

AUSTRALASIAN ANTARCTIC EXPEDITION

1911-14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, O.B.E., B.E., D.Sc., F.R.S.

SCIENTIFIC REPORTS.
SERIES C.—ZOOLOGY AND BOTANY.

Edited by Professor T. Harvey Johnston,
University of Adelaide.

VOL. II. PART 7.

CIRRIPIEDIA

BY

FREDA BAGE, M.Sc., F.L.S.
PRINCIPAL OF THE WOMEN'S COLLEGE, UNIVERSITY OF QUEENSLAND.

WITH FOUR PLATES AND ONE TEXT FIGURE.

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CIRRIPEDIA.

By FRED A BAGE, M.Sc., F.L.S., Principal, Women's College, University of Queensland

(With plates V-VIII and one text figure.)

INTRODUCTION.

The small collection of Cirripedia obtained by the Australasian Antarctic Expedition is described in this report. Though few in number they are of some special interest.

The collections were made at Station III, Commonwealth Bay, in 157 fathoms, during the cruise of the "Aurora" in 1913-14; by Dr. J. Hunter in 1912 in Commonwealth Bay; and by H. Hamilton at Macquarie Island.

There are three antarctic species:—

Scalpellum (Arcoscalpellum) discoveryi Gruvel.

Scalpellum (Arcoscalpellum) aurorae n.sp.

Hexalasma antarcticum Borradaile.

The second is somewhat doubtfully described as a new species in the absence of any literature describing a similar type.

The chief interest centres round the finding of the animal parts of *Hexalasma* which had been previously described by Borradaile.

DESCRIPTIONS OF SPECIES.

SUB-CLASS CIRRIPEDIA.

ORDER 1.—EUCIRRIPEDIA.

Sub-order PEDUNCULATA.

Family POLLICIPEDIDAE.

Genus SCALPELLUM Leach.

1. SCALPELLUM (ARCOSCALPELLUM) DISCOVERYI Gruvel, 1907.

Scalpellum discoveryi, Gruvel, Nat. Antarct. Exped. 1901-1904 ("Discovery"), Nat. Hist., 3, Crust., VI, 1907, 2, figs. 4-6.

Scalpellum (Arcoscalpellum) discoveryi, Borradaile, Brit. Antarctic ("Terra Nova") Expedition, 1910, Nat. Hist. Report, Zool., 3, (4), 127-136.

Material dredged from 25 fathoms in Commonwealth Bay; 9 specimens of varying sizes.

As in the case of Borradaile's specimen these were found on one of the Pycnogonids which have been described elsewhere. They are of varied sizes, the lengths of the capitulum of the four largest being 6, 8, 12 and 14 mm. respectively, with five smaller ones measuring from 3.0 to 3.7 mm. The four larger specimens agree closely with the original description of Gruvel in shape and position of the valves. The two largest specimens are covered between the valves with a thick dark hair-like coating which extends over part of the valves making the more strongly calcified parts stand out against a dark brown background. This coating is only commencing to show in the specimens with the 6 and 8 mm. length of capitulum, where the valves are more distinct in outline, but less thickly calcified. The five tiny specimens have no sign of this coating.

The scales of the peduncles are for the most part very clearly triangular in shape. They seem to overhang very slightly from the posterior and are very regular and in rows winding round the peduncle. In the largest specimen only the scales nearest to the capitulum become less distinct and appear to be embedded in the peduncle only small calcified parts showing between the same dark hair-like growth present on the capitulum. These approximate a little more in appearance to those of Gruvel's illustration, though his description agrees entirely with the appearance of these specimens.

The five small specimens show certain differences from Gruvel's type description of the species. They are all closely alike in size and appear to be young of the same species. The peduncles are short with very few scales distinctly triangular. The rostra are less triangular in shape, the upper end being equal in breadth to the lower, making the plate oblong. The angle of the upper lateral plate adjacent to the scutum seems to have much less projection and the scutum therefore is not notched to receive it.

2. SCALPELLUM (ARCOSCALPELLUM) AURORAE n.sp. ?

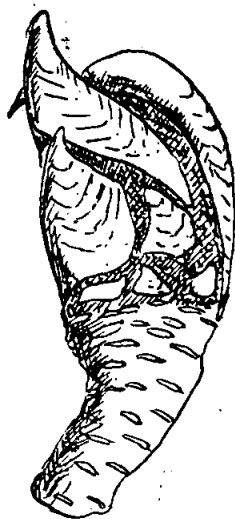
(Text fig. 1.)

