

clouds are seen from here on almost every clear night near the summer solstice. For the last two years special note has been taken of them. In 1887 they were first seen at midnight on June 13, and last seen on July 20; this year their first appearance at midnight was on June 4, and they are still visible every clear night. The clouds are not, as far as I have observed, coloured, but shine with a pearly or silvery lustre. I have seen them at midnight as high as 30° altitude, but they are generally confined to the first 10° or so above the northern horizon. The facts that they vary greatly from night to night in appearance, being sometimes almost absent, and that one or two photographs that have been taken of them show them simply as ordinary cirrus clouds, all seem to indicate that they really are very high cirrus lighted by the sun.

I may add that the upper glows continue to be seen here, though with varying intensity, on every clear night both before sunrise and after sunset, but for the past year no reddish ring or glare has been observed round the sun in the day-time.

Ben Nevis Observatory, July 2.

R. T. OMOND.

Micromillimetre.

THE Council and the Fellows in general meeting have taken into consideration the objection raised by Prof. Rücker to the term micromillimetre.

This term was in use by microscopists long before the British Association Committee formulated their system of nomenclature; but nevertheless the Society are unwilling, on a question of precedence only, to insist upon retaining a word which may give rise to confusion.

The Council have therefore directed the editors of the Journal to discontinue the use of the term "micromillimetre," and to substitute for it that of "micron," which has been in use for as long a time as the former word.

This resolution has been confirmed by a general meeting of the Society, who agree with the Council in thinking that the term "micrometre," proposed by Prof. Rücker, would give rise to considerable confusion from its similarity to "micrometer."

FRANK CRISP,

Royal Microscopical Society, June 21.

Secretary.

A Prognostic of Thunder.

AMONG prognostics of thunder given in books and elsewhere I have never met with mention of what has for years been to me one of the most trustworthy of weather signs, viz. the formation of *parallel streaks or bars*, definite in form but limited in number, extent, and persistence, appearing chiefly in cirrus and cirro-stratus, but also on the surface (apparently) of nimbus. In cirrus they give often almost the first intimation of coming change after settled weather, and are almost, if not quite, invariably followed within twenty four or thirty-six hours by thunder. When they appear on nimbus the interval is much less, but they are not seen, I think, on the thunder-cloud itself. These small patches of definitely marked "parallel bars" are to be distinguished from the more general parallel arrangement which is often seen on a much larger scale, but which has not, so far as my observation goes, any very distinct value as a weather prognostic.

As the thundery season is now on, it would be interesting to have the observation confirmed by others, and the connection of this particular form of cloud with electric disturbance explained. I have no doubt of the fact, and have often, and several times within the present year, pointed out these "parallel bars" to friends who had never observed them, and hardly ever has my prediction of thunder failed to come true. In the very few cases in which thunder has not followed in the same locality, I think I may say that there have never been wanting instances of its occurrence within a moderate distance.

B. WOODD-SMITH.

Branch Hill Lodge, Hampstead Heath, June 29.

Parasites of the Hessian Fly.

ALTHOUGH numbers of these most useful insects were bred last year from puparia of 1886 and 1887, there seemed to be a good deal of doubt among some entomologists as to whether the American species, *Merisus destructor*, had occurred. I bred a

large number of various kinds, four of which appeared to me to agree in every respect as to form, colour, and marking with the description given by Prof. Riley.

During the present month (June) I have bred a very large number of this parasite, specimens of which (both male and female) I sent to Dr. Charles Lindeman, of Moscow, who has just replied that "the specimens of parasites sent, bred in England from the Hessian fly, seem to me to be *Merisus destructor* of Riley, &c." He thus fully confirms my opinion of last year, that the American parasite had occurred here. Early in the spring I bred several other parasites which, I am much inclined to think are *Platygaster herrickii* of Riley; and, if this is correct, it strengthens the opinion that part of the attack came from America.

The damp muggy weather appears to be decidedly favourable for the development of "the pest," the larvæ of which I found at the beginning of this week engaged in weakening the stems of barley; and on June 2 I observed a female Hessian fly ovipositing. The number of eggs laid was 158! Truly a most prolific "pest," requiring both natural and artificial means to check its increase.

F. E. S.

Fact and Fiction.

AS Mr. Grant Allen reads NATURE,—indeed this is evident from a sentence in his novel "This Mortal Coil," now in course of publication in *Chambers' Journal*—he will perhaps be good enough to satisfy my doubts upon the following practical points in electro- and thermo-physics. Firstly, in order to successfully attract a flash of lightning to a tree, is it necessary to bury beneath its roots a Rhumkorf coil? Secondly, do Rhumkorf coils exist which are *without* secondary wires? Thirdly, will an electric discharge ignite commercial petroleum oil?

