

REPORT UPON CERTAIN ECTOPARASITES OF MAMMALS

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Dr. J. Bequaert has submitted to me the ectoparasites of mammals collected by the Harvard African Expedition, which are herewith reported upon. The collection is small, but it contains material of exceptional interest. I have included in the report certain other material having a definite bearing upon that collected by the Expedition, this consisting of specimens taken by me some years ago from mammal skins in the United States National Museum. The types of the new species will be deposited at the Museum of Comparative Zoölogy, Cambridge, Massachusetts.

HEMIPTERA

POLYCTENIDAE

Of one of those rare parasites of bats belonging to the hemipterous family Polyctenidae, three specimens are included. Thanks to the careful work of Jordan, it is possible to identify these quite positively.

Eoctenes nycteridis (Horváth)

Text Fig. No. 12

1910. *Ctenoplax nycteridis* Horváth, Ann. Mus. Nat. Hungarici 8, p. 572; Pl. 14, figs. 2-5.

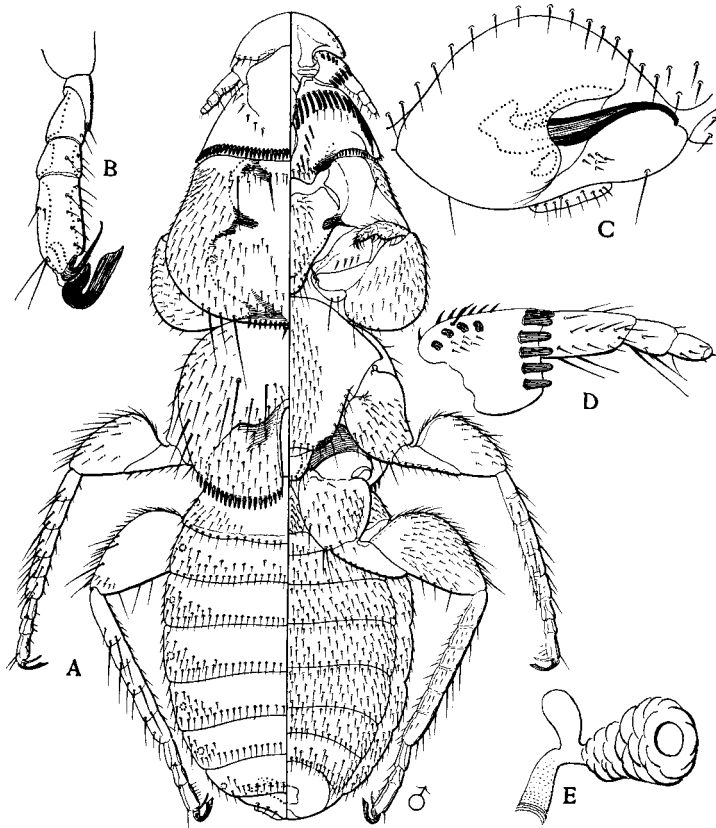
1912. *Eoctenes nycteridis* Horváth, Jordan, Novitates Zoologicae 18: 575-576; Pl. 13, figs. 5-8 (♀).

PREVIOUS RECORDS. Thus far known only from one immature and five mature specimens, the adults all females from "bat," Entebbe, Uganda, and from *Nycteris hispida*, Shirati, southeastern shore of Lake Victoria.

PRESENT RECORD. A single adult male and two nymphs that seem certainly to belong to the same species, from *Petalia arge* (Thomas), Du River, Camp No. 3, LIBERIA (J. Bequaert).

NOTES. The species being at present known only from the female and nymphs it seems worth while to figure the male. The single adult specimen agrees closely with the description and figures given by Jordan, except in certain minute and undoubtedly insignificant details. According to this author the prosternum in the female is slightly emarginate at the tip, while in this specimen it is merely broadly rounded. Apparently also the specimen at hand has a smaller number of teeth in the pronotal comb. The beak of the adult is apparently but three-segmented — as is described for the species — but in the two nymphs it is clearly four-segmented, although Jordan describes the single nymph examined by him as having the beak three-segmented.

I do not know that the spiracles have been described for any species of this group. I have here figured an abdominal spiracle (Fig. 12E). The other figures will supplement those given by Jordan.



TEXT FIGURE 12. — *Eoctenes nycteridis* (Horváth): A, Male; B, tarsus of middle leg; C, general appearance of genitalia; D, antenna; E, spiracle

MALLOPHAGA

A. THE MALLOPHAGAN FAUNA OF THE MAMMALIAN FAMILY PROCAVIIDAE

The material forwarded by Dr. Bequaert included one bottle containing great numbers of Mallophaga labelled as from *Procavia* (*Dendrohyrax*) *adolfriederici* Brauer, Lulenga, Belgian Congo, March 2, 1927 (J. Bequaert). This one bottle contained six quite distinct species of the family Trichodectidae. This material, together with other specimens that are at hand, makes possible a review of the Mallophagan fauna of the Procaviidae (Hyracidae). There are in connection with this fauna certain aspects of very considerable interest.

As has many times been pointed out, the distributional problems associated with the ectoparasites of birds and mammals are among the most interesting phases of the study of these groups of insects. It would be out of place here to enter into a general discussion of these problems, but I may call attention to that particular one which is most beautifully illustrated by the material at hand.

The distribution of such ectoparasites as the Mallophaga and Anoplura is biologically practically analogous to that of island species. Biologically each host

species is in effect an island which received its complement of species at the time when it separated from its original mainland, the parent stock. Since that time it may possibly have received additions to its fauna by accidental means but in most cases such accidents seem not to have occurred.

Upon the host island the factor of isolation has been at work and thus it follows that in general the parasite species upon widely different groups of birds or mammals are quite different, while those upon closely related hosts are very similar or even identical. It follows also that in general two or more very closely related species of parasite do not occur upon the same animal. This is quite in accord with the generally accepted dictum of students of distribution which holds that two very closely related species are usually found not in exactly the same region but in neighboring regions. Upon the very limited area represented by the body of an animal, with its ecologically uniform conditions, it is difficult to see how two closely related species could arise, the factor of isolation being entirely non-operative.

