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## SOME JERSEY OLIGOCHÆTS.

BY THE REV. HILDERIC FRIEND, F.L.S., F.R.M.S.

UP till the present time only eleven species of *Oligochæta* have been known to me from Jersey, and these were all Earth-worms or *Lumbricidæ*. Little if any attention has been paid by naturalists to the other groups of terrestrial or freshwater Annelids hitherto, and no one could give the vaguest guess as to their nature or number. It was, therefore, exceedingly gratifying to receive at the beginning of July a large and typical collection made by my indefatigable friend and most expert investigator, Mr. H. Hillman, of Nottingham, ably assisted by Mr. Abbot, of Jersey. Mr. Hillman spent some days on the island during the month of June, and devoted many hours to a systematic search for the smaller species of Annelids, with results which abundantly justified and rewarded his exertions. In the letter which accompanied the gleanings, Mr. Hillman remarks that he captured something every day he was in Jersey. One box contained "collections of all kinds [except cash], mainly from places in the south and east of the island, and up valleys running northwards from the south coast and south-west. They come from broodsides, roadside banks where damp oozes out, gutters in similar places, half rotted heaps of potato haulms (what an odour these possess!), heaps of manure, of dead leaves, amongst roots of plants, moss, pot-plants in a vinery, the manure heap outside the vinery in which vines are growing, amongst algæ around roadside drinking troughs, and in a rotted elm. Some of the larger worms I got a friend (Mr. Abbot) to dig for in his garden. In this connection it should be added that the soil of Jersey is very light, full of moles, and, at the present time, desiccated and powdery, so that we dug in several places without finding anything at all, even where the ground was covered with weeds. The other tin box contains a collection of algæ, moss, &c., from many places. Some came

from just the border of the beach where fresh water was dripping ; some from a cave in Devil's Hole. The match-box contains a collection from the shore of the lake, the west and north generally, and the banks of a small stream running into Devil's Hole. I spent a whole day on this run on a cycle, and sorted out the worms as I got them, instead of waiting until I got back, and am under the impression there is a big number in the small space."

The surmise proved to be correct, as the following notes will show :—

GENERAL RESULTS.—Seeing that this is the first attempt to deal in a systematic way with the Annelid fauna of any of our islands,\* the results are of peculiar interest. Nearly fifty different species of Annelids reached me in Mr. Hillman's collection, and, when these are added to the species already known, we obtain the ensuing :—

Family.	No. of Species.
<i>Lumbriculidæ</i> ... ..	1
<i>Enchytræidæ</i> ... ..	31
<i>Megascolecidæ</i> ... ..	1
<i>Lumbricidæ</i> ... ..	17

If we analyse the Enchytræids, we find their number represented thus :—

Genus.	No. of Sp.	Genus.	No. of Sp.
<i>Buchholzia</i> ...	1	<i>Chamædrilus</i> ...	1
<i>Mesenchytræus</i>	2	<i>Pachydrilus</i> ...	2
<i>Henlea</i> ...	4	<i>Enchytræus</i> ...	4

while the species of *Fridericia* numbered sixteen at least. Though a strict account was not kept from the very beginning of each specimen of Enchytræid examined and identified, the figures which follow give a good idea of the relative frequency of the different species.

*Buchholzia* was represented by three specimens, all immature, and *Chamædrilus* by five, also in an immature condition.

\* Mr. Southern has dealt with Clare Island for the Irish students of Nature in a similar way. See Bibliography.

*Mesenchytræus setosus* was adult, three specimens being found; while only two were discovered of *M. oligosetosus* sp. nov. The Pachydrilids were *Marionina crassa* (?) represented by eight specimens, and one or two other species not yet diagnosed. Four species of *Henlea* totalled twenty specimens, there being one to credit to *H. insulæ* sp. nov., two to *H. parva* (?), four to *H. hibernica*, and thirteen to *H. rhætica*. Similarly the four species of *Enchytræus* were represented by thirty-four specimens. Of these *E. nigrinus* had one, *E. buchholzi* one, *E. minimus* six, and *E. albidus* twenty-six.

