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STRAY NOTES ON MALLOPHAGA.

Stray Notes on Mallophaga.

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15. *Notes on the Types of the Mallophaga
described by Bedford.*

After the death of my friend the late Mr. G. A. H. Bedford, the authorities of the Veterinary Laboratories at Onderstepoort found that a considerable portion of his very valuable collection of Mallophaga was incompletely labelled, and placed it in my hands so that I might remedy this to some extent.

The collection consists of a large number of specimens, very excellently mounted in Canada balsam, each specimen on a separate slide. The only exceptions to this rule are specimens received from other collections, and a very few pairs mounted *in copula*. None of Bedford's own specimens are stained. The series of each species is usually very short, normally only two males and two females, but this is varied by the retention of similar series collected from different hosts, and there are a certain number of exceptions to the rule, though these are sufficiently few to indicate that the extra specimens were regarded as duplicates. The collection is contained in slide-boxes of the rack-type, and was in a certain amount of confusion, partly owing to additions subsequent to the original arrangement of the collection and partly to the fact that specimens of one species were often in separate boxes, possibly some put aside as duplicates.

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The labels are of three principal types which are of some importance to the understanding of the following notes. The oldest type of label is one inch wide, and nine-tenths of an inch deep, and has the printed heading "Veterinary Research Laboratory." Later labels are square, with sides four-fifths of an inch long, and the principal differences are that Bedford sometimes used two of these (writing the data on the left-hand label, and the particulars of the parasite on the right-hand one), and sometimes wrote both the data and the name on one label; these are called "double" and "single" labels, respectively, in the notes below. Yet another kind of label, of little importance, was in use for a very short period during the last year of Mr. Bedford's life; it is narrower than deep, coarsely rouletted on both sides, and was apparently used chiefly, if not entirely, for duplicates. Special "type" labels will be mentioned later.

Besides the labelled slides there are a few slides with no labels whatsoever. Their presence is accounted for by Bedford's practice of putting a temporary label loose against a slide or between two slides; some of these temporary labels have been lost and in other instances they had become displaced, but in some cases I was able to attribute them with complete certainty to the specimens to which they belonged, and to write permanent labels for these.

The types and paratypes are frequently not indicated in any way, more particularly in the case of the earlier-described species. It has, therefore, been necessary for me to select lectotypes in many cases. Comparatively recently Bedford obtained a supply of special labels for types and paratypes from Mr. G. B. Thompson, and these were employed for the types of species described during the last few years, with the exception of the *Amblycera* and a few of the Trichodectidæ described in his two posthumous papers, which were only labelled with the data, and had no generic or specific names. Bedford had begun relabelling his types and paratypes with the special labels (the allotypes invariably called "cotype"), and the relabelling of the Trichodectidæ *s. l.* was almost complete, but hardly any of the types in other groups had been dealt with.

I have been guided in my selection of types by the fact that Bedford nearly always published the sex of his holotype, by the data, by a careful comparison of the specimens with the description and figures, and (as the last resource) by the kind of labels. The importance of the labels is that it is clear from examination of the collection that Bedford normally used the square double labels for the specimens to which he attached most importance, though the rule is not quite invariable. Not all the specimens labelled by me are lectotypes, for in a number of cases a species was described from a single specimen or a pair, and in such cases the specimens are definitely holotypes or allotypes, even though Bedford did not so label them. I have not used the term lectotype in labelling the slides, but it is easy to tell from the following notes in which cases it is appropriate. Similarly, Bedford recorded in a number of instances that the types were in the South African Museum, and Dr. A. J. Hesse of that museum kindly went into the matter for me. In many cases he found that the museum possessed a single specimen or a pair from the original lot, though they were not indicated as types. In view of Bedford's published statements these specimens are unquestionably the types; Dr. Hesse has labelled them as such, and I have labelled specimens from the type lots in the Bedford collection as paratypes. In a few instances the specimens in the museum did not even bear the specific name, and Dr. Hesse kindly sent me such specimens to examine.

In view of the fact that some types are legitimately absent from the collection my selection in some cases must be regarded as provisional. Although I have made many enquiries as to the whereabouts of the types of the species described by Bedford, it may yet happen that others will turn up, and the specimens I have selected will revert to being paratypes. This is especially the case with regard to species of which the type material was supplied by Mr. L. Hill, who has not answered my enquiries. In a few instances I have felt so much doubt as to the identity of the types that I have not felt justified in designating any. I have indicated the holotype and allotype (or lectotypes) by red borders drawn round the label, and the paratypes by yellow borders.

