

THE MALLOPHAGA FROM *EUDYPTES CHRYSOLOPHUS*
(BRAND) AND *E. CRISTATUS* (MILLER).

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THIS note is based mainly on material collected by the Australian National Antarctic Research Expedition and loaned to me by the British Museum (Natural History).

Two species of Mallophaga known from *Eudypetes cristatus* have hitherto been known, namely *Austrogoniodes hamiltoni* Harr. and *A. macquariensis* Harr., no positive record being known from *E. chrysolophus*.

Clay and Rothschild (1938) have recorded *A. struthesus* Harr. from captive specimens of *Eudypetes chrysolophus* and *E. cristatus*, but these records are probably due to contamination. I have not seen specimens from the first-named bird, but Miss T. Clay was kind enough to send me specimens collected in March, 1937, in the London Zoo from *Eudypetes cristatus* (two slides no. 8309, both undetermined), which proved to be conspecific with my *A. bifasciatus* ssp. *demersus* from *Spheniscus demersus*, Dyar's Isl., South Africa. They are also conspecific with a good series of specimens collected by Clay from captive individuals of *Spheniscus demersus*, and with a pair collected by Waterston from the same bird in South Africa.

A. struthesus was described by Harrison from *Eudypetes sclateri*, no locality. According to Thompson (cf. Guimarães, 1938), who has examined a specimen determined by Harrison as *A. struthesus*, this species is conspecific with *A. bifasciatus* (Piaget) from *Spheniscus magellanicus*. As I have not seen specimens of *A. struthesus* from one of the original hosts, I cannot decide whether this species is conspecific with *bifasciatus* or with ssp. *demersus*. It is at any rate certain, also from the original description, that the affinity of *A. struthesus* is near *Austrogoniodes bifasciatus* and its occurrence on *Eudypetes sclateri* and *schlegeli*, which are confined to the Islands south of New Zealand, is interesting, as has been already pointed out by Guimarães (*l.c.*).

Elsewhere (Kéler, 1952) two further species from *Eudypetes cristatus* are described, one of them being represented in the collection at hand, namely *Austrogoniodes cristati* from Tristan da Cunha.

We have then four species of Mallophaga known from *E. cristatus* and none from *E. chrysolophus*.

In the present material, collected by the A.N.A.R.E., there are represented the following species:

1. From *Eudypetes cristatus*: *Cesareus hamiltoni* (Harr.) (type host), and *Austrogoniodes cristati* Kéler (type host).
2. From *Eudypetes chrysolophus*: *Cesareus bicornutus* sp. n. (see below), *C. macquariensis* (Harr.) (new host) and *Austrogoniodes cristati* Kéler (new host).

Cesareus macquariensis (Harrison) (figs. 1-3).

Two males, four females and three nymphs from *Eudyptes chrysolophus* Rog., Heard Isl., S. Ind. Ocean, A.N.A.R.E. coll. no. 640, bird no. 631, 26.xii.1949. The specimens were collected off the head of the bird.