Station III.—Lat. S. 66° 32', long. E. 141° 39', 157 fathoms.

Two specimens with the capitulum measuring 20 mm. and 22 mm. respectively.

Capitulum with 14 plates with narrow uncalcified strips, covered by a hairy cuticle, between them. Carina continuously curved more sharply at the anterior end, and at its posterior end it reaches the capitulum. The lower border of the tergum is slightly convex, the carinal border straight until beyond the carina where it is definitely concave forming a recurved point, less than one third of its border projecting beyond the carina. The occludent border is slightly convex. The scutum also has a distinct upcurving point near its anterior occludent border where the umbo is situated. Its lateral border is convex, posterior border definitely concave and into it fits the long narrow rostro-lateral. The upper lateral plate has a curved projection which lies in the angle between the tergum and scutum. The rostrum in one specimen is small and rounded, in the other minute. The lower lateral plate is triangular as also are the carino-laterals which do not meet below the carina.

The peduncle is very short, in both specimens, slightly less than half the length of the capitulum. It narrows very much immediately below the base of the capitulum, and its scales are very narrow, elongated horizontally, and though arranged regularly, far apart.



Scalpellum (Arcoscalpellum) aurorae.

The species resembles most closely the Challenger species *S. antarcticum* Hoek 1883 (Challenger, VIII, Cirripedia, p. 95). However, there are a number of points of difference and in the absence of any literature which describes any species agreeing more closely I have decided that this may well be a new species.

Family LEPADIDAE.

Sub-family LEPADINAE.

Genus LEPAS Linn.

3. LEPAS HILLII Leach.

Lepas hillii, Darwin, Monograph Lepadidae, 1851.

Macquarie Island. One damaged specimen only. Height of capitulum 16 mm., measurement across base 11 mm.

The valves are well calcified, smooth, base of carina forked and deeply embedded. There is no internal umbone on the right scutum. On lifting up the right scutum the three filamentary appendages characteristic of this species are seen well. There is no yellow colouring of the peduncle but this is probably due to the preservation of the specimen.

SUB-ORDER OPERCULATA.

TRIBE SYMMETRICA.

Family BALANIDAE ?*Genus* HEXALASMA *Hoek.*4. HEXALASMA ANTARCTICUM *Borradaile*, 1916.

(Plates V-VIII.)

Hexalasma antarcticum Borradaile, Brit. Antarctic ("Terra Nova") Expedition, 1910, Nat. Hist. Report, Crustacea, Part III. Cirripedia, Zool., 3, (4) 1916, 127-136.

From Station III, lat. S. 66° 32', long. E. 141° 39', 157 fathoms.

Material.—Loose compartments, four complete specimens of varying sizes, and one large specimen with valves but without compartments of which the details are as follows:—

- (1) Loose compartments:—(a) rostrum, lateral, carino-lateral belonging to same specimen, plate V; (b) rostrum; (c) rostrum.
- (2) Animal enclosed in opercular valves but without compartments. Plate VIII fig. 1.
- (3) Complete specimen growing on (1b). Plate VII, figs. 1, 2.
- (4) Complete specimen growing on (1c).
- (5) Complete specimen growing on right scutum of (2). Plate VII, fig. 4.
- (6) Complete specimen.

The following tables show the measurement in millimetres of specimens referred to in the above list.

TABLE 1.

No. of Specimen.	Compartment.	Length.	Breadth across base.	Breadth across widest part.
(1) a	Rostrum	70	27	32
	Lateral	80	8	24
	Carino-lateral	80	28	37
b	Rostrum	75	44	..
c	Rostrum	66	30	...

TABLE 2.

No. of Specimens.	Greatest Length.		Length.
	Tergum.	Scutum.	Occludent Margin.
(2)	43	41	32
(4)	24	23	15

TABLE 3.