A further point which seems worth recording is that Bedford seems sometimes to have been ill-served by those who identified the hosts from which he obtained his material *, since there are a number of instances of obvious and gross misdeterminations of hosts. One instance will suffice: I found in the collection an undetermined *Philopterus* (*s. l.*) labelled as from a flamingo. Finding that it was a *Neophilopterus*, I noted that it must have been a straggler, and passed on until I came to the Esthiopterinae, where I found a series of a probably undescribed *Ardeicola* with exactly the same data. The *Ardeicola* had a familiar look, and on searching my own collection I was gratified to find specimens agreeing exactly with Bedford's, and from *Ibis ibis*, a bird superficially not altogether unlike a flamingo. This bird is recorded as a somewhat uncommon visitor to South Africa.

In the notes below the species are arranged as nearly as possible in the order of Bedford's "Check-List" (Bedford, 1932 a). Host-names are as given in the original description. I have not usually recorded paratypes unless there was a possible doubt about the identity of the types.

Falcolipeurus africanus Bedford, 1931 b. The two males and two females mentioned in the original description are all in the collection. Although Bedford wrote "Holotype a male," none of the specimens were labelled as types or paratypes. One pair, however, were labelled with the generic and specific names, whereas the others had the data only. Both the fully-labelled specimens bear the date 9. ix. 1919 as well as 5. xii. 1916; the former is possibly the date on which the parasites were collected, as opposed to that on which the host was shot. I consider the fully-labelled male to be the holotype, and the fully-labelled female the allotype.

Falcolipeurus lineatus Bedford, 1931 b. Here, again, all the specimens mentioned in the original description are in the collection, and none are indicated as types, one pair from *Terathopius ecaudatus* and the pair from *Gyps*

* This does not apply, of course, to the numerous species he described from material found on skins in the Transvaal Museum, and in the South African Museum.

coprotheres were fully labelled (the specific name in pencil), and the other pair from *Terathopius* were labelled with the data only. Bedford designated as holotype a male, and as allotype a female, from *Terathopius ecaudatus*, and I consider the fully-labelled specimens to be these types. In describing this species Bedford overlooked the fact that he had in his collection a second pair from *Gyps coprotheres*, collected at the same place and on the same date as the others from this host. These specimens (now, by the generosity of the Director of Veterinary Services, South Africa, in my own collection) are not paratypes, but agree perfectly with the types. I am convinced that *Terathopius ecaudatus* is not the true host of this species (see note 17, below).

Gallipeurus l. laurensis (Bedford), 1929. No specimens from the type lot are in the collection. The types are in the South African Museum, Capetown, the male being the holotype.

Gallipeurus p. pternistis (Bedford), 1929.—The types were without special labels, but were marked "Holotype" and "Allotype" in Bedford's writing.

Lagopæcus waterstoni (Bedford), 1930.—The types are in the South African Museum, but there are a pair of paratypes (not so labelled) in the collection. The types were labelled only with the data and "*Nov. gen. et sp.*"

Colilipeurus colius (Bedford), 1920 a.—Of the original series there are in the collection a pair *in copulâ*, a male broken into two pieces (but in perfectly useful condition), and another female, all with single labels and none indicated as types or paratypes. The figures were almost certainly drawn from the pair *in copulâ*, especially the male, of which the portions shown dotted in Bedford's figure correspond exactly to the parts somewhat hidden in the specimen. No holotype or allotype has ever been designated. I therefore designate the male of the pair *in copulâ* as the holotype and the female of this pair as the allotype.

Otilipeurus kori Bedford, 1931 b.—This species was described from a single pair, the female being the holotype. Both are in the collection, not indicated as types and with square single labels.

Otidæcus dimorphus Bedford, 1931 b.—There are two pairs from the type lot in the collection, all with square single labels and none indicated as types or paratypes.

Bedford stated his holotype to be a female. There is little to choose between the specimens, and all agree well with the figures, but one pair are slightly better-mounted than the others. The labels of the better-mounted pair have a narrow black edging and are precisely similar to those on the types of *Otilipeurus kori*, whereas the others have rather larger labels without the black border. I consider the female of the better-mounted pair to be the holotype, and the male of this pair the allotype, and have so labelled them.

Goniodes pternistis Bedford, 1929.—Described from “several males and females taken off *Pternistis swainsoni* . . . in the Zoological Gardens, Pretoria, on the 4th November, 1925.” No holotype was designated. There is a single pair belonging to the type lot in the collection. They have double square labels, and I think there is little doubt that they are the types. I have labelled the male as holotype and the female as allotype.