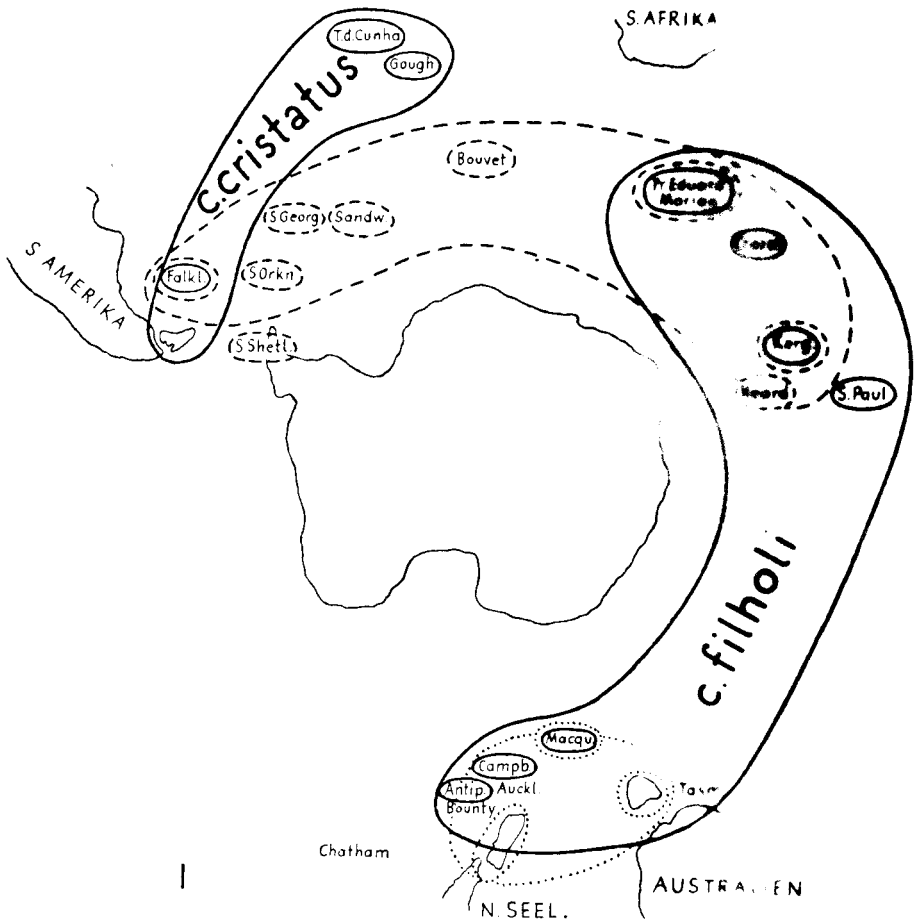


FIG. 1.—Map showing distribution of *Eudyptes cristatus* (subsp. *cristatus* and *filholi*) ———, *E. chrysolophus* - - - - and *E. schlegeli* , after records in Peters (1931), Murphy (1936), Riehdale (1941) and Serventy-Whittel (1948), comp. by Mr. Sanft, Ornith. Dep. Zool. Mus., Berlin.

Harrison (1937) described this species from two males and two females collected from *Eudyptes chrysolome* (= *cristatus filholi*) and *E. schlegeli*, both from Macquarie Isl. Later this species was recorded by Eichler (1941) from the original host (*Catarrhactes chrysolome* = *Eudyptes cristatus cristatus*) in Tierra del Fuego, collected by the Hamburger Magalhaens Expedition in 1893. This slide of the Hamburg Museum is before me. It contains one male of

C. macquariensis and three males and two females of *Austrogoniodes cristati* Kéler, one of the latter males having been figured by Eichler (*l.c.*) as "*macquariensis* Harr."

The occurrence of *C. macquariensis* on *Eudyptes chrysolophus* in Heard Island may easily be accounted for by the distribution of the penguin species in question, i.e., *Eudyptes cristatus cristatus*, *E. c. filholi* and *E. chrysolophus* (see fig. 1) and on the other hand by the contact which these birds may often have on their breeding places.

