XVII.—Mallophaga and Anoplura from South Africa, with list of
Mammalian Hosts of African species,

by

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THE material upon which the present paper is based was received
from Mr. E. C. Chubb, Curator of the Durban Museum, the
greater part of it having been collected by Mr. W. E. Jones at
Mfongosi, Zululand. The Mallophaga listed include seven species,
of which one is normally mammal-infesting, and the remainder are
normally bird-infesting, although two of these are here recorded from
a mammal. All are referable to described species. The Anoplura
include eight species, of which two are apparently undescribed.

The literature on the Mallophaga and Anoplura of Africa has been
growing rapidly of late and in order to aid somewhat the students of
these parasites there is appended to this paper a host list of those
species of both groups that have been recorded from African mammals.
A glance at this list is sufficient to show how fragmentary is our
knowledge of the distribution of the mammal-infesting species, whole
groups of the rich mammalian fauna of this continent being totally
unrepresented by parasites. For instance, of the extensive order
Carnivora, but three families appear in the host list, and of these
families two are represented by a single species each, and one of these
is from the domestic dog. It is not unsafe to estimate that the
number of species of Anoplura and Mallophaga from the mammals of
Africa will in time be more than quadrupled.

The determinations of the old species and descriptions of the new
ones follow.

MALLOPHAGA.

Trichodectes cornutus, Gervais.

Trichodectes cornutus, Gervais, Hist. Nat. Apteres, III, p. 315, 49,
fig. 10, 1847.

XXVII, p. 110, pl. 6, fig. 1, 1866.

Trichodectes cornutus, Giebel, Insecta Epizo, p. 62, 1874.
Trichodectes cornutus, Taschenberg, Die Mallophagen, pp. 220–222, pl. VII, figs. 9, 9a, 9b, 1882.

Numerous males and females from Cervicapra fulvornifera (Mfongosi, Zululand, W. E. Jones, coll.). These specimens agree very well with the descriptions of T. cornutus given by the various authors and with the figures of Taschenberg, although the previous records have been of specimens taken from various species of antelopes. The species is readily recognizable by the elongated head with a triangular incision in the anterior margin and by the characteristic genitalia of the male. T. crenelatus Piaget, a species evidently closely related to T. cornutus, has been made the type of a new genus, Damalinius, by Mjöberg, but the grounds for doing so are so extremely scanty that it seems best to retain both these species in Trichodectes, at least until studies of a much more critical nature are made.

Lembothrium setigerum, Piaget, var. africanum, Kellogg & Ferris.

Lipeurus capitatus, Piaget.

Colpocephalum subpenicilatum, Piaget.

These three species from the Hadada ibis, Theristicus hagedash were discussed in a previous paper in these Annals,* and require no further consideration here.

Nirmus fuscus, Nitzsch.

Five females from Astur tachiro, the African Goshawk (Melmoth, Zululand). This is an extremely wide-spread parasite of hawks, having been recorded under various names, from numerous hawk hosts in both the Old and New Worlds. Compared with specimens from Falco sparverius taken in California the African specimens differ only in having the head slightly more pointed and slender and in being of a slightly lighter colour.

Nirmus subcuspidatus, Nitzsch.

Three mature females and one larva from Coracias garrulus, the European Roller. This species has previously been recorded from the same host and from Coracias temmincki, both these records being from Europe.

Goniocotes asterocephalus, Nitzsch.

Three females and one male from a "rat," Dasymys incomptus (Mfongosi, Zululand; W. E. Jones, coll.). This record and the one which follows are most certainly cases of straggling. The species of the genus Goniocotes are typically parasites of gallinaceous and columbine birds, and the particular species in question has been recorded from Perdix coturnix and Coturnix communis in Europe. It is impossible to be absolutely certain of the determination, but the specimens agree very closely with the descriptions and figures of this species, and it is probable that their normal host is some species of quail or partridge.

Lipeurus unicolor, Piaget.

Three females from Dasymys incomptus, contained in the tube with the preceding species, and, like it, probably stragglers from some gallinaceous bird. The species is one of Piaget's "circumfasciati angulati" group, this group being composed of about ten species from partridges, quail, mound-birds, horn-bills and the American tinamou. While the specimens at hand do not entirely agree with Piaget's description and figure of L. unicolor, they are evidently nearest to this species, differing from it in having on the abdomen clearly defined dark areas, which are said to be lacking in L. unicolor. However, they may very well be placed with this species for the present.