Goniodes scleroptilus Bedford, 1929.—Described from two females and one male. There are two females from the type lot in the collection, but one was unnamed, and must have been overlooked when the description was drawn up; it is, therefore, not a paratype. The types are in the South African Museum. No holotype was designated by Bedford, and I designate the male as holotype and the female as allotype.

Coloceras hilli (Bedford), 1920 *a*.—The two females and two males mentioned in the description are all in the collection, all with single labels and none indicated as types. No holotype was designated. One pair has square labels, and the other pair the oldest kind. I have selected the pair with square labels as types (there being no other indication) and the male as holotype.

Naubates harrisoni Bedford, 1930.—Described from three males and one female. Two of the original males are in the collection, and the types are in the South African Museum, the male being the holotype.

Naubates pterodromi Bedford, 1930.—The holotype female is in the South African Museum, and two paratypes in the collection.

Ibidæcus threskiornis Bedford, 1929.—“Described from a number of females and males taken off *Threskiornis æthiopica* . . . at Emakosini, Zululand, on the 29th October, 1924.” “Holotype: a female.” There are

in the collection one male and one female each labelled "Cotype" in Bedford's writing, and a second pair from the original batch, not so labelled. The pair labelled "Cotype" are evidently the types, and I have labelled the specimens accordingly.

Neophilopterus abdimius Bedford, 1929.—There are in the collection one male and two female paratypes. The types are in the South African Museum, and Bedford designated the female as holotype.

Procavicola angolensis Bedford, 1936.—The types are in the British Museum, and the paratypes in the Bedford collection have special labels.

Procavicola emarginata (Bedford), 1928.—Holotype (sole original specimen) in the collection, with a special label.

Procavicola furca Bedford, 1939 *a*.—The male holotype is present in the collection, specially labelled. The female is unknown.

Procavicola heterohyraxis Bedford, 1932 *a*. Holotype and allotype with special labels.

Procavicola jordani Bedford, 1936.—The male holotype and female allotype are in the British Museum collection, and paratypes, with special labels, are in the Bedford collection.

Procavicola lopesi Bedford, 1939 *a*.—This species was described from material belonging to me, and I have presented the types (which had special labels) to the British Museum. There are paratypes in the Bedford collection.

Procavicola mokeetsi Bedford, 1939 *a*.—Types, with special labels, in the collection.

Procavicola natalensis Bedford, 1932 *b*.—Types in the collection, specially labelled.

Procavicola parva Bedford, 1932 *b*.—Holotype male in the collection, specially labelled. Although Bedford writes of "males and females" he did not describe the female, and there are no specimens of this sex in the collection.

Procavicola pretoriensis Bedford, 1932 *b*.—Types present, specially labelled.

Procavicola sternata (Bedford), 1928.—Types present, specially labelled.

Procavicola subparva Bedford, 1932 *b*.—Types, specially labelled, in the collection. Although Bedford writes of

“females” the allotype is the only specimen of this sex in the collection.

Dasyonyx minor Bedford, 1939 *a*.—The holotype female had a special label. The male is unknown.

Dasyonyx nairobiensis Bedford, 1936. Described from material belonging to me, and holotype and allotype presented to the British Museum. There are paratypes in the collection.

Dasyonyx oculatus Bedford, 1928.—The single male holotype is in the collection, specially labelled.

Dasyonyx ovalis Bedford, 1932 *b*. Types present, specially labelled.

Dasyonyx transvaalensis Bedford, 1932.—This species was figured and very briefly described by Bedford in 1928 (p. 848, pl. ii. fig. 6), as *Eutrichophilus diacanthus* (Ehrenberg), from a single female collected on *Procavia capensis coombi* at Rooikrans, Transvaal. In August 1932 (1932 *a*, p. 360) he renamed it *Dasyonyx transvaalensis*, and in September (1932 *b*, p. 722, fig. 10, 13 *b*, 14 *a*) he described and figured both sexes under the new name. The original female is in the collection, but had no indication of its status; I have labelled it “Type.” One of the males had a special label “Cotype” (=allotype), but in view of the fact that Bedford’s paper 1932 *a* was published (against his expectation) before his 1932 *b*, this specimen is, strictly speaking, a neallotype. Similarly, the specimens labelled as paratypes are, strictly speaking, neoparatypes.

Dasyonyx validus Bedford, 1932 *b*.—This name was a *nomen novum* for “*Trichodectes lindfieldi* Hill” of Ferris, 1930, *nec* Hill 1922. The types are, therefore, the specimens described by Ferris, and were never in the Bedford collection.

Dasyonyx waterbergensis Bedford, 1932 *b*.—Types present, specially labelled.

