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On a new genus of phosphorescent Lumbricidæ, and on the type-species of that genus, Photodrilus phosphoreus, Dugès

M.A. Giard

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Yarell		D 15+15 P 19	V 1+5 A 3+8 C 14
Couch		D 15+13 P 17	V 1+5 A 3+7 C 15
Günther		D $\frac{15}{15}$..	.. A $\frac{3}{8-9}$.. Vert. 12/19
Day		D $\frac{15}{15}$ P 20	V 1/5 A $\frac{3}{8-9}$ C 13 Vert. 12/19
Specimens here referred to.	From Shetland, 1883	... D 15+13 P 19	V 1+5 A 3+7 C 15
	From Berwick, 22 i. 85	.. D 12+12 P 20	V 1+5 A 3+6 C 16
	From „ 19 v. 85	.. D 12+13 P { $\frac{18}{19}$ right left }	V 1+5 A 3+6 C 14 Vert. 25
	From Stonehaven, 14 ii. 87.	D 12+14 P 20	V 1+5 A 3+6 C 14
	From „ „	D 12+13 P { $\frac{19}{18}$ right left }	V 1+5 A 3+6 C 15
	From „ „	D 12+13 P 19	V 1+5 A 3+6 C 16

The following measurements were taken (along a median longitudinal line) from the largest Stonehaven specimen :—

	millim.
Diameter of eye	30
Length from tip of premaxillæ to centre of eye	40
" " " to posterior end of closed maxillæ	51
" " " to root of pectoral fin	105
" " " " pelvic fin	114
" " " " 1st spine of dorsal fin	93
" " " " 1st soft ray of "	221
" " " " last "	281
" " " " 1st spine of anal fin ..	210
" " " " 1st soft ray of " ..	226
" " " " last " ..	257
" " " " outer caudal ray	315
" " " " to tip of caudal central rays	378
Depth through centre of eye	73
" at root of first dorsal spine	110
" " " anal "	98
" (least) at root of tail	34

One of the three Stonehaven specimens had 6 spines on the preoperculum instead of the usual 5, the extra one being small, and situated close to the most ventral of the series.

On a new Genus of Phosphorescent Lumbricidae, and on the Type-species of that Genus, Photodrilus phosphoreus, Dugès. By M. A. GIARD.

The existence of the photogenic function among certain Lumbricidæ has often been pointed out; but very rarely have the parts which present this peculiarity been described in a sufficient manner, and the conditions under which the phosphorescence is produced are still imperfectly known. During the months of August and September I observed, at Wimereux, in the paths of a garden at some distance from the sea, a luminous earthworm, which appears to me to belong to a new genus of the group of "Lumbricius postclitell-

liens" of Perrier, nearly allied to *Plutellus*, and more nearly still to *Pontodrilus*. To obtain a fairy spectacle it was sufficient, in the evening, especially when the weather was damp, to kick or scrape the gravel on the walks; a multitude of luminous specks, of a fine opalescent green, were at once lighted up. These specks were of unequal dimensions: the largest produced a light as bright as that of our glow-worms, and visible even in a room lighted by a good lamp. When one of these specks was taken and rubbed between the hands, both palms were soon rendered luminous. In the vicinity of each phosphorescent speck, or of each luminous streak, a small earthworm was found, which, more often than not, showed no injury, in spite of the rather rough treatment employed to discover it.

Photodrilus phosphoreus has a length of from 45 to 50 millimetres, with a width of 1.5 millimetre (2 millimetres in the clitellian region). It has about 110 segments. Its colour is of a rosy grey, orange at the cingulum. The skin is sufficiently transparent to allow the internal organs and an abundant vascular system to be seen. The setæ are short and bent; but, instead of being in pairs as in most of the Lumbricidæ, they are distant from one another as in the *Pontodrili*. They form, accordingly, eight nearly parallel longitudinal rows; the two lower ventral rows are very near together in the anteclitellian part, and the space which separates them scarcely exceeds the width of the nervous chain.

The cephalic lobe is rounded, and does not encroach upon the buccal segment. Between segments 8 and 9 (the seventh and eighth setigerous segments), on the lines of the lower ventral setæ, may be seen the orifices of the single pair of copulatory pouches. This is homologous with the second pair in *Pontodrilus*. The cingulum begins towards the superior third of the thirteenth segment, and occupies the fourteenth, fifteenth, sixteenth, and seventeenth segments; this last is very much shorter than the preceding ones. The fourteenth segment contains the female genital apertures on the lines of the lower ventral setæ and a little above these setæ. The male genital orifices are on the eighteenth segment. The segmental organs only exist below the fourteenth segment, and open externally at the upper limit of each segment outside the lines of the superior ventral setæ.

The digestive tube commences with an exsertile part (proboscis), which the animal evaginates and draws back alternately, rather slowly, when it is subjected to the action of chloroform. In these backward and forward movements, on the lower surface of the buccal segment, a tuft of long transparent filaments may be seen to project, sometimes finely striated transversely and of an extreme slenderness. These setiform elements, which are much longer than the cephalic lobe and very flexible, have not, to my knowledge, been noticed in any Lumbrician. Must they be regarded as homologous with the cylindrical bacilli described by Perrier in the interior of the hypodermis of the *Pontodrili*? or are they really muscular fibres ruptured and dissociated by the reagent?

