

4. On new Parasitic Copepoda from Zanzibar and East Africa, collected by Mr. Cyril Crossland, B.A., B.Sc. By Staff-Surgeon P. W. BASSETT-SMITH, R.N., F.Z.S.

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(Text-figures 11 & 12.)

Mr. Cyril Crossland, in his recent examination of the marine fauna of Zanzibar and British East Africa, obtained several specimens of parasitic and semiparasitic Copepods, three of which he has been kind enough to allow me to examine.

These curiously deformed and often grotesquely-shaped animals are frequently found attached to the gills, &c., or to the surface of fish and other marine animals.

A large number from the former which are now described from a variety of different hosts, and from wide geographical areas, I enumerated in Proc. Zool. Soc. 1899, p. 438; to this paper I have appended a list of addenda, which I have drawn up with the kind assistance of Mr. E. Bergrotti, of Tammerfers, and others.

Not only fish but a number of other marine animals are undoubtedly infested with these parasites, though at present little information concerning them has been collected; the specimens of Mr. Crossland are therefore particularly interesting.

Gerstäcker, in Bronn's 'Klass. und Ordn. des Thier-Reichs,' 1866-79, Crustacea, vol. v. Copepoda, p. 774, mentions five genera found on Nudibranch Mollusca: *Doridicola* Lyd., *Eolidicola* Sars, belonging to the family Ergasilidæ; *Artotrogus* Boeck, to the family Ascomyzontidæ; and *Splanchnotropus* Hanc. and *Ismailia* Bergh, to the family Chondracanthidæ. Also nine genera from various Vermes, p. 773.

Of the three specimens of Mr. Crossland, two were taken from the kidneys of species of Pleurobranchids (not determined) and one from the skin of a Sipunculid (*Aspidosiphon*).

As they were only single specimens it was impossible to dissect them, and therefore the descriptions are necessarily incomplete. The first two evidently belong to the family Chondracanthidæ, but do not fall in with the descriptions of any known genus; they appear to be most nearly related to the genus *Splanchnotropus* of Hancock (Trans. Linn. Soc. vol. xxiv. pp. 51, 55), two species of which he describes, *S. gracilis* and *S. brevipes*, taken from Nudibranchs; the present specimens differ from them, however, in the complete absence of antennæ and articulate limbs, and in having the external ovaries elongated and the eggs arranged in single series.

I have therefore provisionally placed them in a new genus, *Chondrocarpus*, following closely after *Splanchnotropus* Hanc. and *Diocus* Fabr.

CHONDROCARPUS, gen. nov.

♀. Cephalothorax coriaceous, elongated, with four lateral short

lobe-like processes on either side; abdomen one-fourth length of whole, biarticulate, tapering; no distinct antennæ or thoracic limbs; mouth placed on under surface, with minute maxillæ; external ovaries as elongated filiform sacs containing ova in a single series.

♂. Pigmy.

CHONDROCARPUS RETICULOSUS, sp. n. (Text-fig. 11, A-G.)

