LETTERS TO THE EDITOR.

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Visibility of Halley's Comet.

THE discovery of Halley's comet at a time so far preceding the date of perihelion passage adds another proof of the great capacity of the photographic method. The interesting point to many observers is as to when the comet will become visible to them as a telescopic object. This must, of course, depend in a large measure upon the diameter of their glasses and on their powers of vision. After the present moon has left the sky, say during the second week in October, the comet ought to have increased in light sufficiently for it to be observed in a 12-inch telescope. The calculated magnitude of the comet will be 14½ on October 15, and its distance from the earth about 230 millions of miles. Its apparent position will then be five degrees west of γ Geminorum, and near 72 Orionis. On October 16 the comet will be just two degrees south of 71 Orionis (mag. 5·5), and ought to be visible as a very faint nebulosity, especially if the night is good. The transparency of the air has an important influence on the perception and aspect of faint comets and nebulæ, for a really suitable sky will enable objects to be glimpsed which are utterly invisible on bad nights when there is diffused light, thin cloud, mist, or fog prevalent. The comet will be visible in an excellent position nearly all night during most of the winter, but will continue small and faint until it blazes out next April. W. F. DENNING.

The Presence of Hæmoglobin in Invertebrate Blood.

MAY I make use of your columns to correct a statement in my article on Crustacea in vol. iv. of the "Cambridge Natural History," which I am afraid may seriously mislead the reader? Referring to the alleged presence of hæmoglobin in the blood of Branchipus and Daphnia, I have stated in a footnote on p. 30 that the fact that the red blood of Lernanthropus has been proved not to contain hæmoglobin throws doubt on the reality of its presence in the other two animals. At the time of writing I was not aware that the authority on which the presence of hæmoglobin in Branchipus and Daphnia rested, and I was inclined to impugn, was Sir Ray Lankester, who, in the late 'sixties and early 'seventies, published a series of researches which laid the foundation of a comparative knowledge of the distribution of hæmoglobin and similar respiratory pigments in the animal kingdom (see especially Proc. Roy. Soc., vol. xxi., December, 1872, p. 70). After reading these articles it is clear to me that Sir Ray Lankester's statement as to the presence of hæmoglobin in the blood of Branchipus and Daphnia, resting as it does on careful microspectroscopic examination, is quite unaffected by what may or may not be the case in Lernanthropus, so that I can only withdraw my footnote with many apologies to him and to readers of the "Cambridge Natural History." With regard to Lernanthropus and its allies, small crustacea parasitic on fish and mussels, which possess a closed vascular system containing a red fluid, there is still some doubt. Van Beneden, who discovered Lernanthropus in 1880, states (*Zoologischer Anzeiger*, Bd. iii., p. 35) that he examined the blood spectroscopically, and found the oxyhæmoglobin lines.

More recently Dr. Steuer (*Arbeiten Zool. Inst. Wien*, vol. xv., p. 14, 1903) sent numerous specimens of an allied form, Mytilicola, to Prof. R. von Zeynek in Vienna, who came to the conclusion that the blood did not contain hæmoglobin, since (1) with glacial acetic acid and sodium chloride no hæmin crystals were obtained; (2) after reduction with potassium cyanide and ammonium sulphide, the characteristic reduced hæmoglobin lines were not formed; (3) there was no hæmochromogen reaction.

Curiously enough, we are not told whether the simple examination of the blood gives the oxyhæmoglobin lines, as Van Beneden stated, or not, so that we are left in doubt whether Van Beneden was altogether in error or the red substance in the blood of Lernanthropus possesses one of the properties of hæmoglobin but not the others. The matter being in this unsatisfactory state, it is very desirable that someone, to whom the opportunity is offered, should re-investigate the blood of Lernanthropus.

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MAGNETIC STORM OF SEPTEMBER 25.

DR. CHREE, F.R.S., has sent us the following communication on the above:—

The magnetic storm of September 25 exhibited the rapid oscillatory movements that are usually associated with the appearance of aurora. As recorded at Kew, the storm commenced suddenly at about 11.43 a.m. During the next nine hours there was an almost uninterrupted succession of large oscillatory movements in the magnetic curves, especially those of declination and horizontal force. The storm was of comparatively short duration, no movements of any great size being recorded after 8.30 p.m. on September 25, and by 1 a.m. on September 26 little trace of disturbance was left. When the storm was at its height the oscillatory movements were so rapid that the record left on the photographic paper was frequently too faint to show minute details, and the limits of registration were at times exceeded.

At the commencement there would appear to have been an exceedingly rapid oscillatory movement of the declination needle, after which the needle moved to the east continuously for about 15 minutes. After the first 12 minutes, during which a movement of 72′ was recorded, the trace got off the sheet, so that the full extent of the easterly drift is not shown. After a few minutes' absence the trace reappeared, but, after some oscillatory movements of the needle, the trace got off the sheet again on the same side as before at about 12.12 p.m., and remained off on this occasion for nearly 40 minutes. During the whole of this time the needle pointed at least 70′—at times, probably, a good deal more—to the east of its normal position. After coming on the sheet about 12.52, the trace exhibited some minor oscillations superposed on a rapid drift across the sheet. The entire width, representing 2° 7′, was crossed in less than half an hour, and the trace at about 1.20 p.m. got off the sheet on the opposite side. The needle then pointed about 1° to the west of its normal position. Between 1.20 p.m. and 8.30 p.m. there were a number of large oscillations, movements of 40′, 60′, or more, now east, now west, taking place in the course of a few minutes. The largest of the rapid oscillations clearly shown took place between about 8.7 and 8.22 p.m., a westerly movement of 98′ being followed by an easterly movement of 84′. The disturbance shown by the horizontal-force curve was no less remarkable. The commencing movement at 11.43 a.m. went beyond the lower limit of registration, a fall of 430 γ taking place in about 10 minutes. At this time the trace was off the sheet for only about 5 minutes. After reappearing it showed large oscillations. By 12.53 p.m. it had crossed the sheet to the other side, the change of force during one period of 13 minutes being no less than 625 γ. The trace was off the sheet continuously from 3.55 to 5.10 p.m., the horizontal force during the whole of this time exceeding its normal value by more than 300 γ. Except when off the sheet, the trace showed continuous large oscillatory movements during the whole afternoon. The largest clearly shown was partly synchronous with the large declination oscillation near 8 p.m. already described; it consisted of a rise of 520 γ and fall of 710 γ, all in the course of 17 minutes.

The declination range, 2° 7′, and the horizontal-force