

NEW RECORDS FOR BRITISH ANNELIDS.

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DURING no previous year has so much been done as in the present to advance our knowledge of the Oligochaets of this country. This is due to the fact that the Royal Society has awarded me a grant from Government for the purpose of such investigations. The endowment of research is said by some to be very dangerous, and it is therefore a pleasure to be able to shew what may be achieved when a voluntary worker is aided in his heavy expenses. The present contribution is not intended to be exhaustive but suggestive; the aim being threefold. In the first place some recent records for rare and little known species will be given. We shall then take some of the species which are new to Britain, and close with a description of some annelids which are new to science. The lists will only include those names or species about which no doubt can any longer exist. There are a number of species in the writer's possession which can only be satisfactorily determined after a further investigation into their character on the one hand, and the recent Continental literature on the other; and it is felt that one had better make only such records as are entirely beyond dispute.

I. SOME NEW COUNTY RECORDS.

Nais heterochæta Benham occurs at Woodville, Derbyshire. *Chætogaster diaphanus* Gruith, found in the same county, in a pond at Hartshorne between Burton-on-Trent and Ashby, September 28th, 1911. *Nais obtusa* Gerv., same time and place. Also *Stylaria lacustris* L., which was likewise the dominant water worm at Sutton Broads in August. The same species received from Crowborough in Sussex. *Nais elinguis* O.F.M., taken at Kirkbride, near Carlisle, February 4th.

Among the Tubificids we find *Clitellio arenarius* Müller at Lytham, *Limnodrilus hoffmeisteri* Clap. and *L. udekemianus* Clap. at Malvern, Kew, and elsewhere. *L. parvus* Southern at Repton, May 12th, adult, and near Malvern Wells; *Heterochæta costata* Clap. at Lytham, as well as in the mud of the river Thames, along with various other species of Tubificids which are still under examination. My thanks are due to Mr. Charles Todd of Tottenham, for samples of ooze from the Thames, the Roding, and the Lea, which are rich in worms of this description. Other species will be named later. *Tubifex templetoni* Southern occurs in Sutton Park near Birmingham, and at Welland, near Malvern.

Lumbriculus variegatus Müller is very widely distributed, though, strange to say, I sought it in vain in and around the Sutton Broads in August. These phenomena, as Mr. R. Gurney

remarked to me at the time, have their value, and ought to be recorded. I found one adult at Welland, 1909. *Stylodrilus vejdotskyi* Benham has also been frequently taken. *Psammoryctes barbatus* Grube has been found by me at Stratford-on-Avon, in the Thames and elsewhere.

Among the Enchytræids much valuable work has been done. *Henlea nasuta* Eisen occurs at Sutton, Norfolk, with *Buchholzia jallax* Mich. *B. appendiculata* Buch. is common around Swadlincote. *Pachydrilus subterraneus* Vej. was received recently from Worcester, where it was found in the drip from a tap. *Henlea puteana* Vej. abounds at Ledbury in Herefordshire.

Enchytræus albidus Henle, *E. pellucidus* Friend, and *E. argenteus* Mich. (= *E. parvulus* Friend) have received much attention. One or other of the forms, or each and all have been taken at Birmingham, Carlisle, Sutton Broads, Kew, Cambridge, Malvern, and elsewhere, and the question of their possible identity, with that of *E. hyalinus* Eisen, is being carefully studied. *E. turicensis* Bret. has this year been added to the English lists, as has also *E. minimus* Bret. *Fridericia bulbosa* Rosa is one of the most widely distributed species in this group, and has been found at Malvern, Hurstmonceux, Rugby, Newton near Penrith, Newark, and elsewhere, usually in the company of *F. michaelseni* Bret., while *F. striata* Lev., *F. ratzeli* Eisen, *F. leydigi* Vej., and *F. perrieri* Vej. have a similar distribution. Up till this year the various species of Achæta have evaded the English collectors, though three species have come into the hands of Mr. Southern in Ireland. We are, however, not without representatives of the genus. Our first record is *A. bohémica* Vej., Kew Gardens, August 28th, 1911. Another species has to be noted later.

