

had to encounter a vigorous opposition from the authorities and people for many years; at present, however, the capital is connected by wire with the coast. The electric light is the latest improvement which has excited the suspicion and dislike of the Mandarins. The foreign settlement at Shanghai has for some time been lighted on the Brush system, apparently much to the comfort and jubilation of the denizens of the "model settlement," as the foreign portion of the city is generally called. The promoters appear, however, to have reckoned without the Chinese officials. They probably thought that where gas was permitted, there could be no objection to electricity. The Chinese Governor of the district appears to be of a different opinion. He has addressed a letter to the senior Foreign Consul requesting the removal of all the electric lamps. He has read, he says, in translations from European papers, that terrible accidents have arisen from electricity, and flatly refuses to permit the residents of Shanghai to be exposed to such dreadful risks. Hundreds of thousands of houses might be destroyed, millions of lives might be lost; even the walls of the city might be blown down if anything went wrong with the machines. He has strictly forbidden his own countrymen to use it, and has peremptorily ordered those who have already adopted it to discontinue it forthwith. Whether this ukase will be immediately obeyed or not it is impossible to say; but past experience leads us to the conclusion that if the Chinese have determined to set their face against the electric light, no power on earth can get them to permit it in their territory. Their leading principle in these matters seems to be a dislike of all innovation until its necessity is clearly demonstrated by *their own* experience, and a determination that new inventions or appliances shall not be foisted or forced on them from outside. The late difficulty with Russia showed them the imperative necessity of being prepared for war, and of having their capital in direct communication with the outer world. Ironclad ships and rifled guns are accordingly being purchased with extraordinary rapidity; forts are being erected at various points on the seaboard, and a telegraph line about 800 miles in length was constructed in the course of a few months. Perhaps, after all, the Chinese policy in this respect is not so wrong-headed as it sometimes appears. It certainly saves them from the wiles of speculators and promoters of all sorts.

THE additions to the Zoological Society's Gardens during the past week include two Bonnet Monkeys (*Macacus radiatus* ♂ ♀) from India, presented by Mr. Nathaniel Cotton; two Slender Loris (*Loris gracilis*) from India, presented by Dr. H. W. Lentaigne; a Leopard (*Felis pardus*) from India, presented by Capt. Park; a Crimson-crowned Weaver Bird (*Euplectes flammeiceps*) from Madeira, presented by Mr. E. W. Gain; a Common Heron (*Ardea cinerea*) from Scotland, presented by Mr. W. H. Henderson; eleven Muscovy Ducks (*Cairina moschata*) from South America, presented by Major Finlay; a Hoary Snake (*Coronella cana*), a Crossed Snake (*Psemmophis crucifer*), a Rhomb-marked Snake *Psemmophylax rhombatus*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; two Golden-winged Woodpeckers (*Colaptes auratus*) from North America, purchased; a Golden-Eye (*Clangula glaucion* ♂), British, on approval; a Molucca Deer *Cervus moluccensis* ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN

STELLAR PARALLAX.—The results of a series of observations with the filar micrometer on the Washington refractor for the determination of the annual parallax of  $\alpha$  Lyrae and 61 Cygni have been printed in advance of the publication of the yearly volume of observations. The measures were made by Prof. Asaph Hall, those of  $\alpha$  Lyrae extending from May 24, 1880, to July 2, 1881, on seventy-seven nights, and those of 61 Cygni from October 24, 1880, to December 7, 1881, on sixty-six nights. The magnifying power employed was 383. Prof. Hall

remarks that since observations of the angle of position made with the micrometer-circle are less accurate for distances that enter into the determination of parallax, he observed simply the difference of declination of  $\alpha$  Lyrae and the companion of the tenth magnitude, and in the case of 61 Cygni the difference of declination of the smaller component and a star of 9.5 magnitude about 3'.3 south of the double star, which is D.M. + 38°, No. 4345.  $\alpha$  Lyrae was observed both with bright and dark wires, for 61 Cygni only the dark wires were used. It may be noted that the star measured is the following component of the double star. The course of observation pursued for each night's set of measures is described, and except on one occasion the same programme was followed throughout.