Nevertheless, there are a few cases where two or even more quite closely related species of parasites occur upon the same host species. The most remarkable of such cases that is known to me is that represented by the material at hand from the Procaviidae, specifically that in the bottle received from Dr. Bequaert. *Here we have six species, some of which at least are quite closely related, occurring together upon a single host individual.* Furthermore these are but a part of the species of the same group that occur upon the Procaviidae and as far as the present evidence goes these species are more or less generally and promiscuously distributed over the members of the family. It would seem that such a case merits a considerable degree of attention.

I shall not here enter into any speculation concerning the possible reasons for the origin of a condition that departs so widely from the normal. I shall, however, figure in detail and discuss the species involved in order to present the data concerning the case.

TRICHODECTIDAE

All of the Mallophaga in question belong to the family Trichodectidae, the members of which are distinguished from all other Mallophaga by a number of characteristics, but most obviously by the possession of one-clawed tarsi. All of the members of the family occur upon mammals, between seventy and eighty species being known.

No careful study of the entire family has ever been made. Consequently, although it is possible to recognize groups of species, it is not possible at present to indicate generic groupings with any feeling of security. Certain genera have indeed been segregated from *Trichodectes*, but on very unconvincing grounds. Two genera, however, *Trichophilopterus* and *Eurytrichodectes*, are unquestionably valid. The latter of these includes a species that comes within the range of our attention here.

Because of the existing conditions, which demand a complete review of the Trichodectidae before the naming of genera is undertaken, I shall not attempt to

remove any of the forms at hand from *Trichodectes*, although I am inclined to believe that some of them have more in common with *Eurytrichodectes*.

Eleven species have been recorded from the family Procaviidae. Of these, I regard one as unrecognizable. Eight species are present in the material at hand of which three are described as new, making a total of fourteen species from this host family. Owing to the occurrence of so many species upon the same hosts, it is at times a very difficult matter properly to associate males and females with their rightful partners, especially if they are found at different times or come from different hosts or localities. In the material at hand, fortunately, the many specimens taken together permit critical comparisons and I feel reasonably sure of the associations that are here made. It appears that, although there is a marked sexual dimorphism, there are always certain characteristics which are constant in both sexes and which may be relied upon to correlate them. It is evident that previous authors have in at least two cases associated males and females of quite different species.

These factors, combined with the inadequacy of descriptions which fail to note important and essential characters, even while dealing at length with non-essential details, and figures which are lacking in precision, have resulted in producing something of a tangle that even yet cannot be entirely cleared up. It is hoped, however, that the present essay will make some progress toward the elucidation of the problem.

The species represented in the material at hand may be separated upon the basis of the following keys. Some other species are included on the basis of the literature.

MALES

- | | |
|--|---|
| 1. Claws of the middle and posterior legs spinose-serrate on the inner face..... | 2. |
| Claws of these legs smooth on the inner face..... | 5. |
| 2. Anterior margin of the head without a distinct median notch..... | |
| ? <i>Trichodectes diacanthus</i> Ehrenberg. | |
| Anterior margin of the head with a distinct median notch..... | 3. |
| 3. Preputial sac of the genitalia with several large teeth near its apex. <i>Trichodectes lindfieldi</i> Hill. | |
| Preputial sac with but minute teeth..... | 4. |
| 4. Head with small, rounded processes on the posterior lobes. <i>Trichodectes dendrohyracis</i> n. sp. | |
| Head with the posterior margin straight..... | <i>Trichodectes oculatus</i> Bedford. |
| 5. Head very broad and short, wider than long..... | <i>Eurytrichodectes paradoxus</i> Stobbe. |
| Head with length and breadth at least subequal..... | 6. |
| 6. Anterior margin of the head without a distinct notch..... | 7. |
| Anterior margin of the head with a distinct notch..... | 9. |
| 7. Male as yet unknown, but by analogy with the female probably with the posterior lobes of the head strongly produced and with the intersegmental membranes of the abdomen granulate..... | <i>Trichodectes granulatus</i> n. sp. |
| Posterior lobes of the head small and broadly rounded, intersegmental membranes of the abdomen not granulate..... | 8. |
| 8. Terminal complex of genitalia large and conspicuous..... | <i>Trichodectes serraticus</i> Hill. |
| Terminal complex of genitalia (as indicated in published figure) very small..... | |
| | <i>Trichodectes robertsi</i> Bedford. |
| 9. Posterior lobes of the head conspicuously produced, slender and acute, preputial sac of genitalia with very large, flat teeth throughout its length..... | |
| | <i>Trichodectes univirgatus</i> Neumann. |
| Posterior lobes of head at most but slightly produced, preputial sac without such teeth. | 10. |

10. Pseudopenis represented only by the bases of its arms.....
 *Trichodectes sternatus* Bedford and *T. emarginatus* Bedford.
 Pseudopenis entire, Y-shaped..... 11.
11. Arms of the basal plate articulating to the tips of the arms of the pseudopenis; basal plate
 not attaining the thorax..... *Trichodectes congoensis* n. sp.
 Arms of the basal plate articulating to the sides of the arms of the pseudopenis, basal plate
 extending even into the thorax..... *Trichodectes baculatus* n. sp.

FEMALES

From this key it is necessary to omit the species *Trichodectes robertsi* Bedford, *T. emarginatus* Bedford, and *T. baculatus* n. sp., of which the females are unknown.

1. Claws of middle and posterior legs spinose-serrate on inner face..... 2.
 Claws of middle and posterior legs smooth..... 4.
2. Anterior margin of head without distinct median notch ?*Trichodectes diacanthus* Ehrenberg.
 Anterior margin of head with a distinct median notch..... 3.
3. Abdomen with a distinct, internal, sclerotic sac of cylindrical form.....
 *Trichodectes lindfieldi* Hill.
 Abdomen with an internal sac, but this not cylindrical.... *Trichodectes dendrohyracis* n. sp.
4. Head distinctly wider than long..... *Eurytrichodectes paradoxus* Stobbe.
 Head with width at least subequal to length..... 5.
5. Head without a distinct anterior notch..... 6.
 Head with a distinct anterior notch..... 7.
6. Intersegmental membranes of abdomen granulate..... *Trichodectes granulatus* n. sp.
 Intersegmental membranes of abdomen not granulate..... *Trichodectes serraticus* Hill.
7. Posterior lobes of the head with small and rather transparent but clearly distinct processes.
 *Trichodectes univirgatus* Neumann.
 Posterior lobes of head without such processes..... 8.
8. First apparent sternite of the abdomen with a heavily sclerotic transverse bar extending
 from side to side..... *Trichodectes sternatus* Bedford.
 First apparent sternite of abdomen without such bar..... *Trichodectes congoensis* n. sp.

