

MONTHLY NOTICES
OF THE
ROYAL ASTRONOMICAL SOCIETY.

VOL. XXVIII.

May 8, 1868.

No. 7.

Admiral MANNERS, President, in the Chair.

Isaac Patchett, Esq., Birstall Academy, Leeds,
was balloted for and duly elected a Fellow of the Society.

Occultations visible in the Month of August, 1868, at Madras, and along the Shadow Path of the Total Eclipse of the Sun in India. By C. Ragoonatha Chary, First Assistant at the Madras Observatory.

(Communicated by N. R. Pogson, Government Astronomer at Madras.)

In consideration of the importance attached to the coming great Solar Eclipse of August next in the Indian Peninsula, and of the interest evinced by Her Majesty's Government and by scientific Societies to secure observations calculated to throw light upon the physical constitution of the Sun, I have taken the liberty of communicating the prediction of certain occultations which will, I trust, be deemed worthy of insertion in the *Monthly Notices* of the Society.

It may not be out of place here to mention that approximate calculations for twelve stations on the central line have been made by me, and that two maps, showing respectively the track of the Moon's shadow across India, and the positions of such stars and planets as will most probably be visible to the naked eye, have been prepared in conformity therewith. My results, together with a popular description of the usual phenomena of a total eclipse by N. R. Pogson, Esq., Government Astronomer, have

been published in the Madras Almanac of the Male Asylum Press, and seven spare copies of the same, in pamphlet form, are herewith forwarded for distribution, and review in the *R. A. S. Monthly Notices*.

As it is intended that several competent observers shall be stationed in different localities along the central line in the Indian Peninsula to secure noteworthy observations of this great phenomenon, and as it is also probable that these observers may have to remain in their places some days prior and subsequent to the date of the occurrence of the eclipse, to ascertain their geographical positions, &c., it occurred to me that, by means of corresponding observations of the occultations of stars by the Moon at the Madras Observatory, as well as at the different places in the track of the shadow at which the eclipse may have been recorded, the terrestrial longitudes of such stations might be pretty accurately determined.

In the hope that such preliminary calculations may prove useful, I have selected such stars only as can be easily observed; and these, twelve in number, will suffer occultation in the month of August, and will be equally visible at Madras and throughout the shadow line. The times of disappearance, reappearance, and the points of contact for these stars, are computed for three equidistant places on the centre line; one on the western coast near Viziadroog, another in the middle near Muktull, and the third on the eastern coast near Masulipatam. As the shadow crosses India nearly along the same parallel of latitude, the variations in time, &c., for the intermediate stations will only be affected by the difference of longitude, and such variations I have therefore given, both for disappearance and reappearance, for each occultation computed. They will enable observers to ascertain easily and approximately the times and points of contact for all intermediate stations.

The tabulated results have been obtained exclusively by the aid of the slide-rule. They are not likely to be uncertain by more than half a minute in time, or a degree in the angular points of contact.

For the Madras Observatory.

1868.	Star's Name.	Mag.	Disappearance.			Reappearance.		
			Local Mean Time.	Angle from North Point.	Angle from Vertex.	Local Mean Time.	Angle from North Point.	Angle from Vertex.
Aug. 2	7043 B.A.C.	6½	13 58 ^h 8 ^m	110° E	58° L	15 4 ^h 8 ^m	151° W	146° L
3	29 Capricorni	5	12 4 ^h 3 ^m	48° E	54° L	13 44 ^h 0 ^m	94° W	132° R
4	38 Aquarii α ²	6	17 37 ^h 9 ^m	69° E	3° R	18 43 ^h 3 ^m	114° W	171° L
10	μ Ceti	4	11 17 ^h 4 ^m	78° E	156° L	12 16 ^h 0 ^m	121° W	42° R
12	1406 B.A.C.	7	12 38 ^h 1 ^m *	78° E	154° L	13 32 ^h 5 ^m	112° W	33° R
12	Aldebaran	1	13 37 ^h 3 ^m	71° E	150° L	14 38 ^h 6 ^m	108° W	25° R
14	12599 Lalande	8	14 18 ^h 3 ^m *	65° E	140° L	15 8 ^h 4 ^m	82° W	3° R
14	12650 Lalande	8	14 58 ^h 3 ^m	38° E	116° L	15 37 ^h 9 ^m	56° W	25° L

1863.	Mag.	Local Mean Time.	Disappearance.			Reappearance.		
			Angle from North Point.	Angle from Vertex.	Local Mean Time.	Angle from North Point.	Angle from Vertex.	
Aug. 19	21487 Lalande	7½	7 10.3	163 E	86 L	7 41.2*	123 W	161 L
22	{ xiii. 1016 Weisse's Bessel }	8	9 34.6	65 E	11 R	10 17.9*	35 W	113 R
23	ξ' Libræ	6	7 20.7	128 E	68 L	8 34.9	94 W	163 R
25	5579 B.A.C.	5	8 46.3	151 E	98 L	9 38.0	137 W	161 L

* Star below the horizon.

