

H. H. Sharland, F.Z.S.; two Herring Gulls (*Larus argentatus*), British, presented by Mr. Joseph White; a Common Chameleon (*Chameleon vulgaris*) from North Africa, presented by Mr. V. H. Dudmesh; a White Pelican (*Pelecanus onocrotalus*), South European, deposited; a Bay Colobus (*Colobus ferrugineus* ♀) from West Africa, purchased; a Large Hill-Mynah (*Gracula intermedia*) from India, received in exchange.

OUR ASTRONOMICAL COLUMN.

OBJECTS FOR THE SPECTROSCOPE.

Sidereal Time at Greenwich at 10 p.m. on October 23 = oh. 9m. 4s.

Name.	Mag.	Colour.	R.A. 1890.			Decl. 1890.		
			h.	m.	s.	°	'	"
(1) G.C. 5046	—	—	23	57	36	+15	33	
(2) G.C. 5950	—	—	23	58	52	+ 4	35	
(3) 30 Piscium	4	Yellowish-red.	23	56	19	— 6	31	
(4) δ Andromedæ	3	Yellow.	0	35	24	+30	16	
(5) α Andromedæ	1	Bluish-white.	0	2	42	+28	29	
(6) W Cygni	Var.	Reddish.	21	31	53	+44	53	
(7) I Aquarii	Var.	Reddish.	20	44	8	— 5	32	

Remarks.

(1, 2) Neither of these nebulae have yet had their spectra recorded. The first is described as "considerably bright; considerably large; irregularly round; very gradually brighter in the middle"; the second as "pretty bright; very small; much elongated; very suddenly much brighter in the middle."

(3) A star of Group II., the spectrum being described by Dunér as "very fine." All the bands 2-9 are very wide, dark, and strongly marked. As the star is a comparatively bright one of this class, a detailed study of its spectrum should be made, special attention being given to the brightness of the carbon flutings, and the presence or absence of dark lines.

(4) Secchi thought this star had a spectrum of Group II., but Dunér and Gothard describe it as one of the solar type, the latter observer, however, stating that it approaches Group II. According to Dunér, D and δ are strong and dark, and several other lines are distinctly visible. At the place of band 2 (the iron fluting) in Group II. stars there is only a narrow and feeble line. It seems probable that the spectrum greatly resembles that of α Tauri, but as the band in the red has disappeared, it is probably a step higher in temperature. A direct comparison with α Tauri, which can now easily be made, might lead to interesting results as to the changes brought about by an increase of temperature in such a star.

(5) A star of Group IV. The usual observations are required.

(6) There will be a maximum of this variable about October 25. The period is short (120-138 days), and the range is from 5.8-6.2 to 6.7-7.3. The spectrum is an exceptionally fine one of Group II., all the bands being very wide and dark. We do not yet know whether any variations of spectrum accompany the slight changes of magnitude of such a variable as this.

(7) The spectrum of this variable has not yet been recorded. It is one of considerable range (6.7-7.8 to 12.4-12.7), and the period is 203 days. As the magnitude at maximum is not small, the observation of the spectrum should not be difficult. There will be a maximum on October 27.

A. FOWLER.

PHOTOGRAPHS OF NEBULÆ.—The current number of *Comptes rendus* (October 13) contains a note by Admiral Mouchez on a photograph of the Ring Nebula in Lyra, obtained at Algiers Observatory by MM. Trépiéd and Rabourdin. The nebula was given an exposure of six hours, in two evenings of three hours each. The negative obtained is said to be very dense, and a positive copy, enlarged 64 times, has been presented to the Paris Academy. With respect to the photograph, Admiral Mouchez remarked:—"This image of the nebula is certainly the largest that has yet been obtained. It shows, in a very striking manner, the distribution of light in this curious celestial object. We see that a region of maximum light exists at each of the extremities of the minor axis of the elliptical ring. These two maxima are not equal, and in each of the halves of the ring the intensity of the light diminishes gradually up to the extremities of the major axis, where it has the smallest value. These are well-known characteristics of this nebula, and such as may be observed by means of ordinary telescopes. But the photo-

graphic observation teaches us other things. In fact, according to the work done at Algiers Observatory, when we photograph this nebula with increasing exposures, the nebulosity does not extend sensibly outside the ring, but spreads more and more towards the centre. On the other hand, when we observe the body in a telescope, we find that the central part of the ring is perfectly separated from the ring itself. The interior of the ring is therefore filled with a material difficult to see, but of which the existence is demonstrated in a certain manner by photography. In fact, the central nebulous star attains an intensity in the present proof nearly equal to that of the feeblest maximum of the ring.