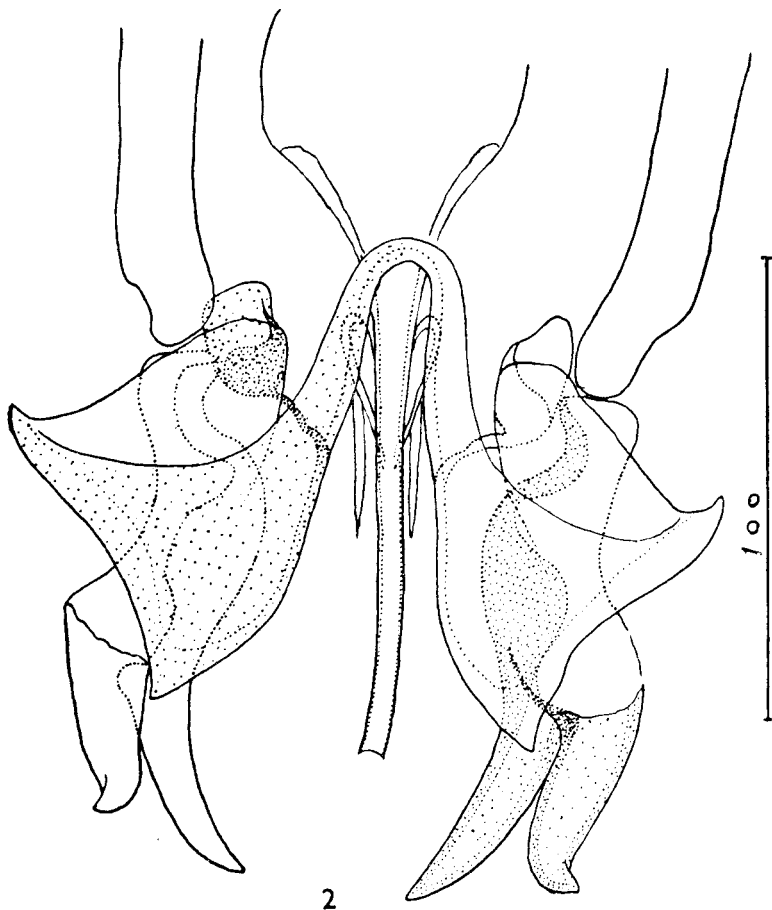


FIG. 2.—*Cesareus macquariensis* (Harr.), 1937. Posterior part of male genitalia. Specimen from *Eudyptes chrysolophus*, Heard Isl.

This case is similar to that of the occurrence of *Austrogoniodes bifasciatus* or *demersus* (*strutheus*, s.o.) on *Eudyptes sclateri* and *schlegeli* in the New Zealand area. In both cases we have evidence that Mallophaga can, in natural conditions, pass over from one host species to another and can survive on the new host; or alternatively we can accept the other opinion, namely that *C. mac-*

quariensis or *A. bifasciatus* (*demersus* resp.) remained unchanged when the original species of the host split into three different species.

C. macquariensis differs in many respects from the *bifasciatus* group (*Austrogoniodes bifasciatus*, ssp. *demersus*; *A. cristati* may perhaps also prove to be a ssp. of *bifasciatus*) and is more closely related to forms of the *hamiltoni*-group, which I have placed in the genus *Cesareus*.

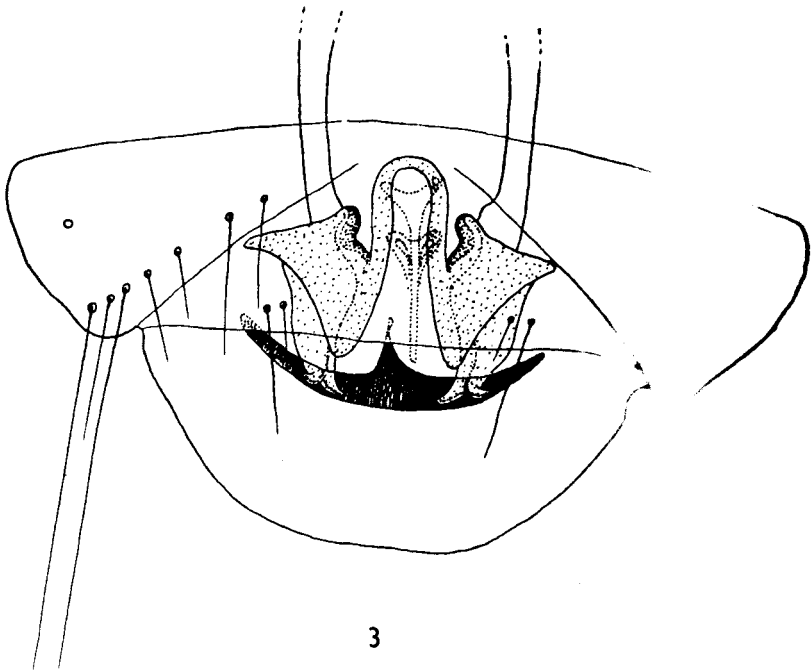


FIG. 3.—*Cesareus macquariensis* (Harr.). Posterior part of male genitalia *in situ*. Specimen from *Eudyptes cristatus cristatus*, Ushuaia, Tierra del Fuego.