No. of Specimen.	Diameter.			Length.			
	Carino-rostral.	At base.	Right angles to carino-rostral.	Carina.	Rostrum.	Largest.	Smallest.
(3)	35	...	23	35	66	65 (incomplete)	25
(4)	26	28	23	27	40	55	21
(5)	20	13	14	10	20	20 (r)	10 (c)
(6)	11	13	9	11	11	17	8

Particular interest attaches to this species, only the shell parts of which had been found previously. The compartments and valves were described as a new species by Borradaile (1916). A number of parts were found disarticulated and without any trace of animal matter, at Evans Cove, Terra Nova Bay, Victoria Land, in the Glacier 30 feet above sea level. Borradaile writes:—"No tracing of such a barnacle has been found in any dredging collection in Ross Sea or elsewhere, nor—a stronger argument—can any satisfactory suggestion be made as to the way in which recent shells could have reached the position in which these were found."

Borradaile's conviction that the parts belong to deep water forms is confirmed by the present discovery of the animal itself, dredged in considerable numbers at Station III, lat. S. 66° 32', long. E. 141° 39', from a depth of 157 fathoms. The satisfactory suggestion needed by Borradaile to account for the position of recent shells in the glacier has been found in the paper by Mr. F. Debenham (ref. see literature) which gives an explanation of the way in which marine deposits found in McMurdo Sound and other localities by Professor David and Mr. R. E. Priestley, had been raised from the sea floor of varying depths. Organisms were found in these deposits belonging normally to depths up to 100 fathoms. The present discovery of *Hexalasma antarcticum* in 187 fathoms furnishes evidence that the shells described by Borradaile were from forms now living. The enormous size of some of the specimens and the differences from the

Hexalasma species already described leave no room for doubt in regard to the validity of Borradaile's species, and it is interesting to find his doubts as to the geological age of his specimens justified.

The compartments and valves of the specimens are of very varying sizes as shown (1) in the table above. Apparently the variation is due to the position in which the barnacle grows on the compartment or valve of larger specimens.

From the examination of the soft parts of the animal it is apparent that the reference of the genus to Balanidae or Chthamalidae, discussed by Hoek (1913) and Pilsbry (1916), remains unsettled. This species seems to have characteristics of both the families. Like Balanidae the rostrum is without alae, the labrum has a small though distinct notch, and there are no caudal appendages. It agrees with Chthamalidae in the resemblance of the third pair of cirri to the fourth rather than the second pair, and in its deep water habitat. It appears that the genus is somewhere between the two families.

LITERATURE.

1903. BENHAM, W.—“ On some remains of a gigantic fossil Cirripede from the Tertiary Rocks of New Zealand.” *Geol. Mag. London*, 10, Dec. 1903, 111.
1916. BORRADAILE, L. A.—Crustacea, Part III, Cirripedia. *British Antarctic (“ Terra Nova ”) Expedition, 1910. Nat. Hist. Rep. Zool.*, 3, (4), 1916, 127-136.
1854. DARWIN, C.—*Monograph of the Cirripedia. Ray Society*, 2 vols.
1919. DEBENHAM, F.—A new mode of transportation by ice: the raised marine muds of South Victoria Land (Antarctica), *Quart. Journ. Geol. Soc.*, 75, 1919, 51-76.
1905. GRUVEL, A.—*Monographie des Cirrhipedes. Paris.*
1906. „ *Cirripedes of the “ Discovery.” Bull. Paris Mus.*, 12, 1906, 270-273.
1907. „ *Cirripedes. Nat. Ant. Exped., 1901-1904, Nat. Hist.*, 3, (6), 1907.
1910. „ *Die Cirripedien der Deutsche Südpolar Expedition, 1901-1903, Bd. xi, Zool. III, 1910, 195-229.*
1887. HECTOR, J.—*Scalpellum aucklandicum. Trans. N.Z. Inst.*, 20, 1887, 440.
1883. HOEK, P. P. C.—Report on the Cirripedia collected by H.M.S. “ Challenger ” during the years 1873-6. “ Challenger ” Report, Zoology VIII.
1907. „ *The Cirripedia of the Siboga Expedition. A. Cirripedia pedunculata. Resultats des Explor.*, xxxia, 1-127.
1913. „ *The Cirripedia of the Siboga Expedition, xxxi, Introduction, pls. 1-XXV, Haarlem, 1912.*
1913. „ *The Cirripedia of the Siboga Expedition. B. Cirripedia sessilia. Results of Exped.*, xxxib, 129-275.
1915. JENNINGS, L. S.—Pedunculate Cirripedia of N.Z. and neighbouring islands. *Tr. Proc. N.Z. Inst.*, 47, 1915, 285-293.
1926. NILSSON-CANTELL, C. A.—*Antarktische and Sub-Antarktische Cirripedien. Gesammelt von S. Valin, 1923-4. Ark. Zool., Stockholm 18A, (27), 1-16.*
1930. „ *“ Discovery ” Reports*, 2, 1930, 223-260.
- PARK, J.—*Geology of New Zealand*, pp. 113-115.

