

No. 19.

DESCRIPTION OF A NEW SPECIES OF PINNOTERES, AND
OF THE FEMALE OF *P. MARGARITIFERÆ*, LAURIE.

(Plate III.)

By T. SOUTHWELL, A.R.C.Sc. (LOND.), F.L.S., F.Z.S.

LARGE species of *Pinna bullata* and *Mytilus*, sp., abound on the Kondatchi Paar, Ceylon pearl banks.

The specimens of *Pinna bullata*, sp., often measure 14 inches in length, and lie with their pointed ends buried in the muddy sand to a depth of 4 or 5 inches, each with their byssus attached to very coarse quartz grains. The species of *Mytilus* usually measure 4 inches in extreme length, by 1 inch in thickness, and the shell is perfectly black.

A number of these forms were collected and examined, and the following table shows the numbers of *Pinnoterres* and *Conchodytes* obtained:—

Mytilus, sp.—Twenty-eight specimens yielded—

- (a) Twenty-four, each with one symbiotic female *Pinnoterres margaritiferae*, Laurie.
- (b) Two, each with one male and one female *Pinnoterres margaritiferae*, Laurie.
- (c) Two, each with no *Pinnoterres*.

Pinnabullata, sp.—Forty-seven specimens yielded—

- (a) Three specimens, each with one female *Pinnoterres ridgewayi*, n. sp., and no *Conchodytes meleagrince*.
- (b) One specimen, with one male *Conchodytes meleagrince*.
- (c) Forty-three specimens, each with a male and female *Conchodytes meleagrince*.

PINNOTERES RIDGEWAYI, n. sp., Female. (Plate III., Figs. 1, 2, and 2a.)

Body soft and membranous. Carapace 15 mm. broad, 13 mm. long, oval transversely, smooth, and somewhat flattened. Lateral margins entire. Rostrum fairly pronounced and bent. Eyes, eye-stalks, and the whole of the orbit hidden in a dorsal view. Eyes exceedingly minute, but just visible to the naked eye, and sessile. Antennæ minute (1 mm.) and placed internal to the orbital hiatus.

Chelipeds smooth, equal, small in comparison to the body, and exactly equal in length to the breadth of the carapace; permanently bent at right angles dorso-ventrally at the junction of the carpopodite and meropodite. Propodite and dactylopodite equal in length to the rest of the cheliped. Dactylus barely as long as the carpopodite, and bearing a minute tooth proximally and a few fine silky hairs.

The first pair of walking legs are slightly shorter than the second pair, and the latter are shorter than the third pair, the fourth pair being smallest. The third pair of walking legs 21 mm. long, of which—

Dactylopodite is 3 mm. long.
Propodite is 5 mm. long.

Carpodite is 5 mm. long.
Meropodite is 8 mm. long.

Dactylus and distal part of propodite covered with fine silky hairs. The other walking legs similar.

Abdomen very broad throughout, permanently flexed under the abdomen, and 7-jointed. Posterior edge of abdominal segments setose, and reaching anteriorly to the mandibles.

First, sixth, and seventh abdominal segments without appendages, the rest with paired appendages. Those on segments 4 and 5 are without exopodites, whilst those on segments 2 and 3 have both endopodites and exopodites. (Plate III., Fig. 2a.)

No males of this species were obtained.

Natural Colours.—Carapace, central part of abdomen, and legs, maroon. The rest dirty yellow.

Three females, from *Pinna bullata*, sp. Kondatchi Paar. February 18, 1910.

I have pleasure in naming this species in honour of Sir West Ridgeway, G.C.M.G., G.C.B., K.C.S.I., late Governor of Ceylon.

PINNOTERES MARGARITIFERÆ, Laurie. (Plate III., Figs. 3 and 3a.)

Female.—Carapace 10 mm. broad, 9 mm. long, soft, smooth, and slightly convex. Eyes hardly visible in a dorsal view, small, and sessile. Rostrum, of two projections, separated by a median furrow. Antennæ minute. Chelipeds equal, 8 mm. long, permanently bent at right angles dorso-ventrally, and covered with short, thickly-set minute hairs. Fingers one-third the length of the hand, and crossing at their tips. No hiatus between them when closed. Third pair of walking legs 9 mm. long. All the walking legs covered with short minute hairs, giving them a punctate appearance. Dactylus, sword-like and flattened. Abdomen permanently flexed, and not nearly reaching ventrally to the mandibles. Abdominal appendages as in *Pinnoteres ridgewayi*, n. sp.

Natural Colours.—Dirty yellow shading into pink in places. Eggs chocolate to maroon.

