

slightly increased until about 5.40 p.m., whilst both horizontal and vertical forces similarly increased in intensity, more especially between 4 and 6 p.m. They further diminished in force after 10 p.m., and their changes became very rapid from 12 midnight to 2 a.m., whilst at the same time the declination proceeded to its extreme westerly position. Subsequently, the fluctuations in magnetism became much reduced in extent, and the whole disturbance gradually diminished and died out about 4 p.m. of Sunday.

The Kew magnetometers were not able to record the complete extent of the vibrations to which free needles were subjected, nor could the entire change of force be secured in the field of the instrument. The limits, however, clearly recorded were  $2^{\circ}$  of declination from  $1760$  to  $1830$  of horizontal force, and from  $4350$  to  $4420$  units of vertical force expressed in C.G.S. measure in absolute force.

G. M. WHIPPLE,

Superintendent.

Kew Observatory, Richmond, Surrey, February 16.

### The New Star in Auriga.

PROF. COPELAND has suggested to me that as I am the writer of the anonymous postcard mentioned by you a fortnight ago (p. 325), I should tell your readers what I know about the Nova.

It was visible as a star of the fifth magnitude certainly for two or three days, very probably even for a week, before Prof. Copeland received my postcard. I am almost certain that at two o'clock on the morning of Sunday, the 24th ult., I saw a fifth magnitude star making a very large obtuse angle with  $\beta$  Tauri and  $\chi$  Aurigæ, and I am positive that I saw it at least twice subsequently during that week. Unfortunately, I mistook it on each occasion for 26 Aurigæ, merely remarking to myself that 26 was a much brighter star than I used to think it. It was only on the morning of Sunday, the 31st ult., that I satisfied myself that it was a strange body. On each occasion of my seeing it, it was slightly brighter than  $\chi$ . How long before the 24th ult. it was visible to the naked eye I cannot tell, as it was many months since I had looked minutely at that region of the heavens.

You might also allow me to state for the benefit of your readers that my case is one that can afford encouragement to even the humblest of amateurs. My knowledge of the technicalities of astronomy is, unfortunately, of the meagrest description; and all the means at my disposal on the morning of the 31st ult., when I made sure that a strange body was present in the sky, were Klein's "Star Atlas," and a small pocket telescope which magnifies ten times.

THOMAS D. ANDERSON.

21 East Claremont Street, Edinburgh, February 13.

### Nacreous Clouds.

IN the morning of the 30th ult. there was a magnificent display of the nacreous (or iridescent, as they were first called) clouds, which formed such a striking feature of the sunset and sunrise sky for some days in succession in December 1884 and 1885 (vol. xxxi. pp. 148, 192, 316, 360, &c.). They were not exactly the same in appearance, but I should say they were of the same nature. I had not seen them in the interval of six years, and have only noticed them lately on the one day mentioned. They were confined to the southern part of the sky. As the sun rose higher their colours were less visible, and the clouds disappeared about noon; though in the afternoon some reappeared, but never became very striking. At 5h. 44m. G.M.T. there was only one group, which was too far from the sun to show any nacreous colours; its centre was about at hour-angle  $1h. 2m.$  west, and declination  $23\frac{1}{2}^{\circ}$  south. Although conspicuous they were no longer very bright, and I should say the sun was evidently not shining on them, for they were the same bluish-green colour as the western sky, and I apprehend were illuminated by the sky.

T. W. BACKHOUSE.

Sunderland, February 9.

### The Cause of an Ice Age.

IN his very kindly review Prof. Darwin thinks I might have stated my argument with more completeness if I had preserved its generality by the use of a symbol instead of taking a special case.

No doubt in many ways the treatment he suggests would have been better. It would, for instance, have enabled me to prove the case *a fortiori*. Perhaps, however, the reasons given in the chapter explaining "why the book has been written" may show that for the object I had in view the method actually used was appropriate.

I am also much obliged to the same friend for pointing out that the astronomical theorem proved in the appendix had been given by Wiener, "Über die Stärke der Bestrahlung" (*Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie*, vol. xiv., 1879, p. 129).

ROBERT S. BALL.

Observatory, Co. Dublin, February 9.

### Ice Crystals.

WITH reference to the letter on the subject of ice crystals which appeared in NATURE of the 4th inst. (p. 319), it is perhaps worth mentioning that a paper on the subject, entitled "Eine Eiskrystallgrotte," by C. A. Hering, appeared in Groth's *Zeitschrift für Krystallographie und Mineralogie*, Band xiv. (1888), pp. 250-253, and Plate vi.

The crystals occurred in an old mine on the Waschgang near Döllach in Carinthia. Large fans, as much as 300 mm. long  $\times$  200 mm. broad, of ice-crystals grow out horizontally from the vertical walls. The stalk, consisting of a series of hexagonal prisms, hollow, like thermometer-tubes, was in the middle 25 mm. thick and thickened towards the point of attachment to the rock. The fan surface was a large hexagonal plate with strong prismatic ribs running from the centre to the angles. The interspaces between the ribs were filled by prisms arranged with the greatest regularity. Upon the ribs of the fan either single crystals or funnel-shaped structures with step-like sides consisting of prisms were borne. The individual crystals were almost all thick tabular forms, with prism, basal pinacoid, and rhombohedral faces.

BERNARD HOBSON.

Owens College, Manchester, February 8.

### A Rare British Earthworm.

IN the summer of 1890, during my researches into the Vermes of Cumberland, I discovered a species of earthworm which proved to be new to Britain (*Lumbricus Eiseni*, Levinsen). As I have recently had the good fortune to receive specimens of the same worm from another part of the country, it seems desirable to place the same on record. A correspondent writes from Gloucestershire as follows:—

"Last Saturday (January 30, 1892), I walked up to one of my favourite woods here on the Cotswolds, about 700 feet above the sea—a damp old beech wood, the Frith Wood of Withering's "Arrangement," seventh edition, 1830—and seeing a stump of some 10 inches diameter with a growth of the black 'Candle Snuff Fungus' on it, I examined the rotten wood, which gave way to the pokes of my stick. Among this rotten wood I saw some earthworms, two or three of which I inclose, hoping they may prove an addition to our worm fauna."

I have placed on record all the known earthworms of Gloucestershire in *The Field Club* for 1891, to which this may now be added. The worms were small, but in good form for identification, and prove to be specimens of Eisen's worm. I have, unfortunately, been unable hitherto to consult Levinsen's original description; nor have I been able to obtain Rosa's memoir published in the *Boll. Mus. Zool.*, Torino, 1889 (vol. iv., No. 71). I am therefore obliged to content myself with a description of the specimens in my possession.

*Lumbricus Eiseni*, Lev., as found in Britain, is a small species of earthworm, measuring about  $1\frac{1}{2}$  inches in length when adult. It has the usual colour of the allied species—the purple and red worms—being of a ruddy hue, with iridescence. The clitellum or girdle, which occupies segments (24) 25 to 31, is a reddish-brown, being lighter in colour than the anterior portion of the worm's body on the dorsal surface. Ventrally the worm is, as usual, of a lighter shade. No *tubercula pubertatis* have been seen under the girdle, but the first dorsal pore in every specimen examined is clearly detected behind the 5th segment. This may be indicated by the fractional sign  $\frac{5}{6}$ ; and as the most recent researches tend to demonstrate the constancy of this character for each species of earthworm, it is important to note the same. The lip or prostomium has the complete mortise and