1907. PILSBRY, H. A.—The Barnacles (Cirripedia) contained in the collections of the U.S. National Museum—Classification of Lepadidae. U.S. Nat. Mus. Bull. No. 60, Washington.
1908. „ On the Classification of Scalpelliform Barnacles. Proc. Acad. Nat. Sci., Philadelphia; vol. I, pt. 1.
1916. „ The Sessile Barnacles (Cirripedia) contained in the collection of the U.S. Nat. Mus., including a Monograph of the American species. U.S. Nat. Mus. Bull. 93, 366 pp.
1913. WITHERS, T. H.—Some Miocene Cirripedes of the Genera Hexalasma and Scalpillum. Proc. Zool. Soc., Lond., 1913, 840-844.
1924. „ The fossil Cirripedes of New Zealand. Palaeont. Bull. Geol. Survey, N.Z., Wellington, No. 10, 1-47.
-

PLATE V.

Hexalasma antarcticum Borradaile.

Upper series.—External views of three compartments of large specimen.

C.L., carino-lateral; L, lateral; R, rostrum.

Lower series.—Internal views of same.

PLATE VI.

Hexalasma antarcticum Borradaile.

Upper series.—External views of compartments of smaller specimen

C, carina; CL, carino-lateral; L, lateral; R, rostrum.

Lower series.—Internal views of same.

PLATE VII.

Hexalasma antarcticum Borradaile.