Dasyonyx windhuki Bedford, 1936.—“Holotype. a male, and allotype . . . will be deposited in the British Museum collection.” There are paratypes in the Bedford collection.

Procaviphilus ferrisi Bedford, 1932 *b*.—This was a *nomen novum* for “*Trichodectes scrraticus* Hill” of Ferris 1930, *nec* Hill, 1922. The types are the specimens described by Ferris, and there are no specimens of the species in the Bedford collection.

Procaviphilus granuloides Bedford, 1939 *a*.—Described from material belonging to me. The types are in the British Museum, and there are paratypes in the Bedford collection.

Procaviphilus robertsi (Bedford), 1928.—Holotype male and neallotype female (latter labelled “Cotype”) present and with special labels.

Procaviphilus sclerotis Bedford, 1932 *b*.—Types present, specially labelled.

Bovicola adenota Bedford, 1936.—Described from my material. The types are in the British Museum and paratypes in the Bedford collection.

Bovicola dimorpha Bedford, 1939 *a*.—“The holotype will be deposited in the British Museum collection, and the allotype will be returned to Dr. Liu.” The allotype, with two male paratypes, was still in the collection when examined. Miss Clay informs me that the holotype is not in the British Museum.

Bovicola hilli Bedford, 1934.—Types in Mr. Hill’s collection. Two female paratypes in the Bedford collection, one specially labelled, the other not indicated as a paratype.

Bovicola martinaglia Bedford, 1936.—The two pairs in the collection are from the type lot, but were not even labelled with the specific name. I have assumed that they are paratypes, but it is very probable that they include the types, which are not in Dr. Martinaglia’s possession.

Bovicola pelea Bedford, 1934. Types present, specially labelled.

Bovicola thompsoni Bedford, 1936.—“The holotype will be deposited in the British Museum collection.” One female paratype is in the Bedford collection; the male is unknown. Miss Clay tells me that the holotype is not in the British Museum.

Damalinia hopkinsi Bedford, 1936.—The male holotype is in the British Museum, and the only paratype in my collection.

Damalinia theileri Bedford, 1928.—Described from a single female, which is in the collection labelled “Holotype” in Bedford’s writing, but not specially labelled. The undescribed male is also represented in the collection.

Eutrichophilus maximus Bedford, 1939 *a*.—The unique

female is in the collection, but was labelled only with the data. I have labelled it as the holotype.

Felicola caffra (Bedford), 1919.—Described from a single pair which are in the collection, but not indicated as the types. Bedford later (1932 c, p. 357) designated the male as holotype, and I have labelled the specimens accordingly.

Felicola calogalea (Bedford), 1928.—Of the type series there were in the collection two pairs from *Calogale cauxi* and two pairs from *C. pulverulentus*. Bedford designated as holotype "the male from *Calogale cauxi*." None of the specimens were labelled as types or paratypes, and there is nothing to indicate which of the specimens from *C. cauxi* are the types; I have selected one of the males from this host as lectotype and a female from the same host as allotype.

Felicola cooleyi (Bedford), 1929.—Types in collection, with special labels.

Felicola cynictis (Bedford), 1928.—Described from "males and females taken off *Cynictis penicillata* at Onderstepoort and at Bothaville, O.F.S." There were in the collection a pair from Onderstepoort and a male and two females from Bothaville. I have selected the better male (from Onderstepoort) as lectotype and the accompanying female as allotype.

Felicola genetta (Bedford), 1919.—Described from "two slightly immature females and one male," the male being subsequently designated as holotype by Bedford (1932 c, p. 363). All three specimens were in the collection, none indicated as types. The male is certainly the holotype, and I have labelled it accordingly; one of the females agrees very well with Bedford's figure and the other does not; I consider the former to be the allotype and the latter the paratype, and have labelled them thus.

Felicola helogale Bedford, 1932 c.—Described from two females and one "immature male"; holotype a female. All the specimens are in the collection, one female with a special holotype label, the other not indicated as belonging to the type series, and the immature specimen with a special paratype label. This specimen is extremely immature, and I can see nothing to indicate that it is a male; the male of this species must, therefore, be considered still unknown. I have labelled the second female as a paratype.

Felicola hopkinsi Bedford, 1936.—The types are in the British Museum.

Felicola rostrata Bedford, 1932 c.—Types in the collection, specially labelled.

Felicola setosa Bedford, 1932 c.—Types in the collection, specially labelled.

Felicola zeylonica Bedford, 1936.—“The holotype, a male, and allotype will be deposited in the British Museum collection.” There are paratypes in the Bedford collection.