Habitat.—*Mytilus*, sp., and more occasionally *Margaritifera vulgaris*. Sometimes found free. Kondatchi Paar. February 18, 1910.

At first I regarded my specimens as new species, since my collection then consisted of females only. During further examinations of the same mollusc, however, two specimens were found, each containing both a male and a female *Pinnoteres*. The male is undoubtedly *P. margaritifera*, Laurie (Vol. V., "Ceylon Reports"), and the specimens described above are obviously the female of the same species. The female was not obtained by Laurie, and therefore it is described above for the first time.

It is important to note the preponderance of females over males, the more so since Laurie obtained a single specimen only. His specimen may have dropped from its partner, on the deck of the steamer engaged dredging during Professor Herdman's survey of the banks, although it also appears to occur free.

The occurrence of *P. margaritifera* in both the Ceylon oyster and mussel is notable. It appears often in dredgings on this pair, and has also been found by divers working under my supervision, who state that it occurs free on the sea bottom. It differs considerably from *P. ridgewayi*, n. sp., besides being only about one-third the size. It also differs from *P. placuna*, Southwell and Hornell, in the shape of the rostrum, and in being more convex.

In both species the carapace of the male is hard, whilst that of the female is soft. The male is invariably the smaller, and not so brightly coloured.

EXPLANATION OF PLATES.

Plate I.

- Fig. 5a .. *Cephalobothrium variabile*, n. sp. × 16.
 Fig. 5b .. Single typical proglottis of same. × 20.
 Figs. 5c .. Illustrate the varying forms of proglottides occurring in *Cephalobothrium variabile*, n. sp.
 × 10.
 Fig. 8 .. *Tetrarhynchus unionifactor*, Shipley and Hornell. × 15.
 Fig. 9a .. Head of same. × 20.
 Fig. 9b .. Typical spine from proboscides of same, highly magnified.

Plate II.

- Fig. 7 .. ~~Rhine~~ *bothrium insignia*, n. sp. × 40.

Plate III.

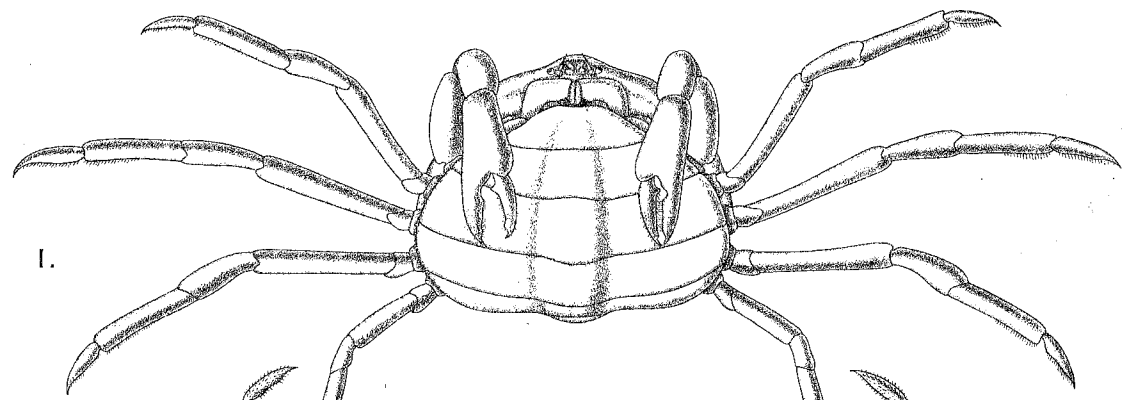
- Fig. 1 .. *Pinnoteres ridgewayi*, n. sp. Female. Ventral view. × 25.
 Fig. 2 .. *Pinnoteres ridgewayi*, n. sp. Female. Dorsal view. × 25.
 Fig. 2a .. Ventral view of tail fin of same. × 3.
 Fig. 3 .. *Pinnoteres margaritiferae*, Laurie. Dorsal view. × 4.
 Fig. 3a .. *Pinnoteres margaritiferae*, Laurie. Ventral view. × 4.

Plate IV.

