

6

Long by Sunrise + Sunset.
Worked Example.

{ 10th Oct. 1923
at about 6-15 p.m. }

Sun's Upper Limb

Chron Time	<u>h. m. s.</u> 2. 46. 20	Sun's Decl	corrected. <u>4° 29' S</u>	Equation of Time.	
fast -	<u>4. 50</u>		<u>40. 00</u>	min. sec.	11. 21
G. M. T.	<u>2. 41. 30</u>	Polar distance	<u>85. 31</u>		Subtracted from App Time.

Lat 39° 44' S. Secant 10.114343 (from Table XXV. Norie).
 Polar dist 85. 31 cosec. 10.001331 (" " ")
125. 18
- 53
 Sum 2 124. 25
 1/2 Sum 62. 12 1/2 cosine 9.668626 " " "
+ 53
 Remainder 63. 05 1/2 Sine 9.950234 " " "
 log of Hour Angle 9.734564 = Hour Angle 6. 19. 36
 (from Tab XXXI. Norie).

h. m. s.
 Hour Angle 6. 19. 36
 Eq. Time - 11. 21
 Mean Time Ship 6. 8. 15
 Mean Time Greenwich. 2. 41. 30
 Long in time 3. 26. 45
60
 4 206. 45
51. 41. 15 East.

Formula for Upper Limb.
 Lat + P.D. - 53' = Sum ÷ 2
 Lat | sec
 P.D. | cosec
 1/2 Sum | cosine
 Rem. | Sine = log of Hour Angle.

For Lower Limb.
 Lat + P.D. - 21' = Sum ÷ 2 = 1/2 Sum + 21' = Rem

Logs as for Upper Limb.

Note. Great care must be taken in noting Chron Time exactly as limb meets the horizon.

Diff $\left(\frac{53}{21} \right)$ 32 being Sun's diameter

^{Example.}
* On April 20th ^{H. Water.} 11.45 a.m. Next H.W. is at 0 hrs 4 min. on 21st

Another method of finding Time of High Water.

To the time of High Water at Full & Change of the Moon add 49 minutes for every day elapsed, since last Full or Change, the result will be the p.m. tide for the day.

Time of High Water at Yarawa at Full & Change.

h. m. } Tides at Apamama as for Yarawa }

3. 30

~~To find Long at Sunrise or Sunset: ~~is to find~~~~
For

These methods may differ in results by a few minutes, the latter will be found very convenient as no Tide Tables are required. The time of High Water at Full & Change of the moon, being always given on the chart usually near the title.

G. M. T.

Tides of High Water at Liverpool. ^{5 constant is Apply Time H.W. + 4 hrs. 7 min. = Yawawa}

Date	January 1924		Date	February		Date	March	
	MORN	AFTERNOON		MORN	AFT.		MORN	AFT.
	h. m	h. m		h. m	h. m		h. m	h. m.
10 th	1. 39	1. 51	9 th	1. 56	2. 8	10 th	2. 01	2. 16
20 th	10. 23	10. 48	19 th	10. 42	11. 9	20 th	10. 55	11. 18
30 th	5. 13	5. 48	29 th	6. 04	6. 44	30 th	7. 12	7. 59
Date	April		Date	May		Date	June	
	MORN	AFT.		MORN	AFT.		MORN	AFT.
10 th	2. 31	2. 58	10 th	2. 42	3. 13	10 th	3. 59	4. 38
20 th	11. 45	—	20 th	—	0. 6	20 th	1. 02	1. 38
30 th	9. 6	9. 36	30 th	9. 21	9. 44	30 th	10. 15	10. 30
Date	July		Date	August		Date	September	
	MORN	AFT.		MORN	AFT.		MORN	AFT.
10 th	4. 33	5. 11	10 th	6. 28	7. 05	10 th	8. 50	9. 14
20 th	1. 34	2. 04	20 th	9. 34	2. 56	20 th	3. 14	3. 45
30 th	10. 36	10. 46	30 th	11. 29	11. 38	30 th	—	0. 10
Date	October		Date	November		Date	December	
	MORN	AFT.		MORN	AFT.		MORN	AFT.
10 th	9. 37	9. 53	10 th	10. 33	10. 50	10 th	10. 42	11. 2
20 th	3. 32	3. 50	20 th	4. 53	5. 18	20 th	5. 14	5. 44
30 th	0. 2	0. 21	30 th	1. 19	1. 33	30 th	2. 03	2. 14

* 16. B. where a blank occurs there is no t.h. on that morn or afternoon
2. 7. 6.