Measurements.*

	Males.				Females				
	Harri-son.	Ushuaia.	Heard Isl.		Harri-son.	Heard Isl.			
HL ¹	—	0.427	0.462	0.470	—	0.548	0.555	0.568	0.555
HL ²	0.386	0.370	0.400	0.400	0.420	0.470	0.476	0.479	0.483
HB	0.521	0.504	0.583	0.583	0.621	0.714	0.700	0.700	0.700
PB	0.201	0.217	0.300	0.294	0.285	0.357	0.350	0.364	0.364
MB	0.470	0.420	0.504	0.510	0.554	0.650	0.650	0.646	0.646
AB	0.688	0.590	0.742	0.728	0.789	1.050	0.950	0.990	0.990
TL	1.386	1.288	1.547	1.555	1.738	1.974	1.960	1.990	2.023
I ¹	—	1.18	1.26	1.24	—	1.30	1.26	1.28	1.26
I ²	1.35	1.36	1.46	1.46	1.48	1.52	1.47	1.50	1.45

* HL¹ = head length, with posttemporal projections, and (HL²) in the mid-line, HB = head breadth, PB = prothorax breadth, MB = metathorax breadth, AB = abdomen breadth, TL = total length of the body, I¹ = head index for the first and I² = second length of the head.

The specimens from *E. chrysolophus* differ slightly in some measurements from the original description, as also from the male taken in Ushuaia. The latter is juvenile and besides it is mounted in canada balsam without having been treated in caustic potash, both facts being probably responsible for the differences. As the head index of *C. macquariensis*-males from *chrysolophus* is greater and that of the females agrees in the mean (± 1.485) with that of the original description, it seems that the differences may be only individual, or partly due to differences in mounting.

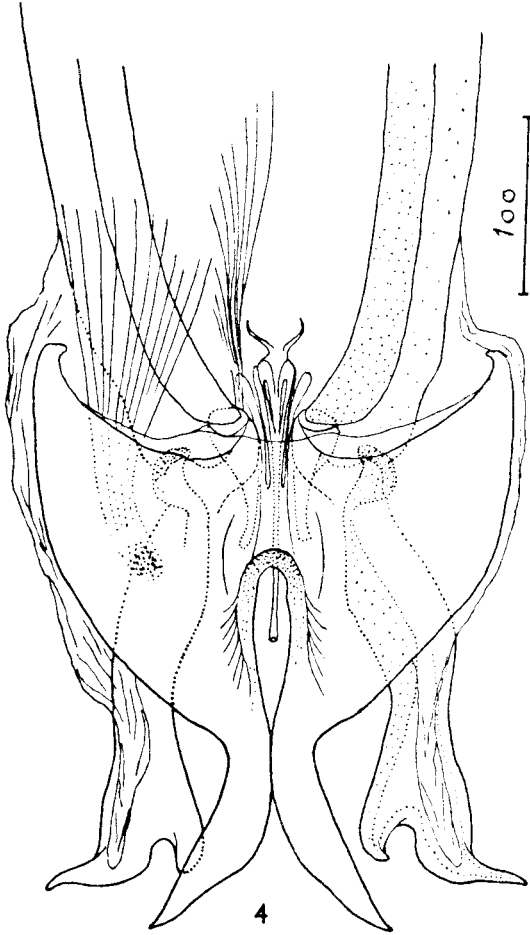


FIG. 4.—*Cesareus hamiltoni* (Harr.), 1937. Posterior part of male genitalia. Specimen from *Eudyptes cristatus filholi*, Macquarie Isl.

The male genitalia of my specimens from *E. chrysolophus* (fig. 2) are exactly as in the male from Ushuaia (fig. 3) except the small differences caused by the oblique position of the genital organ in the latter male.

I do not think, at present, that there are any subspecific differences between *C. macquariensis* from *Eudyptes chrysolophus* and *E. cristatus*, but a com-

parison of a longer series of specimens from both hosts and from *E. schlegeli* and *sclateri* may perhaps throw some new light on the systematics of this species.

As to the generic position of *C. macquariensis*, it may be noted that this species shows in both sexes a very distinct appendix con on the end of the clavi, which is also present in *C. hamiltoni* and *C. bicornutus*, while it is wanting in the species of the *bifasciatus*-group. The antennae of *macquariensis* are

