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THE

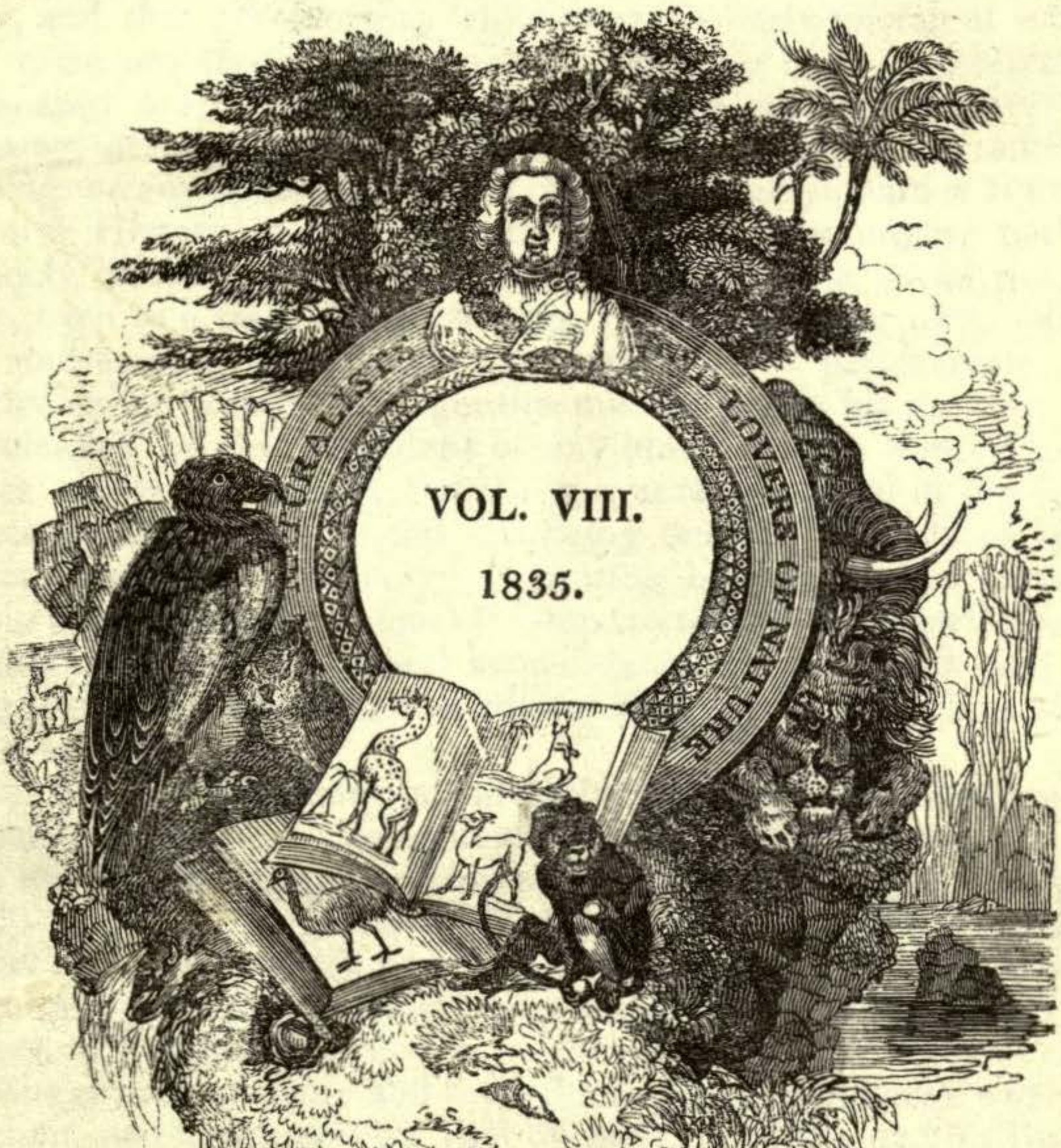
MAGAZINE OF NATURAL HISTORY,

AND

JOURNAL

OF

ZOOLOGY, BOTANY, MINERALOGY, GEOLOGY, AND METEOROLOGY.



CONDUCTED

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LONDON:

PRINTED FOR

LONGMAN, REES, ORME, BROWN, GREEN, AND LONGMAN,
PATERNOSTER-ROW.

1835.

ART. VII. *Illustrations in British Zoology.* By GEORGE JOHNSTON, M.D., Fellow of the Royal College of Surgeons of Edinburgh.