Protelicola intermedia Bedford, 1932 c.—Described from “Males and females taken off . . . *Proteles cristatus* (Sparrm.), Umkomaas Valley, Natal, 19. vi. 1931 (coll. L. Hill). Holotype a male.” The collection contains one male, two females, and an immature specimen from the type series. These are either types or paratypes, but in view of the probability that the types are in Mr. Hill’s collection, and my failure to ascertain whether this is indeed the case, I have not dared to label the specimens in the Bedford collection.

Trichodectes ovalis Bedford, 1928.—Although this was described from “females and males collected by the writer off *Pæcilogale albinucha* . . . at Onderstepoort on the 1st March, 1920,” there is only one pair with the correct data in the collection. Bedford designated a female as holotype, and I have so labelled the female of the above pair; I have labelled the male “Allotype.” A second male has similar data except that the date is merely “1920”; I consider it to be a paratype, and have so labelled it. It is worth recording that Bedford later thought that he had misidentified the host, and that it was really *Ictonyx striatus*.

Trichodectes ugandensis Bedford, 1936.—This species was described from material belonging to the British Museum. The types are in the British Museum, and the single female paratype in my own collection.

Tricholipeurus æpycerus Bedford, 1929. Described from a single pair, the male being the holotype. The types are in the South African Museum, and the species is not represented in the Bedford collection.

Tricholipeurus antidorcus Bedford, 1931 b.—“Described from males and females taken by the writer off *Antidorcus marsupialis* . . . at Onderstepoort on the 25th

July, 1930." "Holotype a male." There are two pairs with the correct data in the collection, but none are labelled as types or paratypes. One pair have neater labels than the others and are slightly the better specimens; I have labelled the male of this pair as holotype, and the female as allotype. The others are paratypes.

Tricholipeurus elongatus Bedford, 1934.—The types are in the collection, specially labelled.

Tricholipeurus lerouxi Bedford, 1930.—This was described from two females, of which one was labelled with a special holotype label. The paratype was missing, but I found a second female among some completely unlabelled slides which appeared to have been set aside as rubbish. In view of the absence of labels of any kind I cannot regard this as the missing paratype, but it agrees in every detail with the type and must, I think, be from the type lot. I have been most generously permitted to retain this second specimen.

Tricholipeurus lineatus (Bedford), 1920 *a*.—The types are in the collection, specially labelled.

Tricholipeurus reduncæ Bedford, 1929.—Types present, specially labelled.

Tricholipeurus trabeculæ Bedford, 1929.—Types present, specially labelled.

Tetrophthalmus africanus Bedford, 1931 *a*.—In the paper in which Bedford described this and the next two species he did not record the amount of material from which the species were described, but he stated (p. 242) that all the holotypes were females. Of the type lot of the present species there are in the collection two males, two females, and three immature specimens. All have single labels, but one pair have neater labels than the others, and the same specimens agree best with Bedford's figures. I consider them to be the types, and have so labelled them; the other adults are paratypes.

Tetrophthalmus australis Bedford, 1931 *a*.—The same remarks apply to the two pairs of this species in the collection. I have labelled the pair best in agreement with the figures (and neatest labelled) as types, and the other pair as paratypes. As I have not been able to trace the source of the material, it is just possible that the specimens I have labelled types are only paratypes, and that the types are in Australia, but the correspondence

with the figures is sufficiently close* to make this very improbable.

Tetrophthalmus subtilan Bedford, 1931 *a*.—There are only one male and one female from the type lot in the collection, and I consider them to be the types.

Allomenopon lophocercus (Bedford), 1920 *b*.—Bedford never designated a type, or even a type-host, for this species. Of the original series there are in the collection a pair from *Lophoceros leucomelas*, a pair from *L. epirhinus*, and two males and a female from *L. erythrorhynchus*. Of these the male from *L. leucomelas* (the first host mentioned by Bedford) agree best with the figure of the male genitalia, and I have selected this as the type and the female from the same host as the allotype.

Pseudomenopon rostratulæ Bedford, 1919.—Of the original series there are two pairs in the collection, one pair with the neatest type of single label, and the other pair with the oldest type of label, on which Bedford had not even written the specific name. Bedford did not mention to which sex the holotype belongs, but he described the female in full, and the male much more briefly. I consider the pair without specific names to be paratypes, and of the neatly labelled pair I have selected the female as type and the male as allotype.

Chapinia africana (Bedford), 1919.—The types were specially labelled, the holotype being a female from Gruut Schoor. The specimens from Mafa, South-West Africa, mentioned in the description are not conspecific.