While it is not undesirable that scientific fact should be imported into modern fiction, it is surely important that it should be fact: loose statements are apt to perpetuate themselves.

Mr. Allen is exceptionally well read and observant, and I am quite at a loss to understand why a simple solution of continuity in that part of his copper conducting wire which was immersed in the petroleum would not as well have served his purpose (if indeed, that purpose could have been effected in the way described), as the elaborate expedient of burying and destroying an expensive piece of apparatus.

Dublin, July.

HARRY NAPIER DRAPER.

The Nephridia of Earthworms.

THE number of NATURE published on June 28 last contains (p. 197) an interesting paper by Prof. Baldwin Spencer, which deals with the excretory system of the gigantic Australian earthworm *Megascolides*. Prof. Spencer promises an extended memoir upon the anatomy of this earthworm, which has not hitherto received more attention than a superficial description. In the meantime the paper in NATURE contains an abstract of the results obtained by the author from his investigation of the nephridia.

This paper is particularly interesting to myself, as I am at present preparing an account of some further investigations into the anatomy of the excretory system of earthworms, which will supplement those already published by me in the *Quart. Journ. Micr. Sci.* (January 1888).

It appears from Prof. Spencer's paper that, as he himself points out, there is a considerable resemblance between the excretory organs of *Megascolides* and of *Perichata aspergillum*, one of the species investigated by me; there are at the same time certain important differences between the two types.

In my paper upon *P. aspergillum* I described only the nephridia of the anterior segments of the body. I have since found that the nephridia of the posterior segments are in some respects different. In both cases, however, the external orifices are more numerous than I was at first inclined to suspect. They are not limited to the area of the segments which lie between the setæ, but are found all over the body, scattered irregularly; they have, in fact, no relation whatever to the segmentation of the body.

The tufts of tubules in the posterior segments of the body are not so abundantly developed as in the anterior segments, where they not only form a layer covering the body-wall and septa but occupy nearly the whole of the coelomic space available.

Again, they are furnished with numerous ciliated funnels; I have not detected them in the nephridia of the anterior segments, but they have been possibly overlooked. These funnels are very abundant; for example, I counted five in one section on one side of the body. Some of them are distinctly larger than others; the larger ones were occasionally observed to be connected with a duct which perforated the septum and joined the nephridia of the segment behind.

In the posterior segments there is a distinct tendency for the nephridial system to become broken up into isolated clumps. It by no means always happened that this tendency to segregation was in relation to the metamerism of the body. On the contrary, the tufts are scattered irregularly in the segments; and the inter-segmental septa do not always isolate the nephridial tufts which are connected by intraseptal tubules.

In fact the nephridial system of *Perichata* and *Megascolides* forms a strong support for that view of the origin of the segmented from the unsegmented worms that has been so ably argued by Arnold L. ng.

With regard to the ciliated funnels of *Perichata*, it is right to mention that they have been already observed by Dr. Benham in a species from Luzon, though no description has been published. Prof. Spencer has made the observation that in the posterior region of the body of *Megascolides* there are a pair of much larger nephridia, which are furnished with a ciliated funnel opening into the segment in front of that containing the nephridium. He believes that these have arisen from the smaller nephridial tufts, and that from them are derived the paired nephridia of such earthworms as *Lumbricus*. I am quite disposed to agree with Prof. Spencer with regard to these points. I had already made some observations upon another earthworm which exhibits a closely analogous structure.

In *Perichata aspergillum*, as I have mentioned above, some of the ciliated funnels are larger than the others, and are connected with a nephridial tuft lying in the segment behind that which contains the funnels. I could not, however, notice a very marked difference in the size of the nephridial tubules themselves.

In another species of *Perichata*, viz. *P. armata*, which was characterized some years ago (*Ann. Mag. Nat. Hist.*, 1883) by myself, the nephridial system is rather different from that of *P. aspergillum*. Mr. W. L. Sclater, of the Calcutta Museum, has kindly sent me some specimens of this worm which were well preserved. The worm has been lately re-described by Dr. D. Rosa (*Ann. Mus. Civ. Genova*, 1888), who states that each segment contains a pair of nephridia, opening internally by a funnel which lies in the segment anterior to that which contains the nephridium. So far Dr. Rosa's description is accurate, but there are also innumerable tufts of minute tubules which may or may not be provided with funnels. *These appear to be for the most part quite distinct from the large pair of nephridia*. The calibre of the tubules of the large nephridia is many times greater than that of the small tufts. The latter open by numerous orifices on to the exterior.