45. LERNÆ`A UNCINA`TA. (*fig.* 53.)

——— " Is this a creature,
Or a monstrè transformed agayne nature?" CHAUCER.

OF all the curious creatures which the naturalist meets with in his researches, there are none more paradoxical than the Lernæ`æ; none which are more at variance with our notions of animal conformation, and which exhibit less of that decent proportion between a body and its members which constitutes what we choose to call symmetry or beauty. Of its paradoxicalness no better proof can be given, than the difficulty which the most experienced systematists have found in determining the proper place and rank of the family among organised beings. Linnæus located it amongst the Mollúsca, because of the softness of the body, and its want of a shell; Cuvier placed it at the end of his first order (Cavitaires) of intestinal worms; to Lamarck it appeared to have some resemblance to worms, and some to insects; but, belonging to neither, he conjectured that it indicated the probable existence of a new class, which should fill up the void that yet exists between those classes. Latreille has collected the various genera into a group, which forms the first order of his worms, Elminthógama; while Audouin and M. Edwards maintain that they are suctorial Crustàcea "become monstrous after they have fixed themselves:" and this allocation seems, on the whole, the best of any, though neither Chaucer nor M. Edwards will convince me that they are monsters " transformed agayne nature."

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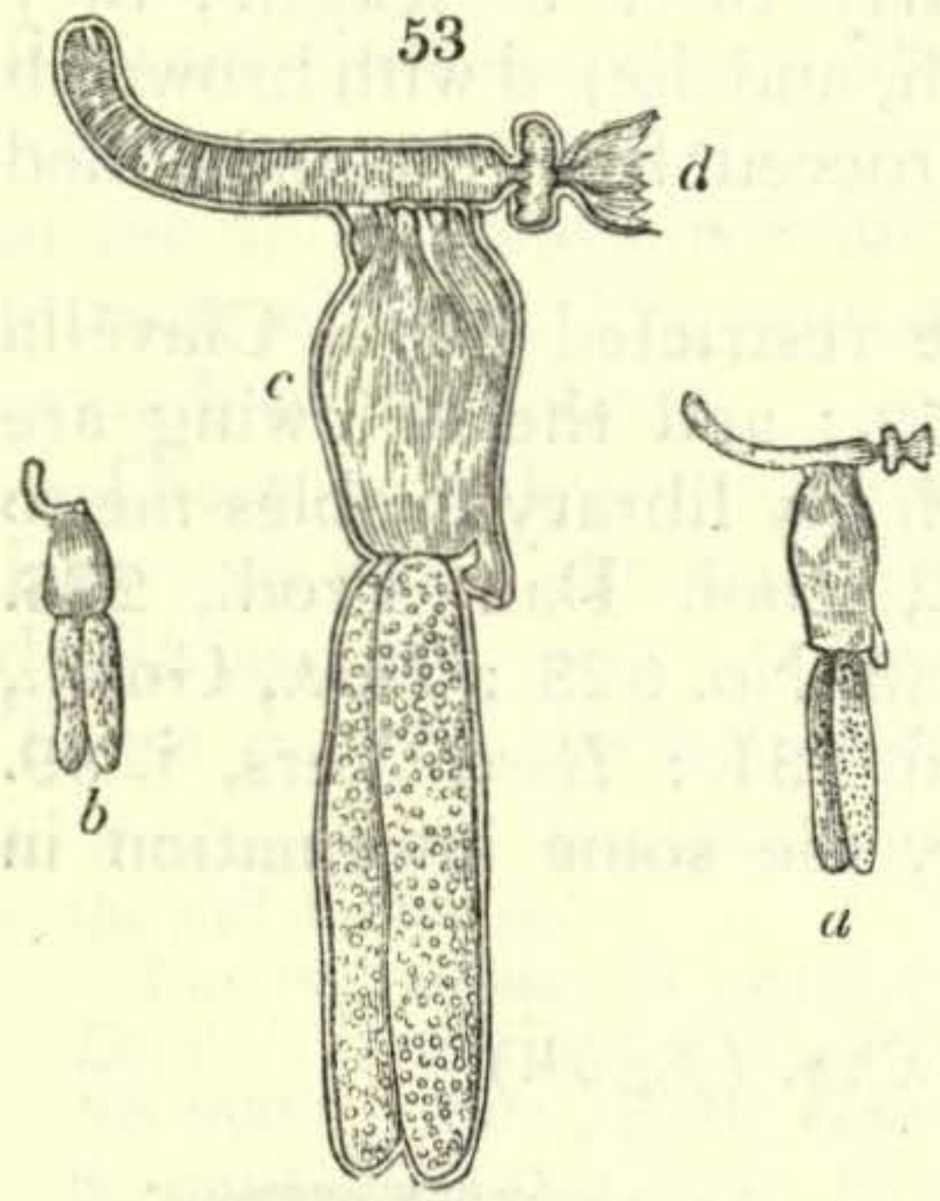


