

ratus is considerable, the corks by which these tubes are fixed must fit very tightly.

In using the arrangement the bottle is filled with water, the jet is then closed with the finger, and the funnel, which should be supported on the ring of a retort stand, is filled with mercury; on removing the finger from the jet the mercury falls into the bottle, expelling the water which rises in a fountain to a height depending upon that of the column of mercury, but rather less than is theoretically possible, the height of the fountain being ten or eleven times that of the fall of mercury. By employing mercury as the falling liquid in Hero's fountain a similar increase of effect may be obtained with that apparatus.

W. A. SHENSTONE

Fownes' "Manual of Chemistry"

IN my review of Fownes' "Manual of Chemistry" are two mistakes which I beg to correct. On page 25, line 1, read *improbable* instead of *improvable*; and line 6, *dimorphides* instead of *isomorphides*.

THE REVIEWER

OUR ASTRONOMICAL COLUMN

THE TRANSIT OF MERCURY, MAY 6, 1878.—The transit of Mercury, which will occur on May 6 in the ensuing year, is the last during the present century in which the planet can be observed upon the sun's disc for any length of time in this country, and on that occasion the nearest approach of centres will take place only half an hour before sunset; owing, however, to the long duration of the transit, 7h. 35m. geocentric, Mercury will have been upon the disc more than four hours and a quarter when the sun sets. Reducing to Greenwich by the *Nautical Almanac* data it appears the first external contact will occur at 3h. 10m. 58s. mean time, and the first internal contact at 3h. 14m. 4s., or the planet will be 3m. 6s. in wholly entering upon the disc. The least distance of centres will occur at 7h. 0m., and sun-set at 7h. 29m. The duration of the transit is longer than in any other of this century, or indeed than in any one that has occurred since the year 1756.

Up to the present year twenty-four transits of Mercury have been more or less observed; in this number are included that of 1631, November 7, predicted by Kepler, when the planet was seen upon the sun's disc for the first time by Gassendi, at Paris, who observed on the dark-chamber method—by allowing the sun's light to pass into the room through a small aperture in the window, and throwing his image upon a white screen; that of 1651, November 3, imperfectly seen by Shakerley at Surat, and that of 1707, May 6, which was observed through clouds by Roemer at Copenhagen near the egress. Of these *twenty-four* transits it is singular that only *eight* have taken place at the descending node or in May, as will be the case next year. Two-thirds of the number have therefore occurred in November, when we might have expected the hindrances to observation to have operated unfavourably in these latitudes.

Of the three transits of the present century subsequent to 1878, that of 1881, November 7, will be wholly invisible in this country, the ingress taking place at 10h. 16m. and the egress at 15h. 37m.; in the transit of 1891, May 10, the egress occurs soon after sun-rise; and in that of 1894, November 10, it occurs near sun-set. The reader who is curious respecting the transits of Mercury in the next century may consult a communication from the Rev. S. J. Johnson to the Royal Astronomical Society in the *Monthly Notices*, vol. xxvii. p. 425; and for an account of Gassendi's long watch for the transit of 1631, and his successful observation of it, he may be referred to Prof. Grant's classical work, the "History of Physical Astronomy."

NOVA CYGNI, 1876.—Prof. Julius Schmidt mentions that the star which he first remarked on November 24, 1876 (and which is not found in the *Durchmusterung*)

diminished very regularly from January to August of the present year; it exhibited none of the slight oscillations in brightness which are still seen in T Coronæ, and we may add in other "Novæ." With the Athens refractor he has observed three small stars near the variable, with the following differences of right ascension and declination:—

13m	...	$\gamma =$ Nova	- 1'0	...	Nova	- 45
13	...	$z =$ "	- 1'6	...	"	- 81
12'5	...	$x =$ "	+ 4'6	...	"	+ 20

It will be remembered that this star suddenly shone out of 3.4 magnitude, and had diminished to the limit of naked-eye vision soon after the middle of December. Its mean place for 1880.0 is in R.A. 21h. 36m. 59.9s., N.P.D. 47° 42' 16".

COMET 1873, IV.—M. Raoul Gautier has worked out definitive elements of the comet discovered by M. Borrelly on August 20, 1873, and finds the observations best represented by an ellipse with a period of 3,277½ years, the probable errors of perihelion distance and eccentricity limiting the period between 3,012 and 3,585 years. This comet, however, was observed for one month only, or through an orbital arc of only 58°, and such results of calculation in the present case are not perhaps to be allowed any great weight. There are many other comets which we imagine would better have repaid the labour expended by M. Gautier upon Comet 1873, IV. Expressing his best *parabolic* elements in the manner adopted in catalogues of comet-orbits, we have the following figures:—

Perihelion Passage, 1873, September 10.83679 M.T. at Berlin.

Longitude of perihelion	36 48 40	} M.Eq. 1873 0
" ascending node	230 38 4	
" inclination	84 0 50	
Log. perihelion distance	9.899956	
Motion—retrograde.			

MINOR PLANETS.—A remark in this column some time since upon the probability of several discoveries of so-called new planets proving to be observations of bodies previously detected, appears to be justified by recent experience. Thus the object announced as a new planet by Prof. Watson and M. Borrelly in August last was shown by Herr Knorre, of Berlin, to be identical with No. 141, detected by M. Paul Henry at Paris, on January 13, 1875, and it is now stated that the small planet remarked by Herr Palisa at Pola on October 2 is really No. 161, which was discovered by Prof. Watson on April 18, 1876, and received the name *Athor*. As was to be expected from the rapidity with which discoveries of small planets have succeeded one another of late years, calculation is now considerably behind observation, and we are still without published elements of a number of the bodies lately brought to light.—Prof. Peters states that he has proposed the name *Idunna* for the planet discovered by him on October 14, which is No. 175, a name which he says will be understood by those members of the "Astronomische Gesellschaft" who, at their late meeting at Stockholm, participated in the hospitality of "Ydun."—There is now a strange confusion of mythologies and systems of nomenclature in the minor-planet group, a state of things that at one time might have been readily avoided.

THE ROYAL DUBLIN SOCIETY

A SCHEME for the reorganisation of this society as a branch of the National Museum of Science and Art established by the Government has been under consideration for some time, and a report of the council on the subject was submitted to the society at its meeting on November 8. The scheme includes a recommenda-