ANOPLURA.

Genus Scirto, Cummings.

This genus was established by Cummings (Bulletin Entomological Research, Vol. III, p. 393, 1913) to contain a single curious species taken from Aulacodus (Thryonomys) swinderianus, the African cane-rat. The material at hand contains specimens of this species and of another undescribed species of the same genus, the character of this undescribed species being such that some revision of the generic characters as given by Cummings is rendered necessary.

The original description of the genus was as follows:

"Head long and broad, the third joint of the antenna very long, almost equal to the length of the second, fourth and fifth together. Thorax shorter and broader than the head. First pair of legs with a long slender claw, and, arising close beside it, another claw, half the length of the first, hook-shaped and enlarged at its base. Pretarsal
sclerite of the second and third pairs of legs very large. Abdomen ovoid, as long as head and thorax together, pleurse small but strong, the posterior ones drawn out into tubular processes as in *Solenopotes.*”

With the finding of this additional material, the definition of the genus may be revised as follows: Antennæ five-segmented, not differing in the sexes. Eyes lacking, the temporal angles sharp and prominent. Middle and posterior legs of the same size, very large and with stout, pointed claws. Anterior legs small and slender with a long slender claw, and, arising close beside it, a shorter, hooked, claw-like process. Abdomen large and soft, entirely without chitinized tergal and sternal plates, except in the male where these plates may be present as very narrow, transverse areas. Pleural plates present. Each segment with a single transverse row of long spines. Gonopods very short. Spiracles small. Male resembling the female except for its smaller size.

*Scipio aulacodi* (Neumann). (Text-figs. 16 and 17b).

*Hæmatopinus aulacodi*, Neumann, Archives de Parasitologie, Vol. XIV, pp. 403-406, figs. 5, 6, 7, 1911.


Three females and one male from *Thryonomys* sp., the African cane-rat (Mfongosi, Zululand; W. E. Jones, coll.). The species

Text-fig. 16.

Head of *Scipio aulacodi* (Neumann).
was originally described from specimens taken from *Thryonomys (Aulacodus) scudderianus* and the later characterization of the genus was based upon specimens taken from the same host.

**Scipio breviceps**, sp. nov.  (Text-figs. 17a, 18, 19, 20, 21 and 22).

Two males and several larvae and females from *Thryonomys* sp. These specimens were included in the tube with those of the preceding species, apparently being from the same host individual. This species differs markedly from *S. aulacodi* the head and antennae being not only relatively but actually, much shorter than in the latter, the total length considerably greater and the pleural plates larger and more sharply defined.

Types in the Stanford University collection, co-types in the Durban Museum.

**Text-fig. 17.**

A, Antenna of *Scipio breviceps* sp. nov.  
B, Antenna of *S. aulacodi* (Neumann).

Description of female. Total length 1.95 mm.; length of head 1.36 mm.; length of abdomen 1.26 mm.; width of head across temples 1.25 mm.; width of thorax 0.53 mm.; width of abdomen approximately 1.87 mm.; these being the measurements of the type female.

Head about one and one-half times as long as wide, the anterior margin rounded, lateral margins straight and parallel to the sharp and prominent temporal angles behind which they converge slightly, Occiput slightly prolonged medially, roundly pointed. Antenne set well toward the anterior margin of the head, five-segmented, all the segments sub-equal in length except the third which is about as long as any other two segments combined. A broad chitinous band extends across the head in front of the antennae and there is a narrow chitinized area along each temporal margin.
Thorax rather trapezoidal in shape, somewhat broader than long, widest across the posterior margin along which is a transverse row of about ten long hairs, although these may, however, belong to the first segment of the abdomen, as the boundary between the thorax and abdomen is not distinctly defined. Legs of the type characteristic of the genus. Sternal plate small not touching the bases of the coxae, longer than wide, irregular and variable in shape and bearing one or two short spines.

Text-fig. 18.

Female of Scipio breviceps sp. nov.

