### Flight of Birds Across the Moon's Disc.

ON the evening of October 7, 1895, while observing the passage of the moon through the Pleiades for occultations, my attention was attracted by a flight of birds across the moon's disc. This continued with more or less regularity the whole time I was at work, from 7.30 to 9.30, the birds usually crossing singly, but sometimes in groups of two, three, or even four. In all, I saw perhaps 50 or 60; assuming a like frequency during the intervals when I was not at the telescope, from 200 to 250 must have crossed the disc during the two hours. All were flying south with a single exception. Their outlines and the flapping motions of their wings were very distinct; none were soaring. The telescope is a 12-inch refractor: eyepiece of power 90. The moon was low, its altitude ranging from 5° to 15°.

The time occupied in transit varied from four to eight seconds, the difference in apparent size being very marked, and the larger always taking the less time. Assuming a rate of twenty miles an hour for their flight, the distance would be about 5 miles for a bird making a transit in eight seconds, or $2\frac{1}{2}$ miles for four seconds. Taking into consideration the altitudes of the moon when the above transits were timed, the corresponding altitudes of the birds above sea-level ranged from 2700 to 5000 feet. Considerations as to its size make it probable that these figures are none too small. It may be of interest to note that the Observatory stands on a promontory jutting out about 5 miles from the general trend of the Syrian coast, and that according to these calculations the birds were flying either just along the coast-line or over the sea.

I may add that, in addition to Mr. Bray's experience, given in NATURE, No 1348, several accounts of similar observations are given in Newton's "Dictionary of Birds," with estimates of altitudes, ranging, for the most part, much higher than those given above. ROBERT H. WEST.

Syrian Protestant College, Beirut, November 25.

### A Luminous Centipede.

RETURNING home on a very dark evening a few days ago, I saw on the ground a greenish phosphorescent light which, in the distance, I took to be a glowworm (*Lampyris noctiluca*), but a nearer approach showed a luminous thread-like worm of $1\frac{1}{4}$ inches in length, moving in curves along the gravel drive. I stooped and placed a finger and thumb on either side of the glowing thread without actually touching it, and in a few seconds observed that, aware of danger either from scent or vibration, the insect showed a remarkable power of control over its luminosity, invaluable for protection. It began to extinguish its light, and in a most peculiar fashion not dying slowly out all over, but with a rapid wave of darkness sweeping from the tail to the head, then in a second or so glowing brightly all over again, repeating the manœuvre several times so long as my finger and thumb remained in its vicinity. A glass was brought, into which I transferred the insect, where it glowed with a lessened light for three or four hours. The next night the phosphorescence was very feeble, and on the morning following the insect was dead.

Seen in the daylight my capture appeared to be a thin thread-like centipede, orange-coloured, furnished with a fringe of fine hairs on either side of its many-segmented body.

ROSE HAIG THOMAS.

The White House, Basildon, November 27.

THE above communication certainly refers to one of the luminous centipedes of the family *Geophilidæ*; and since the species that most commonly draws attention to itself in England by the exhibition of phosphorescence is of a reddish-orange colour and is known as *Linotœnia crassipes*, there is no reason to doubt that the specimen under discussion was an example of this species. The property of luminosity lies in an adhesive fluid secreted by glands which open upon the lower surface of the body, and the power of discharging or retaining the fluid appears to be entirely under the centipede's control.

The phenomenon is observable during the autumn months, from about the middle of September to the end of November, and although its significance is not clearly understood, it is generally believed to be connected with the pairing of the sexes.