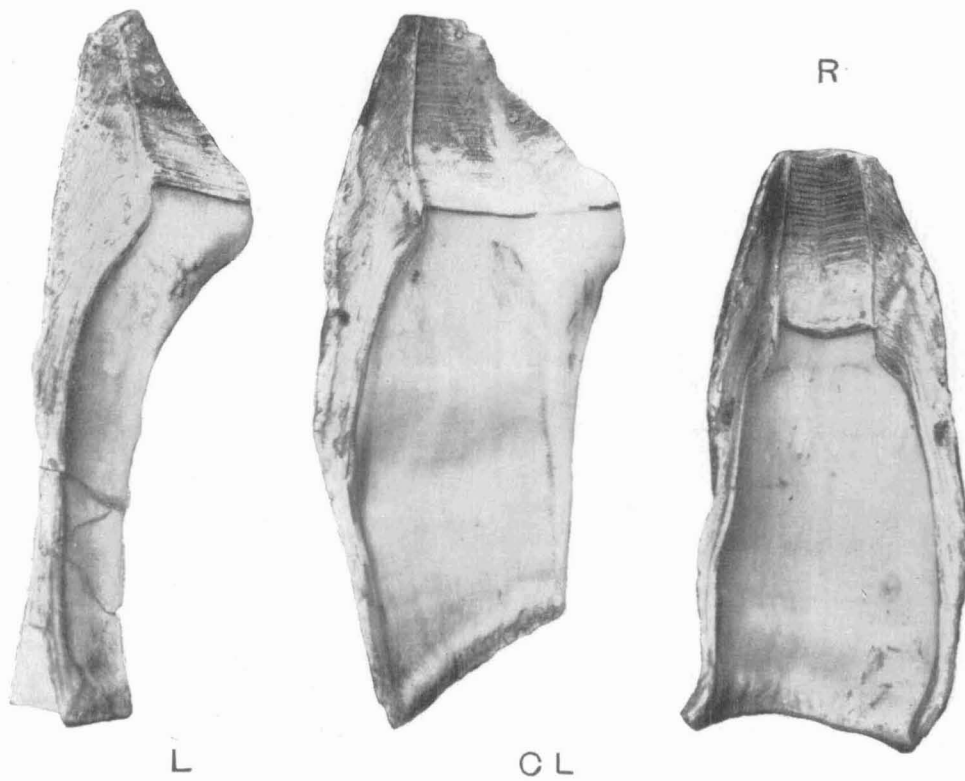
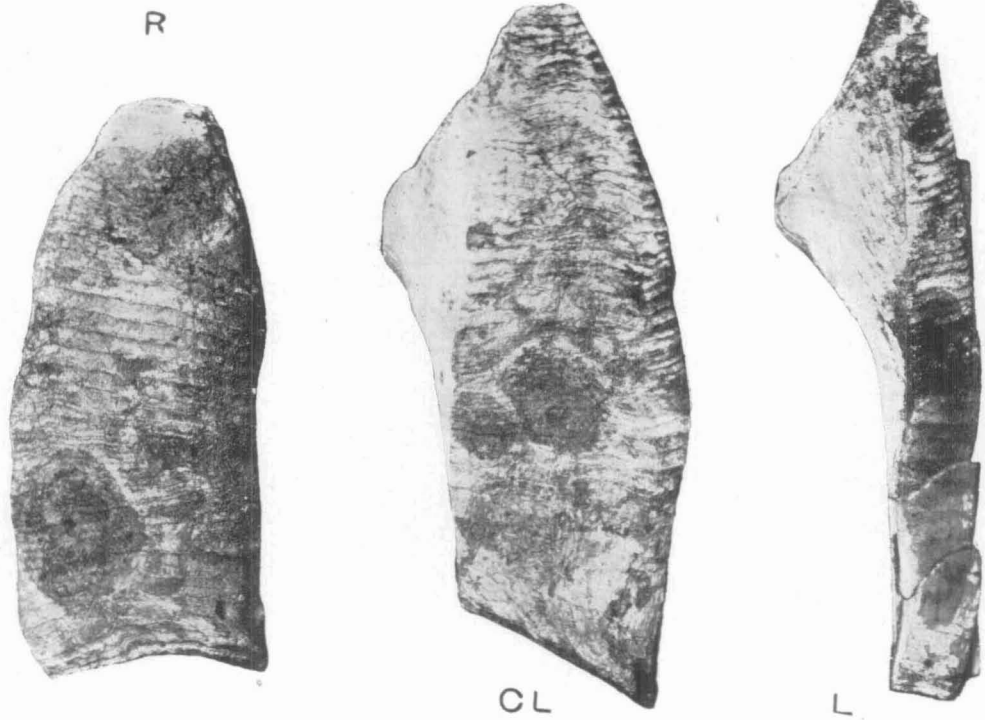
1. Entire specimen, growing on large rostrum, seen from right side.
2. Same from posterior end, showing inside views of rostrum of larger specimen.
3. External view of opercular valves of left side. sc, scutum; tg, tergum.
4. External view of right scutum with smaller specimen growing upon it.
5. External view of tergum of right side.
6. Internal view of opercular valves of left side. sc, scutum; tg, tergum.
7. Internal view of tergum of right side.
8. Internal view of scutum of right side.