Eurytrichodectes paradoxus Stobbe

Text Fig. No. 13

1913. *Eurytrichodectes paradoxus* Stobbe, Entomologische Rundschau 30:111; figs. 3-5.

PREVIOUS RECORDS. Known only from the record by Stobbe, from *Dendrohyrax* sp., in the Berlin Museum, without nearer indication of origin.

PRESENT RECORD. A single female and two nymphs from *Procavia adolfi-friederici*, Lulenga, BELGIAN CONGO, March 2, 1927 (J. Bequaert).

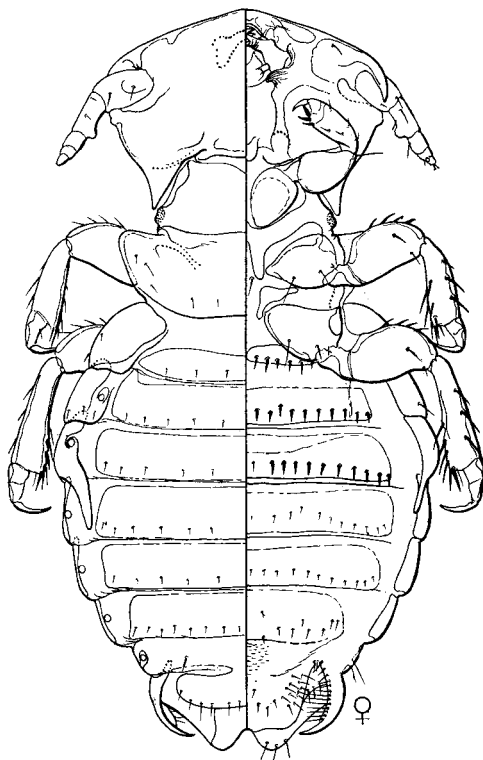
NOTES. The accompanying figure will supplement the rather inadequate figures given by Stobbe. Unfortunately no male is available. While the species appears at first glance very peculiar and certainly should be separated generically from *Trichodectes*, I am inclined to believe that it is actually not so remote from some of the species here dealt with. It impresses me as belonging to the same stock as do some of the other species infesting the Procaviidae.

Trichodectes diacanthus Ehrenberg

1828. *Trichodectes diacanthus* Ehrenberg, Symbolae Physicae.

1913. *Eutrichophilus diacanthus* (Ehr.) Stobbe, Sitzungsberichten der Gesellschaft naturforschender Freunde, Berlin 8:382; tf. 9.

1928. *Eutrichophilus diacanthus* (Ehr.) Bedford, Report Director Veterinary Education and Research, Union of South Africa, 13-14:848; pl. 2, f. 6.



TEXT FIGURE 13. — *Eurytrichodectes paradoxus*
Stobbe, female

PREVIOUS RECORDS. Known only from the original record by Ehrenberg, which in the available literature is given merely as from *Procavia* (= *Hyrax*) *syriacus* without indication of locality, and from a single female from *Procavia capensis coombi*, Rooikrans, Transvaal, considered by Bedford to be this species.

NOTES. Stobbe (ref. cited) has given some notes on this species, based upon Ehrenberg's types which are still in the Berlin Museum. The figure accompanying the note is merely a crude outline, but the head form of the species is very distinctive and would make its recognition easy if it were not that apparently there are two closely related species of this same type. These two are *Trichodectes serraticus* Hill and that considered by Bedford to be *T. diacanthus*.

As far as can be determined from the figure given by Bedford — which is far from being precise and definite — and from his statements, his specimen differs from what I take to be *T. serraticus* only in having the claws of the middle and posterior legs spinose-serrate. It may be noted that he records his specimen as occurring in company with a male of *T. serraticus*, which is perhaps not at all significant.

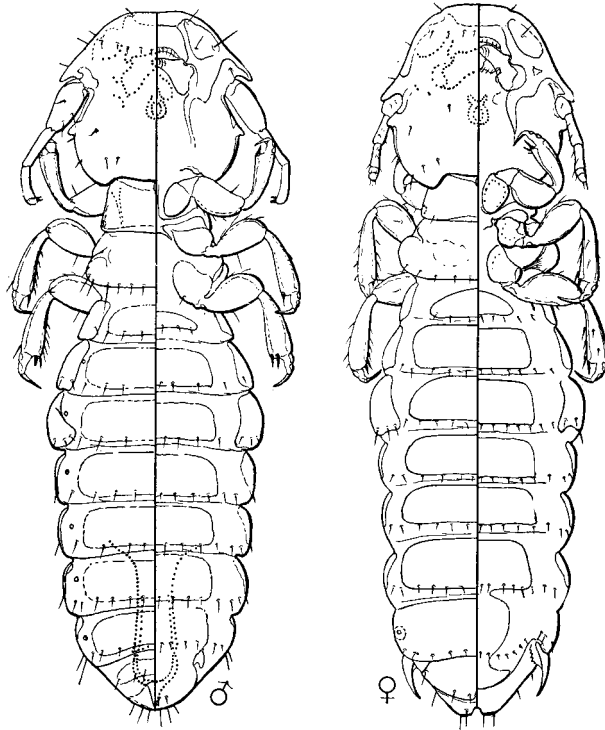
Trichodectes serraticus Hill

Text Figs. Nos. 14 and 15

1922. *Trichodectes serraticus* Hill, *Parasitology* 14:67; pl. 2, figs. 7-9.

1928. *Trichodectes serraticus* Hill, Bedford, Report Director Veterinary Education and Research, Union of South Africa 13-14: 848.