The resulting parallax for  $\alpha$  Lyrae is,  $0''.1797 \pm 0''.00561$ ; the time required for light to pass from the star to our sun is thus found to be 18'.11 Julian years.

For 61 Cygni the parallax is  $0''.4783 \pm 0''.01381$ , and light requires 6'.803 Julian years to traverse the space that separates this star from the sun.

The parallaxes it will be seen, are obtained by the differential method, and are thus relative, or they are the differences of the parallaxes of the two stars. To get the absolute parallax of the bright star it is necessary to add the parallax of the small star. Prof. Hall says that he might have effected this by means of the parallaxes for stars of different magnitudes given in Struve's table in his "Études d'Astronomie Stellaire," but as the whole matter is uncertain, he has omitted this reduction.

Dr. Ball, Astronomer Royal for Ireland, continues his researches on stellar parallax, at the Observatory of Dunsink, Dublin, and has lately published a determination of the parallax of 6 (Bode) Cygni, which is the well-known double star No. 2486 of Struve. The components are of 6 and 6.5 magnitudes. The existence of a parallax to a very measurable amount was suggested during the course of a series of preliminary observations in 1879 and 1880 for the detection of such proximate objects, and a systematic course of observation was commenced on October 3, 1880, and continued to December 22, 1881. 6 B. Cygni is No. 196 of Argelander's list of 250 stars having large proper motion, given in vol. vii. of the Bonn Observations, where it has attributed to it an annual motion of  $0''.636$  on an angle of  $346^\circ 27'$ ; Argelander's positions belong to the preceding component. Dr. Ball has employed the following one in his investigation. Measures were obtained on twenty-six nights, the mean date being 1881.5207; they were made from a star *n.f.* of the 10.5 magnitude, the adopted mean distance of which is  $170''.692$ , and position angle  $78^\circ 18' 61''$ . If this small star is assumed to be at rest, and Argelander's proper motion attributed to the double star, the annual increase of distance is  $+0''.02$ , and that of angle  $+12''.796$ ; thus almost the whole proper motion applies to change in the position angle. The observations show that there is no regular increase of distance, and hence, Dr. Ball observes, there is *prima facie* evidence that the comparison star does not participate in the proper motion.

The resulting parallax of  $\Sigma$  2486 is—

From the distances ... ..  $0''.5039 \pm 0''.060$   
 From the angles ... ..  $0''.383 \pm 0''.13$   
 Combining these two values, we have for the parallax  $0''.482 \pm 0''.054$ . It is intended to make another series of observations of this star, the present result being regarded by Dr. Ball as merely provisional, though he thinks it can hardly be doubted that a parallax of very considerable amount really exists. The place of the star is in right ascension 19h. 8m. 20s., with  $49^\circ 35' 3$  north declination for 1855.0.

COMET 1882 b.—The following positions of this comet for midnight at Greenwich, though liable to an error of several minutes of arc, may serve for finding it in the telescope without difficulty.

|             | Right Ascension.<br>h. m. | Declination.<br>° | Log. distance from<br>Earth. | Sun.   |
|-------------|---------------------------|-------------------|------------------------------|--------|
| Dec. 31 ... | 7 14.9 ...                | -29 28 ...        | 0.2365 ...                   | 0.3883 |
| Jan. 2 ...  | 7 9.2 ...                 | 29 10             |                              |        |
| 4 ...       | 7 3.7 ...                 | 28 49 ...         | 0.2489 ...                   | 0.3991 |
| 6 ...       | 6 58.4 ...                | 28 26             |                              |        |
| 8 ...       | 6 53.3 ...                | 28 2              | 0.2622 ...                   | 0.4096 |
| 10 ...      | 6 48.4 ...                | 27 36             |                              |        |
| 12 ...      | 6 43.8 ...                | 27 8 ...          | 0.2763 ...                   | 0.4196 |
| 14 ...      | 6 39.4 ...                | 26 40             |                              |        |
| 16 ...      | 6 35.2 ...                | 26 10 ...         | 0.2912 ...                   | 0.4294 |
| 18 ...      | 6 31.2 ...                | 25 40             |                              |        |
| 20 ...      | 6 27.4 ...                | -25 9 ...         | 0.3067 ...                   | 0.4388 |