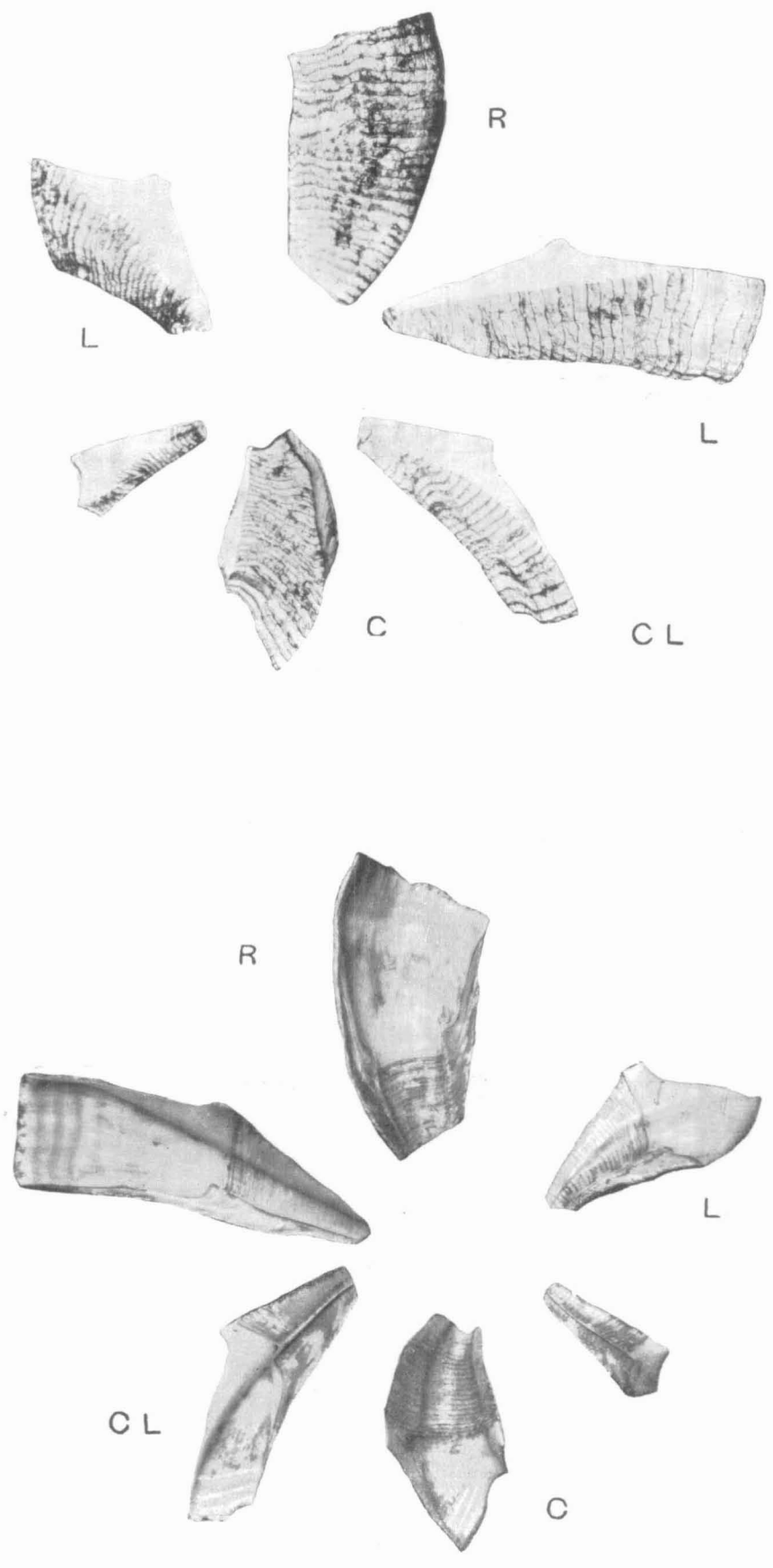
PLATE VIII.

Hexalasma antarcticum Borradaile.

(Outlines of figs. 1, 2, 4, 5, 6 drawn with aid of camera lucida.)

- Fig. 1. Specimen from right side in situ, right opercular valves removed. $\times 1\frac{1}{2}$.
 C, carinal or posterior end of body; c1, c2, etc., cirri; em, edge of mantle;
 m.c., mantle cavity; R, rostral or anterior end of body; s, stomach;
 sa, scutum adductor separated from right scutum; Sc, scutum;
 sd, depressor scutum muscle; td, depressor tergum muscle; Tg,
 tergum.
- Fig. 2. Cirri of right side removed from body. $\times 1\frac{1}{2}$.
 c1-c6, cirri, 1-6.
- Fig. 3. Mouth parts in situ. $\times 4$.
 l, labrum; lp, labial palp; max. 1, maxilla; max 2, outer maxilla.
- Fig. 4. Left mandible. $\times 14$.
- Fig. 5. Left maxilla. $\times 14$.
- Fig. 6. Left outer maxilla. $\times 14$.
- Fig. 7. Posterior end of specimen showing mode of attachment of cirri. $\times 1\frac{1}{2}$.
 a, anus; c3, 4, 5, etc., bases of cirri; p, base of penis.
- Fig. 8. Penis from right side. $\times 4$.
 c6, sixth cirrus, left; c6, base of right cirrus; p, penis.