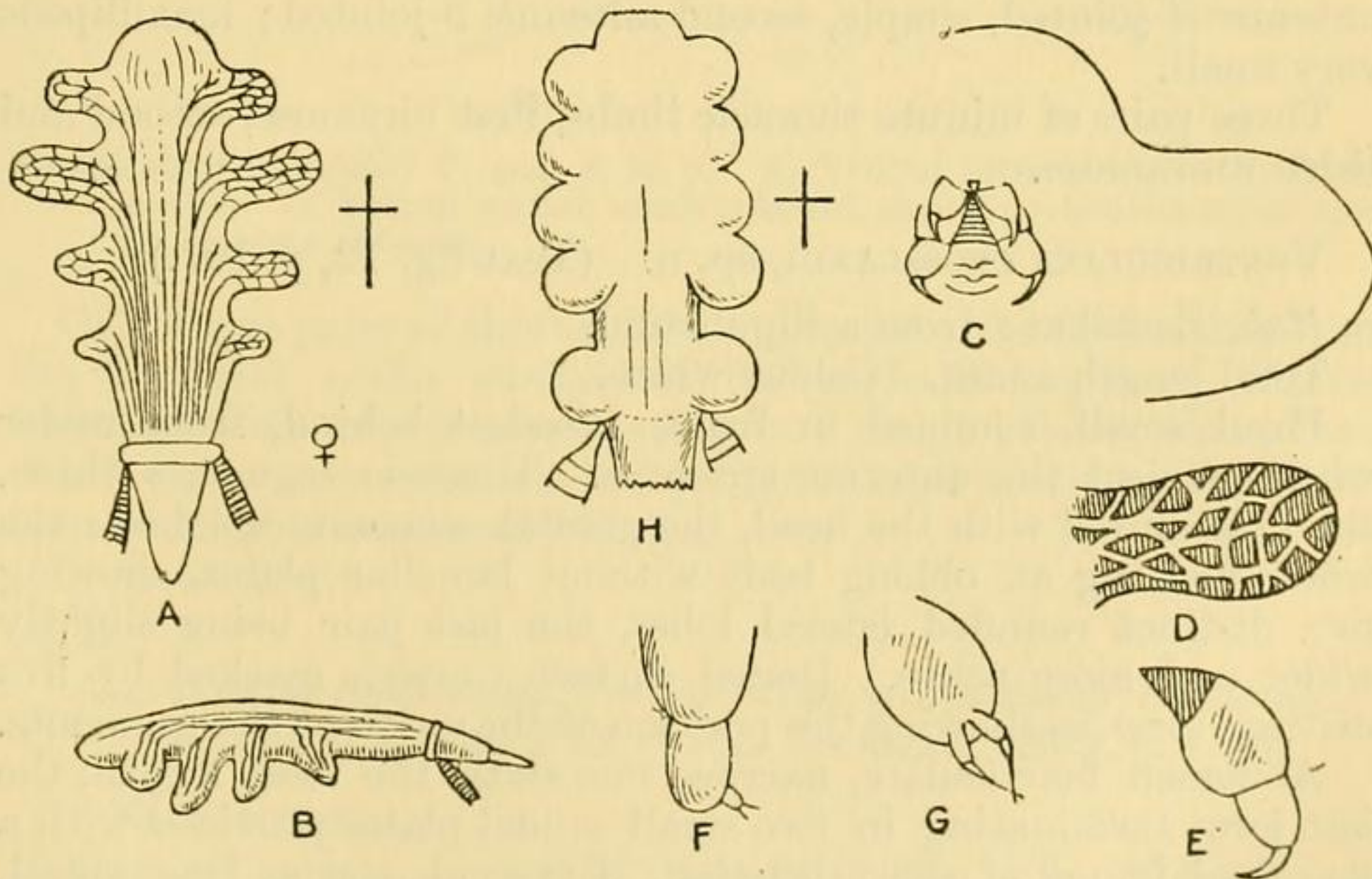
Hab. Zanzibar: from large Pleurobranchid.

Length 12 mm., breadth 4 mm.

♀. Cephalothorax indistinctly segmented, elongated, tapering, dorsally convex, laterally produced into 4 rounded truncated processes; the 4th pair being most widely separated and the smallest; the whole having a peculiar reticulate appearance from the network of ramifying tubules; anterior extremity rounded; no visible antennæ; mouth as a papilla placed between the 1st pair of processes; upper lip triangular; only one pair of maxillæ and mandibles (?) could be made out, each terminating in minute claws. No thoracic limbs; there is a short genital segment, or ring, from which spring the long filiform ovaries. Abdomen indistinctly biarticulate, tapering, without caudal plates or setæ.

♂. Pigmy. One was seen attached to the last abdominal segment but was partially hidden, the bifid articulate caudal extremity only being visible.

Text-fig. 11.



Chondrocarpus reticulosus ♀, gen. & sp. n. A. Dorsal surface. B. Lateral view. C. First segment and mouth-organs. D. One of the lobes showing reticulate appearance. E. Second maxilliped. F. Abdomen showing fixed ♂. G. Posterior extremity of ♂. H. *Chondrocarpus* sp. ♀: dorsal surface (specimen incomplete).

CHONDROCARPUS sp. (Text-fig. 11, H.)

A specimen of a second species of this genus was taken from a

Pleurobranchid; it was much broken both at the anterior and posterior extremities. It differs from *C. reticulosus* in not having the peculiar reticulate appearance and in having a pair of lateral lobes on either side of the genital segment.

The third specimen also appears to be new, and belongs to the family Dichelesthiidæ, the animal resembling most nearly the genus *Enterocola* of Van Beneden (Bull. Acad. Roy. de Belg. tom. ix. 2nd ser. p. 151), found by him in the respiratory cavity of "*Aphidium ficus*," than any other form I have been able to find recorded.

