observer has been turned half round as well as the telescope"*. The above explanation presupposes an equatoreal mounting, with the eye-tube placed parallel to the declination axis in both the positions; only on this supposition will the apparent motion through the field be parallel to the tube of the reflector.

It follows, from this peculiarity in the front view, that the position-angle of a double star is measured in a direction round the position-circle of the micrometer *contrary* to that of the position-circle of the refractor, *i. e.* when the circle is looked at in front the numbers proceed from zero round the circle in the same direction as the hands of a watch move.

Hopefield, Alleyn Park, West Dulwich,
1881 Dec. 1.

GEORGE HUNT.

Meteors.

SIR,—

A large meteor was seen in this neighbourhood at 4.45 P.M. on Nov. 20th.

Mr. J. C. Smith, of Sandford Mill, near Chelmsford, described it as appearing about a degree above Jupiter (then rising in the east), and passing under Saturn, curving its path downwards, till probably it disappeared near Mira.

Although still almost daylight, the light of the meteor was considerable; it left a streak or train of light, and towards the end of its path either broke up into three pieces, or dropped flakes of fire as it went along. The colour of the meteor was bright green, and its motion slow.

Yours truly,
H. CORDER.

SIR,—

On Monday the 5th inst., at 5.41 P.M. G. M. T., during the eclipse of the Moon, a large meteor was observed to appear immediately above the Pleiades. Moving slowly, a little above the Moon, it passed in a direct line across the sky to α Ursæ Majoris, close to which star it disappeared.

The estimated time of the duration of its flight was six or seven seconds. It was not bright, but had a large nebulous head and a tail about $\frac{1}{2}^\circ$ in length.

Yours faithfully,
G. M. WHIPPLE.

Kew Observatory,
December 1881.

NOTES.

THE TRIPLE STAR ζ CANCRI.—This star, already known to be double, was discovered to be in fact triple by Sir W. Herschel on November 21st, 1781, on which occasion he noticed that the preceding of the two stars of the double star itself consisted of two

* Or perhaps, more precisely, *the eye-tube*.—G. H.

components. By reason of the orbital motion of the system, these latter two afterwards approached each other still more closely, so that Sir W. Herschel was unable to see them separately, and it is thought was led to doubt the accuracy of his own observation. His discovery of the triple nature of the star was, however, confirmed by Sir J. South in 1825; and it is now well known that the system consists of three stars, denominated by Struve A, B, and C, of the respective magnitudes 5·0, 5·7, and 5·3. A very elaborate paper on the subject of their motions was communicated to the French Academy by O. Struve in December 1874 ('Comptes Rendus,' vol. lxxix. p. 1463), and more recently they have been discussed by Hugo Seeliger of Leipzig, in a paper read before the Vienna Academy on the 5th of May last. The general result obtained by Herr Seeliger is remarkably confirmatory of that suggested by M. O. Struve, founded chiefly on his own observations, viz., that whereas it is possible to represent all the observations (within probable errors of observation) of A and B, the two close stars first separated by Sir W. Herschel, by the assumption of a relative motion of one about the other, undisturbed to any appreciable extent by the third star C (which Herr Seeliger thinks may be, although probably of considerably greater mass than both the others combined, so placed as not to affect their apparent relative motions as referred to the plane of the orbit), yet a discussion of the motions of C itself seems to show that, besides a uniform motion around the optical centre of A and B, it is endued with a motion in a secondary orbit around a neighbouring opaque companion.

New Variable of the Algol Type*.—A telegram from the 'Science Observer,' Boston, U.S., reports the discovery by Mr. Sawyer of a new variable of the Algol type. This star is DM +1° 3408; its place for 1882·0 is R.A. $17^h\ 10^m\ 33^s$, Dec. 1° 20′·6 N. It has a period of 5·24 days, it brightness varying from $6^m{\cdot}0$ to $6^m{\cdot}7$; 1881, Nov. 30·84 G. M. T., being an epoch of minimum.

Schjellerup, in his catalogue (Copenhagen, 1864), had already pointed out that "This star seems to be variable, as Lalande has 6^m, but Bessel 7^m (1822, July 4); Bremiker, in the 'Academische Sternverzeichniss,' adds expressly that he estimates it of the 8th mag.; Argelander has $5^m{\cdot}5$. It occurs in Lamont's Zone 101 with 7^m, and in Zone 102 with 8^m."

Schjellerup has $7^m{\cdot}7$ in a clear sky on 1863, June 9.

Star with Peculiar Spectrum†.—Prof. Pickering on Nov. 24 noticed that the spectrum of DM × 36° 3987 had a bright band in the blue, so that the star seems to belong to the small class of objects like Rayet's stars in the same neighbourhood.

New Planetary Nebula†.—The following evening the same observer detected a very small planetary nebula (place for 1880,

* Dun-Echt Circular, No. 41. † Dun-Echt Circular, No. 43.

$20^h\ 6^m\ 26^s{\cdot}38$, $+37°\ 3'\ 25''{\cdot}2$) south $3'\ 10''$ of B.-W.XX, 200–1, and following it $8^s{\cdot}38$. Except by its spectrum it is undistinguishable from a star of the fourteenth magnitude.