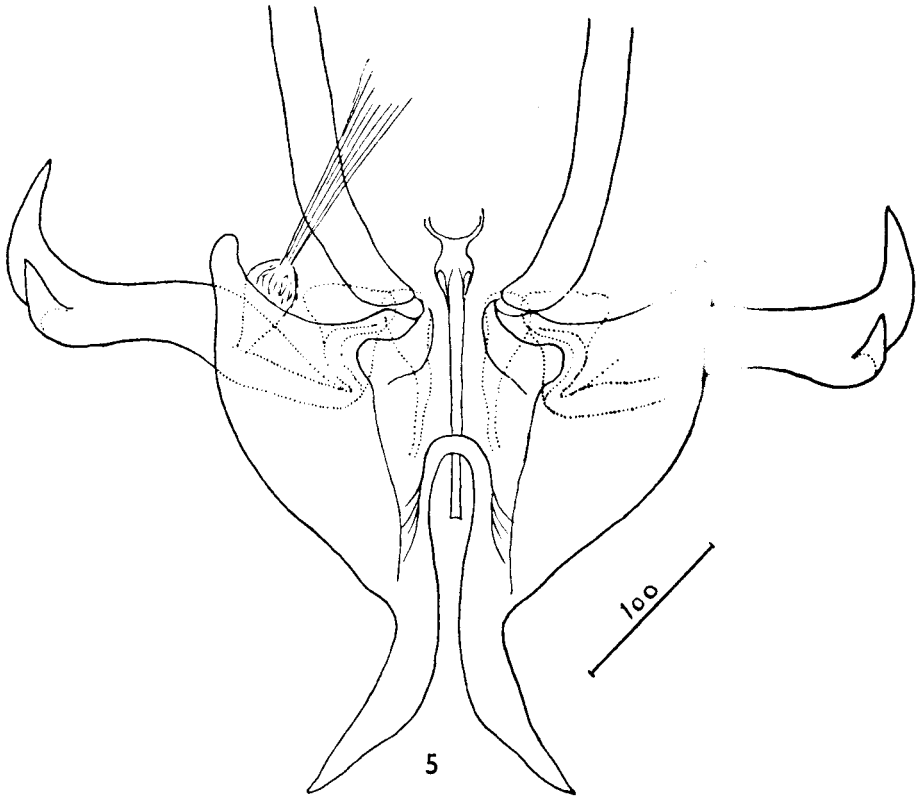


FIG. 5.—*Cesareus hamiltoni* (Harr.). As fig. 4, with spread out parameres. Male paratype, type no. 437 in British Museum.

distinctly dimorphic only in the basal segment and the temporal lobes are not so prominent as in *hamiltoni* and *bicornutus*, but much more prominent than in the *bifasciatus*-group. The lateral lobes of the metathorax are nearly as strongly dilated as in *hamiltoni* and *bicornutus*. Finally, the shape of the strongly dilated tibial spurs in *macquariensis* is as in *hamiltoni* and *bicornutus*.

Cesareus hamiltoni (Harrison) (figs. 4–7).

Material.—Seven males, 13 females and 6 nymphs from *Eudyptes cristatus* (juv.) Macquarie Isl., A.N.A.R.E. coll. no Mi/49/B.7, 9. vi. 1949, and 2 females

from the same host species, Atlas Cove, Heard Isl., A.N.A.R.E. coll. no 443, bird no. 442, 30.xi.1949.

This species was described from many males and females by Harrison (1937) from *Eudypetes chrysochome* (= *E. cristatus filholi*) from Macquarie Isl. Clay (1940) recorded it from *E. c. cristatus*, Falkland Isl.

As the drawing of the copulatory apparatus in the original description shows a different shape of the tips of the parameres, it was necessary to compare the types of this species. Through the kindness of Miss Theresa Clay, British Museum (Natural History), I have been able to compare a male and a female paratype of *C. hamiltoni*.