Mr. Crossland's specimen appears to be much more degenerate from its parasitic habits; the articulate limbs are excessively small, difficult to make out, and the ova are carried in long spiral thread-like processes in a single series as in the Caligidæ, and not in dilated sacs. Unfortunately there was only this single female specimen for examination. I would provisionally create for it a new genus "*Ventriculina*," giving the specific name of "*crosslandi*" in recognition of the collector.

VENTRICULINA, gen. nov.

Head small, rounded; neck indistinct; 3 thoracic segments, the first amalgamated with the head; genital segments lobed, equal in breadth with the thoracic; no dorsal plates; abdomen short, biarticulate; external ovaries spiral, ova uniserial; first antennæ 4-jointed, simple, second antennæ 3-jointed; maxillipeds very small.

Three pairs of minute thoracic limbs, first biramose, second and third uniramous.

VENTRICULINA CROSSLANDI, sp. n. (Text-fig. 12, p. 107.)

Hab. Zanzibar: from a Sipunculid.

Total length 4 mm. Colour white.

Head small, rounded in front, broadest behind, from under which project the anterior antennæ. Thoracic segments three, the first united with the head, the genital segments trilobed; the whole forming an oblong body without lamellar plates, showing five distinct rounded lateral lobes, the last pair being slightly wider and more acute. Dorsal surface convex, marked by five distinct grooves showing the position of the union of the segments.

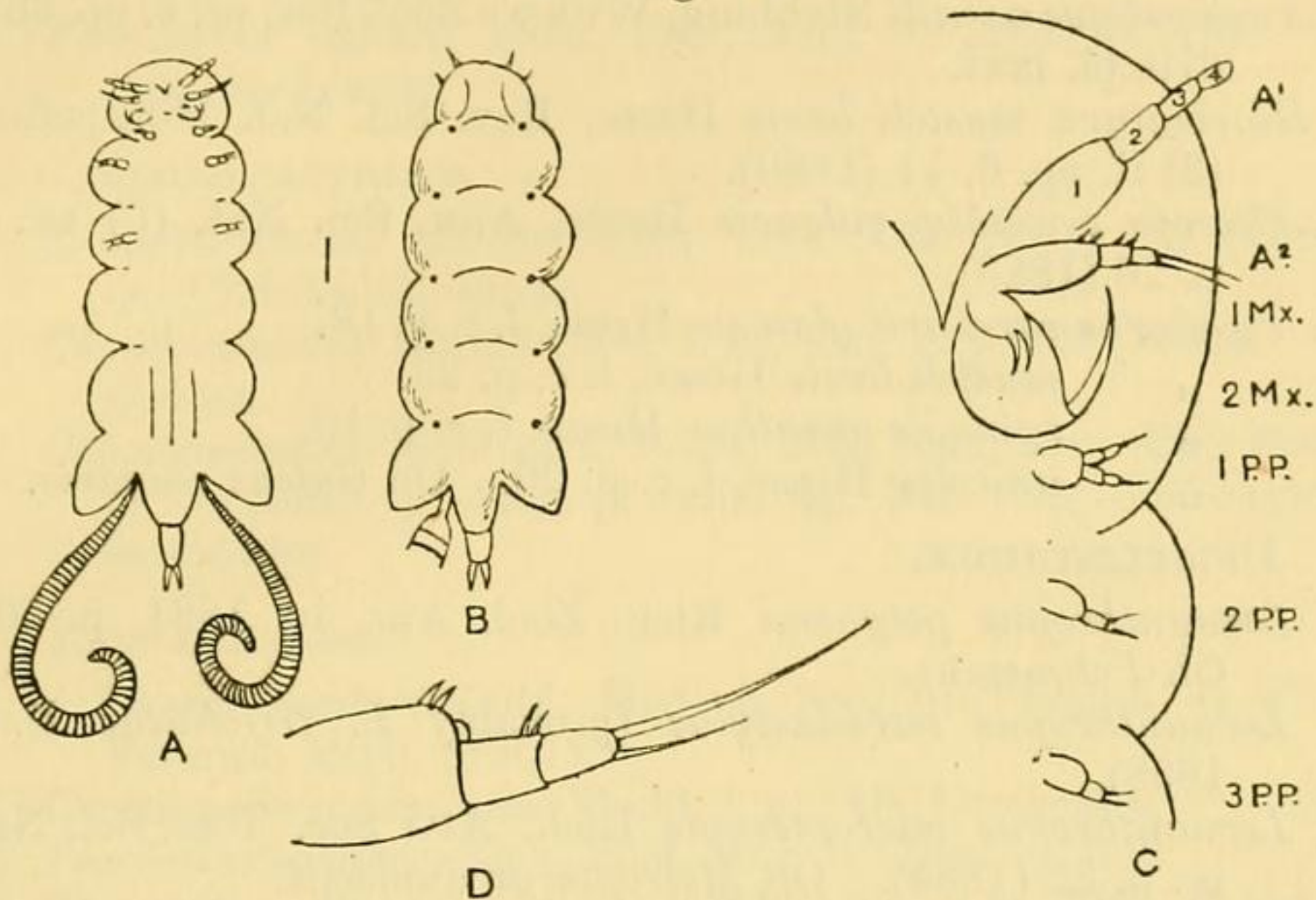
Abdomen biarticulate, narrow, one-sixth the total length, the last joint terminating in two small caudal plates provided with a marginal fringe of short bristles. External ovaries long, spiral, springing from papillæ at the angle of the genital segments and abdomen. Ova large, arranged uniserially as in the Caligidæ.