I need say little about the earthworms as their distribution is being carefully worked out in my contributions to the *Zoologist*. An interesting form of *Eisenia rosea* Sav. was found in the Botanic Garden, Cambridge, on August 26th. One specimen of the rare *Bimastus eiseni* Lev. was taken on Mr. R. Gurney's estate near North Walsham: *Eophila icterica* Sav., *Aporrectodea similis* Friend, and *D. submontana* Vej., with other interesting species at Kew on August 28th. Special note may be made, in conclusion, of *Helodrilus oculatus* Hoffm. and *Octolasion gracile* Oerley. The former is now known to occur near Edinburgh, in various localities on the eastern side of the Malverns, at Eastnor, in the Botanic Garden, Cambridge, abundantly in the Thames at Kew, with other rare worms new to Britain, and in the dykes of the Sussex marshes, as at Boreham and Hurstmonceux. The other worm (*O. gracile*) was the subject of a note in the last issue (see page 394). It has been found abundantly at Sutton Broads, where it was the most

prevalent form of *Allolobophora*, and sparingly at Bridlington, Carlisle, in Scotland, Derbyshire, and elsewhere.

These notes, which do not by any means exhaust the year's records, will suffice to suggest the direction in which our subject is advancing.

II. ANNELIDS NEW TO BRITAIN.

The year has been fruitful in this direction also. A few worms which were known to occur in Ireland or Scotland have now been found in England too, while others are at present known only in England so far as these islands are concerned. It is pleasing to be able to record the occurrence in England of *Monopylephorus trichochæta* Dit., and *M. parvus* Dit. They were both found in the mud on the banks of the Thames off Kew Gardens, along with *Paranais naidina* Bret., *Helodrilus*, an Enchytræus new to science, and other novel oligochæts. A new *Trichodrilus* and a new *Stylodrilus* are under examination. The Enchytræids have been the chief subject of investigation, and mention may be made of *Buchholzia appendiculata* Buch., found at Smisby near Ashby, and elsewhere; *Enchytræus minimus* Bret. and *E. turicensis* Bret., found in Derbyshire; *Fridericia paroniana* Bret., a beautiful pigmy form discovered at Acresford near Ashby-de-la-Zouch with the last named, and another rare Enchytræid named *Achæta cameranoi* Cognetti. This is a most interesting addition to our worm fauna, since the creature not only has no setæ, but is even destitute of the sacs which are usually found in other species of *Achæta*.

Fridericia bisetosa Lev. as well as *F. bulbosa* Rosa may now be definitely added to the English list. During my stay at Sutton Broads Laboratory in August two or three new species of *Fridericia* were discovered; but these, together with some other Enchytræids from Newton Moss in Cumberland, and Newark, have yet to be determined. *Henlea rosai* Bret. was found by me at Buxton on May 27th, 1911. *Lumbricillus (Pachydrius) verrucosus* Clap. occurs near Ashby-de-la-Zouch.

I find on reference to my notes that there are several other species which have long been known to me which do not occur in the lists published by Southern and others. These will be enumerated in due course when the whole subject will come up for careful revision.

No new species of Lumbricid has been added to our lists since *Dendrobæna mercienensis* Friend was discovered. We pass, therefore, to our final subject, viz. :—

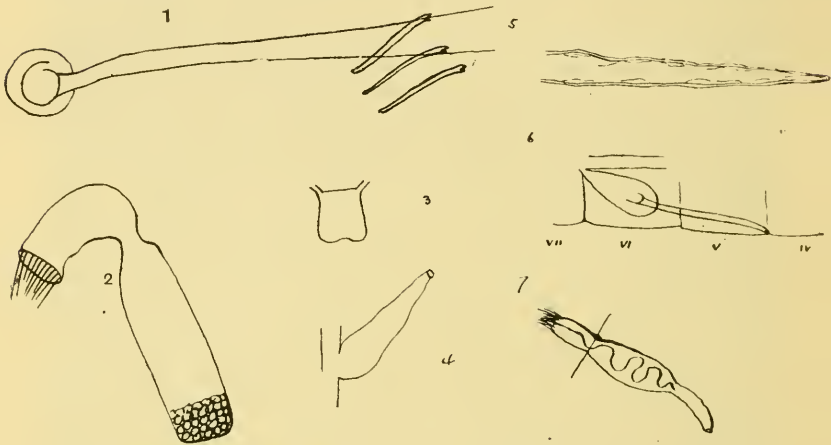
III. SPECIES NEW TO SCIENCE.

In a letter to *Nature*, September 21st, 1911, I stated that a new *Monopylephorus* had been found in the Thames ooze. Further examination shewed that the worm had already been

described, and two species of this genus have now been added to the one (*M. rubroniveus* Lev. = *Vermiculus pilosus* Goodrich), already known. I found, however, a new Enchytraeus and a new Limnodrilus in the mud, the latter occurring in the Lily Ponds in Kew Gardens as well. The diagnoses are as follows:—

1. *Limnodrilus aurantiacus*, n. sp.