Machærilæmus plocei Bedford, 1920 *a*.—The original pair are in the collection, the female labelled "Type" in Bedford's writing, together with another female from the type lot, which he evidently overlooked when he described the species. The male must be the allotype. Although the species was described from "Waxbill" the host on all the labels is *Quelea sanguinirostris lathamii* (A. Sm.).

Machærilæmus urocolius Bedford, 1930.—The original pair from Ntabanana are in the collection, together with the female (but not the male) from Onderstepoort. Bedford designated a female as holotype. The Onderstepoort female was labelled only with host, locality, and date, and I consider it to be a paratype. I have labelled the

* There is a good deal of individual variation in *Tetrophthalmus*.

Ntabanana female and male as holotype and allotype respectively.

Neomenopon pteroclurus Bedford, 1920 *a*.—The holotype female labelled "Type" in Bedford's writing, and one immature paratype are in the collection.

Plegadiphilus threskiornis Bedford, 1939 *b*.—There are two males and two females in the collection, all from the same host-individual of *Threskiornis æthiopica*. Although none of the specimens were labelled with the generic or specific names it was obvious which pair were intended to be the types, because these had separate data-labels, whereas the other pair had single labels with spaces for the insertion of the generic and specific names. I have labelled the former pair as types and the latter as paratypes. Bedford designated a female as holotype.

Menopon francolinus Bedford, 1920 *b*.—"Described from a number of females and males taken off . . . *Francolinus sephæna* . . . in the Rustenburg District, and a few from . . . *Pternistes swainsoni* . . . in the same district." No type or type-host has been designated. Of the type lot there were in the collection two pairs from *F. capensis* and one pair from *P. swainsoni*, one pair from the former host with square single labels, and the rest all with the oldest type of single label. The pair with square single labels are also the best specimens, and I consider them to be the types; as Bedford described the female in full, I have labelled this the holotype and the male the allotype.

Menopon powelli Bedford, 1920 *b*.—The published particulars of the type batch of this species are exactly as for *M. francolinus* except that the numbers on the two hosts are reversed. No type or type-host has been designated. The collection contains two pairs from *P. swainsoni*, and three males and two females from *F. sephæna*; it seems clear from Bedford's description that the former bird was intended to be the type-host. Of the two pairs from this host one is slightly better-mounted than the other, and has the square single label, the other pair having the oldest type. I have labelled the female (the sex figured by Bedford) of the former pair "Holotype" and the male "Allotype." It is perhaps worth noting that all the specimens of the original batch from *F. sephæna* are labelled "Buffelsdraai, Tr.",

and certainly worth mentioning that the two species of hosts were not obtained on the same occasion since this tends to exclude straggling.

Austromenopon africanum var. *transvaalense* (Bedford), 1920 b.—The variety was described from specimens “taken from a domestic duck at Maritzburg,” and there are only two specimens, a male and a female, with this data in the collection. Both have the old type of label and were without the specific or varietal names. Bedford never designated a type for this form, but his description deals mainly with the female, so I have selected the female as type and the male as allotype.

Myrsidea hopkinsi Bedford, 1939 b.—This species was described from material belonging to me, and there were a number of specimens of the type lot in the collection, none labelled except with the data. One pair had neater labels than the rest, and were evidently intended as the types—a fact confirmed by their being slightly better mounted than the remainder. Bedford designated a female as holotype, and I have labelled this pair accordingly. The types are in the British Museum, and paratypes in several collections, including Bedford's and my own.

Myrsidea pilostomi Bedford, 1939 b.—Almost the same remarks apply, but there were two pairs with the neatest type of label. Selection of the holotype female was easy because the sternal plates of the two specimens are differently shaped, and the one which agrees with Bedford's figure is obviously the type, but there was nothing to indicate which of the two males with this type of label is the allotype, and I have merely selected the better of the two specimens. Types in the British Museum, paratypes in several collections, including Bedford's and my own.

Myrsidea subanaspila Bedford, 1939 b.—Although Bedford speaks of “females and males from Onderstepoort,” there are only two females and one male from this locality in the collection. None of the specimens bore the specific name, but the male and one of the females had recently been given new data-labels by Bedford, and are obviously the allotype and holotype respectively. The second female is a paratype, but the second male is from Beira, and although I think it conspecific it cannot be a paratype.

Menacanthus corvus Bedford, 1930.—The types were labelled by Bedford (obviously quite recently) with special type-labels bearing the inscription "*Menacanthus gonophæus* (Nitzsch). Syn. *M. corvus* Bedf." The female is labelled "Type" and the male "Cotype" (*i. e.*, allotype).