The Fridericias are everywhere in Britain the dominant genus of Enchytræid. As already stated, the number of species collected in Jersey by Mr. Hillman reached sixteen or more. Of these *F. helvetica*, *F. galba* and *F. bretscheri*, were represented by one apiece; *F. ratzeli* and *F. leydigi* by two each; *F. michælseni* and *F. glandifera* by three; *F. connata* by four; *F. polychæta* and *F. ulmicola* each by eight; *F. bulbosa* and *F. perrieri* by eleven.

The *Lumbricidæ* were well represented, *Allurus* and the Brandling (*Eisenia fætida*) being by far the most numerous.

CURIOUS LACUNÆ.—Not a single specimen of any of the genera belonging to the *Æolosomatidæ*, *Naididæ* or *Tubificidæ* was to be found, and only one specimen representing the family *Lumbriculidæ*. This seemed so anomalous that I wrote to Mr. Hillman expressing my surprise. A quotation from his reply may throw some light on the matter. It may be premised that when the consignment reached me it was accompanied by a note saying that the water containing weeds and algæ had gone putrid. "The absence of freshwater worms is remarkable, and yet cannot be attributed to the loss of the bottle of water; because if they had been present in the water, the wet moss and algæ would surely have contained them also. I particularly regret the loss of the water, because I had the peculiar conditions of Jersey in view when I got it. There are not six ponds in the whole island, I am told. All the streams are, of course, spring water, plus surface oozings, and the springs must surely be fed by Continental sources? They run directly into the sea down valleys more or less straight. It is quite possible what ponds there are may be seasonal, but the

'lake' and an old water supply reservoir, from both of which the contents of the bottle came, are constant. It is also to be noted that the main manure on the land is seaweed. I do not know if this may affect the types to be found, especially where used wet, and thus full of marine life."

When this fact about the manure is kept in mind, it is surprising that only two red-blooded Enchytræids or Pachydrilids occurred; the total number of specimens not reaching a dozen. There is, therefore, evidently room for further research and discovery.

EXTENSION OF RANGE.—Some very interesting facts have come to light in the course of this research. I begin with *Lumbricus papillosus*, Friend (= *L. friendi*, Cognetti), which was first discovered by me in Ireland, then found in the Pyrenees and Switzerland. Although searched for throughout England, Scotland and Wales for twenty years, it has never yet been found in the British Isles except in the south of Ireland. Its appearance, therefore, in Jersey is very instructive. Next in point of interest comes *Helodrilus oculatus*, Hoffm., whose known range is being constantly extended. To the Continental localities Germany, Switzerland and Italy, given by Michaelsen, we may add Holland (the Hague); and for Great Britain, London, Hastings, Malvern, Nottingham, Edinburgh, Dublin, and other localities. Now we have Jersey as a further habitat.

Frequent allusions have been made in former years to phosphorescent worms in England and Ireland, while specimens are still preserved in the Museum at Worcester of a species discovered some years ago in that city. But reliable records respecting the species are rare. This year, however, Mr. Hillman sent me worms from a market garden near Nottingham, which included specimens of *Microdrilus phosphoreus*, Dugès. Among the material collected in Jersey were five specimens of the same Annelid, while a further specimen, no larger than a well-formed *Henlea*, with hair-like processes in the mouth, may possibly be referred to this species.

While the typical form of *Allurus* was abundant, a very beautiful specimen of var. *luteus* was found in the adult stage with a few immature forms. So with the common Green Worm

(*A. chlorotica*); while some were of a brilliant green, others were yellow or golden. The remaining *Lumbricidæ* offer few subjects for special remark, except that certain species of the *Dendrobæna* group seem to be abundant.

It is among the Enchytræids that the most important discoveries have been made. The new species will be mentioned later. Meanwhile, a few remarks respecting those already known as British may not be out of place. Mr. Hillman took some specimens from "a rotted elm, a piece of which is enclosed on the chance that the worms peculiar to this may remain in it." This accounts for my finding no fewer than eight specimens of *F. ulmicola*, while only three of *F. michælseni* were present. The specimens were adult, and have enabled me to confirm and extend my original diagnosis. *Fridericia perrieri* was plentiful, but one specimen seemed to be clearly referable to *F. agricola*. While there were seven specimens of *F. polychæta* all closely resembling the type, there was one specimen which differed so widely from the rest that I have for the present given it place as a distinct variety. Similarly, there were two specimens of *F. leydigi*, and three others closely allied thereto, which have puzzled me greatly. About a dozen species are typical British and European, but some of the rest are critical, and one must hope for a further opportunity of examining new material in order to solve the problems which they present.

