

OLIGOCHAET WORMS OF LANCASHIRE AND CHESHIRE.

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Worms fall naturally into two groups :

1. POLYGOCHAETS, which are marine.
2. OLIGOCHAETS, which are terrestrial.

We are here concerned only with the latter. These again fall into groups, and may be roughly distinguished as :

1. Earthworms (Lumbricidae).
2. Waterworms (Tubificidae).
3. Whiteworms (Enchytræidae).

These divisions must not be unduly pressed, as they are wont to overlap. Thus, some Earthworms are more or less aquatic. The Waterworms belong to different families of which the Tubificidae are the best known in England ; while the Whiteworms include a group (the Pachydrilids) with red blood, closely resembling waterworms, and in great part aquatic in habit.

The Oligochaets of Cheshire have, until this year, never been worked.

When, in 1911, I wrote on the distribution of earthworms in England, not one was on record for Cheshire. On March 6th, 1916, I received from Dr. Wm. Tattersall a Brandling (*Eisenia foetida*) and an immature *Dendrobaena* from that county. In January and February of this year Mr. T. A. Coward sent me rich collections from Rostherne (28-1-18), and his own garden at Bowdon (16-2-18), which contained nine species of Lumbricidae, of which the following is a list :—

1. *Lumbricus terrestris* L. Earthworm.
2. „ *rubellus* Hoffm. Red worm.
3. „ *castaneus* Sav. Purple worm.
4. *Eisenia foetida* Sav. Brandling.
5. „ *rosea* Sav. Mucous worm.
6. *Allolobophora longa* Ude. Long worm.
7. „ *chlorotica* Sav. Green worm.
8. „ *caliginosa* Sav. Turgid worm.
9. *Dendrobaena subrubicunda* Eisen. Gilt-tail worm.

In January I also received a number of gleanings from Mr. Coward and Mr. T. Clegg, of Rochdale, Lancashire, and among

these were many very interesting worms. My notes show, however, no additions to the foregoing list, unless, perhaps, *Allurus tetraedrus*, the Square-tail worm, may be included.

The chief interest lay in the fact that we were able for the first time to place on record a number of Enchytræids for Cheshire. Thus *Mesenchytraeus setosus* was found among decaying vegetation on the edge of the mere at Rostherne, where further examination will be rewarded by the discovery of Naids and Tubificids (Waterworms). There were also found in mossy soil in the same locality *Fridericia magna*, *Fr. michaelsoni*, *Fr. diaebaeta*, *Fr. perrieri*, *Fr. bulbosa*, and *Fr. connata*, with *Chamaedrillus*. Other localities in that neighbourhood yielded *Fr. lobifera*, *Fr. magna*, *Fr. michaelsoni*, *Henlea dicksoni*, *Enchytraeus albidus* and *Chamaedrillus*, showing that Rostherne is a peculiarly favourable district for this group of worms.

Mr. Coward's February material also contained some white worms (Enchytræids), six of which were from garden soil, and the seventh from behind the bark of a fallen tree at Rostherne, three being additions to the foregoing list. Their names are *Enchytraeus albidus* Heule, the commonest of all white worms, *Enchytraeus minimus*, *Fridericia michaelsoni*, *Fr. perrieri*, *Fr. beddardi* Bret., *Fr. lobifera* Vejd., and *Mesenchytraeus beumeri* Mich. Out of the seven specimens of *E. albidus* six were infested with parasites of five different kinds, a report on which has formed the subject of a separate communication.

I believe that represents the extent of our knowledge of the Cheshire Oligochaet worms. It is much to be desired that collection should be made in different parts of the county. Worms abound in almost every locality, but especially where there is rich humus or decaying vegetable matter. The white worms are not easily seen at first, but a little practice will enable one to find them without difficulty. The muddy sides and bottoms of ditches, streams, ponds, lakes, and seashore are rich in waterworms.

Lancashire has received a good deal more attention than Cheshire both by Southern (7) and myself (1). Our first researches go back many years, but more recently I have received specimens at intervals from Dr. Tattersall and Messrs. Coward, Williamson, Clegg, and others, which make a fairly respectable list.

The phosphorescent worm reported many years ago as having been exhibited at a meeting of the Literary and Philosophical Society of Liverpool (6) on November 14th, 1853, has never been identified, but was in all probability the alien *microscolex*, which has frequently been found in different parts of the country.

On June 5th, 1891, I visited the Lancashire borderlands from Keighley, and found eight species of earthworms (1).