Abdomen elongate oval in shape, without chitinized tergal and sternal plates, the ninth segment, however, being crossed by a chitinized area. Each segment with a single transverse row of twenty to twenty-four long spines. On the ventral side each segment except the eighth and ninth has a single transverse row of about fifteen spines, all of which are much shorter than those on the dorsum, the
four or five nearest the meson being shorter than the others. Genital plate on the eighth segment clearly defined, sharply pointed posteriorly. Gonapods very short, each bearing a row of eight or ten short spines. Posterior angles of the ninth segment bearing a group of fifteen to twenty long, slender hairs.

Text-fig. 19.

Sternal plate of female of S. breviceps sp. nov.

Pleural plates present on the third to eighth segments, clearly defined and on the posterior segments projecting fin-like from the body-wall. Each plate bears a pair of long slender hairs.

Description of male. Length 1·5 mm.; length of head 3·5 mm.; length of abdomen 9·7 mm.; width of head across temples 2·4 mm.; width of thorax at widest part 5·3 mm.; width of abdomen approximately 7·7 mm., these measurements being from the type male.

Text-fig. 20.

Ventral aspect of terminal abdominal segments of S. breviceps sp. nov.
Similar to the female except for its smaller size and a slight reduction in the number of spines on the abdomen. Genitalia large and conspicuous, the basal plate rather short and broad and consider-

**Text-fig. 21.**

Claw of anterior leg of *S. breviceps* sp. nov.

**Text-fig. 22.**

Genitalia of male of *S. breviceps* sp. nov.
ably widened at its posterior end. Parameres about half as long as the basal plate, stout but tapering toward the posterior end which is slightly hooked. Between and overlapping the parameres, is a broad, complexly shaped piece which appears to be one of the parts of the mesosome. Penis short and sharply pointed. Posterior end of the abdomen rounded and bearing numerous short spines.

**Hematoptinus phachochari**, Enderlein.

*Hematoptinus phachochari*, Enderlein, Contributions to the Swedish Exp. to Kilimandjaro-Meru, part II, Anoplura, 1908.


*Hematoptinus phachochari*, Harms, Ibid. p. 293.

Numerous males and females of this strikingly marked species from *Potamochoerus chaeropotamus* (Ngxwala Hill, Ubombo, Zululand; F. Toppin, coll.). It has previously been recorded four times; by Enderlein from *Phacocherus oleianus massaicus*, by Neumann from *Potamochoerus africanaus*, by Kellogg & Paine from *Phacocherus aethiopicus* and *Potamochoerus chaeropotamus*, and by Harms from *Potamochoerus* sp., each time under a different specific name. There can, however, be no doubt that all these records have to do with one and the same species, as has previously been pointed out for the first three by Paine.

*Hematoptinus incisus* Harms, is, it seems probable, at the most, no more than a variety of *H. phachochari* End., although the author of *H. incisus* had specimens of *H. phachochari* for comparison. The differences stated, however, are extremely slight and as specimens at hand from both *Potamochoerus* and *Phacocherus* agree in all respects, we believe that *H. incisus* should be regarded as a synonym of *H. phachochari*.

**Linognathus angulatus**, Piaget.

*Hematoptinus angulatus*, Piaget, Les Pediculines, Suppl. p. 144, pl. XV, fig. 7, 1885.

Numerous males and females from Cephalophus mutulensis (Mfongosi, Zululand; W. E. Jones, coll.). These specimens do not agree too well with Piaget's description and figure, but as his specimens were from a species of the same host genus as these and L. angulatus has been reported by other authors from other host species of the same genus, it is probably safe to assign them to this species.

Linognathus fahrenholzi, Paine.


(Specific name preoccupied).


Numerous males and females from Cercicapra fulcorna fulca (Mfongosi, Zululand; W. E. Jones, coll.). Originally described from specimens taken from Cercicapra arundinum (Nyasaland).

Text-fig. 23.

A, Genitalia of male of Polyplax otomydis, Cummings.
B, Genitalia of male of P. Jonesi, K. & F.
C, Genitalia of male of P. gracilis, Fahrenholz.
POLYPLAX OTOMYDIS, Cummings. (Text-fig. 23a).

This species was recorded in the previous paper in these Annals. The material at hand contains many specimens from Otomys irratus (Mfongosi, Zululand; W. E. Jones, coll.).

POLYPLAX GRACILIS, Fahrenholz. (Text-figs. 24 and 23c).


Several males and females from *Mus chrysophilus* (Mfongosi, Zululand; W. E. Jones, coll.). These specimens agree excellently with the descriptions and figures of Fahrenholz, who obtained his specimens from *Mus minutus* in Europe. It should be noted that in this species the pre-axial process on the third antennal segment of the male, present in most species of *Polyplax*, is lacking.