PREVIOUS RECORDS. Recorded by Hill from *Procavia capensis*, Mtabamhlopi, Natal, and by Bedford from a single male from *Procavia capensis coombi*, Rooikrans, Transvaal.



TEXT FIGURE 14. — *Trichodectes serraticus*
Hill, male and female

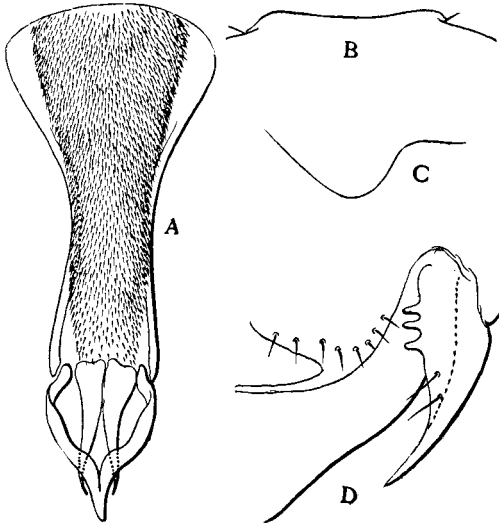
PRESENT RECORD. Specimens that I take to be this species from *Heterohyrax pumila rudolfi*, Marsabit Road, BRITISH EAST AFRICA, and *H. brucei bakeri*, Nimule, UGANDA (all from United States National Museum).

NOTES. If taken at their face value the figures given by Hill indicate clearly that he had at hand the male and female of different species, for his figure of the female shows clearly what appears to be a heavily sclerotic first sternite such as occurs in some other species and Bedford (ref. cited, p. 846) indicates such a structure as present in the female only of this species. No such sexual difference exists in any species of which I have specimens that permit the definite correlation of the sexes, these including material which seems rather definitely to agree with the male described by Hill. In other respects the female described by Hill seems to agree with the male and it is possible that his figure is in error, the assumption being supported by the fact that his figures are in many cases morphologically very inexact.

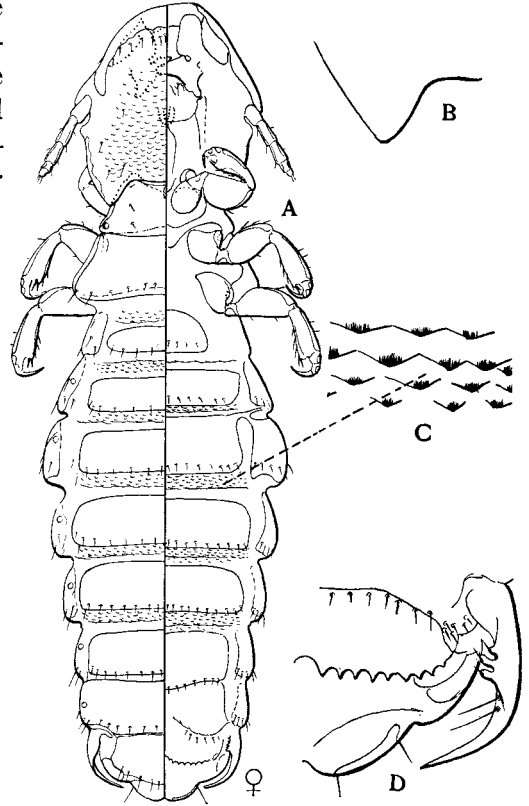
The type of *serraticus* is not indicated by Hill. I therefore designate the male as including the holotype.

The species is well marked. The genitalia of the male (Fig. 15A) have the basal plate quite large and broadening anteriorly; the preputial sac is beset

only with small teeth. The gonapods of the female (Fig. 15D) bear two or three tooth-like lobes on the inner face and the margin of the vulva is not at all toothed. In the male the anterior margin of the head is flattened, but not at all emarginate (Fig. 15B). The dorsal side of the head shows a faint tendency toward granulation, but there is no such pronounced development of this character as is to be seen in the next species.



TEXT FIGURE 15. — *Trichodectes serraticus* Hill: A, genitalia of male; B, outline of anterior margin of head of male; C, outline of posterior lobe of head; D, gonopod and portion of vulvar region of female



TEXT FIGURE 16. — *Trichodectes granulatus* n. sp.: A, female; B, outline of posterior lobe of head; C, markings of intersegmental membrane; D, gonopod and portion of vulvar region

Trichodectes granulatus, new species

Text Fig. No. 16

SPECIMEN EXAMINED. A single female from *Procavia adolfi-friederici*, Lulunga, BELGIAN CONGO, March 2, 1927 (J. Bequaert).

Female (Fig. 16A). — Length 1.75 mm. A slender species, resembling most closely *T. serraticus* and probably closely related thereto. Head somewhat longer than wide, with the anterior margin continuous and somewhat asymmetrical; posterior lobes strongly produced (Fig. 16B) and rather acute; antennae distinctly five-segmented; dorsal surface of the head distinctly granulate.

Thorax cuneiform, the lateral margins of the prothorax and metathorax continuous and quite strongly divergent. Abdomen with pleural plates quite strongly developed on the first three segments, more weakly so on the remainder, the third pair largest. Tergal and sternal plates strongly developed, one on each segment. Intersegmental membranes very distinctly granulate (Fig. 16C). Gonapods (Fig. 16D) with three tooth-like lobes on the inner face; margin of the vulva distinctly serrate.

NOTES. The asymmetry of the head, while quite marked in the specimen at hand may not be normal. The species is apparently most closely related to *T. serraticus* Hill.

Trichodectes univirgatus Neumann

Text Figs. Nos. 17 and 18

1913. *Trichodectes univirgatus* Neumann, Archives de Parasitologie 15: 612-614; fig. 6.1913. *Trichodectes univirgatus* Neumann, Stobbe, Entomologische Rundschau 30: 112.

PREVIOUS RECORDS. From "*Hyrax*" sp., Congo (Neumann) and *Dendrohyrax* sp., Berlin Museum (Stobbe).

PRESENT RECORD. From *Procavia adolfi-friederici*, Lulenga, BELGIAN CONGO, March 2, 1927 (J. Bequaert).

NOTES. The characteristics of this species are so marked that the figures of the head-outline given by Neumann make its determination definite.

