

TIDE, HOURS, RANGE, AND COMPASS VARIATION.

PLACE.	H. W. F. & C.		RANGE, FEET.	VARIATION, EAST.
	H.	M.		
NORTH ISLAND.				
Three Kings Island	0	0	7	0
Bay of Islands	8	15	4 to 9	14 55
Wanganui Harbour	7	0	5 to 9	14 20
Auckland Harbour	7	5	7 to 11	14 20
Tauranga Harbour	7	10	6	14 18
Cape Runaway	9	16	7	14 18
East Cape	8	55	7	14 47
Povey Bay	6	5	5 to 6	14 49
Ahuriri Harbour	7	50	2 1/2 to 5	15 0
Port Nicholson	4	30	6	15 0
Manawatu River	10	0	4 to 8	14 52
Wanganui River	10	15	4 to 8	14 45
Taranaki	9	30	12 to 14	
Kawhia Harbour	9	30	7 to 13	
Manukau Harbour	10	0	8 to 11	
Kapara Harbour	9	45	10	
Hokianga Harbour	9	45	10	
MIDDLE ISLAND.				
Cape Campbell	6	0	6 to 8	14
Kaikoura Peninsula	5	30	6 to 8	15
Lyttelton	3	24	4 to 8	15 24
Akaroa	3	30	4 to 8	15 40
Otago Harbour	3	8	4 to 8	16 1
Molyneux River	1	0	4 to 8	16 16
Ruapeku Island	11	20	4 to 8	15 31
Bluff Harbour	9	20	6 to 14	
Preservation Inlet	0	50	6 to 14	
Cape Farewell	9	55	6 to 14	15 9
Motunui River	10	0	3 to 11	
Nelson Haven	8	50	6 to 8	16 10
Port Hardy	9	50	6 to 8	14 5
Palorus Sound	9	55	6 to 8	13 54
Port Gore	8	50	6 to 8	16 6
Queen Charlotte Sound	8	15	6 to 8	16 8
Tory Channel	6	10	6 to 8	13
Port Underwood	4	45	4 to 8	16 6
SOUTH ISLAND.				
Port William	12	0	7	18 0
South Cape	12	0	7	
Traps Rocks	12	0	7	

HIGH WATER.

TABLE,

From which to find approximately the times of High Water in the Harbours of Nelson, Lyttelton, and Port Chalmers, from the Age of the Moon.
Calculated for the afternoon of each day.

MOON'S AGE.	NELSON.*		LYTTELTON.		PORT CHALMERS.	
	Days.	H. M.	H. M.	H. M.	H. M.	H. M.
0	9	50	4	20	3	30
1	10	27	4	57	4	4
2	11	4	6	34	4	7
3	11	39	6	5	4	44
4	0	38	6	36	5	15
5	1	20	7	8	5	46
6	2	10	7	50	6	18
7	3	13	8	40	7	0
8	4	30	9	43	7	50
9	5	50	11	0	8	53
10	6	58	0	20	10	10
11	7	53	1	28	10	10
12	7	53	2	23	10	33
13	8	39	3	9	1	33
14	9	20	3	50	2	19
15	9	58	3	5	3	0
16	10	35	4	23	3	38
17	11	11	5	5	4	15
18	11	48	6	18	4	58
19	0	45	6	36	5	28
20	0	45	7	15	6	46
21	1	31	8	1	7	25
22	2	22	8	53	7	11
23	3	29	9	59	8	2
24	4	47	11	17	9	9
25	6	6	0	36	10	27
26	7	11	1	41	11	46
27	8	15	2	35	0	51
28	8	48	2	35	1	45
29	9	28	3	58	2	28
			3	58	3	8

* At Marlborough the tide is three hours earlier than at Nelson. Thus, at full and change it is High Water at Nelson at 9.50, and at Marlborough at 6.30.

ECLIPSES IN 1866.

During this year there will be three Eclipses of the Sun and two of the Moon.

I.—A partial Eclipse of the Sun, March 17th, invisible either in England or the Southern Hemisphere. The following are reduced to mean time at Lyttelton:—

- Begins on the earth generally,—
March 17, 8h. 20m. a.m., in longitude 141° 34' E.; latitude, 49° 57' N.
- Greatest Eclipse,—
March 17, 9h. 22m. a.m., in longitude 129° 8' E.; latitude, 72° 6' N.
- Ends on the Earth generally,—
March 17, 10h. 23m. a.m., in longitude 90° 6' W.; latitude, 85° 21' N.

This Eclipse will be visible in the North Polar regions, and in the North Eastern part of Asia.

II.—A total Eclipse of the Moon, March 31st, partially visible in England, and very partially visible in New Zealand. The following are reduced to mean time at Lyttelton:—

First contact with the Penumbra	...	...	31d. 0h. 59m. p.m.
First contact with the Shadow	...	...	31d. 2h. 9m. p.m.
Beginning of total Phase	...	...	31d. 3h. 15m. p.m.
Middle of the Eclipse	...	...	31d. 4h. 4m. p.m.
End of total Phase	...	...	31d. 4h. 53m. p.m.
Last contact with the Shadow	...	...	31d. 5h. 59m. p.m.
Last contact with the Penumbra	...	...	31d. 7h. 9m. p.m.

If the evening be clear, the termination of this Eclipse will be visible as the Moon will rise three minutes before its last contact with the Shadow.

III.—A partial Eclipse of the Sun, April 15th, invisible both in England and New Zealand. The following are reduced to mean time at Lyttelton:—

- Begins on the Earth generally,—
April 15, 4h. 42m. p.m., in longitude 33° 30' E.; latitude, 64° 55' S.
- Greatest Eclipse,—
April 15, 6h. 22m. p.m., in longitude 136° 39' E.; latitude, 71° 30' S.
- Ends on the Earth generally,—
April 15, 8h. 2m. p.m., in longitude 135° 25' E.; latitude 34° 15' S.

The Sun will set at New South Wales at the commencement of the Eclipse, and at Melbourne and Tasmania at the Middle of the Eclipse.

IV.—A total Eclipse of the Moon, September 24-25, visible in New Zealand. The following calculations are reduced to mean time at Lyttelton:—

First contact with the Penumbra	...	...	24d. 10h. 35m. p.m.
First contact with the Shadow	...	...	24d. 11h. 50m. p.m.
Beginning of total Phase	...	...	25d. 0h. 50m. a.m.
Middle of the Eclipse	...	...	25d. 1h. 38m. a.m.
End of total Phase	...	...	25d. 2h. 25m. a.m.
Last contact with the Shadow	...	...	25d. 3h. 25m. a.m.
Last contact with the Penumbra	...	...	25d. 4h. 22m. a.m.

V.—A partial Eclipse of the Sun, October 9th, invisible in New Zealand, partly visible in England. The following are reduced to mean time at Lyttelton:—

- Begins on the Earth generally,
October 9, 2h. 22m. a.m., in longitude 120° 59' W.; latitude, 68° 15' N.
- Greatest Eclipse,—
October 9, 4h. 15m. a.m., in longitude 2° 50' W.; latitude, 72° 1' N.
- Ends on the Earth generally,
October 9, 6h. 7m. a.m., in longitude 16° 25' W.; latitude, 34° 38' N.

This Eclipse will be partially visible in Western Europe, the North Western part of Africa and the Northern regions of North America, the North Atlantic Ocean intervening.