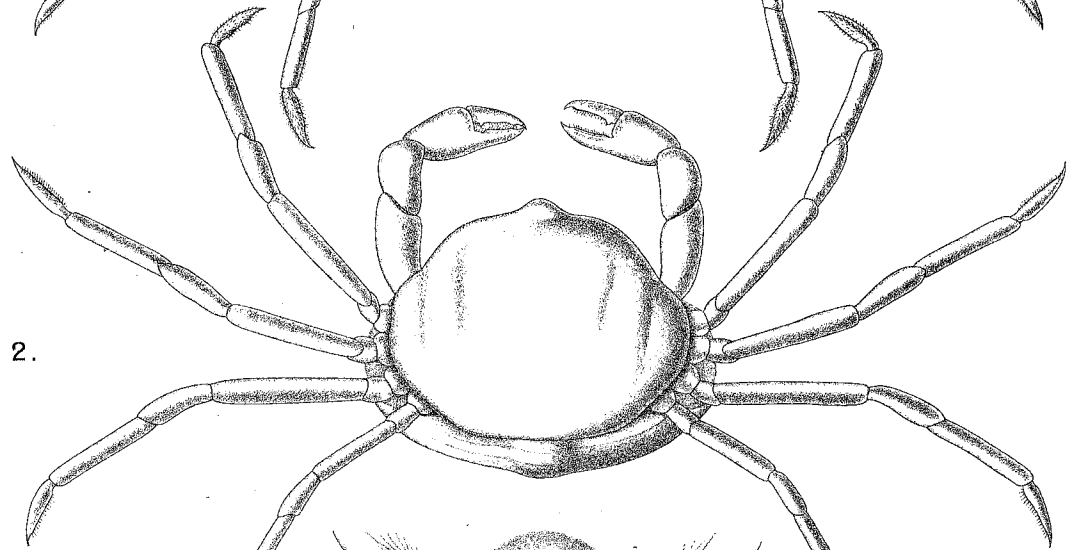
- Fig. 1a .. *Phyllobothroides kerkhami*, n. gen., n. sp. × 20.
 Fig. 1b .. Termination of neck and first proglottides of same. × 50.
 Fig. 1c .. Head of same. × 25.
 Fig. 1d .. View of the bifurcated hooks on the head of same, highly magnified.
 Fig. 2a .. *Cyclobothrium typicum*, n. gen., n. sp. × 4.
 Fig. 2b .. Head of same. × 25.
 Fig. 2c .. View of proglottis of same. × 16.
 Fig. 10a .. *Phyllobothroides hutsoni*, n. sp. × 6
 Fig. 10b .. Head of same. × 30.
 Fig. 10c .. View of hooks on the head of same, highly magnified.
 Fig. 11 .. Cestode species (?). × 4.

Plate V.

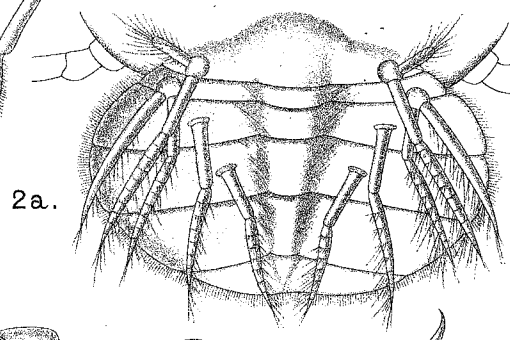
- Fig. 3a .. *Calliobothrium farmeri*, n. sp. × 5.
 Fig. 3b .. Head of same. × 6.
 Fig. 3c .. Hooks of same, highly magnified.
 Fig. 6a .. *Echinobothrium boisii*, n. sp. × 10.
 Fig. 6b .. View of spine surmounting the head of same, highly magnified.
 Fig. 6c .. Three views of the spines on the neck ("Kopfstiel") of same, highly magnified.
 Fig. 12a .. *Tetrarhynchus spinulifera*, n. sp. × 6.
 Fig. 12b .. Head of same. × 50.
 Fig. 12c .. View of a proboscis sac of same, highly magnified.
 Fig. 12d .. View of spines on the head of same, highly magnified.
 Fig. 4a .. *Cephalobothrium abruptum*, n. sp. × 6.
 Fig. 4b .. View of anterior proglottides, showing the ringed cuticle. × 12.



