OUR ASTRONOMICAL COLUMN

THE VARIABLE STAR R AQUARII.—Harding notified his discovery of variability in this star in 1811, in the first volume of the *Zeitschrift für Astronomie*. The earliest attempt to determine the period appears to be that of Westphal, in the *Zeitschrift für Astronomie*, vol. iv. p. 218; he used Harding's observations between October 20, 1811, and January 19, 1817, which, though not numerous, sufficed to give an approximate value, while they also indicated that the star at times was as bright as 6·7 m., and at others was invisible in Harding's telescope. Westphal's period is 382·5 days. Although the variability of the star has thus been long known, it would seem that few of these objects have been less observed, and it may be recommended to the attention of those who are interested in this branch of astronomy, and whose positions enable them best to command a star at 16° south declination. In vol. vii. of the Bonn observations, Argelander deduces the following formula for the maxima:—

1843, September 4·7 + 388^d·011 E.,

which is adopted in Prof. Schönfeld's second catalogue (Manheim, 1875); the maximum of the present year would therefore fall on September 25, and may be well observed. In the same catalogue the degree of brightness at minimum is set down as "11 m (?)." Harding estimated the star 6·7 m. on October 20, 1811, and on January 24, 1812, it was not visible in his telescope, being then below what he called a tenth magnitude, so that observations for determination of the minima should probably be commenced not later than seventy days after the maxima, but it is hardly necessary to remark that in the actual state of our knowledge of the variations of this star, continuous observations through as long a period as its position allows, will possess much interest. The best determination of the place of R Aquarii will be that of the Greenwich Catalogue of 1864, giving for the beginning of the present year—

R.A. 23h. 37m. 30s·35, N.P.D. 105° 57′ 37″·3.

ε INDI.—When may we hope that some southern observer will find opportunity of attacking the parallax of this remarkable star, the large proper motion of which was first pointed out by the late Prof. D'Arrest, and confirmed by Moesta from the Santiago observations of 1856? Mr. Gill, who allows nothing to escape him, during his brief visit to the other hemisphere, wherein Lord Lindsay's heliometer enables him to do an astronomical service, states that he has measured the distance and position-angle of ε Indi relative to five surrounding stars, and hopes "that this may serve as the foundation at some future day of a determination of its parallax and proper motion," but it is obvious that the shortness of his stay at Ascension does not permit of an attempt to measure the amount of parallax—a very interesting undertaking in the case of this star, which, had time allowed, we do not think that Mr. Gill would have hesitated to attempt. And ε Indi is not the only star which holds out prospect of success in parallax investigations in the southern hemisphere.

THE SATELLITES OF MARS.—In the last number of the "Monthly Notices of the Royal Astronomical Society" is a communication from the director of the Observatory at Melbourne, giving the results of a search made for the satellites of Mars, in consequence of a telegram notifying their discovery, and received from Sir George Airy on August 22. At that time, from an accident to the declination movement, the large reflector was not available, but observations with it were commenced on September 26. Mr. Ellery states his search to have been fruitless, except that on one occasion it was believed that one of the satellites was seen. This was on the night of October 16, when Mars having occulted a star of the thirteenth magnitude at 22h. 15m. sidereal time, after its emergence a very faint point was seen half a diameter from Mars s.p.; "this was watched for nearly an hour, when its position indicated a motion with Mars," but the sky becoming cloudy, no measures could be made, and, it is added, "no other signs of satellites have been observed since."

If we use the elements of the exterior satellite employed for the ephemerides which have appeared in this column, and which agree precisely with measures of position-angle made by Mr. A. Common, of Ealing, with his eighteen-inch silver-on-glass reflector on the date in question (October 16), we have the following angles and distances:—

Melbourne Sidereal Time. h. m.	Position. °	Distance. ″	Distance from Limb. ″
22 15	216·0	34·6	25·2
23 15	196·7	27·1	17·7
0 15	167·6	23·5	14·1

Therefore, although the satellite would be in the south-preceding quadrant up to about 23h. 45m. sidereal, its distance would be greater than that estimated at Melbourne, and it is doubtful if this satellite was seen.

As regards the inner satellite, it is not practicable from the measures hitherto published to form so close an estimate of the positions as late as October 16, but on calculation from elements which represent sufficiently well the measures to September 20, it would appear that the satellite was in the south-preceding quadrant after about 23h. 30m. sidereal time, and its distance from the limb at that time would be approximately a semi-diameter of the planet. Thus if either satellite were really observed, it was most probably the interior one—which, indeed, we are assured, is intrinsically the brightest. But the want of better success with the great Melbourne reflector would rather imply that however well adapted for delineation of nebulæ and similar purposes, the instrument fails with observations of such objects as the satellites of Mars.

NOTES

WE understand that on the representation of the Professors of the Royal School of Mines and of the Director-General of the Geological Survey as to the want of proper accommodation for geological teaching in the School of Mines in Jermyn Street, the Lords of the Committee of Council on Education have transferred the instruction in that subject to the Science Schools at South Kensington. As Prof. Judd is supplied with a complete collection of specimens for teaching purposes, and as a laboratory is now provided for him, he will be in a position to give that practical instruction which it is so desirable should be within the reach of geological students.

STUDENTS of pleistocene geology will be gratified to learn that the well-known very fine collection of Ilford fossils, formed by the late Dr. Richard Payne Cotton, F.G.S., has been bequeathed to the Museum of Practical Geology, Jermyn Street. The collection contains 246 specimens of vertebrate remains, consisting of bones belonging to species of mammoth, rhinoceros, ox, aurochs, hippopotamus, horse, deer, Irish elk, lion, bear, beaver, water-rat, wolf, and several kinds of birds. A very perfect lower jaw of the beaver (*Castor europæus*), with some well-preserved bones of the *Elephas primigenius*, the *Rhinoceros leptorhinus*, and the *Bos primigenius*, are among the gems of this private collection, which will form a welcome and most valuable addition to the contents of the National Museum of British Fossils—the more so as the series of late tertiary vertebrates in that collection is by no means so large and complete as could be desired. Every one interested in the geology of the metropolitan area is aware that the Cotton collection, together with that made by Sir Antonio Brady, which has lately been acquired by the British Museum,