The Satellites of Mars*.—Prof. Asaph Hall succeeded in seeing the outer satellite of Mars on Nov. 15, and obtained a measure on Nov. 20, which showed that the satellite was near the computed place. An hour later Phobos was believed to be visible, but could not be certainly made out. The satellites ought therefore to be visible in our larger telescopes for some time both before and after opposition. Mr. Common saw Deimos on Dec. 1.

An Observatory for Hongkong.—A proposal has been made to establish an observatory at Hongkong, as the position of the island renders it a very favourable place for meteorological and magnetic observations. In addition to this work it is suggested that the local time should be determined, and a time-ball dropped daily.

Sun-spots and the larger Planets†.—M. Duponchel has addressed a memoir to the Académie des Sciences in which he argues that the true sun-spot period is neither ten years, as was at first believed, nor 11·2, as Wolf holds, but exactly 11·85, the length of the revolution period of Jupiter. He believes that the occurrence of an abnormal outbreak in 1717, corresponding to the change of position of Uranus and Neptune, has led to the intercalation of a false maximum, whilst another occurring near 1666 has been accidentally suppressed. He predicts that the next maximum will not occur in 1882 according to general expectation, but in 1888 or, more probably, 1890.

The Spectrum of Encke's Comet‡.—M. Tacchini has been able to examine the spectrum of this, the third naked-eye comet of 1881, and finds it precisely similar to that of comets *b* and *c*. The bright bands were seen in the yellow, green, and blue respectively, coinciding with the three principal bands seen in the spectra of hydrocarbons. As in the other comets, the bands were shaded off to the blue. A faint continuous spectrum was also detected. The spectrum has therefore suffered no change since its last appearance.

The death is announced of M. Jean Alfred Gautier of Geneva. M. Gautier, who throughout his long life always showed himself devoted to science, was one of the earliest to discover a relation between the periods of Sun-spots and of terrestrial magnetism; it was also through his exertions that the work of the little observatory at Geneva was carried on, and that finally it was replaced

* Astr. Nach. No. 2407. † Comptes Rendus, xciii. 21 and 23.
‡ Comptes Rendus, xciii. 23.

by a much better one. He was an intimate friend of Sir John Herschel.

Our readers will regret to learn that Mr. W. R. Birt, so long and so widely known for his unremitting zeal in promoting the study of the Moon, died somewhat suddenly on the morning of Dec. 14.

Ephemeris for Physical Observations of Mars.*

Greenwich Noon.	Position-Angle of Axis of Mars.	Latitude of Centre of Disk.	Apparent Diameter.	Defect of Illumination.	
				Amount.	Position-Angle.
	°	°	″	″	°
1882, Jan. 4..	335·2	+0·2	15·0	0·06	108·5
„ „ 8..	334·5	−0·4	14·7	0·12	102·5
„ „ 12..	333·9	0·9	14·3	0·20	99·0
„ „ 16..	333·4	1·4	13·9	0·28	96·6
„ „ 20..	333·0	1·7	13·4	0·37	94·9
„ „ 24..	332·7	1·9	13·0	0·45	93·7
„ „ 28..	332·6	2·0	12·5	0·53	92·8
„ Feb. 1..	332·5	−2·0	12·0	0·60	92·1

Approximate times at which Certain Spots pass the Central Meridian.

	h	h		h	
1882, Jan. 4..	*r* 7·7	*n* 12·4	1882, Jan. 20..	*a* 5·4	*d* 11·6
„ „ 8..	*p* 6·6	*r* 10·1	„ „ 24..	*a* 7·8	*d* 13·9
„ „ 12..	*p* 9·0	*r* 12·5	„ „ 28..	*e* 6·6	*a* 10·3
„ „ 16..	*d* 9·1	*p* 11·4	„ Feb. 1..	*f* 7·8	*a* 12·8

Astronomical Memoranda, 1882, January.

Sun. Jan. 1, sets $4^h\ 0^m$, rises $20^h\ 8^m$; Jan. 11, sets $4^h\ 12^m$, rises $20^h\ 4^m$; Jan. 21, sets $4^h\ 28^m$, rises $19^h\ 54^m$; Jan. 31, sets $4^h\ 46^m$, rises $19^h\ 41^m$.

Equation of Time:—Sun *after* Clock, Jan. 1, $3^m\ 53^s$; Jan. 11, $8^m\ 14^s$; Jan. 21, $11^m\ 37^s$; Jan. 31, $13^m\ 43^s$.

Sidereal Time at Mean Noon:—Jan. 1, $18^h\ 44^m{\cdot}1$; Jan. 11, $19^h\ 23^m{\cdot}6$; Jan. 21, $20^h\ 3^m{\cdot}0$; Jan. 31, $20^h\ 42^m{\cdot}4$.

Moon. In conjunction with Mars, Jan. 3, 1^h, and Jan. 29, 19^h; with Venus, Jan. 18, 16^h; with Mercury, Jan. 19, 23^h; with Saturn, Jan. 25, 22^h; and with Jupiter, Jan. 26, 16^h.

* From Mr. Marth's Ephemeris, 'Astr. Nach.' No. 2395.