I would call attention here to the very marked sexual dimorphism in the form of the prothorax and in the size of the processes of the posterior lobes of the head (Fig. 18C). The antennae are quite distinctly four-segmented. The genitalia of the male are marked especially by the series of large, flat teeth which extends the full length of the preputial sac. The gonapods of the female (Fig. 18B) are simple and untoothed. Within the abdomen of the female there appears a large, wrinkled sac, probably a modification of the uterus, which is of a rather definite form, as shown in Fig. 18D.

The association of this male and female as belonging to the same species seems fairly safe, in spite of the marked dimorphism. Out of all the material examined there seems to be no other species to which either might possibly be referred.

Trichodectes lindfieldi Hill

Text Figs. Nos. 19 and 20

1922. *Trichodectes lindfieldi* Hill, Parasitology 4: 65-67; pl. 2, figs. 4-6. (As to the male.)1928. *Trichodectes lindfieldi* Hill, Bedford, Report Director Veterinary Education and Research, Union of South Africa 13-14: 845.

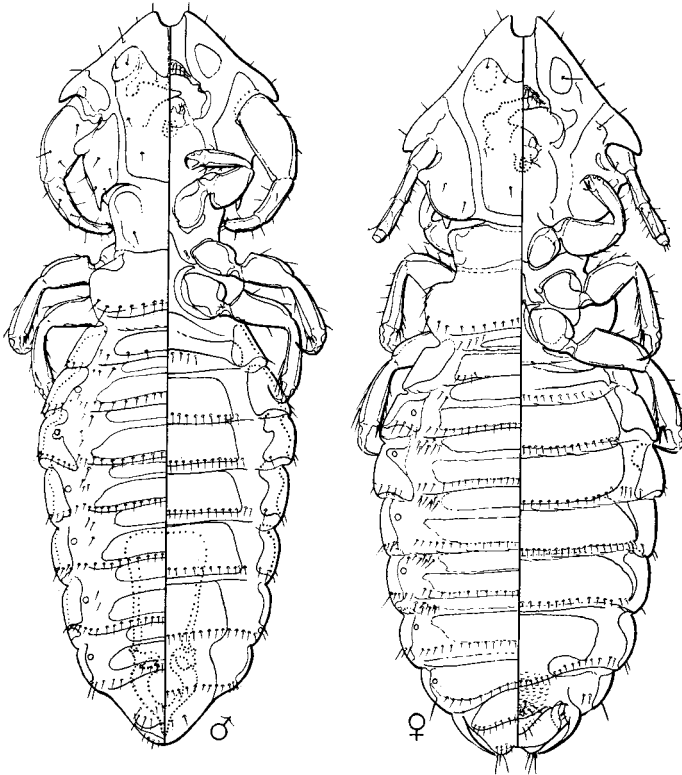
PREVIOUS RECORDS. Recorded by Hill from *Procavia capensis*, Mtabamhlopi, Natal.

PRESENT RECORD. From *Procavia adolfi-friederici*, Lulenga, BELGIAN CONGO, March 2, 1927 (J. Bequaert), and from *Dendrohyrax validus*, Mt. Kili-manjaro (United States National Museum).

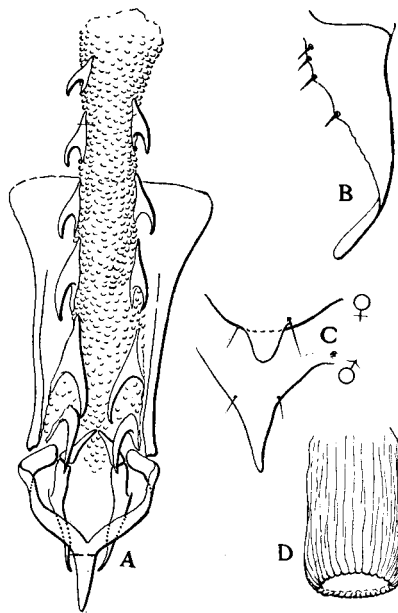
NOTES. In the original description of this species Hill has undoubtedly associated the male and female of different species. I here designate the holotype as a male, no original designation having been made. The female belongs to a species which is at hand and which I am identifying as *T. sternatus* Bedford.

The species is well marked by the rather peculiar form of the head, by the apparently entire absence of the pharyngeal sclerite, by the short, but very definite, processes on the posterior lobes of the head, the spinose-serrate claws of the middle and posterior legs, the genitalia of the male and the gonapods of the female.

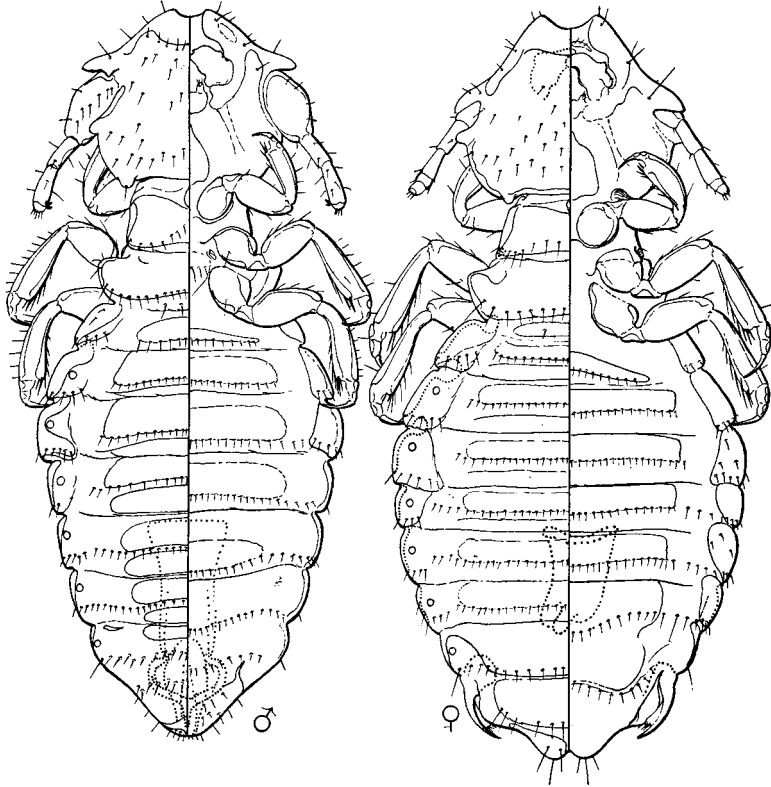
The genitalia of the male (Fig. 20A) have the preputial sac beset with a number of large, flat teeth near its posterior end. The female has the gonapods (Fig. 20H) beset with a distinct, somewhat fimbriated, lobe on the inner face.



