

FIGURE 8

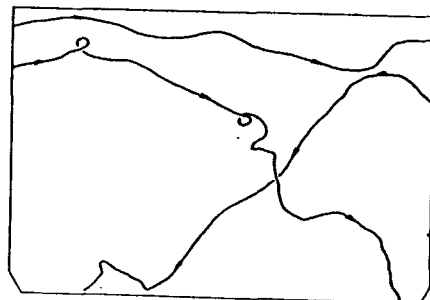


FIGURE 9

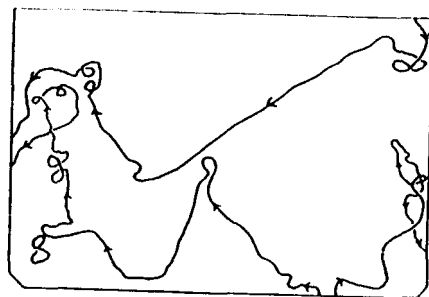


FIGURE 10

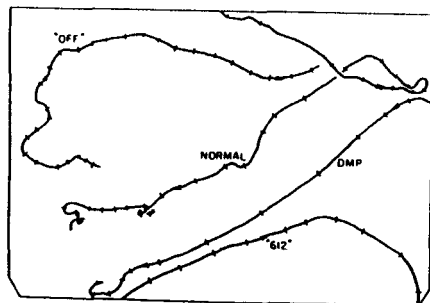


FIGURE 11

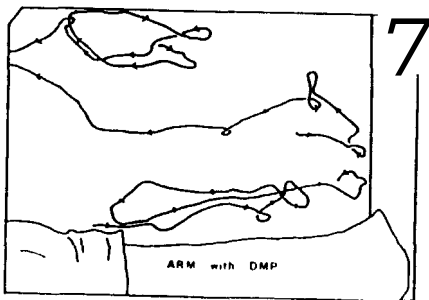


FIGURE 12

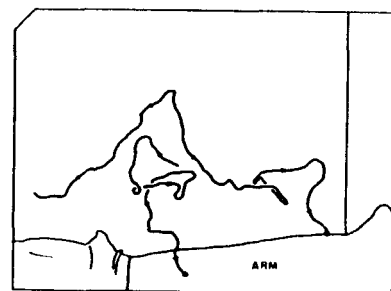


FIGURE 13

Figs. 8-13. Influence of various modifiers on flight tracks of *Aedes aegypti*.

action, which again is often a sudden zoom upwards, but sometimes a rather straight dash to the other side of the chamber.

Evidently the full mechanism of the avoiding action is still not clear, but inhibition of turning plays an important part in it. It will be recalled that in the earlier discussion of olfactory guidance it was postulated that inhibition of turning could result in attraction. Thus both attraction and repulsion may be effected by variations on the same theme. The difference in the effect may result from a difference in the duration of the inhibition. For attraction, the period of inhibition should be of the same order of magnitude as the interval between the pulses of smell from different filaments of a given material. For repulsion, the

period of inhibition should be much longer, so that the insect flies so far out of the odor cloud that it does not readily find its way back when the normal turning and search pattern is resumed. Such a mechanism would in some measure have an across-wind guiding action of the sort remarked on earlier.

It is clear that there are still many problems awaiting study, and it must be emphasized that this is a progress report on work which is under way but far from complete.

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### A New *Austromenopon* (Menoponidae-Mallophaga) Parasitizing Shearwaters (*Puffinus-Procellariiformes*)

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A distinctive new species of *Austromenopon* from two species of shearwaters, *Puffinus kuhlii* (Scopoli) and *Puffinus leucomelas* (Tenninick), is described herein. The new species is based on specimens collected from museum study skins and also from material lent to me by Dr. Theresa Clay, British Museum (Natural History) and the U.S. National Museum. I am indebted to Dr. Clay for the opportunity to examine material from the Meinertzhagen collection and to Dr. K. C. Emerson for reviewing this manuscript.

