

The Lice of Petrels.—Part IV.* *The Genus*
Episbates. By GORDON B. THOMPSON.

[Plate XIX.]

THE genus *Episbates* was erected by Harrison for a species described by Dufour in 1834. It is possible that the forms occurring on different species of Diomedeidæ may ultimately prove to represent distinct species or subspecies, but, in view of the fact that these parasites appear, from the records to date, to occur rarely on the hosts, and the fact that I have only been able to examine eight specimens, I prefer at this stage to refer to all the records as representing Dufour's species. The genus comes very close to Mjöberg's *Pseudonirmus*, but, as Harrison has pointed out, the complete lack of the clypeal region, the continuity of the frontal bands around the anterior margin of the head and the very characteristic sculptured cuticle with its honeycomb pattern which even Dufour featured in his figure, are sufficient to warrant generic rank. I have omitted the few references to the genus since they are contained in the rather exhaustive bibliography which is given below for the species concerned.

Genus EPISBATES Harrison (1935).

Generic Description.—Large, well pigmented and strongly sclerotized forms with characteristic sculptured cuticle; antennal, anterior and internal bands not well developed;

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anterior bands uniting medially; without clypeal region. Species occur as far as is known on birds of the family Diomedidae (Albatrosses and Mollymawks).

GENOTYPE—*Episbatas pederiformis* (Dufour).

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HISTORY OF THE SPECIES.

Dufour described and figured the species sufficiently to make the recognition of it perfectly straightforward as long ago as 1835, but subsequent writers seem to have ignored it. The host was given as *Diomedea exulans* Linn. Gervais (1844) listed the species.

Rudow (1870) described a species under the name *Metopeuron laeve* from "Diomedea aus der Sudsee," and the following is a translation of the original German description:—"Head broader than long, in front rounded, behind somewhat broader, projecting, with rounded sides. No hairs. Colour red brown with much darker margins. "Antennæ far forward in deep grooves, with slightly wider third segment, the two last club-shaped; as long as head, dark.

"Prothorax lengthened into a short neck, rounded in front, with almost straight sides. Metathorax broader in front, tapering backwards, both dark with clearer middle, more than $\frac{1}{2}$ longer than head.

"Abdomen narrow ovate. B. to L. 1 to $3\frac{1}{2}$. Sides almost smooth, penultimate segment broader than last and rounded, with small humps at sides, with single hairs, otherwise no hairs. Colour dark with lighter middle.

"L. 1.25 mm.

"Laek of hairs characteristic and dark colour."

Giebel (1874) referred to Rudow's species, called it *Ligewrus laevis* and *Metopeuron laeve*, and placed it as a

synonym of Dufour's species which he transferred to the genus *Lipeurus*. On p. 235 he said Dufour "figured on p. 676, pl. 26, f. 4 a *L. pederiformis* from *Diomedea exulans*. Unfortunately this volume of the entomological annals is not accessible to me."

Later in 1876, Giebel completely ignored Dufour's *pederiformis*, described the same species under the name *angulicollis*. In 1879, a more detailed description appeared, together with figures of the whole insect and details of the three legs. The host was given as *Diomedea exulans* from Kerguelen I. Studer (1879) listed Giebel's species.

Piaget (1880, p. 205) quoted Giebel's 1876 description, but had no specimens. On p. 333 he referred to *L. pederiformis* and said that Dufour was dealing with the larval form of *D. brevis*. On p. 334 he mentioned Rudow's "læve" and said it was unrecognizable.

Taschenberg (1882, p. 145) placed *P. pederiformis* Dufour in the synonymy of *L. ferox* Giebel, and on p. 148 he said "this species was also found on the same host by Dufour, who described wholly immature specimens as a separate species *P. pederiformis*."

On p. 149, he referred to Rudow's *M. læve* and said it "is not to be perceived with certainty either from the description or from the manuscript drawing which is before me. I suspect that it is an immature form, probably belonging to *ferox*, for Rudow's drawing is very reminiscent of the figure of *pederiformis* Dufour."

Studer (1889) again listed the species described by Giebel. Piaget (1890) ignored Dufour's species and described the same parasite under the name *breviceps* from *D. exulans*. His male was without antennæ.