Length 6-8 mm. or more, with about 60 segments. Brilliant orange coloured cells in segments 8 to 20 or thereabouts—hence the name. Setæ usually 5 in segments 2 to 8, and three behind the 8th segment, varying somewhat in size in two ways. The setæ in front (anterior) are to those of the posterior segments as 3 : 2 in length, while the individuals of the anterior



- 1.—Penis sheath of *Limnodrilus aurantiacus* Friend, with setæ of same relative size.
 2.—Spermatheca of " "
 3.—Brain of *F. exiguus* Friend. "
 4.—Spermatheca of *F. exiguus* joining intestine.
 Salivary gland (5), spermatheca (6) joined to intestine in 6/7, Nephridium (7) of *Fredericia pulchra* Friend.

segments are of unequal lengths. A large heart occurs in segment 8 with a less prominent one in the 9th. The penis sheath is slightly bent, and its length is to its greatest breadth as 13 : 1. It is of value also to observe that the penis sheath is five times as long as the hinder setæ, and nearly four times the length of those in the anterior bundles. The brain is roundish, with strong processes in front and a slight concavity behind. The shape of the spermatheca can only be rightly understood by means of a drawing. The pharynx reaches to the posterior end of the 4th segment, and the septa 4/5 to 7/8 are thickened. The nephridia of the tail possess a very tiny ante-septal.

2. *Enchytræus exiguus*, n. sp.

A very tiny creature measuring 2-3 mm. and containing about 28 segments. Blood yellow; heart-like bodies in segments 7 and 8. The setæ are large for the size of the worm, are 2 or 3 in number in each bundle, while the front individuals are to the hinder ones as 3 : 4 in length. The girdle extends over segment 12 to the setæ of 13. The spermathecæ do not possess glands, diverticula, or a separate duct, but gradually widen towards the intestine. The salivary glands are of a very rudimentary character and look like the two ends of an old-fashioned clerical cravat. There are strong single commissures in $3/4$ and $4/5$, and the post-septal of the nephridia is about five times the length of the anteseptal. The dorsal vessel originates in 11/12 at the beginning of the girdle.

3. *Fridericia peruviana* Friend.

This species was received in earth from Kew Gardens. The mould had come with plants from Peru, and the description is in the hands of the Sec. Roy. Micro. Society.

4. *Fridericia pulchra*, n. sp.

When I was at Kew on August 28th, a careful inspection was made of the loam heap. Here, along with *Eophila icterica* Sav., *Aporrectodea similis* Friend, *Achaeta bohémica* Vej., and other rare annelids, I found a species which is not known to me as having been previously described. It belongs to the bisetose group but differs in various ways from *paroniana*, *maculata*, and *bisetosa*. The setæ, of which there are two in front, and one in each set behind, are bent internally. The worm is quite transparent, is 12-15 mm. in length, and has from 55 to 60 segments. It is a yellowish green to the naked eye, the colour being due to the coelomic corpuscles, which are individually large and of a yellow hue, but tend to shew a green tint when crowded. A striking characteristic is the long salivaries which extend back to the septum $7/8$. The chloragogen cells on the intestine are large, brownish, and somewhat wide apart. The spermathecæ have long ducts which open normally in $4/5$, but the ampulla joins the intestine further back than usual, near the septum $6/7$. The ante-septal is nearly as large as the post-septal, but this latter gives off about its middle a large duct which increases its apparent size. The duct is as long as the other parts of the nephridium combined. The dorsal vessel originates about $21/22$ or even further back, the girdle covers segment 12 and $\frac{2}{3}$ of 13, there are two pairs of septals in $4/5$, $5/6$, and the septa behind these as far as $8/9$ are thickened and forced back. The ampulla in segment 12 is about 2-3 times as long as broad, straight at the mouth, without neck or collar, grey and glandular. The duct is slender, coiled and long. It is the prettiest species I have seen, hence the name.

5. *Henlea perpusilla* Friend, was described in this journal in September (see page 320).

6. *Trigaster minima* Friend.

Some earth received by me from Kew, in May, which had come from Peru, contained two immature Perichaetidae, and a new Enchytraeid. When I had kept the earth several weeks I found another annelid which seems to represent a species new to science. Beddard's *Monograph* contains the following account of Benham's genus *Trigaster*:—'*Definition*: Setae strictly paired, Clitellum extensive, XIII.-XL. Three gizzards in VII.-IX.; calciferous glands absent; Nephridia diffuse; a mucous gland present; penial setae absent. This genus only contains one species.' The type came from the West Indies, and was fully described by Benham, who notes that the prostomium is not imbedded in the buccal segment or peristomium, that the intestine begins in the thirteenth segment, and that the spermathecae are without any apparent diverticula. In *Das Tierreich* Michaelsen gives five species, but the remaining four have only 2 gizzards, and *Trigaster lankesteri* Ben. remains alone with three. This species is, however, subdivided into three subspecies, on account of the differences in the setae and other details. In the type the gizzards are in segments 7, 8, 9; in *intermedia* and *calwoodi* they occupy segments 5, 6, 7.