Text-fig. 24.

![Text-fig. 24](image)

Head of Polyplax gracilis, Fahrenholz.

POLYPLAX CUMMINGSI, sp. nov. (Figs. 25 and 26a).

Five mature females and three nymphs from *Dasypus inornatus*, a murid (Mfongosi, Zululand; W. E. Jones, coll.). Until the status of certain species [*Polyplax pracitus* (Neum.), *P. spiculifera* (Gerv.), *P. claricornis* (Nitzsch), *P. miacantha* Speiser] so inadequately described as to make their determination difficult, is settled, there is a large element of risk in describing any new species of *Polyplax* from African mammals, but the species at hand cannot be assigned certainly to any of the described species and therefore may be considered as
new. The figures will make clear the difference between this and some of the other African species of Polyplax. It seems to be closest to *P. gracilis* Fahr., the most conspicuous difference between the two being the shape of the head, particularly of the occiput. Unfortunately the male, the genitalia of which furnish excellent specific characters in this genus, is lacking. Types in the Stanford University collection, co-types in the Durban Museum. Named in honour of Bruce F. Cummings, an active student of the Mallophaga and Anoplura.

Text-Fig. 25.

Female of *Polyplax cummingsi* sp. nov.

Description of the female. Length 1·21 mm.; length of head 1·19 mm.; length of abdomen 92 mm.; width of head 1·14 mm.; width of thorax 26 mm.; width of abdomen approximately, 34 mm.

Head somewhat longer than wide, the hind head longer than the forehead. Antennæ set somewhat back from the anterior margin, which is roundly pointed. Temporal and posterior lateral angles rounded, not especially prominent. Temporal margins slightly convex
and nearly parallel. Occiput nearly as broad as the forehead and produced into an obtuse point. Each posterior lateral angle bears a long stout spine and immediately in front of this a much shorter and slenderer spine. Temporal margins with three or four very inconspicuous prickle hairs. Occiput bearing two very small spines close together at the meson. Behind the antennae an indistinct suture along which are arranged six small spines. Slightly in advance of the antennae a pair of small spines close together at the meson and three small spines on each side on the anterior margin. On the ventral side of the head is a raised median portion which fills the space between the antennae but tapers to a point posteriorly. The anterior margin of this raised portion is formed by two narrow chitinized bands which extend from the anterior margins of the antennae and meet at the meson, apparently forming a support for the rostrum. The chaetotaxy of the ventral side of the head is as follows: a rather long hair on each side near the base of the antenna and three short hairs on each side just in front of the chitinous band mentioned above. A circle of very fine hairs about the base of the rostrum.

Thorax about as long as the head, the lateral margins convex, the greatest width slightly behind the middle. Posterior margin nearly straight. Posterior margin of the mesothorax bearing a very short spine on each side just within the spiracle and a much longer and...
stouter spine slightly nearer the meson. Sternal plate rather spade-shaped, pointed posteriorly and with a short handle-like portion anteriorly. First pair of legs smallest, with small slender claw, second pair larger with heavier claw, third heavier but no longer than the second and attached to the posterior margin of the coxae in such a manner that they scarcely project beyond the margin of the abdomen.

Abdomen elongated oval and rather slender. It is difficult to be certain of the exact arrangement of the hairs at the base of the abdomen, but it seems to be as follows: first segment with two hairs close together at the meson, second segment with two rows of hairs, the anterior row of four, the posterior of four. Third segment with one row of four. Fourth to sixth segments with two rows of ten hairs each. Seventh segment with two rows, the anterior of eight, the posterior of five. Eighth segment with one row of four. The tergites are narrow and indistinctly chitinized, especially on the first three segments.

On the ventral side segments two to seven each with two sternites. Chetotaxy is as follows: anterior sternite of second segment with five spines, posterior sternite of this segment, anterior sternite of the third and seventh segments each with four spines. Remaining sternites, except on eighth and ninth segments each with six spines, the spine on end of the posterior sternite of each segment being very small. Seventh segment with a single spine on each side between the pleurite and the anterior sternite.

