

astronomical labours than heretofore, and I shall devote all my resources to the completion with the equatoreal of a catalogue of double stars.

“Indeed, having passed the meridian of life, and having now many other avocations that engross a considerable portion of my time, and which are likely to augment rather than diminish, I have long arrived at the conclusion, that, however humble my powers may be, I can more effectually promote the interests of science in the way of counsel rather than action,—in the cabinet rather than the field.

“*Wrottesley, Dec. 27, 1853.*”

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*Occultation observed at Ashurst.* By Robert Snow, Esq.

*Jan. 1st, 1854.*

*North Lat.* .....  $51^{\circ} 15' 58''$

*West Long.* .....  $1^{\text{m}} 10^{\text{s}}$

*Immersion of 33 Capricorni.*

|                            |   |
|----------------------------|---|
|                            | $23^{\text{h}} 41^{\text{m}} 48^{\text{s}} \cdot 5$ |
| Subtracting for Clock fast | $\underline{-16 \cdot 7}$                           |
|                            | $23 \ 41 \ 31 \cdot 8$ True Sid. Time.              |

Well observed. Instantaneous at moon's dark limb. Dark limb visible.

*Emersion of 33 Capricorni.*

|                            |  |
|----------------------------|--|
|                            | $0^{\text{h}} 36^{\text{m}} 30^{\text{s}} \pm$ |
| Subtracting for Clock fast | $\underline{-16 \cdot 7}$                      |
|                            | $0 \ 36 \ 13 \pm$                              |

At moon's bright limb uncertain. Moon and star very low.

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*Observations of the Nebula of Orion, made at Valletta, with the Twenty-foot Equatoreal.* By William Lassell, Esq. 

The following are a few extracts from this paper :—

“*Wednesday, 10th Nov., 1852.* About  $4^{\text{h}} 0$  Sid. Time, turned to the nebula, power 260. A marvellous spectacle. The brilliancy of the trapezium, and of ‘the 5th and 6th stars,’ was most striking. The 6th seemed equally bright with the 5th, and quite as easily seen. It is removed clear away from the rays of the large star.

“It seems remarkable that in this telescope there is no difference in their visibility, while in telescopes considerably less in power the 5th star is incomparably easier to see than the 6th. I do not find so many more stars in the neighbourhood as I had expected. With 160 many sparkling points flashed on the eye by glimpses all over the nebula immediately around the trapezium; but it would be difficult to mark their places.

“ With 1018 the stars of the trapezium were exhibited with fine disks; but the atmosphere was not fine enough to bear this high power upon the nebula.

“ *Monday, 15th Nov.* The nebula appeared a magnificent object with 160 and 260; but I do not see many more *stars* than on some rare occasions I have seen at Starfield. The 5th and 6th stars are of equal intrinsic brightness, and seen with equal facility. The superiority of vision of these stars is the most striking characteristic of the object in comparison with the best views I ever obtained of them in England.

“ *Monday, 6th Dec.* Viewed the nebula with powers 219, 260, and 1018. With the latter power a new phase was given to the nebula, which seemed like large masses of cotton wool packed one behind another; the edges pulled out so as to be very filmy.

“ *Wednesday, 8th Dec.* With powers 160 and 297 the view surpassed, I think, all former ones. The brightness of the minute points about the trapezium is strikingly greater than at Starfield, yet I could not mark the places of more than three or four new stars. I afterwards applied 1018, with which there is no appearance of resolvibility. The whole aspect is that of a number of masses of fleecy cloud, thin at the edges, and packed one behind another; appearing to be a deep stratum of successive layers of nebulous substance. With this power I turned to the neighbouring star *Rigel*, which was admirably shown, the most striking feature, perhaps, being that the small star accompanying it was exhibited with a beautifully neat round disk, circumscribed by a single hair-like ring, most symmetrically formed. The large star had also a perfectly round *disk*, but the flickerings of the air prevented its being a moment still, and the rings were broken into pieces. There were also a good many sharp rays, as radii, extending rather beyond the small star, but they were of much fainter light, and did not at all interfere with the brightness or symmetry of form of the stellar disks. I was much struck with the *capacity* of the telescope for stellar purposes when the atmosphere was in its most favourable condition. On this occasion it was very slightly hazy.

“ *Wednesday, 15th Dec.* The nebula with 160 was most splendidly seen. The brightness, and even *brilliancy*, of the 5th and 6th stars continues to surprise me. They are of equal magnitude and seen with equal ease, the 6th star clean removed away from the rays of *Theta*. A few more stellar points, I believe, appear than I have mapped down in my Starfield diagrams, and the stars contained in those diagrams are very much brighter. With power 1018 the wool-like masses appear as I have previously described them, and there is no disposition whatever in them to turn into stars.


“ In order to perpetuate as far as possible the results of these observations, I send herewith a painting in oil of this nebula on the same scale as my original drawings, the acceptance of which I beg from the Astronomical Society. It is the work of my friend Mr. Hippisley, executed under my own superintendence, and care-


fully compared with my original sketches. I consider it a very faithful picture of what I saw when placed in a proper light and well illuminated. Without attention to these conditions the nebula will appear too faint."