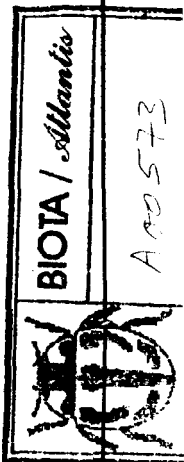
#### *Austromenopon echinatum*, new species

**Male:**—A large procellariiform *Austromenopon*. Head as shown in Fig. 1, A. Outline relatively shallow and continuous, cephalic index 2 (head length measured at mid-he). Gular sclerite typical, lateral margins each with four (sometimes five) setae. Prothorax sharply angled at forward corner, lateral margin slightly incurved accentuating angular appearance. Posterior corner of metathorax with group of six to eight short stout setae. Metathoracic sternite roughly hexagonal, bearing two irregular rows of setae as well as being bordered with long setae. Third femora with typical loose setal brush (Fig. 1, B). Lateral tergal patches of stout pegs on apparent abdominal segments VI and VII, (Fig. 1, C). Pegs tending to curve anteriorly on segment VI and posteriorly on segment VII. Sternites IV-VI with loose setal brushes laterad. Genitalia centrally positioned, symmetrical, and very heavily sclerotized (Fig. 1, D).

**Female:**—About same size as male, not larger as is usually the case with genus. Chaetotaxy, except for terminal abdominal segments, similar to that of male, but without the abdominal pegs.

Measurements:—Averages and appropriate ranges in millimetres.

No. Specimens	Total Length	Head Length	Head Width	Paramere
ex <i>P. kuhlii</i> 3 ♂♂	2.1 (2.1-2.3)	0.70	0.30	0.25
13 ♀♀	2.2 (1.9-2.5)	0.67	0.35	
ex <i>P. leucomelas</i> 3 ♂♂	2.2 (2.1-2.3)	0.70	0.35	0.27
8 ♀♀	2.2 (2.0-2.5)	0.70	0.33	



The differences in measurements between sexes and hosts are not significant. The samples are small statistically and these differences are well within the range of normal variation.

**Type Host:**—*Puffinus kublii* (Scopoli), Cory's shearwater.

**Type material:**—Holotype, male, allotype, female, five paratype males and 14 paratype females from *Puffinus k. edwardsi*, M.C.Z. skin #94293; one paratype male, three paratype females from *Puffinus k. borealis*, Canary Islands, Meinertzhagen slide #8200; seven paratype females from *Puffinus d. diomedea* (= *Puffinus k. kublii*), Constantinople, Meinertzhagen slide #8199; and 20 paratype males and 20 paratype females from *Puffinus k. kublii*, Trinidad, B.W.I., U.S.N.M. material.

Other material examined included 12 mounted and 24 preserved specimens from *Puffinus leucomelas*, China Sea, taken off M.C.Z. skin #131515, and one female from *Puffinus leucomelas*, Japan, Meinertzhagen slide # 8201.

Holotype and allotype deposited in the Allison of Comparative Zoology. Paratypes will be deposited in the British Allison (Natural History), the U.S. National Museum and the American Museum of Natural History.

**Discussion:**—This large member of the genus *Austroromenopon* is readily distinguished from all other described species by the presence of the patches of prominent pegs on the male abdomen.

*Puffinus kublii* and *Puffinus leucomelas* are considered to be closely related. Their ranges overlap in the Indian Ocean. Specimens of *A. echinatum* from the two host species are so similar that they cannot be separated into subspecies, arguing a very close relationship for their hosts. These two hosts also share similar and possibly conspecific populations of lice of the genus *Saemundssonina*. However, lice of the genus *Halipeurus* on these birds are distinctly different species, although more closely related to each other than to any of the other species of the genus. On the basis of their parasites then it may be suggested that the populations of *P. kublii* and *P. leucomelas* do not come into contact with one another but that they are very closely related.