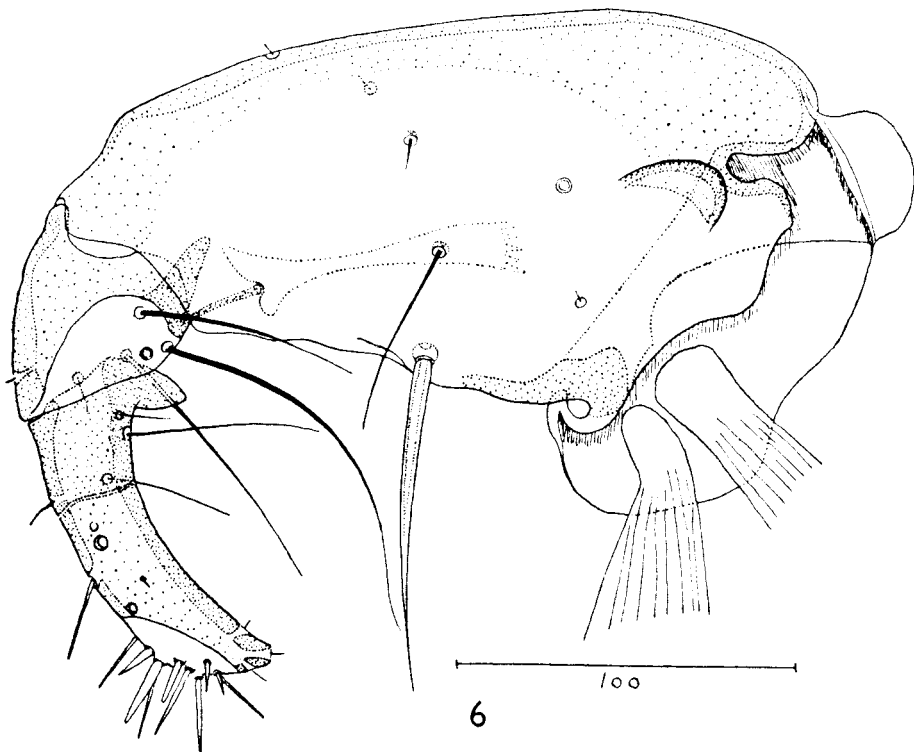


FIG. 6.—*Cesareus hamiltoni* (Harr.). Left antenna of male, dorsal aspect.

Figs. 4 and 5 in this paper show the copulatory organ of *C. hamiltoni*, A.N.A.R.E. coll., no. MI/49/B.7, and fig. 7 the ends of the parameres and endomerai plates of the paratype male.

If compared with the respective figure in the original description it must be stated that both the paramere teeth are not of equal length and are not both curved inwardly as in Harrison's drawing, but they are of unequal length and the outer tooth is strongly directed outwards, whereas the inner tooth is directed postero-medial as in my figures. The extreme tip of the inner tooth is in some specimens directed slightly outwards.

In fig. 5 the copulatory apparatus is shown in an early stage of erection, with the parameres stretched out and with both the parameral teeth directed outwardly, just as in Harrison's second drawing.

Assuming that the male, the genitalia of which have been drawn by Harrison, was conspecific with his paratypes, then the drawing of the parameral teeth in the original description is erroneous.

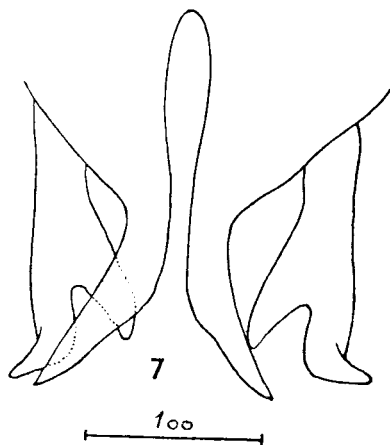


FIG. 7.—*Cesareus hamiltoni* (Harr.). Ends of parameres and endomer of a paratype male in British Museum (type no. 437).

Cesareus bicornutus sp. n. (figs. 8–9).

Material.—One male and two females from *Eudyples chrysandrophus*, Atlas Cove, Heard Isl., A.N.A.R.E. coll. no. 628, bird no. 620, Dec. 1949. Two males and three females from the same host species and locality, A.N.A.R.E. coll. no. B.M. 1951–252, 621 + 619, 26.xii.1949. One male, two females and three nymphs from the same host species, immature bird, no locality, A.N.A.R.E. coll. no. 673, 31.xii.1949.

Holotype: a male from bird no. 620, coll. no. 628, in the British Museum.

Allotype: a female from the same bird, on the same slide with the holotype.

Paratypes: two males and five females in the British Museum and one male and one female in the Zoological Museum, Berlin. The nymphs have not been regarded as paratypes, as there are but three very young ones and I am not sure enough whether they belong to this species or perhaps to *Cesareus macquariensis*, from which I have but 3 nymphs of an early stage.

Males and females in length, habitus and chaetotaxy very similar to *hamiltoni* Harr. In the male the clypeal region is more flatly rounded than in *hamiltoni* ($0.400-0.413 : 0.063-0.070 = 6 : 1$ in *hamiltoni* $0.400 : 0.050 = 8 : 1$). Genital organ as in fig. 8. Last segment nearly regularly rounded, semicircular (in males of *hamiltoni* it is more parabolic), with distinctly flattened sides.