Pleurites of the second segment very narrow, each posterior angle produced into a point which bears a stout spine, that on the dorsum being the longer. Pleurites of the third to sixth segments with the posterior angles produced into slight but distinct points, and with two spines on the posterior margin of which one is near the centre and the other close to the ventral angle. Pleurites of the seventh and eighth segments without points at the angles and with two long hairs on the posterior margin.

Hoplopleura intermedia, Kellogg & Ferris. (Text-fig. 27).


Numerous males and females from Mus coucha (Mfongosi, Zululand; W. E. Jones, coll.). Originally described from the same host. Included among these specimens were a few immature forms of a type so peculiar that at first sight it would seem impossible for them to
belong to this species, but such seems to be the case. Little has ever been published in regard to the immature stages of the Anoplura, a recent paper by Cunnings being the chief contribution on the subject. This paper deals with certain species of Polyplax and in this particular genus it is found that the insect molts three times, each time assuming certain characters that were not present in the previous instar. In the species of Hoplopleura which we are considering, at least, there is a loss of characters as well as a gain at certain of the molts, accompanied by a considerable metamorphosis.

**Text-fig. 27.**

**Immature form of Hoplopleura intermedia, K. & F.**

The specimens which seem to represent the youngest stage present in the material at hand are extremely peculiar. The head is of somewhat the same shape as in the adult, but the chaetotaxy is entirely different and on the ventral side a number of small, symmetrically arranged, chitinous projections or tubercles, very much resembling those described by Neumann as present in Polyplax (?) aculeatus, N. Similar but smaller tubercles are present on the coxae.
The abdomen is entirely without hairs or spines but the pleural plates are present, although very weakly chitinized, and project far beyond the lateral margin of the abdomen, giving it a strongly serrated appearance. The most striking character of all is the presence on the last segment of a pair of curious, long, slender, fish-hook-shaped appendages, each consisting of a short basal portion and a much longer and more slender terminal part.

The other immature stage is represented by a single specimen, unfortunately too badly damaged for illustration or complete description. In this the head is almost identical in shape and chaetotaxy with the head of Polyplax spinulosa, the tubercles are almost entirely lacking and the abdomen bears a median pair of short spines on each segment, both dorsally and ventrally. The peculiar processes on the last segment are lacking but the pleural plates are present, and are of much the same shape as in the other form but are appressed to the body.

While it may be possible that these forms are not immature stages of Hoplopleura intermedia, it seems probable that they are from the fact that the examination of material of two other species of the same genus has revealed forms resembling that first described above in the presence of the tubercles on the head, although the pleural plates and the appendages on the last segment of the abdomen are lacking.

**Mammalian Host List of Anoplura and Mallophaga from Africa.**

The classification and arrangement of the hosts is that adopted by Osborn in “The Age of Mammals,” published in 1910.

(A) indicates an Anopluran species. (M) a Mallophagan species.

Certain species found upon cosmopolitan hosts have been included in this list since they undoubtedly occur in Africa, although they have not actually been reported therefrom as yet. These species are indicated by an asterisk.

**Order CARNIVORA.**

**Family Canide.**

**Canis familiaris** (Domestic dog).

(M) *Heterodurus longitarsus* (Piaget).

*(A) *Lineognathus piliarius* (Burm).

*(M) *Trichodectes latus*, Nitzsch.
Family Mustelide.

Lutra matschiei (Otter).
(M) Trichodectes matschiei, Stobbe (Bipindi, Kameroon).

Family Viverride.

Eupleres goudoti.
(M) Trichodectes madagascarenxis, Mjoberg (Madagascar).

Viverra mallacensis (Civet cat).
(M) Trichodectes viverricula, Stobbe (Madagascar).

Genetta sp. (Genet).
(M) Trichodectes acuticeps, Neumann (Abyssinia).

Herpestes ichneumon (Mongoose).
(M) Trichodectes inaequalis, Piaget.

Herpestes caffer (Mongoose).
(M) Trichodectes inaequalis, Piaget (Kilimandjaro).

Herpestes galera (Marsh mongoose).
(M) Trichodectes rammel, Stobbe (German East Africa).
(M) ..., necirostris, Stobbe (Pemba).

Herpestes badius (Mongoose).
(M) Trichodectes mungos, Stobbe (Zanzibar).

Herpestes affinis gracilis (Mongoose).
(M) Trichodectes mungos, Stobbe (German East Africa).