TEXT FIGURE 17. — *Trichodectes univirgatus* Neumann,
male and female



TEXT FIGURE 18. — *Trichodectes univirgatus* Neumann:
A, genitalia of male; B, gonopod of female; C, outlines of pos-
terior lobe of head of male and female; D, internal sac associated
with the uterus



TEXT FIGURE 19. — *Trichodectes lindfieldi* Hill, male and female

Associated apparently with the uterus is a curious chitinous sac (Fig. 20G), which is quite strongly sclerotic and is of a cylindrical form.

This species has a very close relative in the next to be described.

***Trichodectes dendrohyracis*, new species**

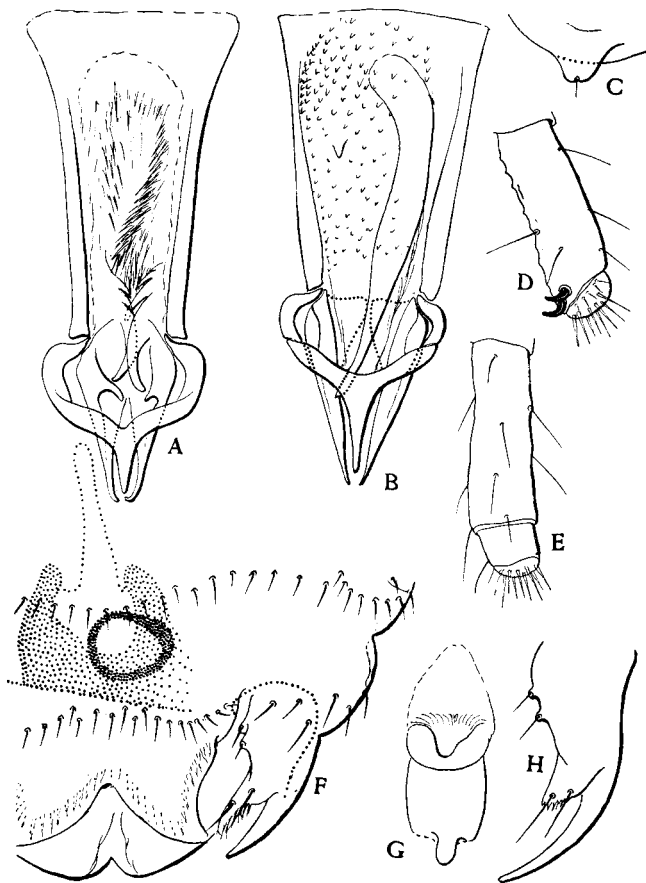
Text Fig. No. 20

MATERIAL EXAMINED. Three males and three females from *Dendrohyrax validus*, Mt. Kilimanjaro (United States National Museum). Holotype a male.

Male. — Length 1 mm. In general so closely related to *T. lindfieldi* (as here understood) that the general figure of the latter will do for this. The distinctive features appear in the genitalia (Fig. 20B) which lack the large teeth on the preputial sac and which have the penis developed into a conspicuous, sclerotic tube.

Female. — Length 1 mm. Practically identical with the female of *T. lindfieldi* except that associated with the uterus is a sac, or other structure (Fig. 20F) of curious and apparently constant form, which replaces the cylindrical sac found in *T. lindfieldi*.

NOTES. Although this species is certainly very close to *T. lindfieldi*, I am convinced that the two must be recognized as distinct. The association of the male and female here regarded as *dendrohyracis* is on the basis of their occurrence together and their size.



TEXT FIGURE 20. — *Trichodectes lindfieldi* Hill: A, genitalia of male; C, outline of posterior lobe of head; D, apex of antenna of male; E, apex of antenna of female; G, internal sac associated with uterus; H, gonapod. *Trichodectes dendrohyracis* n. sp.: B, genitalia of male; F, internal sac associated with the uterus

***Trichodectes oculatus* Bedford**

1928. *Trichodectes oculatus* Bedford, Report Director Veterinary Education, Union of South Africa 13-14: 847; pl. 4, f. 10, pl. 6, f. 14.

PREVIOUS RECORDS. Described from a single male from *Heterohyrax ruddi*, Zoutpansberg District, Northern Transvaal.

NOTES. This species is evidently very similar to that described above as *T. dendrohyracis*, the genitalia of the males apparently being practically identical. However, *T. oculatus* is described and figured as having the posterior margin of the head straight, which is certainly not the case with *T. dendrohyracis*.

***Trichodectes sternatus* Bedford**

Text Figs. Nos. 21 and 22

1928. *Trichodectes sternatus* Bedford, Report Director Veterinary Education and Research, Union of South Africa 13-14: 845; pl. 4, f. 9, pl. 5, f. 12.

PREVIOUS RECORDS. Originally described from *Procavia capensis natalensis*, Mtabamhlopi, Natal, "along with specimens of *T. lindfieldi* Hill and *T. serraticus* Hill."

MATERIAL EXAMINED. Numerous males and females from *Procavia adolfi-friederici*, Lulenga, BELGIAN CONGO, March 2, 1927 (J. Bequaert); two males from *Heterohyrax brucei bakeri*, Nimule, UGANDA; a male and a female from *Procavia capensis* without indication of locality; the two last records being from the United States National Museum.

NOTES. This determination is dubious. In the original description of *T. sternatus* it is compared with *T. lindfieldi* Hill. But, as already shown, *T. lindfieldi* was based upon the male of one species and the female of another, an error not detected by Bedford. In the material at hand, males having genitalia which agree with the figure given by Bedford for the male of *T. sternatus* seem certainly to belong with females that are apparently the same as the supposed female of *T. lindfieldi*.