The ovoid pharyngeal swelling extends from the third to the fifth segment; it is followed by a straight œsophagus, which, in segments 10, 11, 12, and 13, presents four dilatations, taking the place of the gizzard. The intestine, properly so-called, commences at the fourteenth segment. In the anterior region (segments 5 to 9) the œsophagus is covered laterally and dorsally by voluminous glands, which decrease posteriorly; the smallest is situated in the ninth segment. I regard these as homologous with the septal glands discovered by Vejdovsky in the *Enchytræidæ*. Notwithstanding the place which they occupy against the intestine, these organs are not digestive glands; they open on the outside of the back, and I think that it is to their secretion that the luminous property of the *Photodrilus* must be attributed. The dissepiments do not always correspond exactly with the limit of two consecutive segments. Thus the ninth septum is not situated between the ninth and the tenth segments, but it is attached to the intestinal wall, towards the middle of the tenth; in the same manner the tenth, eleventh, and twelfth septa start from a lateral insertion situated a little below the lower limit of the tenth, eleventh, and twelfth segments, and surround the intestine towards the middle of the eleventh, twelfth, and thirteenth segments. The same fact has been remarked by Horst in *Moniligaster Houtenii*.

The circulatory apparatus differs little from that of the *Pontodrilus*. The lateral hearts are situated in segments 10, 11, and 12. The ventral vessel is divided, towards the middle of the 8th segment, into two lateral ventral branches, which, at first very widely separated, converge in segments 5 and 4, and are then directed laterally into segments 2 and 1, to form a fine vascular plexus in the cephalic lobe.

There are two pairs of testes. They are large, very vascular glands, which occupy the upper part of segments 11 and 12. The ovaries are situated in the thirteenth segment. The animals which we have studied not being at the period of sexual activity, the male genital apertures were not very distinct. The apertures of the oviducts were to be seen very clearly on the lower surface of the fourteenth segment, in the form of two little fissures, slightly oblique from without inwards. The copulatory pouches, situated in the ninth segment, have a small accessory sac, as in the *Pontodrilus*.

In certain individuals, in the twelfth and sometimes in the thirteenth and eighteenth segment, besides the eight ordinary setæ, two complementary setæ may be seen, situated lower down than the others and placed outside the lower ventral rows; sometimes one of these setæ is replaced by a bundle of four setæ, and that sometimes to the right, sometimes to the left. Horst seems to have met with similar tetrachetal bundles in the *Rhinodrilus Zenkatei*. Are these penial setæ in retrogression?

The short description which Dugès has given of his *Lumbricus phosphoreus** may apply to the *Photodrilus*. Dugès found this species in the tan of a hothouse in the Jardin des Plantes at

* Ann. des Sc. Nat. 2^e série, t. viii. p. 24 (1837).

Montpellier. At Wimereux the *Photodrilus* is only to be met with in the paths running along the beds filled with soil from the hot-houses of an horticulturist at Boulogne. It is probable therefore that we have to do with an exotic species which has accommodated itself very well to the maritime climate of the Boulonnais.—*Comptes Rendus*, November 7, 1887, p. 872.

Note on a new Species of Cercopithecus from Kaffa, in Central Africa. By Dr. ENRICO H. GIGLIOLI.

The Royal Museum of Florence has lately received from Dr. Leopoldo Traversi some important collections, among which occurs a monkey evidently belonging to a still undescribed species. It is an adult female, and comes from Kaffa; Dr. Traversi has sent the skin and the skeleton.

This monkey belongs to Schlegel's group vi. of *Cercopithecus* (Monogr. des Singes, p. 82, Leyden, 1876), which includes species with the hair black, "annulated with greyish or reddish white upon the upper part of the body, the cheeks, and the basal part of the tail," and in which Schlegel has placed two species, namely *C. leucampyx*, Fischer, and *C. neglectus*, Schlegel. The former lives in Angola, has the forehead white, and received from Gray the name of *C. Pluto* (P. Z. S. 1848, p. 57). The second inhabits the region of the White Nile, and was regarded by Gray (Cat. Monkeys, Lemurs, &c. B. M. p. 22, 1870) as the true *C. leucampyx*, but differs therefrom, as noted by Schlegel (*op. cit.* p. 70), by having the anterior margin of the thighs and a band across the hips white.

The species here described differs clearly from the two above cited by the deficiency of the white bands across the forehead, upon the anterior margin of the thighs, and across the hips. On the other hand it has the anterior part of the neck, the sparse hairs of the upper lip, and the longer and more abundant hairs of the chin of a yellowish white. The greyish annulations, with a greenish tinge in some parts, are to be noted upon the hairs of the forehead, the long hairs of the cheeks, the hairs which adorn the outer margins of the ears, on all the lower part of the back, and on the basal third of the tail. The crown of the head, the nape, the upper part of the back, the limbs, and the terminal portion of the tail have the hair of an intense black colour, which changes to a fuliginous brown on the breast, the abdomen, and the inner parts of the thighs and legs. The naked skin of the face was evidently of an azure-blue colour in the living animal. The hairs are scarce towards the extremity of the tail and on the fingers.

The dimensions are as follows:—Total length (from the vertex to the end of the tail) 0·880 m.; tail 0·390 m.; arm (from the axilla to the end of the middle finger) 0·170 m.; leg (from the groin to the extremity of the toes) 0·270 m. The bones show no differential characters.

The author proposes to name this species *Cercopithecus Boutourlinei*, after the Count Augusto Boutourline, of Florence.—*Zoologischer Anzeiger*, No. 261, September 26, 1887, p. 509.