For East Longitude 73° 30' and North Latitude 16° 35'.

1868.	Star's Name.	Mag.	Disappearance.			Reappearance.		
			Local Mean Time.	Angle from North Point.	Angle from Vertex.	Local Mean Time.	Angle from North Point.	Angle from Vertex.
Aug. 2	7043 B.A.C.	6½	13 9.1	86 E	49 L	14 37.9	126 W	179 L
3	29 Capricorni	5	11 30.5	28 E	48 L	12 50.2	69 W	82 R
4	38 Aquarii e²	6	17 9.5	48 E	17 R	18 15.0	95 W	166 R
10	μ Ceti	4	10 55.0	65 E	137 L	11 52.3	106 W	31 R
12	1406 B.A.C.	7	12 16.1	63 E	134 L	13 7.8	95 W	21 R
12	Aldebaran	1	13 15.3	53 E	127 L	14 10.0	88 W	10 R
14	12599 Lalande	8	13 59.7	45 E	115 L	14 36.8	61 W	13 L
14	12650 Lalande	8	14 50.7	5 W	69 L	14 54.4	13 W	63 L
19	21487 Lalande	7½	6 36.3	154 E	79 L	7 16.8	111 W	176 L
22	{ xiii. 1016 Weisse's Bessel }	8	9 10.3	45 E	27 R	9 39.6	13 W	87 R
23	ξ' Libræ	6	6 33.6	122 E	75 L	7 56.4	83 W	144 R
25	5579 B.A.C.	5	7 49.9	136 E	100 L	9 6.3	118 W	172 R

For East Longitude 77° 20' and North Latitude 16° 25'.

1868.	Star's Name.	Mag.	Disappearance.			Reappearance.		
			Local Mean Time.	Angle from North Point.	Angle from Vertex.	Local Mean Time.	Angle from North Point.	Angle from Vertex.
Aug. 2	7043 B.A.C.	6½	13 35.4	92 E	48 L	14 56.5	133 W	169 L
3	29 Capricorni	5	11 54.4	33 E	43 L	13 20.9	77 W	104 R
4	38 Aquarii e²	6	17 27.2	53 E	14 R	18 31.7	99 W	171 R
10	μ Ceti	4	11 9.3	67 E	141 L	12 8.2	110 W	34 R
12	1406 B.A.C.	7	12 29.9	66 E	138 L	13 23.5	99 W	24 R
12	Aldebaran	1	13 29.7	57 E	133 L	14 28.0	93 W	14 R
14	12599 Lalande	8	14 12.2	50 E	122 L	14 54.9	67 W	8 L
14	12650 Lalande	8	14 57.6	13 E	88 L	15 18.0	31 W	46 L
19	21487 Lalande	7½	6 51.3	151 E	77 L	7 31.7	110 W	177 L
22	{ xiii. 1016 Weisse's Bessel }	8	9 25.8	48 E	25 R	9 56.7	16 W	90 R
23	ξ' Libræ	6	6 56.9	119 E	67 L	8 17.2	83 W	147 R
25	5579 B.A.C.	5	8 15.6	136 E	93 L	9 27.1	121 W	178 R

For East Longitude $81^{\circ} 10'$ and North Latitude $16^{\circ} 15'$.