Anterior antennæ 4-jointed, non-setose, the first joint being the longest and broadest, rising from the underside of the head just in front of the mouth; second, third, and fourth joints progressively decreasing in size.

Posterior antennæ 3-jointed, rising just in front of the upper lip; at the distal end and anterior border of the first and second joints are two short setæ, the third terminating in two bristles, the anterior being very long.

Mouth and appendages placed rather far back; the labrum is triangular, projecting backwards; labium simple, rounded. I was able to make out only 2 pairs of maxillipeds; the first very small, biarticulate, terminating in two short hairs: the second unciniate, with large globose basal joint, to which was articulated a sharp curved claw.

Text-fig. 12.



Ventriculina crosslandi ♀, gen. & sp. n. A. Ventral surface, $\times 10$. B. Dorsal surface. C. Ventral surface much enlarged, showing articulate appendages. D. Posterior antennæ.

Only three pairs of thoracic limbs present: the first rising from the posterior under surface of the cephalic segment, minute, biramose, each ramus terminating in a single bristle; second and third pairs uniramous, made up of two articulations, the distal terminating in two small bristles.

♂ not known.

ADDENDA to *Systematic Enumeration of Species of Parasitic Copepoda found on Fish* (Proc. Zool. Soc. 1899, p. 438).

ERGASILIDÆ.

1. *Eucanthus marchesettii* Valle, Atti Mus. Civ. Trieste, vii. p. 245 (1885). On *Motella tricirrata*.
2. *Ergasilus centrarchidarum* Wright, Proc. Canad. Inst. (2) i. p. 243 (1883).
3. *Ergasilus biuncinatus* Gadd. Meddelanden af Societas pro Fauna et Flora Fennica, xxvii. pp. 181-182 (1901). On *Gastrosteus aculeatus*.

4. *Bomolochus onosi* T. Scott, 20th Ann. Rep. Fish. Board of Scotland, p. 289, pl. xiii. figs. 19-22 (1902). On *Onos mustelus* and *Onos cimbrius*, Firth of Forth.
5. *Bomolochus zeugopteri* T. Scott, *loc. cit.* p. 290, pl. xiii. figs. 23-25. On *Zeugopterus punctatus*.

CALIGIDÆ.

6. *Caligus pacificus* Gissler, Amer. Nat. p. 886 (1883). On *Salmo*.
7. *Caligus labracis* T. Scott, *l. c.* p. 291, pl. xiii. figs. 26-29. On *Labrus mixtus* and *L. maculatus*.
8. *Anchicaligus nautili* Stebbing, Willey's Zool. Res. pt. v. pp. 667-670, pl. lxxi.
9. *Dinematura musteli lævis* Hesse, Rev. Sci. Nat. Montpellier, (2) ii. pp. 6, 11 (1880).
10. *Cecrops acanthiæ vulgaris* Hesse, Ann. Sci. Nat. (6) xv. 3, p. 26 (1883).
11. *Pandarus carcharii glaucus* Hesse, *l. c.* p. 18.
12. „ *musteli lævis* Hesse, *l. c.* p. 23.
13. „ *spinacis acanthiæ* Hesse, *l. c.* p. 10.
14. „ *unicolor* Hesse, *l. c.* p. 20. On *Galeus vulgaris*.

DICHELESTHIIDÆ.

