

THURSDAY, SEPTEMBER 17, 1885

THE NEW STAR IN ANDROMEDA

WE have received the following important communications from Lord Rosse and Dr. Huggins relating to the new star. Whether the star be connected with the nebula or not, during the last week evidence has been brought forward that it has changed both its brilliancy and position with regard to the nucleus. This question of change of position is of the highest importance, for arguments were advanced in this journal (NATURE, vol. xvi. p. 413) on the occasion of the outburst of the stella nova in 1866, which suggested that a body which reduced its lustre so rapidly could have no very great mass, and that therefore it might not be so very remote.

Dr. Huggins is able to decide between the different statements which have been published as to the spectrum of the star: he has little doubt as to the existence of bright lines between D and *b*. This endorses Lord Rosse's observation which we printed last week.

SINCE my communication of September 8 our books have been searched for information on the past history of the nucleus of the Andromeda nebula. I subjoin in full the entries bearing upon the question whether the "new star" is now seen for the first time, or is a variable now shining out with abnormal brilliancy. The latter would appear to be the case. The nebula was frequently observed in past years with the 6-foot reflector and measures made. These measures being too few in number for a proper survey of the nebula, publication was postponed in 1878, and the details of configuration of the nebulosity have not appeared such as to merit a monograph.

ROSSE

September 12

The Great Nebula in Andromeda as observed at Birr Castle with the 6-foot Reflector

1848, December 13.—Three new stars seen near nucleus. Others stars at moments suspected in large nucleus.

1848, December 15.—Confirmed previous night's observations about the three stars *n n f* of nucleus.

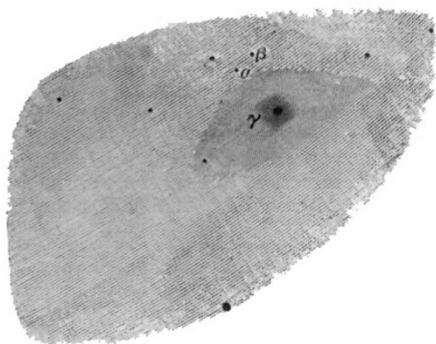
1851, October 25.—[On a rough sketch accompanying micrometrical measurements the nucleus is indicated by a point].

1852, September 16.—Nucleus looked very sharp. Had suspicion of a point in centre of nucleus of large nebula which formed one angle of a quadrilateral of which the other three are small stars to the left.

1855, October 15.—With higher power several stars become visible about the nucleus. Nucleus itself suspected at moments to be resolvable.

1856, October 28.—I observed the nucleus attentively for a long time, and I thought I could at times see stars along its north edge, but I am not very confident about it.

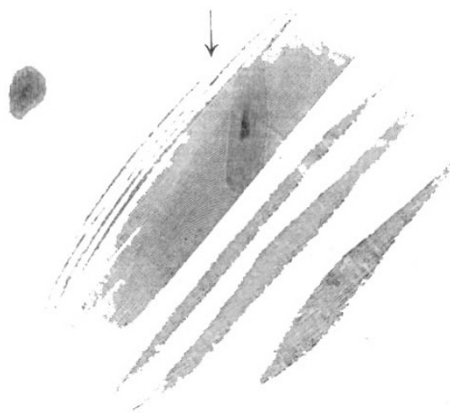
1857, October 16.—The higher power of single lens brings out a great many very faint stars around the nucleus. α seen steadily, β seen by glimpses and I suspect a star in the neigh-



bourhood of γ . The sketch represents the central portion of the nebula. [A point is indicated in the centre of the nucleus.]

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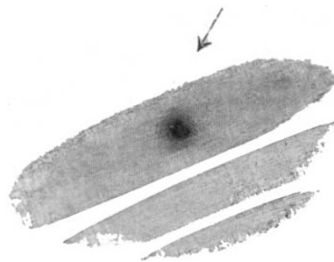
1860, October 19.—I think the nucleus is extended as in accompanying sketch.