The position of the gizzards is a point of great importance, as is also that of the hearts and the commencement of the intestine. In these particulars the species now under consideration varies widely from Benham's type, as will be seen from the following details.

Trigaster sp. nov. Immature. Number of segments, 50; length, 15 mm.; breadth, 1 mm.; prostomium very delicate, and capable of being drawn into the buccal cavity and everted. The movements of the worm remind one of a planarian rather than of an oligochaet. The setae are paired, and differ somewhat in length and size in the ventral and dorsal bundles. The dorsal vessel is attended by dark chloragogen cells, and there are four or more pulsating hearts between the gizzards and the intestine, the strongest being in segments 12-15. The intestine begins in 19, and the gizzards lie in 9, 10, 11. The segments in front of the gizzards are richly supplied with blood vessels, which ramify in all directions. A commissure is found in each segment behind the 19th. There is a striking difference between the fore and hinder parts of the intestine. From its commencement backwards to the 30th segment it is of large size; it then contracts, and from about the 33rd to the end, it is only one half the size.

Unfortunately the immature condition of the specimen renders it impossible for me to give any information respecting the disposition and structure of the sexual organs. But the

details I am able to supply are abundant to show how widely the new species differs from Benham's type. It may be well to place the essential points side by side.

Organs.	<i>T. lankesteri.</i>	<i>T. l.</i> vars.	Sp. nov.
Gizzards	7, 8, 9	5, 6, 7	9, 10, 11
Segments	Ca 500	550-580	50
Length	?	240-280 mm.	15 mm.
Last Heart	? 12	13	Ca 16
Intestine begins ..	13	? 13	19

In the related genus *Benhamia*, we find species differing in length from 16 mm. (in *B. curta*) to 540 mm. (in *B. rosea*), and we may therefore expect *Trigaster* to have a similar range. On account of the small size of the species here described, I propose to name it *Trigaster minima*. Other species new to science will be described in a later contribution. Meanwhile I earnestly solicit the co-operation of collectors.

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In the November *Geological Magazine*, Dr. Lewis Moysey describes and figures some arthropods from the Derbyshire and Nottinghamshire coalfield, including *Leaia trigonioides* sp. nov.

In *The Mineralogical Magazine*, No. 74, Mr. F. H. Butler has a paper on 'The Brecciation of Mineral-veins,' in which he figures and describes examples from the Isle of Man, Grassington in Yorkshire, and Allenheads in Northumberland. In the same journal the Rev. Mark Fletcher figures and describes some artificially produced crystals of Gypsum, from Burton-on-Trent.

With the new volume the *Annals of Scottish Natural History* will appear monthly, instead of quarterly, and will be devoted exclusively to zoology. The last part of the old series (No. 80) contains a report on Scottish ornithology for 1910, the Hydroid Fauna of the West of Scotland, the Freshwater Rhizopoda and Heliozoa of Scotland, and the distribution of *Goodyera repens*.

In the *Journal of Botany*, Major Wolley-Dod describes a rose to which he gives the name *Rosa Margerisoni*. He writes: 'Reluctant though I have been to name any new form, especially one of which the parentage is doubtful, I think this form is sufficiently distinct to deserve a name, and its finder tells me there are several bushes.' The finder was Mr. Samuel Margerison of Calverley, who obtained the plant in Upper Wharfedale.

In *The Zoologist* (No. 844), Mr. F. J. Stubbs has some interesting observations on the Nocturnal Habits of the Redwing; Mr. J. M. Charlton describes the birds of the Northumberland coast; Mr. R. Fortune gives a spirited reply to the criticisms upon his observations of a variety of the Gannet, and adds 'it seems nowadays to be perfectly useless recording any occurrence rare, or differing from the normal, unless one is prepared to exhibit the specimen "in the flesh" and, although this course may be considered correct by "scientific" naturalists, to me, as a "field" observer pure and simple, it does not appeal. Otherwise it would have been an easy matter to have secured the bird.' With these remarks we heartily agree, though we do not remember to have previously met with a 'pure' and 'simple' ornithologist! Mr. R. Warren refers to his transactions with a Leeds dealer in birds' eggs