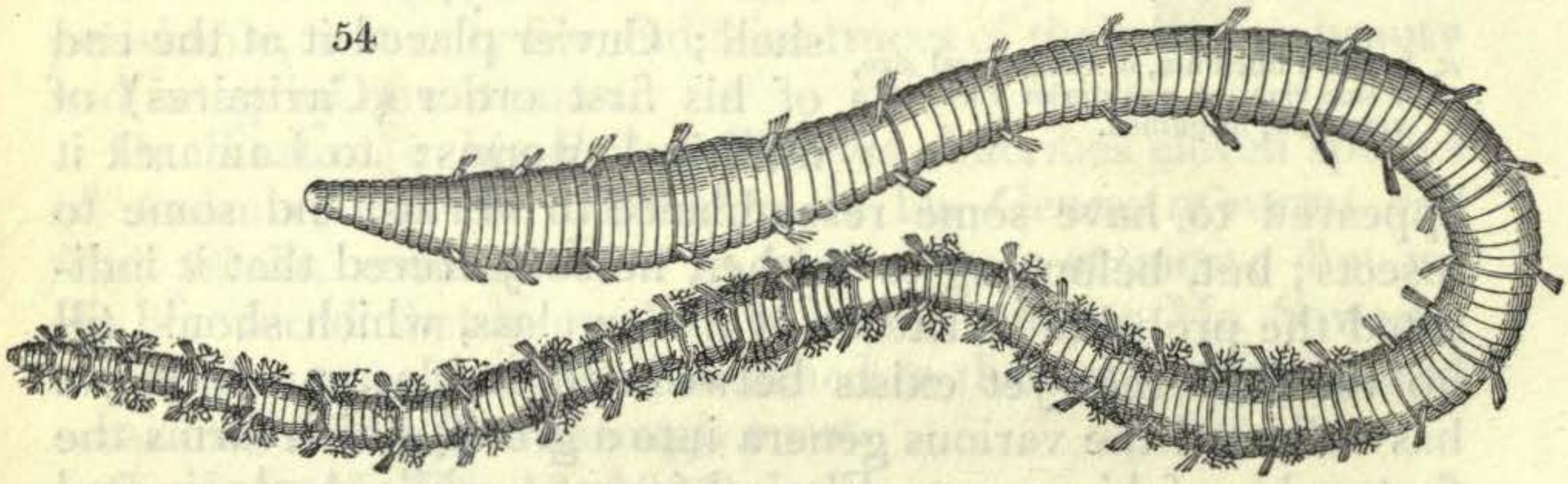
a, Lernæ`a uncinàta, of the natural size, a side view; *b*, a posterior view; *c*, a side view, magnified.

I am not aware that Lernæ`a uncinàta has been yet admitted into the catalogue of British species, although it is probably the most common of any in our seas. It affixes itself to the fins and gill-covers of the cod and haddock by the dilated part marked *d* in the figure, and cannot be removed without pains and difficulty. It is from six to eight lines long, of a milk-white colour, smooth, opaque, and enveloped in a thin transparent pellicle, or skin: the head or mouth (*d*) is reddish,

somewhat corneous, and roughened, apparently, with some short spinules; but, as it is deeply immersed in the flesh of the fish, I have not succeeded in removing it in a state so entire as to form a correct idea of its natural form. Immediately behind it there is a collar, and then a short narrow neck, uniting it to a long cylindrical process, which is curved and bifid, or deeply sinuate at the apex. From the anterior and inferior side of this process the body depends; this is thick, oblong, with an obscure furrow down the middle, and terminated below by a papillary process. The two ovarian cords are articulated to the base of the body, and are nearly twice its length; they are cylindrical, straight and smooth, and dotted with brownish specks, which are presumed to proceed from the embedded ova.

