object of the Institute is "to prosecute continuously scientific research into all aspects of knowledge of the tides"; another object of the Institute is to carry out research work for other bodies in connection with the analysis of tidal observations.

A communication was received from the Hydrographer to the Admiralty, dated 8th December, stating that tidal predictions for the six New Zealand ports have been ordered from the Tidal Institute for delivery by the 1st June, 1924, at a cost of £15 per port, and that full arrangements for the permanency of the work of the Tidal Institute have been made. The work is carried out under the direction of competent officials, and the Admiralty is represented on the governing committee.

The report by Mr. E. J. Williams, Tide-computer, appended hereto, contains further details of the tidal work.

MAGNETIC OBSERVATORY.

During the year under report the work of the Magnetic Observatory at Christchurch and the substation at Amberley has been efficiently carried on by the Director, Mr. H. F. Skey, B.Sc. His report is published as an appendix hereto.

The magnetographs have continued in regular operation throughout the year, and the base values of the curves were determined by absolute observations of declination, dip, and horizontal force, usually taken once a month. The results of the absolute observations have appeared in the monthly reports of the Director.

The mean annual values of the magnetic elements as far as they are available are given in Table D following:—