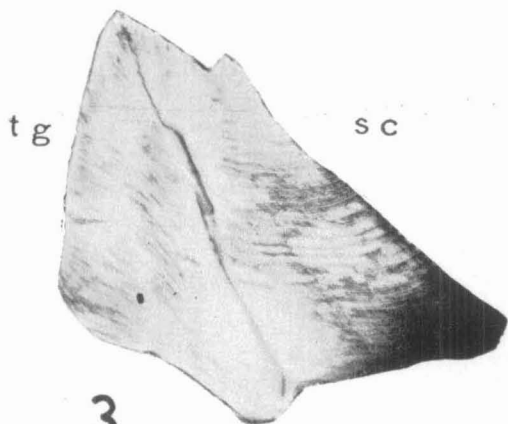




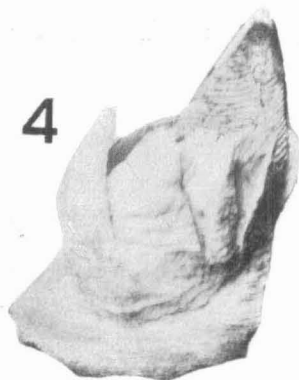
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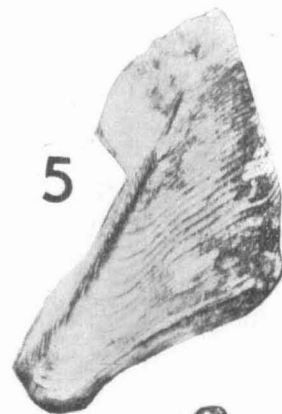
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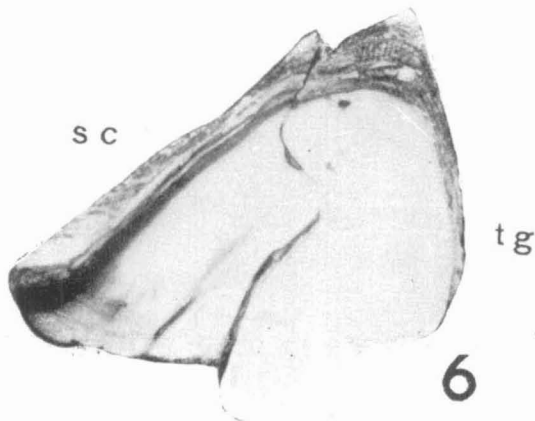
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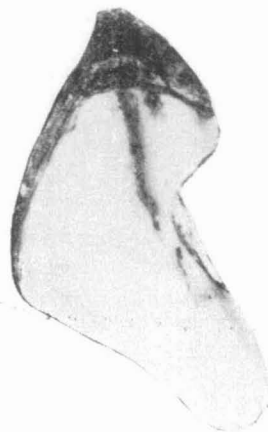
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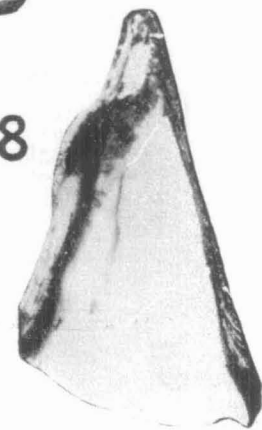
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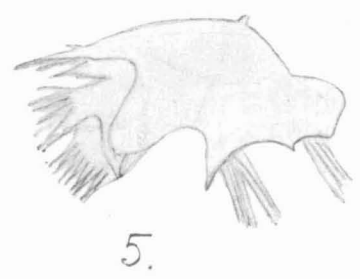