Lernæ`a uncinàta belongs to the restricted genus Clavélla of *Oken*, Cuv. Règ. Anim., iii. 258.; and the following are the only additional references which my library enables me to make: — Lernæ`a uncinàta *Mull.*, Zool. Dan. Prod., 226. No. 2746.; *Fabr.*, Faun. Grœnl., 338. No. 328.; *Turt.*, Gmel., iv. 114.; *Lam.*, Anim. s. Vert., iii. 231.: *Bosc*, Vers, i. 59. pl. 1. fig. 4. (bad). [On Lernæ`æ, see some information in VI. 95.]

46. Areni'cola ecauda`ta. (*fig.* 54.)



The worms which constitute the little family named Arenicólidæ, are of the number of those which connect the Annélides errántes with the A. tubícoles, their organisation being of that undecided and commixed character, that some naturalists have placed them in the former, and others, of equal authority, in the latter order. Thus Savigny arranges them among the Serpùlidæ; a family of Tubícoles, but Cuvier among his Dorsibránches, which is almost synonymous with the Errántes of Audouin and M. Edwards.

The body of the Arenicólidæ is vermiform, cylindrical, and formed of comparatively few segments; but the segments themselves are annulated, or divided into a certain number of circular plaits or rings: it is acephalous and obtusely pointed in

front, truncated behind, and, for the sake of description, may be divided into three portions; an anterior, which is generally inflated, and always abranchial; a middle, distinguished by carrying the branchiæ; and a posterior, which is both apodal and abranchial, but which the species figured for the present illustration proves not to be essential. At the end of the anterior extremity we find the mouth, which is provided with a short edentulous retractile proboscis, roughened with conical fleshy papillæ: there are neither eyes, nor antennæ, nor cirri. The feet are all similar in structure, and consist of a dorsal branch garnished with proper bristles, and of a ventral ridge (scarcely perceptible on the anterior segments), surmounted with a series of embedded crotchets. Upon a certain number of the middle and posterior segments we find highly developed branchiæ, fixed, like miniature arbuscules, behind the dorsal branch of the foot.

There is only one genus in this family, the Arenícola of Lamarck; the name derived from *arena*, sand, and *colo*, to dwell in, and very expressive of the habits of the species. These may be characterised as follows: —

1. *A. piscatòrum.* Branchial tufts 13 pairs; the first six pairs of feet and the tail abranchial.

   Lumbrìcus púnctis promínulis Lin., Faun. Suec., 364. No. 1270. — *Lumbrìcus marìnus Lin.*, Syst., 1077.; *Mull.*, Zool. Dan. Prod., 215. No. 2609.; *Fabr.*, Faun. Grœnl., 279.; *Penn.*, Brit. Zool., iv. 64. pl. 20. fig. med.; *Turt.*, Gmel., iv. 58.; *Stew.*, Elem., ii. 354.; *Turt.*, Brit. Faun., 128.; *Home*, Comp. Anat., iv. pl. 40. fig. 1, 2, 3.; *Roget*, Bridgew. Treat., i. 277. fig. 135. — Arenícola piscatòrum *Lam.*, Anim. s. Vert., v. 336.; *Audouin* and *Edw.*, in Ann. des Sc. Nat., xxviii. 420. pl. 22. fig. 8—12. — Arenicole des pêcheurs, *Bosc*, vers, i. 190. pl. 6. fig. 3.; *Cuv.*, Règ. Anim., iii. 198.—Arenícola tinctòria et A. carbonària *Leach*, in Supp. Encycl. Brit., i. 452. pl. 26.—Lug-worm, or Lob-worm, *Provincial.*
2. *A. branchiàlis.* Branchial tufts 19 or 20 pairs; the first twelve or thirteen pairs of feet and the tail abranchial.

   Arenícola branchiàlis *Audouin* and *Edwards*, in Ann. des Sc. Nat., xxviii. 422. pl. 22. fig. 13.
3. *A. ecaudàta.* Branchial tufts more than 20 pairs; the first fourteen or fifteen pairs of feet abranchial, tail none. (*Nova species.*)