R. I. POCOCK.

### The Critical Temperature of Hydrogen.

IN the October number of the *Proc. Phys. Soc.*, Mr. "G. H. B.," after quoting Wroblewski's paper "Die Zusammendrückbarkeit des Wasserstoffes" (*Wiener Sitzb.*, 1889), says (referring to my paper "On the Critical Temperature of Hydrogen," *Bull. Acad. Cracovie*, March 1895): "Natanson does not appear to have made any fresh experiments on the subject, and the conclusions arrived at in his paper are therefore not results of independent original investigation." It is difficult to understand the right Mr. "G. H. B." has to ignore the professedly *theoretical* character of my paper. To blame a writer offering theoretical deductions on the account of his not having made "fresh experiments," is surely a criticism of extraordinary character. Wroblewski's critical data are not in the least the outcome of direct experiment, but have been calculated from an empirical equation, constructed to represent Wroblewski's compressibility curves. My reasoning and calculation are *utterly different*, being founded upon Van der Waals' law of thermodynamic correspondence. Besides, there are other points in my paper, and they have no relation with whatever Wroblewski has written. All this will be seen at once on comparing my paper with that of Wroblewski's. But from Mr. G. H. B.'s own words, it must be inferred that, before publishing what implies a serious accusation, he did not take the trouble of looking with his own eyes at Wroblewski's paper.

LADISLAS NATANSON.

Cracow University, November 28.

### *A METEOR PHOTOGRAPH.*

THE accompanying photograph (p. 132) was obtained on Saturday night, November 23, about 12h. 15m., by Mr. C. P. Butler, at Knightsbridge. With the intention of focussing and testing the field of a new lens, he had placed a quarter-plate camera on the window-sill, pointed it roughly at the region near the boundaries of Perseus, Andromeda, and Aries. He was necessarily in darkness during the exposure, but uncovered the plate about 12h. 10m., and terminated the exposure at 12h. 20m., so that the limits are close enough for recognising the meteor if it chances to have been recorded elsewhere, On developing the plate on the following Monday, the track of the meteor was the first impression to be perceived, and, not knowing of its occurrence during the taking of the photograph, it was thought that the plate had by some mishap been spoiled. Having finished developing, however, and after fixing, it was seen that this was not the case, the strange appearance being evidently an image of some meteor flashing past during the exposure. The star trails (the camera was fixed, so the stars are represented by short lines about an eighth of an inch long) are all distinct, but owing to the region included in the field being almost barren of bright stars, with the exception of $\alpha$, $\beta$, and $\gamma$ Arietis, which come in at the edge of the plate, they are too minute to bear reproduction.

Confirmation of the occurrence of the meteor is given by its having been observed from the South Kensington Observatory, both the time of fall, 12h. 15m., and the estimated region of its path being identical with the above observations.

As near as can be estimated, on consulting the region on the star map, the meteor appeared some distance south of the interval between Perseus and Aries, in the area enclosed by $\alpha$, $\gamma$, $\xi^2$ Ceti, and fell downwards. It would probably be one of the Andromedes, which were due to occur on the 23rd ult.

It was described as being as bright as Jupiter, and leaving a long trail. This is fully borne out on carefully examining the negative, or the accompanying enlargement, which is about six times the size of the original. Much additional light is thrown on the phenomena attending the passage of a meteorite through our atmosphere, as at present all that is known rests on the results of visual observations, which may be greatly deceptive in the case of such rapidly-moving objects.

The image, in comparison with those of stars of known

magnitude, proves the body to have been at least of magnitude – 1, and at the time of greatest brilliancy this s probably an under-estimate.

PHOTOGRAPH OF A METEOR.

It begins very faintly, showing the initial contact with the atmosphere, and, gradually increasing in brilliancy until it has travelled about $1\frac{1}{2}^\circ$; it is evident that about this time an explosion occurred, the details of which are well recorded on the photograph. The products of the detonation are seen spread out in all directions round the central mass, but the main portion again takes a definite path; not, however, in the original direction of the meteor's flight, as can be readily seen on reference to the photograph.