Neumann (1891) recorded *L. breviceps* from *D. fuliginosa*, and said his specimen was complete and that it should be placed in the genus *Nirmus*.

Osborn (1896) followed Piaget, and said Dufour's species was the immature form of *taurus* Nitzsch.

In 1896, Kellogg placed Dufour's species as a synonym of *L. ferox* Giebel, probably following Taschenberg.

Kellogg and Kuwana (1900) described and figured the same species under the name *macilhennyi* from *D. nigripes* Audubon—Alaska.

Kellogg and Chapman (1902) under the name *Lipeurus macilhennyi* (an obvious misspelling) recorded specimens from a Californian specimen of *D. nigripes* Audubon.

Enderlein (1903) listed Giebel's *angulicollis* and gave *D. exulans* Linn. as the host.

In his catalogue of the Mallophaga of the world Kellogg (1908) listed *angulicollis* Giebel, *breviceps* Piaget and *macilhennyi* (sic) Kellogg and Kuwana as good species, but omitted Dufour's *pederiformis*.

Enderlein (1909) transferred Giebel's *angulicollis* to the genus *Ricinus* and recorded specimens from *D. exulans* Linn.

Neumann (1913) placed Dufour's species as a synonym of *ferox* Giebel and recorded it from *D. exulans* Linn.

Kellogg (1914) recognized the identity of his *macilhennyi* with Giebel's *angulicollis*, but continued to overlook Dufour's species.

Harrison (1916) placed *pederiformis* in his new genus *Esthiopierum* and listed *angulicollis* Giebel, *breviceps* Piaget, *læve* Rudow and *macilhennyi* Kellogg and Kuwana as synonyms.

Uchida (1917) recorded *L. macilhennyi* (one female) from *D. albatrus* Pallas and five males and one miniature from *D. nigripes* Audubon.

Miller (1927) renamed Piaget's *breviceps* (1890) *elongatus* because he said it was preoccupied by *breviceps* Piaget, 1888.

De Barros Netto (1933) merely listed the species in his thesis.

Harrison (1935 and 1937) erected the genus *Episbatas* with Dufour's species as genotype. He recorded a single female from *D. exulans* Linn. in his 1937 paper.

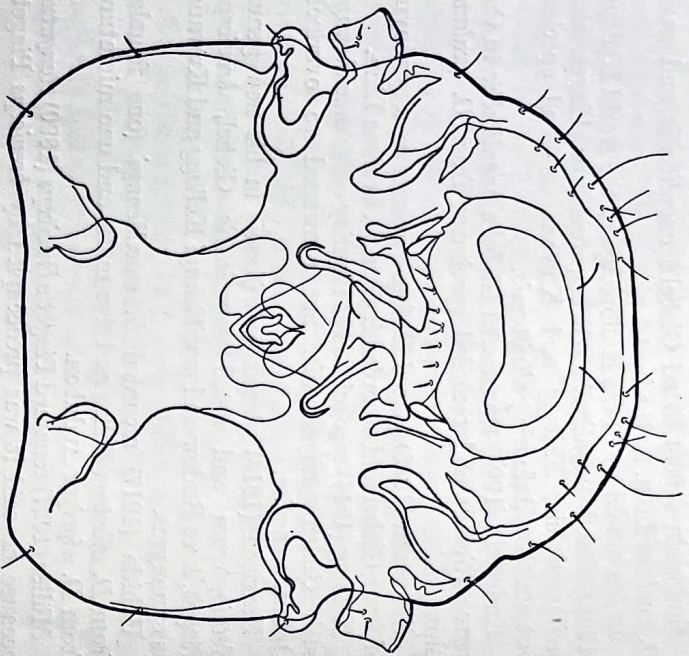
Bedford (1936) recorded females and Thompson (1938) recorded a single female from *D. exulans* Linn.

Clay (1940) recorded two females and two males from *D. exulans* Linn.

Séguy (1944) gave a brief description and reproduced Piaget's figures of *breviceps* together with a detailed figure of the "tegument . . . vu sous l'éclairage vertical."