1860, November 13.—[A sketch was carefully made, which is almost identical with the sketch of 1860, October 19, showing the extension of the nucleus very plainly. No point is indicated in the centre of the nucleus.]

[In 1861 and 1862 numerous micrometrical measures were taken, accompanied by rough sketches, showing the nucleus as a diffused nebulous patch, either round or slightly extended as on 1860, October 19.]

1871, October 7.—A rough sketch was made [showing the nucleus round and rather distinct.]



1872, August 7.—Nucleus very distinct on ground of nebula.

1877, November 2.—Nucleus extends in same direction as nebula; immediately following the nucleus the nebulosity decreases quickly in brightness, more so than on preceding side.

THE star was observed here first on the night of the 3rd inst. It presented the appearance of an orange-coloured star of from the 8th to the 9th magnitude. With a spectroscope of low dispersive power a continuous spectrum was seen from about C in the red to a little beyond F. There was an apparent condensation of light from about D to *b*, which might be due to bright lines in that part of the spectrum. This supposition was strengthened by the employment of a more powerful spectroscope, but I was not able to be certain on this point.

On the 9th the star, which was then distinctly on one side of the principal point of condensation in the nebula, appeared to me to have a less decided orange tint. It presented an appearance in the spectroscope similar to that which it had on the 3rd, with the exception that the light was less strong about D. I was so far confirmed in my suspicion of bright lines that I have little doubt that from three to five bright lines were present between D and *b*.

On the 3rd inst. the star did not appear clearly defined in the refractor of 15 inches aperture, but the state of the sky was not good enough to enable me to be sure that the star was truly nebulous. On the 9th the star was certainly free from nebulosity.

WILLIAM HUGGINS

Upper Tulse Hill, S.W.

ON September 8 the new star in the nebula (Messier 31) in Andromeda was examined in my 10-inch reflector. The *nova* shines with a yellowish tint and looks like an ordinary star of about $7\frac{1}{2}$ mag., being a perfectly sharp and well-defined

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stellar point situated near the central region of the nebula. It is quite free from any blurred appearance or any aspect of indefiniteness other than that introduced by the nebula on which it is projected.

On later nights the star seemed to have slightly decreased; its light was feebler and less sparkling, but I made no exact comparisons for tracing the decline of brilliancy, if any.

During many years the naked eye appearance of this conspicuous nebula has been familiar to me, and I have been accustomed to notice it particularly while engaged in prolonged watches for shooting stars. No sharply-defined nucleus was ever perceptible, but now the involved star is distinctly visible by slightly averting the vision. When the air is very clear the glowing out of the star now and then is very obvious, and I mention the fact in proof that the variation of the nebula by this new phenomenon is sufficiently great to affect its naked-eye aspect.

W. F. DENNING

Bristol, September 13

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Red Rays after Sunset

THERE have lately been seen here some remarkable examples of rose-coloured streamers radiating from the sun at an interval of from 20 to 30 minutes after sunset, particularly on the 3rd, 5th, and 6th of this month. On the 3rd the appearance was especially striking, the contrast of colour between one very broad, vertical ray and the greenish-gray sky which separated it from its neighbours being most marked.

That these rose-coloured rays are essentially identical with the diffused rose-tint observed on other occasions is evident, not only from the similarity of colour and of interval after sunset at which they appear, but also from the occurrence of intermediate examples, in which the rays are so far and so broad that the radiate character is almost lost.

It is, however, by no means so clear why the coloured tract of sky should be sometimes split into rays, and it is with a view to ventilate this question that I desire to call attention to the subject.

I believe it is generally supposed that the dark spaces between the rays are due to masses of cloud intercepting the sun's light, but there are difficulties in the way of this explanation which I have never seen met.