In the present state of our knowledge it appears to me permissible to derive the paired nephridia of *Lumbricus*, &c., from the network of *Perichata* in two ways, which may both have actually taken place:—

(1) By the gradual development of a pair of large nephridia, in the way suggested by Prof. Spencer, out of the minute nephridial network, and the gradual disappearance of the latter (which is in the process of disappearance in *Perichata armata*).

(2) By the gradual breaking up of the nephridial network into tufts of tubules specially connected with the setæ, as in *Acanthodrilus multiporus*, and by the disappearance of all but two of these. Dr. Benham's interesting form, *Brachydrius*, which has two pairs of nephridia in each segment, offers an intermediate condition in this reduction.

To assume that the ordinary condition of the nephridial system of earthworms has been derived in these two ways, renders the mutual affinities of certain earthworms easier to understand. For example, *Perionyx* (which is so nearly allied to *Perichata* in most respects, but differs in having nephridia of the *Lumbricus* pattern) may have been derived from *Perichata* directly via some such form as *P. armata* without having passed through an "*Acanthodrilus* stage"; again, *Deinodrilus*, which is intermediate in many characters between *Perichata* and *Acanthodrilus*, is also, as I shall hope to show later, intermediate in the arrangement of its nephridia, and may therefore represent a stage in the evolution of *Acanthodrilus*.

Zoological Gardens, N.W.

FRANK E. BEDDARD.

THE "AVOCET" ROCK.

THE circumstances attending the loss of the s.s. *Avocet* and *Teddington* towards the southern end of the Red Sea in the year 1887, and the subsequent finding of the small coral patch on which it is probable they both struck, are of interest, and deserving of record as showing the necessity for very close examination of seas where corals flourish, and the difficulties experienced in finding a small patch at a distance from land, when neither discoloration nor break of sea aid the searcher. It should be premised that the area between the Zebayir Islands and Jebel Zukur, in which this rock lies, had never been properly sounded, only a few scattered depths having been obtained. It is crossed yearly by hundreds of steam-ships—the majority of them British—and has always been accounted as deep, safe water.

On the 4th of March the *Avocet* was steaming southwards—with another steamer, the *St. Oswald*, with which she had kept company for some hours, not far from her—a strong head-wind and heavy short sea prevailing at the time. At about 8 a.m. a shock was felt, succeeded by two others, and shortly afterwards water was found to be coming in. It being evident that the ship would go down, the *St. Oswald* was signalled, and after a little time the crew of the *Avocet* were taken off by her, and the latter sank. A Court was held at Aden, and the evidence taken before it showed that the shock had been slight, one witness stating that he thought something had gone wrong in the engine-room; and another, that it was a heavy sea that had struck the ship. The verdict was that the ship had struck on an unknown rock in latitude 14° 21' N., longitude 42° 38' E., the position given by the master. No evidence was given to prove this position; but the fact of the *St. Oswald* being in company, and of other steam-vessels passing on either side of the two ships both just before and just after the accident, seemed to show that they must have been in the straight track, and that the position was not far wrong in longitude at any rate. H.M. surveying-ship *Flying Fish*, arriving at Aden shortly after the inquiry, spent some days on the suspected ground, and found nothing but deep water, over a hundred fathoms being found in the position given.

Those who have the responsibility of the issue of charts for the guidance of navigators may be pardoned if they are extremely sceptical and difficult to convince in the matter of new rocks in the great highways of traffic. So many instances occur of reports which on investigation prove to be erroneous—sometimes in the whole, sometimes in part (as of the position, for instance)—that very good evidence is required before a report, which seems in itself improbable, can be accepted, and one of Her Majesty's ships sent—perhaps from a long distance, and from other important duties—to spend many days in a search. In this case there was no doubt of the ship having foundered; but the cause of the disaster was somewhat doubtful, and her position was unsubstantiated. It was evident, however, that if she had struck bottom it must be a very small rock, as the presence of other vessels prevented the supposition of a wrong course.

The *Avocet* was partly laden with railway iron, she was pitching in a heavy sea, and the evidence of external injury was not convincing. Altogether it seemed more probable that some of this heavy material had fetched way and injured the ship from inside than that a rock could exist in the very track of the heavy trade of the Red Sea. The Admiralty therefore announced that they would order no further search until these points were cleared up, and the Board of Trade consented to order a further inquiry.

The witnesses were collected, and the Court sat on June 10, but before any further proceedings could take place a telegram was placed in the hands of the President