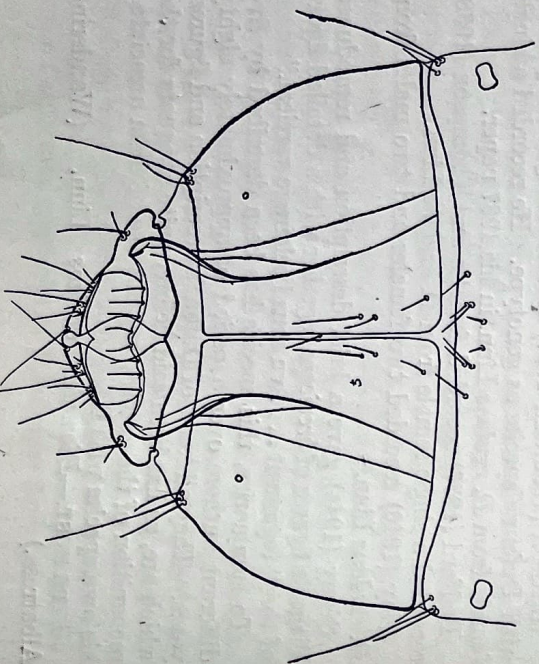
To summarize, this species has been described by five different authors over a period of approximately eighty years. They all knew of Dufour's description and figures, which are, as has been said before, quite adequate for the recognition of the species, but not one of them associated his own species with it.

TYPE-HOST.—*Diomedea exulans* Linn. (Wandering Albatross.)



Episholates pedersiformis (Dufour), ♀. Head.

Text-fig. 2.



Episholates pedersiformis (Dufour), ♀. Terminal abdominal segments.

Besides the type-host *E. pedersiformis* (Dufour) has been recorded from *D. albatrus* Pallas (Short-tailed Albatross), *D. nigripes* Audubon (Black-footed Albatross) and *Phaebetria palpebrata* (Forster). It is extremely likely that it (or closely allied species) occurs on all the species of the genera *Diomedea* and *Phaebetria* of which nineteen forms are listed by Peters (1931) in his "Check-list of the Birds of the World."

SPECIMENS EXAMINED.—2 ♀♀, 2 ♂♂ from *D. exulans* Linn., Lat. 56° 20' S., Long. 61° 18' W., 12. i. 1937 (74) (kindly loaned by the Trustees of the British Museum through the good offices of Miss T. Clay); 1 ♀ from *D. exulans* Linn. and 1 ♀ from *Diomedea* sp. (G. B. Thompson Coll.); 1 ♂ determined as *breviceps* Plaget by Neumann from "*Diomedea fuliginosa* * (Albatros), Îles Mariannes, 20. x. 1891, Paris Museum." 1 ♀ the type of *macillemnyi* Kellogg and Kuwana from *D. nigripes* Audubon, Pt. Barrow, Alaska (kindly loaned by Professor G. F. Ferris). Since Dufour's specimens are no longer in existence I am designating a male and a female of the British Museum specimens as neotypes and the remainder of the specimens from *D. exulans* Linn. as neoparatypes.

Description.—Large, stoutish forms, well pigmented and sclerotized.

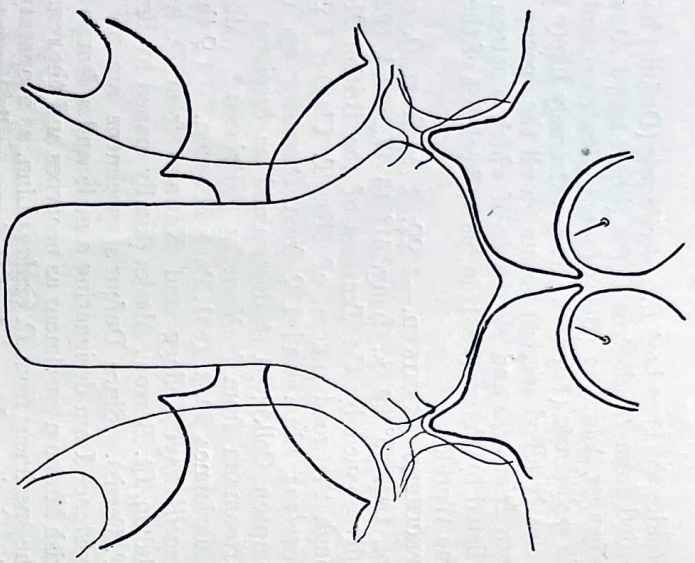
Female (Pl. XIX. figs. 1, 2, 3; text-figs. 1, 2, 4, 5.)