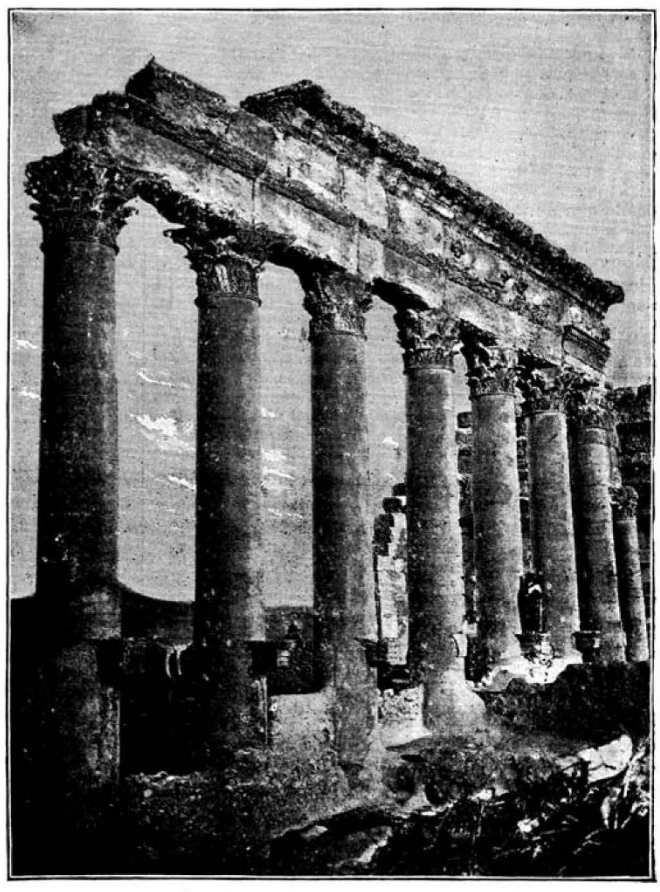
This is probably due to the body being of such a nature as to resist disruption in some directions more than others, and so the resultant of the initial velocity and the new velocity, due to the recoil of the main mass, might lie in some other direction than that of the original path. This has been the case here. If, as an approximation, we take its first appearance to have been at a height of sixty miles, the extreme diameter of the area occupied by the matter expelled during the explosion would be a little more than a mile. The brightest portion of the streak is about $3\frac{1}{2}^\circ$ long, but the fainter trail may be traced for a considerable distance beyond, becoming at last too faint to affect the sensitive plate.

## *THE ROYAL CITY OF ZENOBIA.*[1]

LIKE all ancient cities of the East that have once been centres of trade and culture, but are now only marked by piles of ruins and a few squalid huts, Palmyra has a strange fascination. Though on the edge of the Syrian desert, the site of this ancient city is but five days' journey from Damascus, so that her ruins have been thoroughly explored, her inscriptions copied, and all facts that might be of interest to the man of science, the archæologist, or the historian, have been obtained from her. On opening Dr. William Wright's "Palmyra and Zenobia," therefore, we did not look to find anything very startling or original.

From internal evidence of his work, we gather that Dr. William Wright, who must not be confused with the late Prof. William Wright of Cambridge, is connected with a Protestant missionary society, and from his preface we learn that he was resident in Syria for nine years. It was, perhaps, in consequence of his duties at Damascus that he was unable during this period to break fresh ground in his excursions from that city, and had to be content to follow the more beaten tourist track. His book, in fact, contains an account of two visits to Palmyra, one in 1872, the other in 1874; and as neither of these was of very long duration, we must congratulate him on the production of the present work. The latter part of the book records a trip to the south of Damascus as far as Bosra.

His account of his experiences on the road is amusingly told, and to many will be novel, for Syria is not yet so well known as Switzerland; but what Dr. Wright regards as "adventures," would perhaps appear to the veteran explorer as somewhat ordinary incidents of travel. His description of the ruins, however, and his sketch of the history of Palmyra, though a little superficial and wanting in arrangement, is in the main trustworthy and will, no doubt, prove attractive to many readers. On one occasion the author drops his *rôle* of gossipy narrator, and inserts on p. 124*f.* two Palmyrene inscriptions, to



COLONNADE OF THE TEMPLE OF THE SUN.

[1] "An Account of Palmyra and Zenobia, with Travels and Adventures in Bashan and the Desert." By Dr. William Wright. (London: Thomas Nelson and Sons, 1895.)