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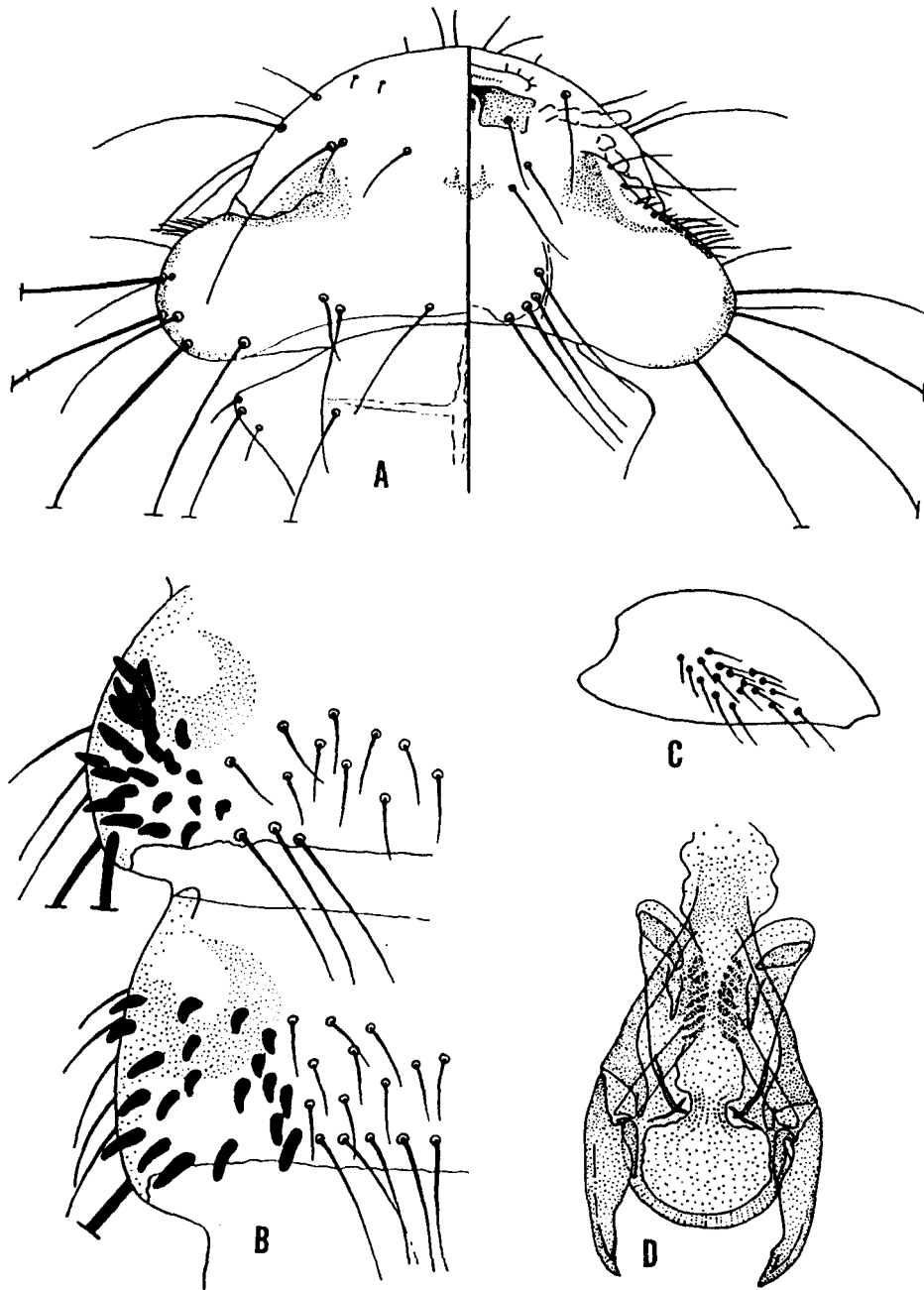


Fig. 1. *Austroromenopon echinatum*, n. sp., Holotype, male. A, Dorsal-ventral view of head; B, Pegs on tergites of abdominal segments VI and VII; C, Setal brush on ventor of third femora; D, Genitalia.