Head as long as broad; antennal and frontal bands forming a continuous band around the anterior margin of the head. The occipital blotches, the posterior inner projections of the antennal bands and the dorsal occipital blotches are the only areas of the head where there are chitinous thickenings. For further details of the head and antenna see Pl. XIX. fig. 2 and text-figs. 1, 5.

Prothorax almost rectangular, less than twice as broad as long, with well pigmented and sclerotized bands running laterally and posteriorly to the first coxae. Mesothorax almost as broad as long, with well sclerotized and pigmented area posterior to the second coxae and running laterally posteriorly along the whole margin. One large, elongate, slightly tapering sternite is present and runs from the mid line of the second coxae to a point level with the anterior margin of the third coxae (see text-fig. 3). There is a row of four long, then two small

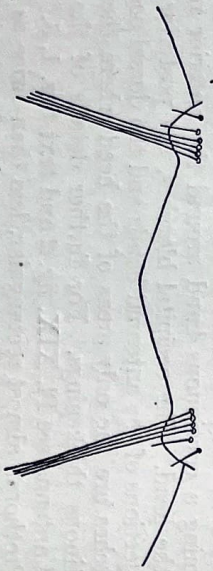
* *D. fuliginosa* = *Phaebetria palpebrata* (Forster).

Text-fig. 3.



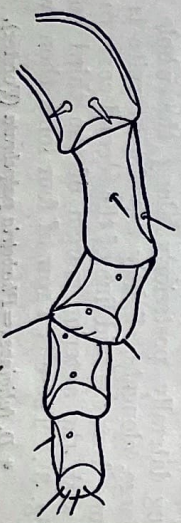
Episbates pederiformis (Dufour), ♂. Thoracic sternite.

Text-fig. 4.



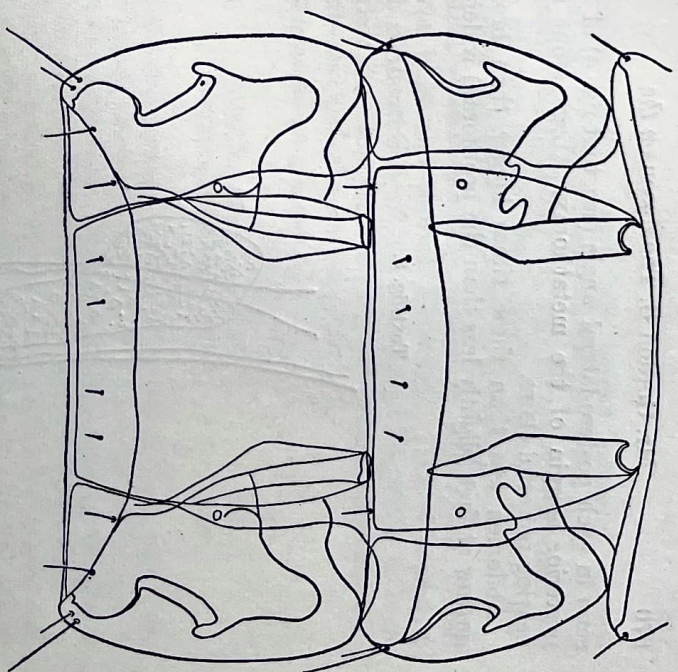
Episbates pederiformis (Dufour), ♀. Posterior margin of metathorax.

Text-fig. 5.



