OUR ASTRONOMICAL COLUMN

SOLAR PARALLAX FROM OBSERVATIONS OF MARS.—In an appendix to the Washington Observations for 1877, Prof. Eastman, of the U.S. Naval Observatory, deduces "a value of the solar parallax from meridian observations of Mars at the opposition in 1877." In September, 1876, a circular was addressed from Washington to the principal observatories in both hemispheres, inviting co-operation in systematic meridian observations of Mars at the close opposition of the following year, and in response series were received from the Cape of Good Hope, Melbourne, Sydney, Cambridge, U.S., Leyden, Kremsmunster, and San Fernando, but Prof. Eastman excludes from his investigations the observations at the last two observatories, in the absence of sufficient details as to the methods and instruments employed. In the circular it was proposed to follow virtually the method of observation adopted at Pulkowa, by Prof. Winnecke in 1862, but it is stated, "The prescribed method of observing was *fully* carried out at only *two* stations and *partially* at one. Where the plan of the circular was strictly followed, the character of the work was decidedly superior to that where the directions were disregarded."

The results of the comparisons are thus given:—

	Sun's Parallax.	No. of Comparisons.
	"	
Washington and Melbourne	8·971	19
Washington and Sydney	8·885	7
Washington and Cape of Good Hope	8·896	7
Melbourne and Leyden	8·969	27
Melbourne and Cambridge, U.S. ...	9·138	10

With respect to the large value of parallax given by comparison of Melbourne and Cambridge, Prof. Eastman remarks: "This difference may arise from the method of observing over inclined threads at Cambridge, for the agreement of the results among themselves is very satisfactory; but, whatever the cause of the discrepancy may be, it has not been deemed advisable to employ these values in obtaining the final result."

The mean of the remaining sixty results, with regard to the computed weights, gives for the solar parallax, 8″·953 ± 0″·019.

It has been assumed that this method of determining the sun's parallax is certain to give too large a value, and Mr. David Gill, now H.M. Astronomer at the Cape, has suggested a definite cause; but Prof. Eastman, after experimenting upon Jupiter, does not find in his case that Mr. Gill's theory holds good. He intends, however, to pursue the investigation upon the disk of Mars.

VARIABLE STARS.—An ephemeris of the variable stars, similar to those of previous years, has been issued by the "Astronomische Gesellschaft" for 1882. It contains the times of maxima and minima of most of the variables whose periods are known, including, in addition to Algol, five stars of the Algol-type, viz. λ Tauri, S Cancri, δ Libræ, U Coronæ, and U Cephei. A minimum of Mira Ceti is fixed to February 3—this phase has been much less observed than the maximum. Both this minimum and the following maximum on May 23 are dated about ten days earlier than Argelander's formula of sines would indicate, but the observations of the last ten years have shown additional perturbation. A minimum of χ Cygni is dated February 20, and a maximum on August 25. The following are Greenwich times of minima of Algol:—

	h. m.		h. m.		h. m.
Feb. 1,	8 28	March 10,	15 4	April 2,	13 35
15,	16 33	13,	11 53	5,	10 24
18,	13 22	16,	8 42	22,	15 17
21,	10 10			25,	12 6
24,	6 59			28,	8 55

Minima of S Cancri occur February 16 at 11h. 23m., March 7 at 10h. 38m., March 26 at 9h. 54m., and April 14 at 9h. 9m.

For U Cephei (Ceraski's variable) calculated times of minima are:—

	h. m.		h. m.		h. m.
Feb. 1,	15 8	March 3,	13 3	April 2,	10 58
6,	14 47	8,	12 42	7,	10 38
11,	14 26	13,	12 22	12,	10 17
16,	14 6	18,	12 1	17,	9 56
21,	13 45	23,	11 40	22,	9 35
26,	13 24	28,	11 19	27,	9 15

A minimum of U Coronæ is dated February 6 at 10h. 7m.; the period is 3d. 10h. 51·24m.; the extent of variation about one magnitude.

THE ROYAL ASTRONOMICAL SOCIETY.—We are happy to be able, on the authority of Prof. Winnecke, to correct a mis-statement in this column, referring to the decease of M. Gautier as leaving Prof. Plantamour the senior Associate on the list of this Society. Notwithstanding some reports to the contrary, Prof. Winnecke informs us that this position is occupied by Prof. Rosenberger, who is still alive and in good health. Forty-five years have elapsed since the Society's gold medal was presented to Prof. Rosenberger, at the hands of Sir George Airy, for his masterly and elaborate researches on the motion of Halley's Comet. He was elected an Associate in April, 1835.

THE GREAT COMET OF 1881.—On January 7 and 8 Prof. Winnecke obtained good determinations of the position of this comet, which is still well observable with the great refractor at Strasburg. Its apparent diameter was about 30″, and there was a condensation presenting the brightness of a star of 13½ m. The resulting places are—

	M.T. at Strasburg.	R.A.	Decl.
	h. m. s.	h. m. s.	° ′ ″
January 7	... 7 49 6	... 22 50 21·70	... +57 48 59·0
8	... 7 33 3	.. 22 52 49·72	... +57 42 15·2

It will be seen that Dr. Dunér's ephemeris in the *Astronomische Nachrichten* still gives the comet's position pretty closely.

THE DETERMINATION OF ELECTROMOTIVE FORCE IN ABSOLUTE ELECTROSTATIC MEASURE

HAVING already described my absolute sine electrometer before the Physical Society and at this year's meeting of the British Association, there is no necessity for describing here more than the prominent features of the instrument. Two plates of brass, each about one foot square, their surfaces being rendered true planes, are connected together, as a rigid body, by four ivory axes passing through both plates near their corners. On these axes are placed (between the plates) washers of mica, which serve to keep the plates asunder and parallel at a very small distance from each other. One of the plates is continuous; the other (the guard plate) has in its centre a square aperture whose side is 3 centimetres long, and in this aperture hangs a very light disk of aluminium suspended from the top of the guard plate by two Wollaston platinum wires each about 7·5 inches long. The disk is flush with the guard plate when it rests against four fine screws attached to the latter. The system of plates is movable, as a rigid body, round a horizontal axis, and its motion is produced by a micrometer screw (1-16th of an inch pitch) working against an insulated portion of the lower edge of the continuous plate; thus the screw tilts the system out of the vertical to a measurable amount. The horizontal axis of the plates is carefully levelled with a cathetometer, and the exact distance between the plates is determined by three readings of a spherometer taken at the aperture of the guard plate (previous to the insertion of the disk) before the mica washers are inserted between the plates (the plates being in complete contact), and three readings at the same points after the insertion of the washers. The vertical distance between the centre of the axis of plates and the point of the micrometer screw is 15 inches; the weight of the disk ·2568 grammes; and the head of the micrometer screw is a circle 3 inches in diameter, divided into 1000 equal parts.

The essential principle of the instrument will be understood from the following figure. B is the horizontal axis about which the plates C (the continuous plate) and G (the guard plate) are tilted by the fixed micrometer screw A. The disk is represented by the full line D in the centre of the guard plate.

To measure the E.M.F. of a battery, put C in connection with the positive pole, while the negative pole and the guard plate (and, with it, the disk) are connected with earth.

If N is the attraction exerted on the disk by the charge on C, W = weight of disk, θ = angle of deflection of the plates from the zero, or vertical, position, we shall have, when the disk is *just* out of contact with the little screws which keep it flush with the guard plate,

$$N = W \sin \theta \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

For the particular instrument which has been constructed for