1868.	Star's Name.	Mag.	Disappearance.			Reappearance.		
			Local Mean Time.	Angle from North Point.	Angle from Vertex.	Local Mean Time.	Angle from North Point.	Angle from Vertex.
Aug. 2	7043 B.A.C.	$6\frac{1}{2}$	14 0 ^h 07 ^m	100° E	51° L	15 14 ^h 0 ^m	140° W	159° L
3	29 Capricorni	5	12 18 ^h 4 ^m	39° E	39° L	13 50 ^h 3 ^m	86° W	122° R
4	38 Aquarii ϵ^2	6	17 44 ^h 2 ^m	58° E	10° R	18 47 ^h 4 ^m	103° W	176° R
10	μ Ceti	4	11 24 ^h 0 ^m	70° E	144° L	12 24 ^h 3 ^m	113° W	37° R
12	1406 B.A.C.	7	12 43 ^h 8 ^m	69° E	142° L	13 39 ^h 5 ^m	101° W	25° R
12	Aldebaran	1	13 44 ^h 8 ^m	62° E	139° L	14 46 ^h 1 ^m	99° W	19° R
14	12599 Lalande	8	14 25 ^h 2 ^m	55° E	127° L	15 11 ^h 6 ^m	72° W	4° L
14	12650 Lalande	8	15 9 ^h 1 ^m	23° E	99° L	15 38 ^h 4 ^m	41° W	36° L
19	21487 Lalande	$7\frac{1}{2}$	7 6 ^h 0 ^m	148° E	74° L	7 46 ^h 6 ^m	108° W	179° L
22	{ xiii. 1016 Weisse's Bessel }	8	9 40 ^h 8 ^m	50° E	23° R	10 13 ^h 5 ^m	20° W	94° R
23	ξ Libræ	6	7 20 ^h 3 ^m	118° E	61° L	8 37 ^h 6 ^m	84° W	150° R
25	5579 B.A.C.	5	8 41 ^h 8 ^m	137° E	88° L	9 47 ^h 7 ^m	125° W	176° L

Variations for one Degree of East Longitude, to obtain the times and points of contact in the neighbourhood of the three above-mentioned Geographical Positions.

1868.	Star's Name.	Mag.	For Disappearance.			For Reappearance.		
			Time.	N.P. Angle.	Ver. Angle.	Time.	N.P. Angle.	Ver. Angle.
Aug. 2	7043 B.A.C.	$6\frac{1}{2}$	+6 ^h 7 ^m	1 ^o 8' E	0 ^o 3' L	+4 ^h 7 ^m	1 ^o 3' W	2 ^o 6' R
3	29 Capricorni	5	+6 ^h 3 ^m	1 ^o 5' E	1 ^o 2' R	+7 ^h 8 ^m	2 ^o 2' W	5 ^o 2' R
4	38 Aquarii ϵ^2	6	+4 ^h 5 ^m	1 ^o 3' E	0 ^o 9' L	+4 ^h 2 ^m	1 ^o 0' W	1 ^o 3' R
10	μ Ceti	4	+3 ^h 8 ^m	0 ^o 7' E	0 ^o 9' L	+4 ^h 2 ^m	0 ^o 9' W	0 ^o 7' R
12	1406 B.A.C.	7	+3 ^h 6 ^m	0 ^o 8' E	1 ^o 1' L	+4 ^h 1 ^m	0 ^o 8' W	0 ^o 5' R
12	Aldebaran	1	+3 ^h 9 ^m	1 ^o 3' E	1 ^o 6' L	+4 ^h 7 ^m	1 ^o 5' W	1 ^o 2' R
14	12599 Lalande	8	+3 ^h 3 ^m	1 ^o 2' E	1 ^o 6' L	+4 ^h 5 ^m	1 ^o 4' W	1 ^o 1' R
14	12650 Lalande	8	+2 ^h 4 ^m	3 ^o 6' E	3 ^o 9' L	+5 ^h 7 ^m	3 ^o 7' W	3 ^o 4' R
19	21487 Lalande	$7\frac{1}{2}$	+3 ^h 9 ^m	0 ^o 7' W	0 ^o 6' R	+3 ^h 9 ^m	0 ^o 3' E	0 ^o 5' L
22	{ xiii. 1016 Weisse's Bessel }	8	+4 ^h 0 ^m	0 ^o 6' E	0 ^o 5' L	+4 ^h 4 ^m	0 ^o 9' W	0 ^o 9' R
23	ξ Libræ	6	+6 ^h 1 ^m	0 ^o 5' W	1 ^o 8' R	+5 ^h 4 ^m	0 ^o 1' W	0 ^o 8' R
25	5579 B.A.C.	5	+6 ^h 8 ^m	0 ^o 2' E	1 ^o 6' R	+5 ^h 4 ^m	0 ^o 8' W	1 ^o 6' R

A Catalogue of Spectra of Red Stars. By Father A. Secchi.

In a letter addressed to Admiral Manners, President of the Society, Father Secchi writes:—

“I send you, according to my last letter, a part of the Catalogue