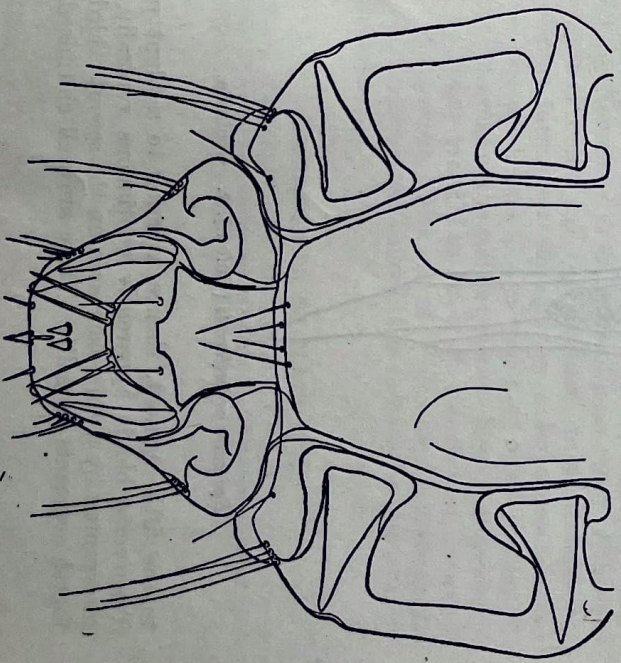
Episbates pederiformis (Dufour), ♀. Antenna.

Text-fig. 6.



Episbates pederiformis (Dufour), ♂. Abdominal segments.

Text-fig. 7.

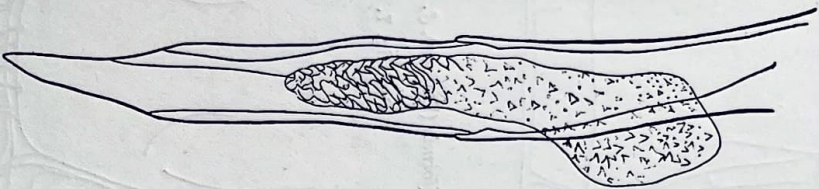


Episbates pederiformis (Dufour), ♂. Terminal abdominal segments.

setae in each postero-lateral angle (see text-fig. 4) of the posterior margin of the metathorax. Legs stout and bearing powerful claws.

Abdomen less than three times longer than broad; narrow at first (slightly less than the prothorax) widening

Text-fig. 8.



Epishabates pederiformis (Dufour), ♂. Genitalia.

to the fifth segment, thence tapering to a blunt point. Transverse bands apparently continuous ventrally, but interrupted by a thin clear area on the second, third and fourth segments dorsally. There are well chitinized and

pigmented areas which are joined laterally, almost rectangular in shape, in the upper and lower third of each segment (see Pl. XIX, fig. 1). It seems that there are two or three longish setae in each postero-lateral angle. Terminal abdominal segments as in text-fig. 2.

Male.—Resembles the female in almost all details of the head and thoracic structures. The chitinization and pigmentation of the abdominal segments is more marked (see text-fig. 6). For terminal abdominal segments and genitalia see text-figs. 7, 8.

Measurements (in mm.).—

Total length3.7	♀	♂
Greatest breadth	. . .0.77		0.70

The characteristic sculptured cuticle seems to be present throughout the greater part of the dorsal surface—it is present on the legs. This is well illustrated by the photographs, but is not shown in any of the text-figures.

Note.—As already stated it is possible that more than one species or subspecies is represented. If this should prove to be the case the name *macilkennyi* Kellogg and Kuwana is available for the form occurring on *D. nigripes* Audubon. The single male specimen, originally determined by Neumann as *breviceps* Piaget, from *Phaethria palpebrata* (Forster) will very probably prove to represent a different form, but through an unfortunate accident it was damaged, and I am refraining from naming it. All the drawings of the male were made from this specimen.

I am deeply grateful to Dr. J. W. Shackle for the excellent photographs. Mrs. A. M. Wiles kindly assisted me with the drawings and I should like to take this opportunity of thanking her.

EXPLANATION OF PLATE XIX.

- Fig. 1. *Epishabates pederiformis* (Dufour), ♀. Head and thorax.
 Fig. 2. *Epishabates pederiformis* (Dufour), ♀. Thorax.
 Fig. 3. *Epishabates pederiformis* (Dufour), ♀.