The females are practically indistinguishable from *hamiltoni*; being separated only by the pair of brown chitinised tubercle-like structures just behind the lateral pouches of the vaginal sac, which are wanting in all my females of *hamiltoni*.

Measurements.

	Males.			Females.						
	Holo-type.			Allo-type.						
HL ¹	0.511	0.497	0.504	0.576	0.562	0.525	0.525	0.525	0.540	0.520
HL ²	0.406	0.392	0.400	0.497	0.483	0.462	0.462	0.448	0.462	0.455
HB	0.680	0.650	0.658	0.728	0.700	0.640	0.646	0.658	0.632	0.625
PB	0.378	0.357	0.343	0.370	0.350	0.294	0.310	0.294	0.310	0.310
MB	0.658	0.632	0.632	0.675	0.650	0.590	0.590	0.576	0.576	0.583
AB	0.980	0.910	0.882	1.010	0.910	0.910	0.896	0.896	0.940	0.952
TL	1.975	1.904	1.764	2.072	1.960	1.750	1.792	1.778	1.862	1.820
I ¹	1.35	1.31	1.30	1.26	1.24	1.22	1.22	1.23	1.17	1.25
I ²	1.67	1.61	1.64	1.46	1.43	1.43	1.43	1.49	1.37	1.37

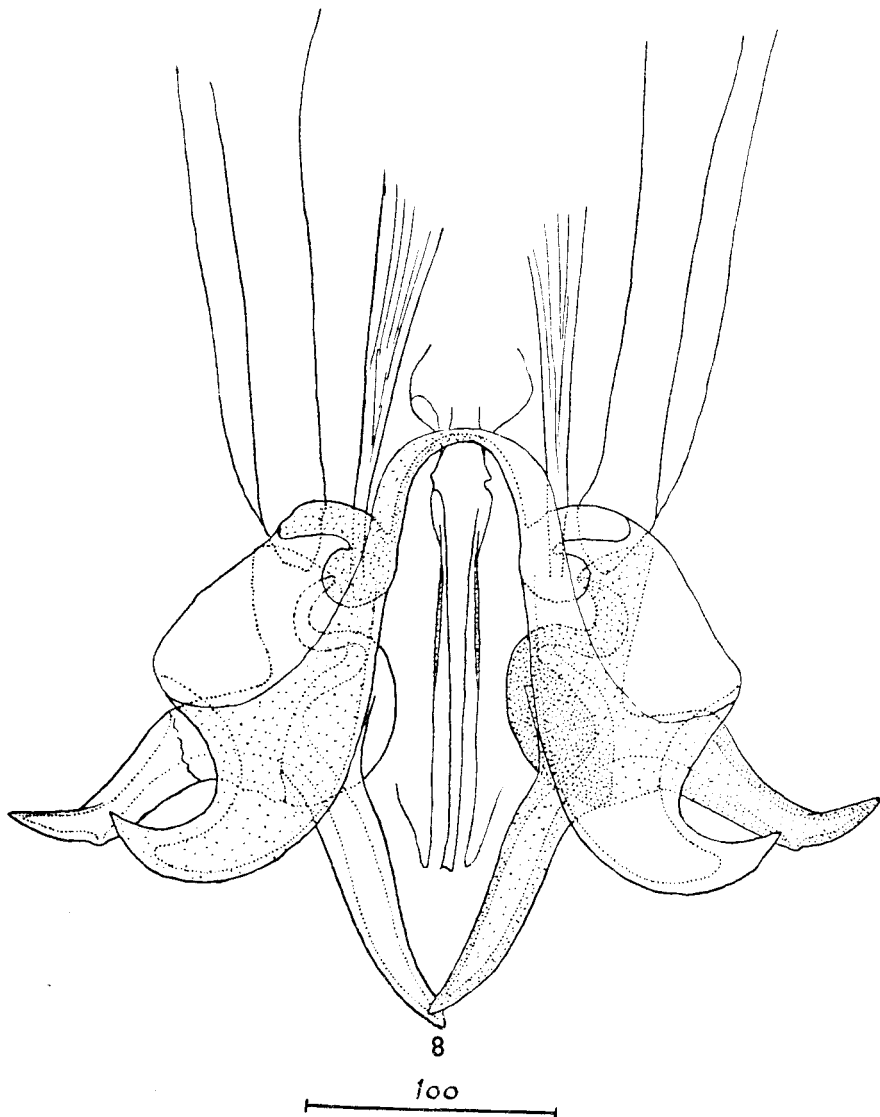


FIG. 8.—*Cesareus bicornutus* sp. n. Posterior part of male genitalia.

