

to account for the fact, that if *two images* are produced by a double-image micrometer, and a satellite in one is brought upon the planet in the other, the satellite appears as a *bright spot* on whatever part of the planet it may be placed. And this is the case even when, by an unequal division of the cone of rays from the object-glass, the image to which the satellite belongs is made decidedly fainter than the other.

Observatory, Haddenham, Bucks, 12 April, 1860.

On the Appearance of Jupiter's Third Satellite on the Disk of the Planet. By Captain Noble.

At page 57 of the present volume of the *Monthly Notices*, is an account by Mr. Lassell of an observation of *Jupiter's* fourth satellite as a dark spot upon his disk. I wish to call the attention of observers to the fact that a similar phenomenon is presented by the *third* satellite. On the night of Wednesday, March 21, I watched the third satellite as it began its transit over the planet. At 9^h 50^m G.M.T., when it was fairly on *Jupiter's* limb, it presented the appearance which it theoretically should have done, that of a brilliant point of light. I left the telescope soon after this. On my return to it at 11^h 30^m, I saw the satellite (now as nearly as possible half way across the disk of the planet) as a well-defined distinct dark spot, "almost as dark" (as I find from the entry in my observatory book) "as the shadow of the satellite itself on an indifferent evening." The contrast of tint was most marked between the satellite and the portion of the great southern belt upon which it was projected; and the bifurcations and markings of which were uncommonly well seen. I, unfortunately, could not observe the egress: a fact I lament, as it would have been a point of great interest to determine at what portion of its passage across *Jupiter's* disk the satellite exchanged its dark appearance for a brilliant one. I am informed by Mr. C. Leeson Prince that he and another Fellow of the Society, Mr. F. Brodie, witnessed a similar appearance of the third satellite during one of its transits some weeks since.

Forest Lodge, Maresfield, Sussex, March 24, 1860.

Account of the Performance of Mr. Fletcher's New Equatoreal.
By Capt. Jacob.

Having lately had the opportunity of trying one of the largest telescopes yet made in England, it has occurred to me that some account of its performance may be interesting to the

Society, and may serve to show that it is not now needful to go abroad in order to procure a first-rate instrument.

The telescope in question is the property of our worthy Fellow, J. Fletcher, Esq., of Tarnbank, where it has been but recently erected by him; the optical portion by Cooke, of York; but the mounting, a long polar axis of cast-iron in the form of a double cone, with 3 feet circles, has been executed under Mr. Fletcher's own direction at an engineering foundry at Whitehaven, belonging to one of his brothers.

The object-glass is of $9\frac{1}{2}$ inches aperture and $12\frac{1}{4}$ feet focal length; the telescope is thus nearly identical in dimension with the great Dorpat telescope, but a trifle shorter.

The trial was made under some disadvantages, the adjustments being only approximate, the driving clock and tangent-screws not as yet fixed, and the glass not kept perfectly clean, the workmen being still employed about the Observatory, and making much dust. The weather also was not very favourable, for though the air was on two or three occasions pretty transparent for a short time, it was never quiet enough to admit of high powers being used with advantage. However, after several vain attempts, on Saturday, 10th March, a good view of *Saturn* was obtained with powers 190 and 250; the obscure ring, streaking of the south hemisphere, and faint line on the outer ring, were very well seen, and a small point of light was discerned just clear of the preceding *ansa*, which proved to be *Enceladus*.

On the 12th a good glimpse was also obtained just about dusk, and *Enceladus* was seen at its east elongation at $7^h 45^m$. *Jupiter* was also examined, and presented the unusual appearance shown in the accompanying sketch.* Nearly the same appearance was again seen on the 14th at 10^h ; but the oblique belt had then extended itself and encroached on the equatoreal belt, forming a darkish spot at the point of junction. On the same night nearly as good a view of *Saturn* was obtained as on the 10th, and the whole of the seven old satellites were seen at once, as shown in the accompanying diagram A. *Enceladus* having come to his west elongation at $6^h 55^m$, while there was yet daylight enough to read the address of a letter! *Mimas* was judged to be at east elongation at about $10^h 48^m$ G.M.T. Though the features of the planet and ring were best brought out by a power of 250, it was found that a lower power answered better for the small satellites, and they could be steadily viewed only with an eye-piece of 134. The whole seven were again seen on the 15th, as in diagram B. The exhibition of so small a point as E, in such close proximity to the ring, is perhaps as good a test of the defining power of the object-glass as could be desired. *Mimas* appeared to be at his elongation about $9^h 25^m$.

* See second Plate, fig. 4. The other diagrams referred to are not printed.

The points marked *h* in the diagrams were at first suspected to be *Hyperion*, but as they are too far distant, and their place also does not agree with Lassell's observations, they must have been two distinct minute stars; they were about the minimum visible, certainly not half as bright as *Mimas*.

A few double stars were examined, but no extremely close or difficult ones, as the instrument was not in order for finding or following such objects, and the night would not bear power. ζ *Cancri* and η *Orionis* were about the closest tried; the former was, of course, easily separated, and the latter also appeared to be so by glimpses when the atmosphere was steady for an instant.

Procyon was examined for focussing and centering with satisfactory results, the image being round and concentric both in and out of focus on both sides, and the disks very small when in focus with powers up to 400.

The mounting seemed remarkably firm, and so smooth in its movement, that, with the telescope slightly under-counterpoised, a star could be well followed and kept pretty near the centre of the field by gentle pressure with the finger. On the whole, I should say it was creditable both to the designer and the maker, and that in such able hands it is likely to prove a most efficient instrument; but Mr. Fletcher will, doubtless, give a fuller description of it himself when he has got it into working order.

Malvern, April 5, 1860.

On the Satellite of Saturn, "Mimas."

By the Rev. W. R. Dawes.

I got a capital view of *Mimas* on March 21, 12^h 0^m G.M.T. a little past his western elongation. I saw him well, though not without many interruptions from atmospheric disturbance, for an hour and twenty minutes, when his approach to the ring and the planet's diminished altitude rendered him no longer visible. I had only looked for him once before this apparition, and I now find that he was then on the face of the planet.

Alvan Clark has seen him frequently with his new 12-inch object-glass; and told me he was sure I could see him in a fine sky.

March 21 was very clear, though the planet was tremulous.

Hopefield Lodge, Haddenham, Thame,
April 12, 1860.