On the other hand, in the same paper Bedford described as new a *T. emarginatus* and as far as his figures and description are concerned the specimens at hand might equally well be referred to this. I have referred them to *T. sternatus* as it is figured in somewhat more detail and has page precedence.

The accompanying figures will aid in placing the species. The genitalia of the male (Fig. 22A) are of a distinctive type, the pseudopenis — or what is apparently the pseudopenis — being represented only by the bases of its arms; preputial sac without large teeth. The gonapods of the female (Fig. 22B) are simple. There is no evident internal sac associated with the uterus, such as appears in the females of some other species. The antennae of both male and female are apparently but three-segmented in both sexes.

The specimens at hand agree closely in structure, but vary greatly in size. The specimens from Lulenga are about 1.5 mm. long. The two specimens from *Procavia capensis* are larger, reaching 1.8, while those of *Heterohyrax brucei* are smaller, reaching but 1 mm.

Trichodectes emarginatus Bedford

1928. *Trichodectes emarginatus* Bedford, Report Director Veterinary Education and Research, Union of South Africa 13-14: 845; pl. 2, f. 5.

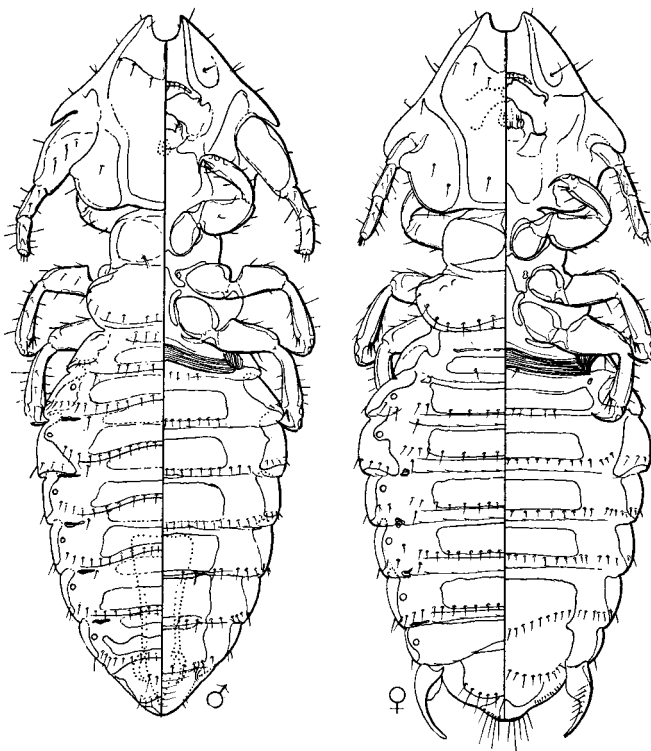
PREVIOUS RECORDS. Originally described from a single male from *Heterohyrax ruddi*, Zoutpansberg district, Northern Transvaal.

NOTES. As indicated above, it is not apparent from the literature why this species is distinct from *T. sternatus* Bedford.

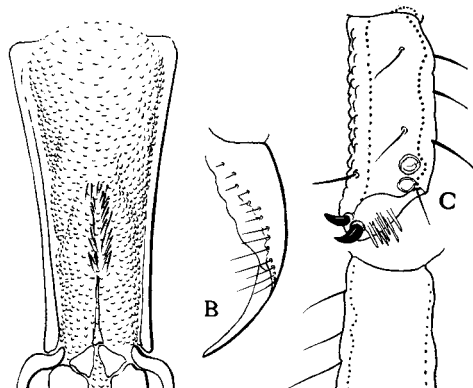
Trichodectes congoensis, new species

Text Figs. Nos. 23 and 24

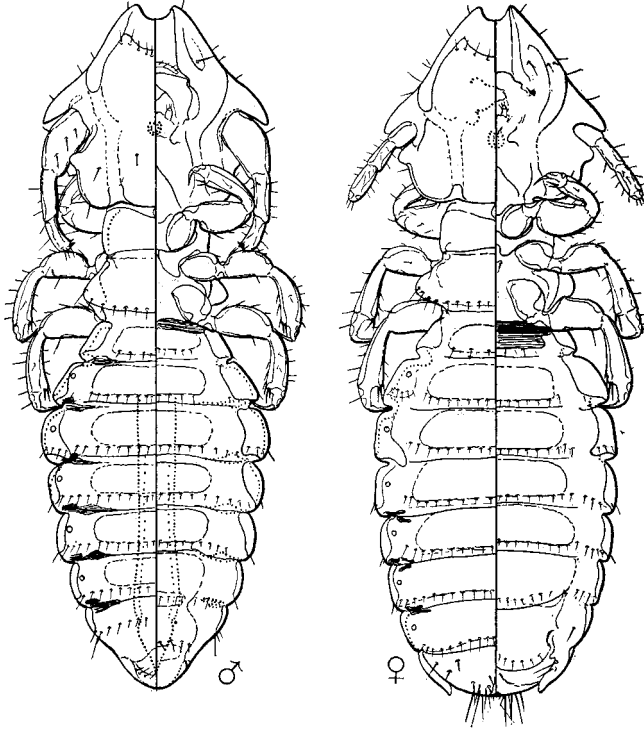
MATERIAL EXAMINED. Holotype, a male, and allotype and several paratypes from *Procavia adolfi-friederici*, Lulenga, BELGIAN CONGO, March 2, 1927 (J. Bequaert), and two similar females from *Dendrohyrax validus*, Mt. Kilimanjaro (United States National Museum).



TEXT FIGURE 21. — *Trichodectes sternatus* Bedford,
male and female



Male (Fig. 23). Length 1.1 mm. Head quite acute anteriorly and with a distinct median notch; without even traces of processes on the posterior lobes; pharyngeal sclerite present; longitudinal bands indistinct. Prothorax quadrate. Metathorax with the sides strongly divergent. Abdomen with the first three pleurites more strongly developed than the others, the third largest



TEXT FIGURE 23. — *Trichodectes congoensis* n. sp.,
male and female

and lobed dorsally and ventrally. Tergites and sternites with but a single plate. The intersegmental furrows, dorsally, are marked by quite conspicuous, small sclerotic areas which are quite characteristic of the species.