It need hardly be pointed out that the matter (whatever it be) which reflects the red light must be at an altitude far above any such masses of cloud as could intercept the sun's rays; it could not otherwise receive and reflect those rays half an hour after the sun had set to the observer. But although above the level of the clouds, the reflecting matter would still be subject to interception of the sun's rays by cloud at sunset, and in order to judge whether the phenomenon can be so accounted for it is necessary to consider what kind of horizon that would be behind which the sun would set to an observer at the altitude supposed. My impression is that the horizon as seen from such a height would be so distant that whatever the irregularities of cloud-surface forming it, it would be practically a level line, and that the most mountainous masses of cumulus-cloud would be insufficient to cast at that distance the enormous shadows which would be necessary to account for the rifts between the rays.

Clifton, September 8

GEORGE F. BURDER

Fireball

A LARGE fireball was visible at Bristol and other places on September 11, at about 9h. 25m. p.m. It was described to me by several observers who approximately assigned its path as from *Altair* towards the western horizon. The sky was much clouded here at the time, with only 1st magnitude stars visible, but the light of the meteor appears to have been something astonishing.

Mr. G. T. Davis, of Theale, near Reading, writes me that, when first seen there, the meteor was near β Ophiuchi, and

seemed to describe a slightly curved path to the horizon, which it touched apparently under β Serpentis. It exhibited a greenish tinted disk with bright, white aureole around it, and left no train. The aureole was at least 16' in diameter.

It will be desirable to collect further accounts of this fine meteor. The direction of its path suggests that it may belong to the same system as that of the detonating fireball of September 14, 1875, which had a radiant point at α 348°, δ 0° ± (Tupman). During the past fortnight I have observed a considerable number of shooting-stars, and one of the best radiant points is at α 346, δ 0° ±, or 2° W. of that of Col. Tupman's fireball of September 14, 1875.

W. F. DENNING

Bristol, September 13

Pulsation in the Veins

IF Mr. Hippisley will refer to Landois' text-book, vol. i. p. 196, he will find it there stated, on the authority of Quincke, that a venous pulse occurs on rare occasions, normally, in the veins on the back of the hand and foot, when the peripheral ends of the arteries become dilated and relaxed. But it is to be remembered that the very same phenomenon may obtain abnormally, owing to some pathological condition of the heart, as stenosis of the mitral orifice, or insufficiency in action of the mitral valve. Mr. Hippisley does not state in his letter whether the heart was in a healthy condition, or whether any lesion of that organ was present in those on whom his experiment was tried.

J. W. WILLIAMS

Middlesex Hospital

"Furculum" or "Furcula"

Is there any authority for the use of *furculum* for the *os furculatorium* of birds? I am told by a contributor to the *Proceedings* of this Society, whose phraseology I have ventured to interfere with, that "*furculum*" has been employed by Balfour, Huxley, and Rolleston. Such may be the case, but it is possible that even these great anatomical writers may have erred in the use of a Latin termination. No dictionary that I have been able to refer to contains the word "*furculum*."

The Zoological Society of London

P. L. SCLATER

THE BRITISH ASSOCIATION

Aberdeen, Monday

THERE have been few meetings of the British Association so crowded with papers in nearly all the sections. On Saturday several sections met which, unless under the greatest pressure, never meet on that day. Section D has been compelled to split up into three subsections, and probably most of the sections will have to meet on Wednesday morning. The social distractions have been much more numerous than usual, and we suspect have somewhat seriously interfered with the legitimate work of the meeting. As might be expected, the Music Hall was crowded on Wednesday evening last to hear the President's address, which seems to have produced a great impression on the audience.

It is being more and more strongly recognised that such pre-arrangements as those of Sections A and B ought to become general throughout the sections. The discussions in the two great sections, of which the programmes have appeared in *NATURE*, have certainly excited great interest among real workers in physics and chemistry. It is to be hoped that a full abstract of these discussions will be placed on record, as otherwise they cannot have any great permanent results. Perhaps the most popular feature in the regular sectional work has been the reading of Sir John Lubbock's paper on ants, in Section D, on Friday.

The number of entertainments, afternoon parties, excursions, and *conversaciones* is almost without precedent. The *conversazione* in the Art Galleries on Thursday last was in every way successful, though the place was overcrowded. The flower and fruit show and the illuminations outside reminded many of the South Kensington displays. It was satisfactory to notice that, thanks to