

vulturina), three Mitred Guinea Fowls (*Numida mitrata*) from East Africa, presented by Mr. George S. Mackenzie; a Tawny Owl (*Syrnium aluco*), British, presented by Mr. G. Gurney; a Long-eared Owl (*Asio otus*), British, presented by Miss Muriel Hele; a Feathery-footed Owl (*Athene plumipes*), a Black and White Jackdaw (*Corvus daurica*) from Newchang, South Mantchuria, presented by M. J. De La Touche; two Indian White-Eyes (*Zosterops palpebrosus*) from India, a Yellow-winged Sugar-Bird (*Cæreba cyanea* ♂) from Brazil, a Dufresne's Waxbill (*Estrelda dufresnii*) from South Africa, six Vulturine Guinea Fowls (*Numida vulturina*) from East Africa, deposited; a Plumbeous Fish-Eagle (*Polióætus plumbeus*) from North-west India, two Golden-headed Parrakeets (*Cyanorhamphus auriceps*) from New Zealand, a Green-winged Dove (*Chalcophaps indica* ♀) from India, purchased; two Emus (*Dromæus nova-hollandie*), received in exchange; a Yak (*Poëphagus grunniens* ♂), a Viscacha (*Lagostomus trichodactylus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

OBJECTS FOR THE SPECTROSCOPE.

Sidereal Time at Greenwich at 10 p.m. on July 10 = 17h. 15m. 5s.

Name.	Mag.	Colour.	R.A. 1890.	Decl. 1890.
			h. m. s.	° ' "
(1) G.C. 4355	—	—	17 55 41	-23 2
(2) α Herculis	3.1-3.9	Orange.	17 9 38	+14 31
(3) β Draconis	3	Yellow.	17 28 0	+52 23
(4) ζ Draconis	3	Bluish-white.	17 8 30	+65 51
(5) 205 Schj.	8	Very red.	17 38 29	-18 37
(6) R Scuti	Var.	Red.	18 41 36	-5 50

Remarks.

(1) Unfortunately this interesting object only attains a low altitude in this country, but it is quite possible that there may be some nights on which spectroscopic observations may be made. It is the object known as the "Trifid Nebula," which is thus described in the General Catalogue:—"A very remarkable object; very bright; very large; trifid; double-star involved." For a further description observers may refer to Herschel's "Outlines." The spectrum was recorded as "continuous" by Captain Herschel in 1868, but in the same year it was observed by Prof. Winlock at Harvard College, and found to contain bright lines. This observer records: "Spectrum of the multiple star continuous, with many bright lines and some bands; one end of spectrum at λ 4280±. . . one bright line seen by C. S. Peirce at λ 4980±." I am not aware that any further observations of the spectrum have been made, but these observations should certainly be repeated with as large an aperture as possible. There can be little doubt that the line near λ 4980 is really the chief nebula line at λ 500. The appearance of bands is especially interesting, as indicating that only a relatively low temperature can be in question.

(2) The spectrum of α Herculis is probably well known to everyone who possesses a telescope and spectroscope. It is a very beautiful one of Group II., all the bands being very wide and dark, giving an appearance of alternating bright and dark bands. From the observations of Prof. Lockyer, Mr. Maunder, and myself, there can now be little doubt that we have here to deal with a mixed spectrum of bright carbon flutings and dark metallic ones. One bright band in the green is coincident with the chief carbon band, and has, moreover, the same appearance. The measures of the dark bands in the green and yellow by Vogel and Dunér show close coincidences with the flutings of manganese (λ 558 and 586) and lead (λ 546), and I have confirmed these by direct comparisons. The principal object in inserting the star in this column is to remind observers that this is a good opportunity for them to demonstrate for themselves that in stars of this type we are dealing with cometary conditions, as indicated by the carbon radiation.

(3 and 4) These stars have spectra of the solar type and of Group IV. respectively (Gothard).

(5) Dunér describes the spectrum of this star as one of Group

VI., in three zones, of which the green is the brightest. He states that the spectrum is rather feebly developed, but it is not clear whether this is due to the faintness of the star, or that the bands are narrow as compared with other stars of the group. If the latter, the star may be one of the long-required connecting links between stars of this group and stars of the solar type.

(6) The spectrum of this variable does not appear to have been recorded, although its magnitude at maximum is about 5. The minimum is irregular, 6.0-8.5, and the period, according to Schmidt, is about 168 days. There will be a maximum about July 14.

A. FOWLER.

SECULAR INEQUALITIES IN THE MOON'S MOTION.—In the *Astronomical Journal* for June 20, Prof. J. N. Stockwell contributes the abstract of a discussion of the problem of the secular variation of the motion of the moon's perigee and node. The value found for the secular variation of the mean longitude of the moon's node does not differ very materially from that found by Laplace and subsequent investigators. But it is otherwise with the secular equation of the motion of the moon's perigee; and if the value Prof. Stockwell has obtained for the secular motion of the moon's perigee is nearly correct, the value found by Laplace and his immediate successors cannot be regarded even as a first approximation to the value of that motion.

If the mean longitude of the moon's perigee be denoted by ω, and the number of centuries from a given epoch by *i*, the variation Δω of the mean longitude of the perigee at any number of centuries from the epoch are quoted by Airy as follows:—

	Δω
Laplace	- 30''55 <i>i</i> ²
Börg and Burckhardt	- 29''98 <i>i</i> ²
Damoiseau	- 39''70 <i>i</i> ²
Plana	- 40''23 <i>i</i> ²
Hansen	- 39''18 <i>i</i> ²
Hansen	- 36''31 <i>i</i> ² .

Notwithstanding this agreement of the results of other investigators, Prof. Stockwell has found, by direct calculation, that Δω is very nearly expressed by the formula

$$\Delta\omega = + 15''.61i^2;$$

and since the motion of the perigee is direct, it follows that this motion is *accelerated* instead of being *retarded* from age to age, as has been hitherto supposed. The application of the result to the discussion of some ancient eclipses is reserved for a future communication.

ANNULAR ECLIPSE OF JUNE 17.—The current number of the *Comptes rendus* contains a letter from M. A. de la Baume Pluvinel to M. Janssen, respecting his observations at Canea. Photographs of the annular and partial phases were obtained, and will be of service in determining the diameters of the sun and moon. M. Pluvinel also finds that there is no difference between photographs of the spectrum of the edge of the sun during the annular phase and the ordinary solar spectrum. It is interesting to note that during the eclipse the temperature fell from 33°.4 to 27°.4 C.

THE ETHNOLOGY OF THE GAMBIA REGION.

THE Governor of the Gambia, in his last Report, devotes a long section to an account of the African tribes connected with that settlement, of which the following is a brief summary:—

Mandingoes.—The head-quarters of this extensive and powerful race lie in the mountainous district near the sources of the Niger and the Gambia, extending as far as Kong. From this region they overran the surrounding country westward to Bambock, and still pushed on, until the banks of the Gambia, as far as the sea, more or less, fell under their sway. At the present moment the principal countries on the north bank of the river are occupied mostly by Mandingoes, and the dominant tribes in Combo, on the south bank, are also of the same race, though the heathen Jolas in the bordering Fogni country are able to hold their own against them. They practically control the trade of the lower river. Three-fourths of the ground-nuts hitherto cultivated have been grown by them; the export of bees'-wax seems to be also dependent upon the Mandingoes, who bring it down from the interior of the Jola country. They also bring cattle and hides into the market, and cultivate cotton largely, which their women spin and weave into the country cloths which play