"At the meeting of July 7, 1890, in presenting to the Academy a photograph of the same nebula obtained at Bordeaux Observatory by MM. Rayet and Courty with an exposure of three hours, I pointed out the probable existence of three, and perhaps four, extremely feeble stars which had never been previously indicated, and which formed an almost regular square around the central star in the dark part of the nebula. The existence of at least three of these very feeble stars is now demonstrated with absolute certainty, because of the long exposure, but in the enlarged image they are somewhat confused with the inner edge of the nebula."

At the same meeting of the Academy (October 13), M. B. Baillaud presented a plate of the region about the Ring Nebula obtained at Toulouse Observatory on September 8, 9, 10, and 11, with a total exposure of nine hours. The size of the plate was 9 cm. by 12 cm., and it exhibits about 4800 stars to the naked eye within an area of three square degrees.

STARS HAVING PECULIAR SPECTRA.—In *Astronomische Nachrichten*, No. 2997, Prof. E. C. Pickering notes that photographs of stellar spectra taken by Mr. S. J. Bailey, at Closica, in Peru, show several stars having peculiar spectra. The following table contains the places of these stars, and a brief description of the spectrum of each:—

Star.	R.A. 1900.	Decl. 1900.	Mag.	Description.
	h. m.			
Cord.Gen.Cat. 7191	5 59.4	- 6 42	5.8	F line bright.
" " 18859	13 47.7	- 46 39	6.6	F line bright.
" " 19737	14 29.2	- 41 43	2.5	F line bright.
" " 22855	16 48.4	- 44 57	Var.	G and δ bright.
Cord.Zone Cat. 3612	17 55.1	- 32 42	9.0	Bright lines.
S.DM. -19° 4854	18 2.1	- 19 25	9.6	Bright lines.
Anonymous	20 9.4	- 39 29	Var.	Bright hydrogen lines.
Cord.Gen.Cat. 29232	21 13.6	- 45 27	6.0	Type IV.

The spectrum of the two stars with "bright lines" is similar to that of the stars discovered by Wolf and Rayet in Cygnus.

The two variable stars in the above list are new. Their discovery resulted from an examination of photographs of stellar spectra at Harvard College Observatory. A comparison of the intensity of the spectrum of the first-named star, situated in Scorpio, with that of others on the same plate, indicated that it fluctuates between magnitudes 7 and 11.4. A similar comparison of the spectrum of the latter variable, situated in Sagittarius, with the spectra of other stars near it, shows that between May and October 1889 it decreased from 8.5 to 10.7 magnitude. Both the stars have spectra of the same character as Mira Ceti and other known variables of long period.

THE PHOTOGRAPHIC CHART OF THE HEAVENS.—The International Committee of the Photographic Chart of the Heavens, will meet at Paris Observatory on March 31, 1891. The last details as to the execution of the work will then be discussed, and it is hoped that all the participating Observatories will be able to begin operations immediately afterwards.

D'ARREST'S COMET.—In the same journal Prof. Krueger points out that the comet discovered by Mr. Barnard of Lick Observatory on the 6th inst., is identical with that of the periodical comet of D'Arrest, for which Dr. Berberich computed an ephemeris (*Astronomische Nachrichten*, No. 2959). An observation at Strasburg on the 10th inst. confirms the identity.

A NEW ASTEROID.—Dr. J. Palisa, of Vienna Observatory, discovered a new minor planet (299) on the 7th inst. Its magnitude was 14.