15. *Lernanthropus polynemi* Rich. Zool. Anz. iv. 1881, p. 505. On *Polynemus*.
16. *Lernanthropus tetradactylus* (probably *L. trifolius* B.-S. 1898).
17. *Lernanthropus micropterygis* Rich. Atti Soc. Tosc. Sci. Nat. iv. p. 82 (1884). On *Micropteryx dumerili*.
18. *Lernanthropus tylosuri* Rich. *l. c.* p. 83. On *Tylosurus imperialis*.
19. *Kröyeria (Lonchidium) galii vulgaris* Hesse, Ann. Sci. Nat. (6) xvi. 3, p. 2 (1883).
20. *Clavella cluthæ* T. Scott, *l. c.* p. 292, pl. xii. figs. 26-31. On *Ctenolabrus rupestris*.
21. *Pagodina (Nemesis) charchariæ glauci* Hesse, *l. c.* p. 13.
22. *Eudactylina carchariæ glauci* Hesse, *l. c.* p. 11.
23. „ *musteli lævis* Hesse, *l. c.* p. 8.
24. „ *squatina angeli* Hesse, *l. c.* p. 5.
25. „ *similis* T. Scott, *l. c.* p. 295, pl. xii. figs. 1-19. On *Raia radiata*.
26. *Eudactylina acanthii* T. Scott, *l. c.* p. 296, pl. xiii. figs. 1-9. On *Squalus acanthias*.
27. *Bassettia congri* Stebbing, Willey's Zool. Res. pt. v. pp. 671, 672, pl. lxx.

PHILICHTHYIDÆ.

28. *Philichthys fialolæ* Rich. Zool. Anz. iii. p. 69 (1880). On *Stromateus fialola*.
29. *Philichthys doderleini* Rich. Zool. Anz. vi. p. 558 (1883). On *Labrus turdus*.

LERNÆIDÆ.

30. *Lernæa abyssicola* Brady, Chall. Rep. viii. p. 137. On *Cirralias uranoscopus*.
31. *Lernæa minuta* T. Scott, 18th Rep. Fish. Board of Scotland, p. 161, pl. vii. fig. 13 (1900). On *Gobius minutus*.
32. *Lernæa lumpi* T. Scott, 19th ditto, p. 128, pl. vii. fig. 12 (1901). On *Cyclopterus lumpus*.
33. *Hæmobaphes ambiguus* T. Scott, 18th ditto, p. 162, pl. vii. fig. 15. On *Callionymus maculatus*.
34. *Peraderma petersi* Rich. Zool. Anz. iv. 1881, p. 387. On *Gobius buccatus*.
35. *Peraderma bellottii* Rich. Zool. Anz. v. 1882, p. 475. On *Scopelus benotti*.

CHONDRACANTHIDÆ.

36. *Chondracanthus bleekeri* Rich. Zool. Anz. iv. p. 387 (1881). On *Chilium chlorurus*.
37. *Chondracanthus ninnii* Rich. Zool. Anz. v. p. 504 (1882). On *Gobius*.
38. *Chondracanthus ornatus* T. Scott, 20th Ann. Rep. Fish Board of Scotland, p. 298, pl. xiii. fig. 34. On *Callionymus maculatus*.

LERNÆOPODIDÆ.

39. *Achtheres sandræ* Gadd. Med. af Soc. pro Fauna et Flora Fennica, xxvii. (1901).
40. *Lernæopoda extumescens* Gadd. *l. c.* On *Coregonus*.
41. *Tracheliastes gigas* Rich. Zool. Anz. iv. 1881, p. 504.
42. *Charopinus dubius* T. Scott, 19th Ann. Rep. Fish Board of Scotland, p. 130, pl. vii. fig. 15. On *Raia circularis*.

5. On the Original Home of the Tiger.

By Col. C. E. STEWART, C.B., C.M.G., C.I.E.¹

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The ordinary idea of English people that the Tiger was originally an Indian animal, is, I believe, quite a mistake. After careful enquiry, I have come to the conclusion that the Tiger is a comparatively late intruder into India.

Firstly, after enquiry, I can discover no Sanscrit word for the Tiger. If tigers had existed in India in the days when Sanscrit was a spoken language, there would be a name in Sanscrit for it, while there is only a modern Hindustani name. There is a Sanscrit word for Lion, "Singha," which would point to the fact that lions were certainly more common than tigers in time long past. At present lions are not found in India, except a very few, which are strictly preserved in Googerat, one extreme

¹ Communicated by Col. HILL JAMES, F.Z.S.