Austrogoniodes cristati Kéler.

Material.—Two males and three females from *Eudyptes chrysolophus*, Heard Isl., S. Ind. Oc., A.N.A.R.E. coll., no 641, bird no 631 (head), 26. xii. 1949. One male from the same host species and locality, A.N.A.R.E. coll. no. 628, bird no. 620, 26. xii. 1949. Two males and one female from the same host species and locality, A.N.A.R.E. coll., B.M. 1951—252, 621 + 619, 26. xii. 1949.

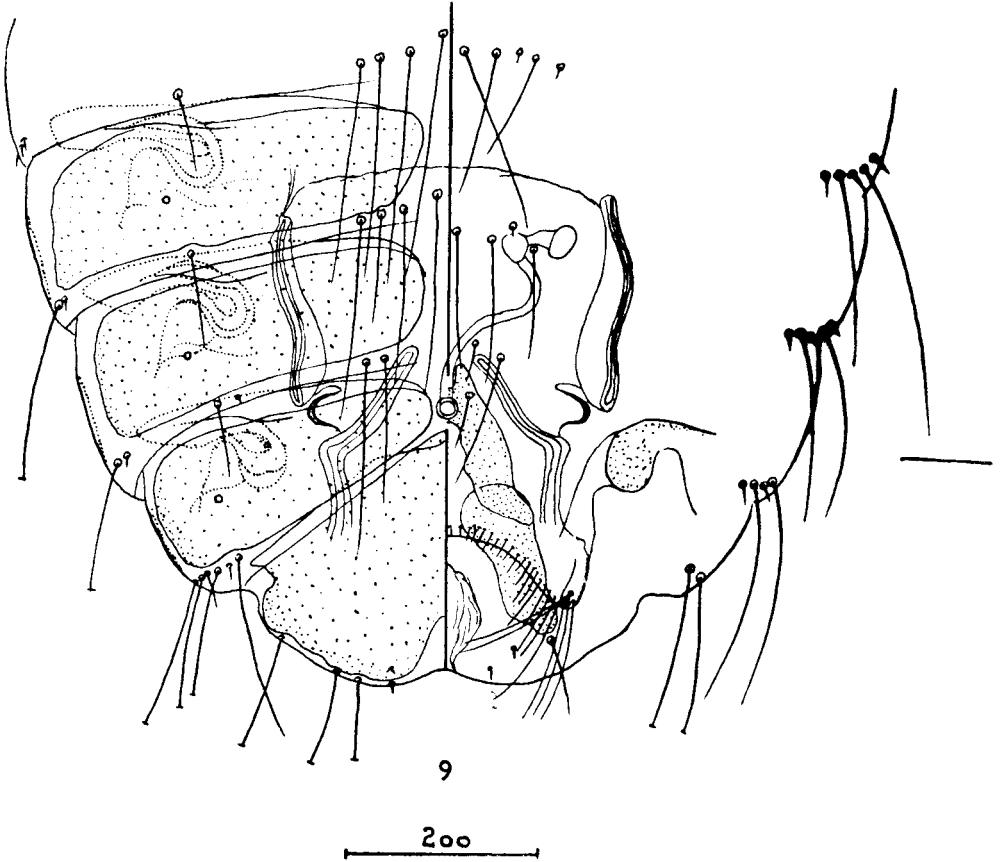


FIG. 9.—*Cesareus bicornutus* sp. n. Posterior segments of abdomen (apex) of female. Left dorsal, right ventral side.

Four males and five females from *Eudyptes cristatus*, same locality, A.N.A.R.E. coll. no. 443, bird no 442, 30. xi. 1949. Four males and three females from the same host species, Macquarie Isl., A.N.A.R.E. coll. no Mi/49 B.7, 9. vi. 1949.

Some of the specimens of the above series from *E. chrysolophus* were used in the original description, and are labelled as paratypes.

There is at present nothing to be added to the original description of this species.

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