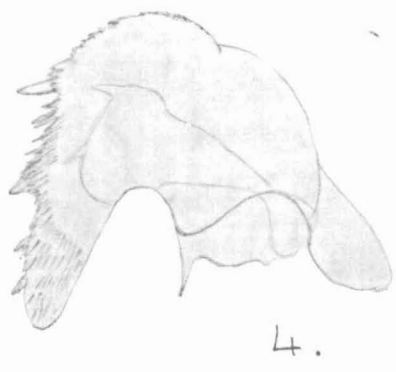
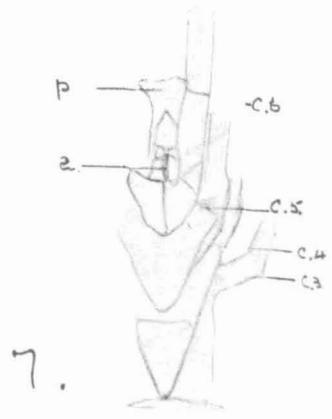
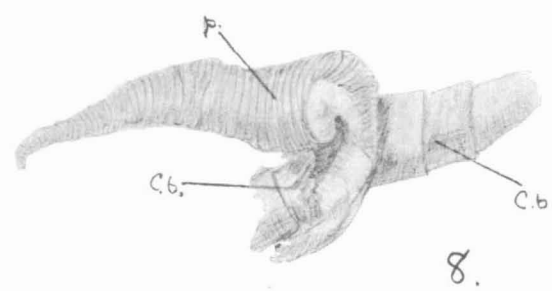
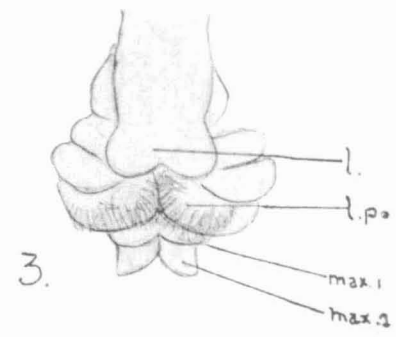
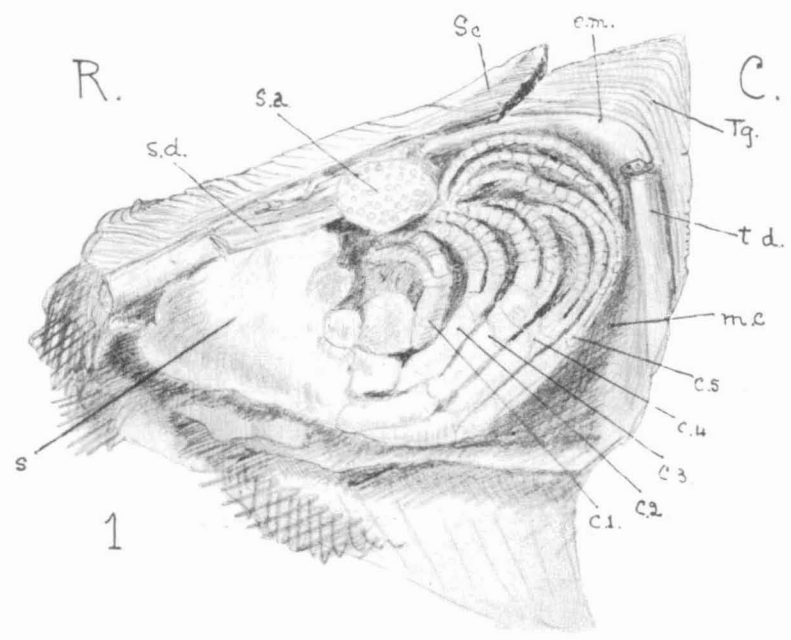
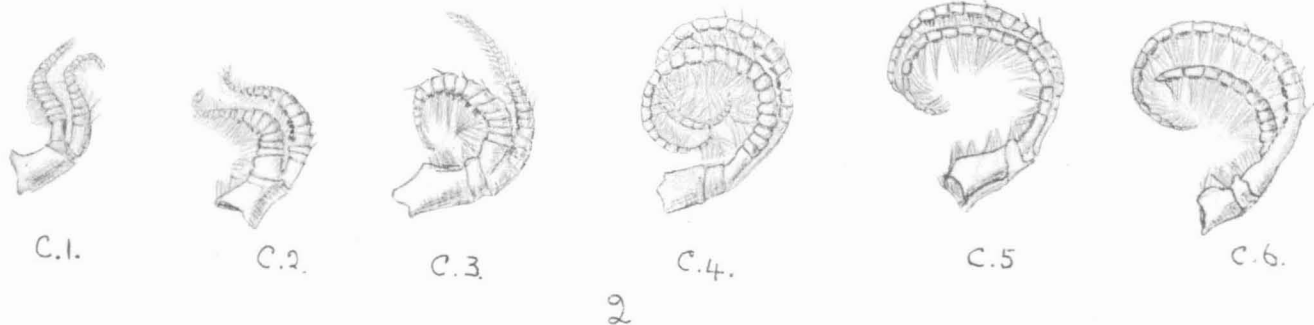
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The Reports on the Birds, Mammals and certain Invertebrata will be included in the records of the British, Australian and New Zealand Antarctic Expedition of 1929-1931 as joint reports.