(Note.—It is extremely likely that at least some of these species of
Trichodectes are synonyms of T. inaequalis, Piaget).

Family Felide.

Felis domestica (Domestic cat).
*(M) Trichodectes subrostratus, Nitzsch.

Order Rodentia.

Family Sciuride.

Xerus getulus (Ground squirrel).
(A) Linquathoides setosus (Piaget) (Northern Africa).

Heliosciurus palliatus (Squirrel).
(A) Neoheumatopinus heliosciuri, Cummings (British E. Africa).
Family Muridæ.

**Epimys rattus** (Black rat).

(A) *Polyplax spinulosa* (Burm.)

**Mus coucha.**

(A) *Hoplopleura intermedia*, Kellogg & Ferris (Zululand).

**Mus chrysophillus.**

(A) *Polyplax gracilis*, Fahrenholz (Zululand).

**Mus barbarus.**

(A) *Polyplax (?) spiculifera* (Gervais) (Algiers).

**Mus sp.**

(A) *Polyplax miacantha*, Speiser (Abyssinia).

**Acomys cahirinus** (Spiny mouse).

(A) *Polyplax oxyrhyynchus*, Cummings (Egypt).

(A) *Polyplax brachycephalus*, Cummings (Egypt).

**Saccostomus campestris.**

(A) *Polyplax jonesi*, Kellogg & Ferris (Zululand).

**Arvicanthis dorsalis** (Striped mouse).

(A) *Hoplopleura enormis*, Kellogg & Ferris (Zululand).

**Dasymys incommitt.**

(A) *Polyplax cummingsi*, Kellogg & Ferris.

(M) *Goniocotes asterocephalus*, Piaget (Zululand).

(M) *Lipeurus unicolor*, Piaget (Zululand).

(The last two records are evidently due to straggling from some gallinaceous bird).

**Pachyuromys sp.**

(A) *Polyplax werneri* (Glinckiewicsz) (Natrontal, Lower Egypt).

**Meriones sp.**

(A) *Polyplax clavicorns*, Nitzsch.

**Otomyx irroratus.**

(A) *Polyplax otomydis*, Cummings (Zululand).

**Otomyx irroratus tropicalis.**

(A) *Polyplax otomydis*, Cummings (British East Africa).
**Mallophaga and Anoplura of African Mammals**

**Otomyx brantsi luteolus.**


“Spotted Rat.”

(M) *Colpocephalum sjöstedti*, Kellogg (Uganda).

“Gros Rats.”

(A) *Polyplax precius* (Neumann) (Abyssinia)

(This probably includes two species).

**Family Dipodidae.**

**Dipus sp. (Jerboa).**

(A) *Polyplax (!) aculeatus*, Neumann (Tunis).

**Family Octodontidae.**

**Thryonomys (Aulacodus) swinderianus (African Cane Rat).**

(A) *Scipio aulacodi* (Neumann) (North-east Rhodesia and Dahomey).

**Thryonomys sp.**

(A) *Scipio aulacodi* (Neumann) (Zululand).

(A) † *breviceps*, Kellogg & Ferris (Zululand).

**Order Tubulidentata.**

**Family Orycteropodidae.**

**Orycteropus capensis** (Cape Aard-vark or Ant-bear).


**Order Primates.**

**Family Lemuridae.**

**Lichanotus indri (= Indris brevicaudatus ?).**

(M) *Trichophilopterus babakotophilus*, Stobbe (Madagascar).

**Family Cercopithecidae.**

**Macacus inuus** (Barbary Ape).

(A) *Pedicinus (?) albids*, Rodow.
Cercopithecus mona.
   (A) Pedicinus breviceps, Piaget.

Papio (Hamadryas) sp.

Colobus caudatus (Guereza).
   (M) Trichodectes colobi, Kellogg (Kilimandjaro).

Family Hominidæ.

Homo sapiens.
   (A) Pediculus corporis, De Geer.
   (A) " capitis, "
   (A) Phthirus pubis, Linnè.

Order Artiodactyla.

Family Suïdæ.

Sus scrofa domestica (Domestic Swine).
   *(A) Haemotopinus suis.

Potamochoerus cheiropotamus (Bush Pig).
   (A) Haemotopinus phachocheri, Enderlein (Zululand).

Potamochoerus africanus (Bush Pig).
   (A) Haemotopinus phachocheri, Enderlein (Nyasaland).