Menacanthus crateropus (Bedford), 1920 *b.*—"Several females . . . off *Crateropus bicolor* . . . and *Crateropus jardinei* . . . in the Rustenburg District, Transvaal." No type or type-host has been designated, and the collection contains two females from each host, all from the type lot. One female from each host had been relabelled by Bedford with the newer type of single label, whereas the others still retain the oldest type of label. The relabelled specimen from *Crateropus bicolor* agrees better with Bedford's figure than any of the others, and I have chosen it as lectotype.

Eucolpocephalum robustum Bedford, 1930.—Described from three females and two males from *Platalea alba*, Capetown, July, 1923; holotype a female. The types are in the South African Museum, but were labelled only with the data and the genus *Colpocephalum*; there are paratypes in the Bedford collection.

Psittacomenopon poicephalus (Bedford), 1920 *b.*—The original pair are in the collection, labelled "*M. impar* var. *poicephalus* Bedf." on the oldest type of label. The male is perfect, the female is somewhat broken, but with all the parts present, and is in perfectly useful condition. As the females of this genus are more distinctive than the males I designate the female the holotype, no previous designation having been made.

Heleonomus harrisoni (Bedford), 1919.—Although the original description says "described from two females," there are four specimens from the type lot in the collection, of which two are males. One of each sex has the oldest type of label, and is labelled "*C. harrisoni* Bedford," and the other pair have newer labels inscribed "*Heleonomus harrisoni* (Bedf.)." The female with the old-type label has the front of the head distorted, but the relabelled one agrees perfectly with Bedford's figure, and is obviously the holotype. The males must have been overlooked when the species was described.

Aneutalus africanus (Bedford), 1939 *b*.—Of the type series there were two males and two females in the collection, none labelled except with the data. Bedford designated a male as holotype. One pair had separate data-labels and were clearly intended to be the types, the other pair having single labels with spaces for the generic and specific names. The types have been returned to Mr. G. B. Thompson.

Colpocephalum ferrisi Bedford, 1930.—Two of the original males are in the South African Museum, neither of them indicated as type or paratype. One agrees much better than the other with Bedford's figure, and I have labelled the former "Holotype."

Colpocephalum subzebra Bedford, 1939 *b*.—There is in the collection a single male from *Anastomus lamelligerus*, and it is evident that this is the holotype; Bedford obviously chose this bird as type-host because the single specimen was in his own collection. The allotype is presumably in the Congo Belge Museum, and I assume that the female in the Bedford collection is a paratype, and a second male certainly is, but I have only labelled the latter. It is to be noted that the type is not (as would be inferred from Bedford's remarks) from Congo Belge, but from Rustenburg District, Transvaal, 5th February 1917; the data given in the paper refer to the allotype and paratypes.

Eulæmbothrion kelloggi (Bedford), 1919.—This was a *nomen novum* for *Læmbothrion setigerum* var. *africanum* Kellogg and Ferris, 1915, nec *L. africanum* Kellogg, 1910. The types are, therefore, the specimens described by Kellogg and Ferris, and were never in the Bedford collection.

16. *The Hosts of some Species described from Hyracoidea.*

As has been pointed out by Bedford (1932 *b*, p. 709) the Hyracoidea are a very archaic group of mammals, and their systematics are peculiarly difficult owing to the fact that differentiation within the group has apparently been very much retarded. We accordingly find in this group the anomaly of parasites which have apparently outstripped their hosts in specific differentiation,

and the proper determination of the hosts of parasites described from hyraxes is of even greater importance than usual. Bedford, noting this anomaly, very wisely usually gave the Transvaal Museum numbers of the individual hosts from which he collected new species of Mallophaga, and in a number of instances these have now been more accurately determined. Through the kindness of Dr. Austin Roberts of the Transvaal Museum I am able to list below the specimens for which more accurate determination are now available.

Dr. Roberts was unable to assist with regard to the form or forms collected at Mtabamhlope, Natal, by P. Barnes, from which Hill described *Procavicola lindfieldi* and *Procaviphilus serraticus*, and Bedford described *Procavicola sternata*; the presence of two species of *Procavicola* does not indicate that two species or subspecies of hosts were concerned, since it is not unusual for two species of this genus to occur on one host, and the fact that the host of Hill's two species is given as *Procavia capensis*, and that of *Procavicola sternata* as *P. capensis natalensis* Roberts, is not evidence in this respect, because all South African hyraxes of this group were formerly referred to *capensis*.

Hill does not give the date on which the host was collected, but paratypes of both Hill's species are in the Bedford collection, and the date is the same as that on which the host of *P. sternata* was obtained. Furthermore, Hill writes of "a Cape Hyrax," implying that there was only one individual. On the whole it seems probable that only one host (probably one individual) was concerned, and that Bedford's species was described from the unmounted residue of the material in Mr. Hill's possession.