NEW RECORDS.—The family of Enchytræids is the only one which has supplied material new to Britain or to science. Here one new *Mesenchytræus*, two new Henleas, and certain new or little known *Fridericias* claim attention. As already stated, *Henlea* was represented by four species. Eleven specimens of *H. rhætica*, our best known species, perhaps, were collected with four *H. hibernica*. The others have not been found in Britain before.

#### 1. HENLEA INSULÆ, sp. nov.

*Description*.—Length, when alive, 12–14 mm. Segments 50–65. Setæ usually 8 in front, gradually diminishing from 6 to 4 behind. No œsophageal glands, therefore falling into the author's *Henleanella* division; no bulb, but œsophagus going gradually into the intestine as in *Fridericia* and *Enchytræus*. Dorsal vessel arising behind the clitellum in 17/18 or 19/20 segments.

Salivaries slender and forked like certain species of *Fridericia*. Girdle from 12 to  $1\frac{1}{2}$  13 with dense gland cells rendering it opaque. Septal glands of three pairs not of the normal shape. Two kinds of cœlomic corpuscles. Brain convex behind as in *Fridericia*. Spermathecæ with duct longer than bulb and ampulla, and possessing a pair of large glands at the  $\frac{4}{5}$  opening. Ampullæ fairly large, about  $3 \times 1$  with long irregularly coiled duct, and considerable atrial gland and large male pores. Nerve enlarged somewhat in segments 2-3. Nephridia with long duct from near the septum.

It will be seen that some of the characters are decidedly Friderician, while in some respects the creature resembles *H. multispinosa*. It is distinguished from all other British forms by the position of the dorsal vessel; while the setæ, spermathecæ, salivaries, brain and other characters serve to separate it from others. Now described for the first time. The trivial name is in allusion to the habitat.

## 2. HENLEA PARVA (?), Friend.

*Description*.—Length about 6-8 mm. Segments 35-40. Setæ 5-7, shortest in the middle of the bundle. Bulb in segment 8, dorsal vessel arising in the middle of segment 9. No œsophageal glands or salivaries. Brain not deeply incised, but slightly concave behind. Girdle 12 to  $1\frac{1}{2}$  13. Spermathecæ short, simple ducts gradually narrowing towards the intestine. Ampullæ small, about  $2 \times 1$ . Nephridia with small anteseptal and large postseptal, but origin of duct could not be discovered. Three pairs of septals and cœlomic corpuscles like those of *Fridericia*.

This comes very near *H. parva*, Friend, and I have therefore refrained from giving it a separate name. More material is needed before a final decision can be reached. See Trans. Notts. Nat. Soc., 1911-12, p. 60.

The genus *Mesenchytræus* is but poorly represented with us. In Jersey two species occur. *M. setosus* has already been reported for other localities. The following paragraph refers to a species not found previously in Great Britain, and, so far as I can judge, equally new to science.

## 3. MESENCHYTRÆUS OLIGOSETOSUS, sp. nov.

*Description.*—Length 5–6 mm. Segments 35. Setæ 1–3 per set, never exceeding 3, usually 2 dorsal and 3 ventral. The enlarged setæ in segments 5 and 6, two in each lateral bundle. Dorsal vessel arises apparently about 13/14. Nephridia with small ante and large postseptal, the duct being about the same length as the latter and arising near the septum. Brain incised behind. Three pairs of septal glands. Girdle with large gland cells on 12–1/2 13; moderately large ampulla for the size of the worm, with large atrial gland and male pores, and long coiled duct. No salivaries seen. Cœlomic corpuscles oval or ovoid, some with processes at the two ends. The spermathecæ were not observed.

The species has fewer setæ than any whose descriptions I am familiar with, hence the trivial name. Now described for the first time.

No genus is more perplexing than *Fridericia*. I have already described a good many new species (see Bibliography), and hesitate to multiply the number. Some of the Jersey forms are very perplexing, and two at least are new to Britain. One of them belongs to the group containing species with two setæ in each bundle throughout. The other merits separate description, and is named after the discoverer.