Phachochoerus æthiopicus (Wart-hog).
   (A) Haemotopinus phachocheri, Enderlein (Nyasaland).

Phachochoerus gliani massaiicus (Wart-hog).
   (A) Haemotopinus phachocheri, Enderlein (East Africa).

Potamochoerus affinis nyasai ? (Wart-hog).
   (A) Haemotopinus phachocheri, Enderlein (Germ. E. Africa).

Potamochoerus (!) demunis.
   (M) Trichodectes rosseleri, Stobbe (German East Africa).

Family Giraffidæ.

Giraffa camelopardalis (Giraffe).
   (A) Linognathus brevicornis (Giebel) (Zool. Garden, Amsterdam).
Family Cameliæ.

Camelus dromedarius (Dromedary).

(A) Haematopinus camelii (Linnè) [= tuberculatus, (Burm.) ?].

Family Cervidæ.

Cervus dama


Family Bovidæ.

Bos taurus (Domestic Ox).

*(M) Trichoedectes scalaris, Nitzsch.

*(A) Linognathus vituli, (Linnè).

*(A) Haematopinus enrysternus, Nitzsch.

*(A) Solenopotes capillatus, Enderlein.

Buffelus caffer (Buffalo).

(A) Haematopinus buflii (De Geer) (Katanga, Congo Free State and Nyasaland).

Cephalophus maxwelli (Maxwell’s Duiker).

(A) Haematopinus breviceps, Piaget.

Cephalophus nigrifrons (Black-faced Duiker).

(A) Linognathus angulatus, Piaget.

Cephalophus natalensis (Red Duiker).

(A) Linognathus angulatus, Piaget (Zululand).

Cephalophus sp.


Cervicapra fulvorufula (Mountain Reedbuck or Rooi Rhebok).

(A) Linognathus fahrenholzi, Kellogg & Paine (Zululand).

(M) Trichoedectes cornutus, Gervais (Zululand).

Cervicapra arundininum (Reedbuck).

(A) Linognathus fahrenholzi, Kellogg & Paine (Nyasaland).

Antilope euchore (Springbuck).

(A) Linognathus tibialis, Piaget, var. euchore Waterston (South African Museum, Cape Town).

Antilope dorcas (Dorcas Gazelle).

(M) Trichoedectes cornutus, Gervais.
Antilope albirostris.
  (M) Trichodectes crenelatus, Piaget.

Hippotragus equinus (Roan Antelope).
  (M) Trichodectes cornutus, Gervais.

Taurotragus oryx (Eland).
  (A) Hematopinus taurotragi, Cummings (Menagerie in England).

Tragelaphus (Limnotragus) gratus (Situtanga).
  (A) Linognathus limnotragi, Cummings (Host in Zool. Garden, London, from Congo).

Capra aegyptica.
  (A) Linognathus saccatus (Gervais).

Fat-tailed Sheep.
  (M) Trichodectes peregrinus, Taschenberg (Germ. S.W. Africa).

"Sheep."
  (A) Linognathus africanus, Kellogg & Paine (South Nigeria).
  (M) Trichodectes sphaerocephalus, Nitzsch (West Africa).

Hircus mambricus.
  (M) Trichodectes mambricus, Rudow (West Africa).
    (A very doubtful species).

Order Perissodactyla.

Family Equidae.

Equus caballus (Domestic Horse).
  *(M) Trichodectes parumpilosus, Piaget.
  *(M) " pilosus, Piaget.
  *(A) Hematopinus asini (Linné).

Equus asinus.
  (A) Hematopinus asini (Linné).
  *(M) Trichodectes pilosus.

Equus burchelli (Burchell Zebra).
  (M) Trichodectes parumpilosus, Piaget, var. ocellata, Piaget.
Order PROBOSCIDEA.

Family Elephantidae.

Elephas africanus (African Elephant).


Order HYRACOIDEA.

Family Hyracidae.

Hyrax (= Procavia) capensis (Cape Cony).


Hyrax sp.

(M) Trichodectes univirgatus, Neumann (Congo).

Dendrohyrax neumanni (Tree Hyrax).


Dendrohyrax sp.


(M) Trichodectes univirgatus, Neumann " " "

Host unknown—

(A) Limognathus (1) squamulatus, Neumann (Diri-Daoua, Abyssinia).