Arenícola piscatòrum is about 10 in. long, contractile, cylindrical, the anterior and branchial portions thick and mutable in form; the posterior suddenly narrower, varying in colour from a yellowish to an umber brown, sometimes glossed with purple, sometimes dusky or black, the whole surface rough with small granules: mouth reddish, puckered, with a short proboscis closely covered with papillæ; above the upper margin of the mouth, which projects a little, there is a small, smooth, somewhat triangular, spot, with a furrow in the middle: segments 19 between the mouth and the last pair of branchiæ, as long as their own diameter, each consisting of five granulous

rings separated by an impressed line, their own divisions marked by an elevated band very obvious when the worm contracts; first segment conoid, each of them furnished with a pair of setigerous feet protruding near the band of separation, the first pairs small, gradually enlarged on the other segments; the seventh pair with a small branchial tuft at its base, and every foot behind this has a similar but larger tuft: branchiæ red or purple, arborescent, consisting of several principal branches, which are much divided, the divisions spreading, papillary: bristles yellow, not very numerous, unequal, slightly curved towards the sharp point, smooth: underneath this setigerous foot there is a transverse fold, armed with a series of crotchets shaped like the italic letter *f*; they are few under the first pairs, but become more numerous under the branchial pairs, forming a ridge which meets its opposite on the mesial line: the tail is equal to the rest of the body in length, the segments indistinct, but often constricted at intervals, and sometimes so regularly, that it might almost be described as moniliform.

Arenícola branchiàlis has not been noticed as yet on the British coast: it is smaller than the preceding, and, in this respect, as well as in the number of the branchiæ, approximates the A. ecaudàta, from which I might not have considered it distinct, had any specimen of the latter exhibited any trace of posterior abranchial segments; and the fishermen assure me that the want of a tail is an invariable character.

Arenícola ecaudàta (*fig.* 54.) is from 6 in. to 8 in. long, very contractile, minutely granular, of a yellowish-brown, tinted in many places with green and yellow, or sometimes very black, glossed with green: the primary rings seem to be composed of only four intermediate ones: the first fourteen or fifteen pairs of setigerous feet are destitute of branchiæ, but to every foot behind these there is appended a dark red arborescent branchial tuft; in one specimen there were twenty-two pairs, in another twenty-five; the first few pairs are smaller than those about the middle, whence they again decrease towards the tail. In other respects, the structure is similar to that of Arenícola piscatòrum.

The lug-worms burrow in the sand, prefering a station near low-water mark. The hole is about 2 ft. in depth, and the presence of the worm is detected by the spiral rolls of sandy excrement coiled above its aperture; for these worms twist their "ropes of sand" with an ease which spirits might envy *,

* "The formation of ropes of sand, according to popular tradition, was a work of such difficulty, that it was assigned by Michael Scot to a number

and renew them after every reflux of every tide. They live in the hole with the head downwards, and ascend and descend with amazing rapidity. The worm "bores its way through the sand by means of the peculiar construction of the rings of its head, which, when elongated, has the shape of a regular cone. As each ring is so much smaller than the one behind it as to admit of being received within it, the whole head, when completely retracted, presents a flat surface. When this disk is applied to the sand, the animal, by gradually projecting the cone, and successively dilating the rings of which it is composed, opens for itself a passage through the sand, and then secures the sides of the passage from falling in by applying to them a glutinous cement, which exudes from its skin, and which unites the particles of sand into a kind of wall, or coating. This covering does not adhere to the body, but forms a detached coherent tube, within which the animal moves with perfect freedom, and which it leaves behind it as it progressively advances; so that the passage is kept pervious throughout its whole length by means of this lining, which may be compared to the brickwork of the shaft of a mine or tunnel." (*Osler*, quoted in Roget's *Bridgewater Treatise*, i. 278.)

The intestine of the lug-worm is always full of sand, from which it doubtless extracts the intermixed nutritive matter; and the colour of the body appears to depend on the nature of the ground the worm burrows in, and on which it feeds, being yellowish brown when in pure sand, and very dark, or even coal-black, when the soil is miry and equally dark-coloured. In Berwick Bay, specimens of both species, of all shades, occur. Vast numbers are daily dug up on all parts of the coast by the fishermen, who esteem them one of their best baits. They discharge, on handling, a liquor that imparts a yellow stain to the fingers, which it is difficult to remove.

Berwick upon Tweed, June 1. 1835.

Art. VIII. *Short Communications.*

[*A Superstition which is extant in Switzerland, similar to that of the Rupture-Ash in Britain*]. — The rupture-ash having

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of spirits, for which it was necessary for him to find some interminable employment." (*Minstrelsy of the Scot. Border*, iii. 253.)

"They sifted the sand from the nine-stane burn,
And shaped the ropes so curiouslie;
But the ropes would neither twist nor twine,
For Thomas true and his gramarye." (*Ibid.* p. 266.)