1. *Lumbricus terrestris* L.
2. *L. rubellus* Hoffm.
3. *L. castaneus* Sav.

It is curious that *L. papillosus* has never yet been found in England, nor has *L. rubescens* (= *festivus*) been received from Lancashire, though I have frequently taken it in the adjoining county of Yorkshire.

4. *Allolobophora caliginosa* Sav.
5. *A. chlorotica* Sav.
6. *Eisenia rosea* Sav.
7. *Dendrobaena subrubicunda* Eisen.
8. *Allurus tetraedrus* Sav.

From Mr. Nuttall, of Rochdale, I received on September 26th, 1891, a set of worms containing *L. terrestris*, *L. rubellus*, *Eisenia rosea*, and

9. *Allolobophora longa* Ude.

On Easter Monday, April 10th, 1892, I visited Morecambe, and found *L. rubellus*, *L. castaneus*, *A. longa*, *A. caliginosa* (*turgida*), *A. chlorotica*, *Allurus tetraedrus*, and

10. *Dendrobaena mammalis* Sav.

March 4th, 1899, found me at Heaton Moor, where, in addition to the lesser worms to be named hereafter, I found *A. chlorotica* and *A. caliginosa*. This worm assumes two forms known as *turgida* and *trapezoides*.

Southern (7) later visited Lancashire, and in 1909 reported *L. terrestris*, *L. rubellus*, *Eisenia rosea*, *A. longa*, *A. chlorotica*, *A. caliginosa*, *D. subrubicunda*, and *Allurus*. He also added to our list .

1. *Eisenia foetida* (The Brandling).
2. *Octolasion cyaneum* Sav.
3. *Dendrobaena rubida* Sav.

The latter, often referred to as *D. arborea* Eisen, may be regarded as the typical tree worm, as it is most frequently found in decaying trunks and among dead wood. It was received by me from Mr. Clegg, of Rochdale, in January, 1916, having been found under dead leaves in a small wood.

In November, 1915, worms received from the Manchester Sewage works through Mr. Williamson included *L. rubellus*, *D. subrubicunda* and *Allurus*, and two years later (24-9-17) exactly the same species came from the sewage filter beds at Rochdale.

It thus appears that the number of earthworms stands at 13, exactly as it did in 1911 (Friend, 2, p. 373). So far as Waterworms are concerned, while not a single species is on record for Cheshire, Southern (7) and I have both done a little to elucidate the subject for Lancashire, but much valuable work remains to be done.

On February 15th, 1911, I was on a flying visit to Lytham when I found *Heterochaeta costata* Clap. and *Clitellio arenarius* O.F.M. Southern had already reported *Tubifex*, *Limnodrilus udekemianus** Clap and *L. parvus**, and these five are the only Tubificids as yet on record for the County. Another waterworm belonging to a different family has been found by Southern (op. cit. 141). It is very widely spread and known as *Lumbriculus variegatus**. The Naids, however, and many other interesting forms are quite unknown.

Coming finally to the Lancashire Enchytraeids, we have to go back to the year 1896 for our first record. On Feb. 15th of that year I paid a visit to Askam and found, in addition to a *Heulea* whose specific name is not recorded, two species of *Pachydrilus*, both of which abounded in Opaline parasites. The first I now refer (4) to *Lumbricillus lineatus* O.F.M., and the second, which has never been rediscovered, was named *Marionina appendiculata* Friend (3). It is characterised by external urn-shaped funnels at the opening of the spermathecae between segments 4/5.

On March 4th, 1899, I found *Enchytraeus pellucidus* at Heaton Moor as well as *Lumbricillus verrucosus*. To these Southern added in 1909 *L. subterraneus* and *L. pagenstecheri*.

Mr. Clegg sent me from Rochdale specimens of *Chamaedrilus* in January last, together with *L. verrucosus*, both of which contained interesting parasites. So far as I can gather this completes the list. The following works and articles are referred to in the text :—

1. 1891. Friend, "Lancashire Earthworms," *North Cumberland Reformer* of June 11th. Probably the earliest article on the subject in existence.
2. 1911. Friend in *Zoologist*, pp. 189, 373.
3. 1912. Friend in *Naturalist*, p. 79.
4. 1916. Friend in *Irish Naturalist*, Vol. 25, pp. 22-24, "On *L. lineatus*."
5. 1916. Friend in *Science Progress*, July, pp. 15-17.
6. 1865. Johnston on "British Worms."
7. 1909. Southern. *Proc. Roy. Ir. Ac.*, Vol. 27, Section B. 119 seq.

* River Douglas, Adlington, Lancs.