In view of the locality, and the fact that Bedford later collected both of Hill's species on *P. c. natalensis*, I suggest that it is extremely probable that the original host of *Procavicola lindfieldi* (Hill), *P. sternata* (Bedford), and *Procaviphilus serraticus* (Hill) was *Procavia capensis natalensis* Roberts. The fact that *Procavicola natalensis* Bedford was also described from this host militates against my suggestion; possibly the host of the latter was misidentified.

The remaining hosts as to the identity of which Bedford expressed doubt are listed below, together with their present status; all were originally determined as *Pro-cavia capensis* or *Procavia* sp.

- T.M. no. 4324. Near to *P. capensis orangiæ* Rbts.
 T.M. no. 3275. *P. capensis letabæ* Rbts. (Paratype.)
 T.M. no. 2148. *P. capensis* ? *capensis* (Pallas).
 T.M. no. 4861. *P. capensis chiversi* Rbts. (Holotype.)

The doubt as to the identity of no. 2148 is due to the absence in South African museums of toponymical material for comparison. From no. 4234* Bedford described *Procavicola furca* and *Dasyonyx minor*, from no. 3275 *Procavicola mokeetsi*, from no. 2148 *Procavicola parva*, and from no. 4861 *Procavicola subparva*.

It seems not beyond the bounds of possibility that the best method for the determination of specimens of Hyracoidea (especially juveniles) may be found to be an examination of their Mallophagan parasites.

17. *The Hosts of the Species of Falcolipeurus described by Bedford.*

Bedford (1931, p. 291) described two new species of *Falcolipeurus*, *F. africanus* ostensibly from *Pseudogyps africanus fulleborni* and *F. lineatus* ostensibly from *Terathopius ecaudatus* and *Gyps coprotheres*. While working on the Bedford collection I took the opportunity to compare many of my specimens with his types, and was amazed to find that all my specimens of *Falcolipeurus* from *Pseudogyps africanus* were *F. lineatus* Bedford, not *F. africanus* Bedf. as I had expected. As *Gyps* and *Pseudogyps* are rather easily confused I assumed that I must have misidentified my birds, but Colonel Meinertzhagen kindly lent me a long series of *Falcolipeurus* collected by himself on *Pseudogyps africanus* in East Africa, and these are also *F. lineatus*. We may take it as certain, therefore, that the host from which Bedford's specimens of *F. lineatus* came was misidentified, and was really *Pseudogyps africanus* (or the subspecies *fulleborni* if it be considered recognizable).

* The Tol. Mus. number given in Bedford's paper is 1324, but this was a slip.

But what is the host of *Falcolipeurus africanus*? Since *Pseudogyps africanus* bears *F. lineatus*, and both Colonel Meinertzhagen and myself have failed to find *F. africanus* on it after searching many individuals, it is most improbable that the host of Bedford's specimens was correctly determined. Among the principal specific characters in *Falcolipeurus* are the shape of the head and (in the male) the shape and chaetotaxy of the elongated lateral plates on sternites 8 and 9, and especially the number of incrassations (in some aspects appearing as definite serrations of the outer wall) on these plates. In *F. lineatus* there are four or five such incrassations, *F. africanus* has only one, and in some species there are none. I possess specimens of *Falcolipeurus* from *Necrosyrtes monachus pileatus* and *Aegyptius monachus*, and Col. Meinertzhagen kindly lent me numerous specimens from *Gyps fulvus* and *Neophron p. percnopterus*, and a single female from *Torgos tracheliotus nubicus*. Careful comparison of the types of *F. africanus* with these specimens shows that this species is not identical with any of them, but it seems nearest to the material from *G. fulvus*. This material agrees rather closely in shape of head with *africanus*, and the sternal plates of the male show only one rather indefinite incrassation, but the shape of the plates and the chaetotaxy of this region are different, and the two forms cannot be conspecific.

The evidence is inconclusive, but suggests that the true host of *Falcolipeurus africanus* was a *Gyps*, possibly *G. coprotheres*. Unfortunately, I have not been able to examine any material from this host.

18. *The Date of Publication of Bedford's two Posthumous Papers.*

On receiving separates of Mr. Bedford's two posthumous papers, published in Vol 12 of the 'Onderstepoort Journal of Veterinary Science and Animal Industry,' I was surprised to find that they bore the date January, 1939. As I knew that they had not been published at that time I wrote to Mr. R. du Toit of Onderstepoort, and asked him what was the actual date of publication; he informs me that it was 14th November, 1939.

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