*Miscellaneous Observations, chiefly of Clusters and Nebulae.*


We extract from this additional paper by Mr. Lassell, the following observations: —


"*Wednesday, 15th Dec.* Surveyed  $\alpha$  *Orionis*, power 160. A most beautiful and brilliant gem! Singularly beautiful in colour, a rich topaz; in hue and brilliancy different from any other star I have seen.


"Cluster, R.A.  $5^h 58^m$ , P.D.  $65^\circ 57'$ .  marvellously striking object. No one can see it for the first time without an exclamation. Power 160. The field of view  $19'$  in diameter, and angular subtense  $53^\circ \frac{1}{2}$ , is perfectly full of brilliant stars, unusually equal in magnitude and distribution over the whole area. Nothing but a sight of the object itself can convey an adequate idea of its exquisite beauty. The brilliancy and concentration of the stellar points and the blackness of the ground cannot otherwise be shown in their just contrast.


"*Thursday, 6th Jan., 1853.* R.A.  $5^h 33^m$ , P.D.  $81^\circ 0'$ , H. 365.  Planetary Nebula. A singular curdled-looking object, slightly and irregularly elliptical, with a sort of cordon running round parallel to, but a little outside of its margin.

"*Friday, 7th Jan. i Orionis.* Surveyed this star for some time without any impression of a nebula about it. At length I began to conceive that the glare around it, which I had attributed to the splendour of the star, might be really nebulous; and on further looking attentively at the stars, I could fancy they were on a black ground in the midst of the nebulae; but, without the suggestion of Lord Rosse's drawing, I think the appearance would have escaped me. When I obtained this view of it, the nebulae seemed to be strongly tinged with a reddish hue. 

"R.A.  $4^h 7^m$ , P.D.  $103^\circ 9'$ . Planetary Nebula. The most interesting and extraordinary object of the kind I have ever seen.  A bright well-defined star, perhaps 11th magnitude, right in the centre of a circular nebula, whose edge was its brightest part; and this nebula again placed upon a larger and fainter, concentric and equally symmetrical. Power 565. A single star just within the nebula, near its preceding edge: and I had an impression of minute points of light scattered over the nebula, but none could be absolutely made out. I was in doubt whether the central star had the brightness and concentration of a fixed star proper. Certainly I should say it had not the intrinsic brightness of some of the stars about *Orion*.

"*Saturday, 8th Jan.* R.A.  $7^h 34^m$ , P.D.  $104^\circ 20'$ . H. 464.  A glorious cluster, with a planetary nebula within it; the nebula, however, sharply defined, and apparently quite separate from the

cluster. There is some analogy in this object to the planetary nebula. R.A.  $4^{\text{h}} 7^{\text{m}}$ , P.D.  $103^{\circ} 9'$ :  this, however, there is only one stratum of nebula. Its form is circular, with a star or stellar nucleus, nearly, but not quite, in the centre. There is also another fainter star within the nebula, and rather nearer the centre than the circumference. About the third of the area around the centre is darker than the rest, *i.e.* there is less nebula there. An astonishing and interesting object.

“*Tuesday, 11th Jan.* Surveyed again the cluster and nebula. R.A.  $7^{\text{h}} 34^{\text{m}}$ , P.D.  $104^{\circ} 20'$ .  he star is not in the centre, and the nebula seems to retreat from the star, leaving it on a much darker ground than the external parts of the nebula. With slight attention another star is seen; and two or three points or bright spots in the nebula occasionally catch the eye. The cluster fills the field and is rich. The stars in the nebula seem dull.”

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*Remarks on Hooke's Observations of the Comets of 1680 and 1682.*

By the Editor.

It will be recollected that, on the occasion of the last apparition of Halley's Comet towards the close of the year 1835, a series of extraordinary physical changes were witnessed in the head of the comet as it continued to approach the perihelion. These consisted of irregular emanations of a luminous substance from the nucleus, which, after advancing a short distance towards the sun, as if attracted towards that body in obedience to the principle of gravitation, then curved backwards, as if impelled by some force of great intensity in the opposite direction. This outstreaming cone of luminous matter presented the appearance of a sector, and as such was generally described by observers. This sector was found to vary in breadth from night to night, and the axis to oscillate on each side of a mean direction, coinciding with the radius vector of the comet: even in the course of a single night the axis was observed to undergo very sensible oscillations. No parallel to these singular phenomena could be found in the observations of any comet of recent times. The great comet of 1811 presented a totally different aspect, as is manifest from the observations of Sir William Herschel and other astronomers. During its visibility the head of that comet was observed to be bounded by a bright line which extended back on each side towards the tail; but this line did not appear to have any connexion with the nucleus, nor was the latter perceived to be subject to those tumultuous changes which so strikingly characterised the nucleus of Halley's Comet. The only former comet mentioned by Bessel, as having exhibited analogous phenomena, was the great comet of 1744, as observed by Heinsius.

Having lately had occasion to make some researches in the writings of Hooke, I was astonished to find in the “*Posthumous Works*” of that philosopher, an account of his observations of the comets of 1680 and 1682, which, in so far as regards the physical