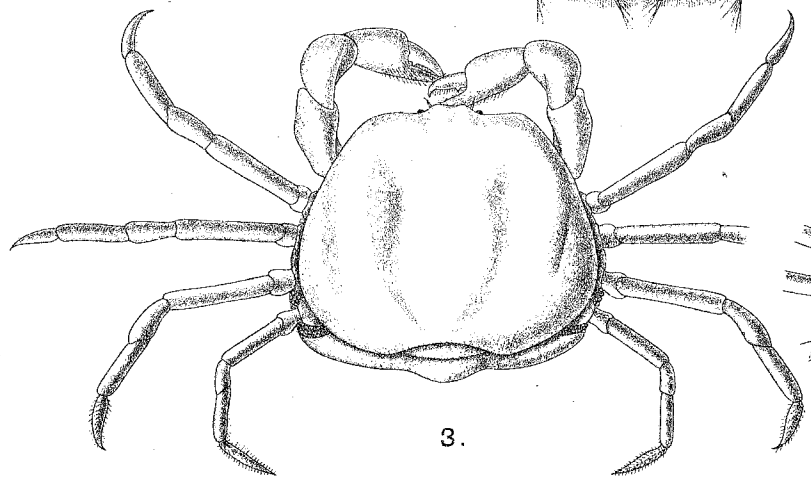
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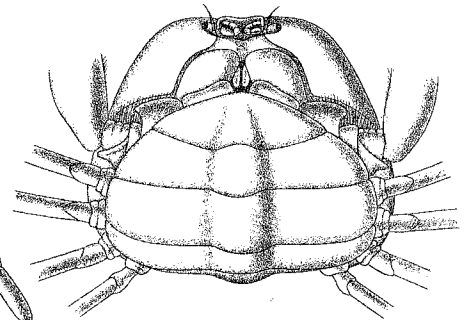
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2a.



3.



3a.

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C.

13 JUN 1912

CEYLON MARINE BIOLOGICAL REPORTS.

Part V.—March, 1911.

Nos. 11 to 19.

REPORT ON CERTAIN SCIENTIFIC WORK DONE ON THE CEYLON
PEARL BANKS DURING THE YEAR 1910.

With five Plates and one Chart.

CONDUCTED BY THE CEYLON COMPANY OF PEARL FISHERS, LIMITED.

BY

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Colombo:

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1911.

Reports from the Ceylon Marine Biological Laboratory.

PART V.]

Nos. 11 to 19.

[VOL. I.

SUMMARY OF CONTENTS.

Introduction.

- No. 11.—Description of the Company's Inspection Vessels, viz., the ss. "Violet" and the Barque "Rangasamee Porawee." By J. C. Kerkham, R.N.R.
- No. 12.—Physical and Biological Conditions on the Pearl Banks.
- No. 13.—Cultching, Transplanting, Trawling, and Dredging.
- No. 14.—Specific Fauna of the Paars, with Notes on the Nature of the Sea Bottom.
- No. 15.—Notes on the genera *Margaritifera* and *Avicula*, and on post-mortem colour changes in Echinoids.
- No. 16.—Notes on some Ceylon Actiniaria.
- No. 17.—Further Notes on the Determination of the Adult of the Pearl-inducing Worm.
- No. 18.—A description of nine new species of Cestode Parasites, including two new genera from Marine Fishes of Ceylon.
- No. 19.—Description of a new species of *Pinnoteres* and of the Female of *Pinnoteres margaritiferae*, Laurie.

APPENDIX.

A Note on the appended Chart of the Cheval Paar. By J. C. Kerkham, R.N.R.

By T. SOUTHWELL, A.R.C.Sc. (LOND.), F.L.S., F.Z.S.

With five Plates and one Chart.

INTRODUCTION.

THE aim and object of this series of publications from the Ceylon Marine Biological Laboratory is two-fold. Primarily they are intended to place on record such new facts and data as experience has shown and proved to be of intrinsic importance in the culture of the pearl oyster in Ceylon, and in this connection the present run of barren years has afforded unique opportunities for extensive scientific and nautical work, which would otherwise have been impossible. The elucidation of the factors at work which have collectively produced this barrenness, is receiving particular attention.

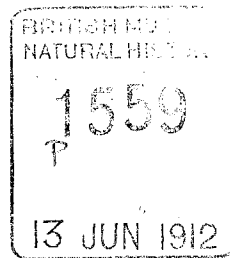
It is no longer believed that bottom currents annihilate whole beds of oysters. Undulatory movements in the lower layers of the water, consequent on the heavy weather during the south-west monsoon, undoubtedly exist, but the disappearance of oysters is due almost entirely to other causes.

The rôle played by surface currents in the re-stocking of the banks with exotic spat, during periods when oysters are absent from our own banks, is also receiving careful consideration, and the results are full of promise. These two great and fundamental factors, together with other points in oyster culture in general, will be more fully dealt with in Part VI., which it is hoped to publish in April, 1911.

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12th June, 1912.

CEYLON.

Sir,

With reference to our letter of the 2nd
April, I enclose one copy each of Part III, IV, V and
VI of the Ceylon Marine Biological Reports.

I am,

Sir,

Your obedient Servant,

A handwritten signature in cursive script, appearing to read "J. S. Huxley".

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Ans.