## 4. FRIDERICIA HILLMANI, sp. nov.

*Description.*—Length 10–12 mm. Slender. Segments 50. A second specimen was smaller than the type, but the characters were the same. Setæ 4 dorsally, 5–6 ventrally in front segments, 4 in segments 13–25, and 2 in posterior part of body. Spermathecæ with fairly large ampulla, duct two or three times as long, and about 5 sessile diverticula. No 4/5 glands. Salivaries stout, ends simple, but processes near the proximal end. Septals three pairs. Girdle on 12–1/2 13, with roundish gland cells, long slender coiled duct, and ampulla about 3 × 1. Dorsal vessel arises about 18/19. Brain of normal shape and size with convex posterior. Transparent between 9/10 and 13/14, clearly showing the internal organs; while the chloragogen cells in front are large and brown. Nephridia of front segments with somewhat globular anteseptal, and postseptal about three times as large.

LIST OF KNOWN FORMS.—It is now possible for us to take a survey of the whole field. The gap remains. No species of *Æolosomatidæ*, *Naididæ*, or *Tubificidæ* is on record.

## LUMBRICULIDÆ.

1. *Lumbriculus variegatus*, Müller.—One immature specimen.

## ENCHYTRÆIDÆ.

2. *Henlea rhætica*, Bret.—Common.
3. *H. hibernica*, Southern.—Less frequent.
4. *H. parva*?, Friend.—Rare.
5. *H. insulæ*, sp. nov.—Rare.
6. *Buchholzia (fallax?* immature).—Three specimens.
7. *Marionina crassa*, Clap.?
8. *M.* or *Lumbricillus*, sp. (possibly two kinds).
9. *Mesenchytræus setosus*, Mich.—Three specimens.
10. *M. oligosetosus*, sp. nov.—Two specimens.
11. *Enchytræus albidus*, Henle.—Common.
12. *E. buchholzi*, Vejd.—Rare.
13. *E. minimus*, Bret.—Not uncommon.
14. *E. nigrinus*, Bret.—Rare.
15. *Fridericia ulmicola*, Friend.—Eight specimens.
16. *F. michælseni*, Bret.—Three specimens.
17. *F. perrieri*, Vejd.—Common.
18. *F. agricola*, Moore.—Rare.
19. *F. leydigi*, Vejd.—With variety or new form, fine specimens.
20. *F. bulbosa*, Rosa.—Typical form. Ten or more specimens.
21. *F. connata*, Bret.—Four specimens.
22. *F. polychæta*, Bret.—Fairly common.
23. *F. polychæta* var. *robusta*, Friend.—One specimen.
24. *F. bretscheri*, Southern.—One specimen.
25. *F. glandifera?* Friend.—Three specimens.
26. *F. galba*, Hoffm.—One specimen.
27. *F. bulbifera*, Friend.—Three varying forms.
28. *F. ratzeli*, Eisen.—Rare.
29. *F. helvetica*, Bret.—Rare.
30. *F. hillmani*, sp. nov.—Rare.
31. *F.* (*bisetose* species not yet identified).
32. *Chamædrilus chlorophilus*, Friend.—Five specimens.

## MEGASCOLICIDÆ.

33. *Microscolex phosphoreus*, Dugès. Five specimens. Also a young (doubtful) form with hair-like processes from buccal cavity.

## LUMBRICIDÆ.

34. *Allurus (Eiseniella) tetrædrus*, Sav.—Type very common.  
 35. *A. (Eiseniella) tetrædrus* var. *luteus*, Friend.  
 \*36. *Eisenia fætida*, Savigny.—Common; dark.  
 \*37. *E. rosea*, Sav.  
 \*38. *Allolobophora trapezoides*, Dugès.  
 \*39. *A. turgida*, Eisen.  
 \*40. *A. longa*, Ude.  
 \*41. *Aporrectodea chlorotica*, Sav.  
 \*42. *Dendrobæna subrubicunda*, Eisen.—Common.  
 43. *D. arborea*, Eisen.  
 44. *Helodrilus oculatus*, Hoffm.  
 45. *Bimastus constrictus*, Rosa.  
 \*46. *Octolasion cyaneum*, Sav.  
 \*47. *Lumbricus rubellus*, Hoffm.  
 \*48. *L. castaneus*, Sav.  
 \*49. *L. terrestris*, Linn.  
 50. *L. papillosus*, Friend (= *L. friendi*, Cognetti).

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Pocklington, York.

\* Those marked with an asterisk had already been reported.