Genitalia (Fig. 24D) with the basal plate long and slender, reaching almost to the base of the abdomen; pseudopenis articulating by the tips of its arms to the arms of the basal plate; preputial sac indistinct and beset with very minute teeth.

Female (Fig. 23). Length 1.2 mm. In form of head and thorax, except for the antennae, very similar to the male. Abdomen with the tergites and sternites undivided. The intersegmental sclerotic areas, which are conspicuous in the male, are much reduced. Gonapods (Fig. 24B) with a small, two-toothed lobe on the inner face.

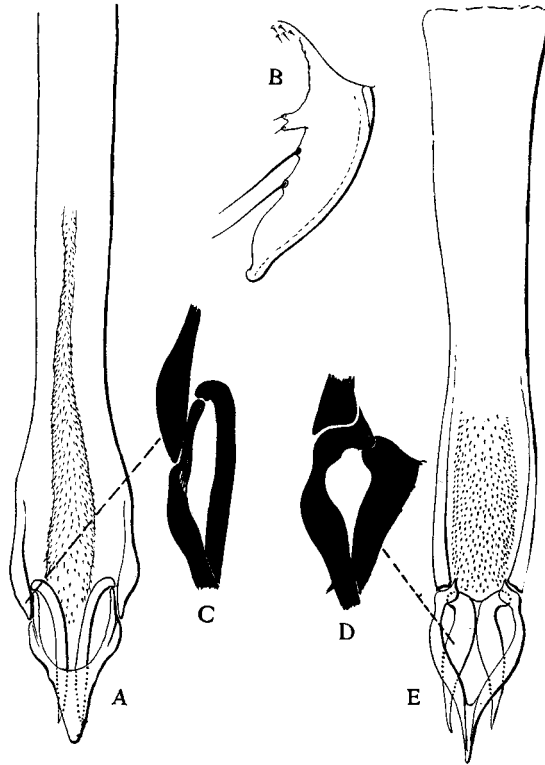
NOTES. I cannot place this species with any described form. It is approached very closely by the following.

***Trichodectes baculatus*, new species**

Text Fig. No. 24

SPECIMENS EXAMINED. Four males from *Dendrohyrax validus*, Mt. Kilimanjaro (United States National Museum). These were accompanied by two females recorded under the previous species and the status of which is doubtful.

Male. Differing from the male of *T. congoensis* apparently only in the character of the genitalia (Fig. 24A). In this species the arms of the basal plate articulate with the sides of the arms of the pseudopenis and the endomeres are completely divided (Fig. 24C). The basal plate is even longer than in *T. congoensis*, extending actually into the metathorax.



TEXT FIGURE 24. — *Trichodectes congoensis* n. sp.: *B*, gonapod; *D*, detail of genitalia of male; *E*, genitalia of male. *Trichodectes baculatus* n. sp.: *A*, genitalia of male (only part of basal plate shown); *C*, detail of genitalia of male

NOTES. In view of the very close evident relationship of this form with *T. congoensis*, it is possible that the two females mentioned may belong with these males. But it is impossible to tell. If they do the females of the two species can hardly be distinguished. Further collecting may throw some light on the matter. As far as the male is concerned, they must be regarded as distinct.

Trichodectes robertsi Bedford

1928. *Trichodectes robertsi* Bedford, Report Director Veterinary Education, Union of South Africa 13-14: 846-847; pl. 1, f. 2.

PREVIOUS RECORDS. Known only from a single male from *Heterohyrax ruddi*, Zoutpansberg District, Transvaal.

NOTES. Apparently this species is not present in the material at hand. It belongs to the group in which there is no median notch in the front of the head.

Trichodectes neumanni Stobbe

1913. *Trichodectes univirgatus* var. *neumanni* Stobbe, Entomologische Rundschau 30 : 112.

PREVIOUS RECORDS. Recorded by Stobbe from *Dendrohyrax* sp. in the Berlin Museum, without indication of locality.

NOTES. The description of this consists merely of the statement that it differs from *T. univirgatus* in the absence of the processes on the posterior lobes of the head. As on this basis it might well be any one of several species it must stand as unrecognizable until the types have been re-examined.

B. A MALLOPHAGAN FROM A VIVERRID

Eight or more species of Trichodectidae have been recorded from the family Viverridae and still others are present in the material that is at hand. Thus far, however, there is no evidence of the occurrence of two or more species upon a single host such as has just been described for the Procaviidae. Practically all the species that have been named are very poorly described, the essential features being in almost every case entirely ignored. It is consequently a dubious matter to identify anything with a named form. The material sent me by Dr. Bequaert contains a single species from a viverrid which I am thus doubtfully referring to a named species.

I would here note that all the species of Trichodectidae from viverrids that I have seen agree in possessing but three pairs of abdominal spiracles. This character may perhaps be used to define a generic group when the family has finally been reviewed.

Trichodectes rammei Stobbe

PREVIOUS RECORDS. Known only from the original description, from *Herpestes galera*, Amani, German East Africa, in the Berlin Museum.

PRESENT RECORD. Numerous specimens of what is possibly this species from *Galerella brunneo-ochracea* Matschie, Ruchuru, BELGIAN CONGO, February 22, 1927 (J. Bequaert).

ANOPLURA

HAEMATOPINIDAE

Polyplax calva Waterston

PREVIOUS RECORDS. Recorded by Waterston and by Ferris from various subspecies of *Cricetomys gambianus* in Zanzibar and from numerous localities in Africa.

PRESENT RECORD. From *Cricetomys gambianus osgoodi*, Uluguru Mts., TANGANYIKA TERRITORY, October 1926 (A. Loveridge).

Hoplopleura enormis pelomydis Ferris

PREVIOUS RECORDS. From species of *Pelomys* and *Lemniscomys* from various localities in Africa.

PRESENT RECORD. From *Pelomys fallax fallax*, Uluguru Mts., TANGANYIKA TERRITORY, October 15, 1926 (A. Loveridge).

dupl.

Francis H. Wilson

**REPORT UPON CERTAIN ECTOPARA-
SITES OF MAMMALS**

BY

G. F. FERRIS

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