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NOTES ON SOME OF THE VERNON L. KELLOGG TYPES OF MALLOPHAGA

By

M. A. Carriker, Jr.
Popayan, Colombia

The author spent the greater part of October and November, 1956 in the San Francisco Bay area of California, and during this time was able to make numerous visits to the Museum of Stanford University, where the Kellogg collection of Mallophaga is preserved.

Mr. Gordon Floyd Ferris, the Curator of Entomology at the Museum, very kindly gave me all necessary aid in my study of the collection, and also permitted me to take certain types to the home of my father in Mill Valley for the purpose of making the necessary drawing of genitalia, etc.

My object in this study was to locate as many of the types described in New Mallophaga I, II and III as possible, since they were the ones most urgently in need of examination. Unfortunately, the types were never segregated, but are scattered throughout the collection, so that it became necessary to hunt through many boxes of slides in order to locate the types.

On most of the type slides there is pasted a small strip of paper on which is printed the word "type." Many species are represented by two or three slides marked "type", from the same, or different hosts. Fortunately, in most cases where the species had been figured for publication, the slide on which the drawing was made was indicated by the abbreviation "fig. d" written on the label. It thus became possible in most cases definitely to select the correct host when more than one host species was involved.

Unfortunately, lack of time prevented a thorough search for types through the entire collection, so that certain especially desired types were not located.

The collection, as a whole, is now in very poor condition for study. The specimens were originally mounted without clearing, inside black rings.

The medium used for mounting was glycerin jelly which has dried and shrunk, in many cases, forming an impenetrable border around the mounted insect, obscuring completely the details of the margin and the marginal chaetotaxy. The presence, also, of foreign matter within the body of the insects in many cases completely obscured the details of structure.

Apparently, when first mounted, they were in a very much better condition for study than at present, otherwise the original drawings could not have been made with the accuracy shown by most of them.

There still remains much work to be done on this collection, but according to Mr. Ferris there is nobody at Stanford or the University of California who is interested in this group of insects.

Unfortunately, Mr. Ferris was obliged to give up work on the Mallophaga some years ago and devote his time to other groups. At present his eyesight is failing badly and he will soon retire from active work.

I am greatly indebted to Mr. Ferris for the privilege of making these studies, also to Col. Emerson for his assistance and encouragement in undertaking the work, also for his notes on a number of species made while he was at Stanford not long ago. I am also indebted to Dr. Clarke, Curator of Entomology at the U.S. National Museum, for assistance in resolving several knotty questions of nomenclature.

SUBORDER ISCHNOCERA KELLOGG

Genus DOCOPHORUS Nitzsch, 1818

Docophorus acutipectus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 84; pl. 3, fig. 4

HOST: *Ceratorhina monocerata* = *Cerhorhina monocerata* (Pallas). "Type fig'd." (♀). Kellogg Type Slide No. 162a.

The species is represented by a single female which automatically becomes the *type*. It is a *Saemundssonina*.

Docophorus altenus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 473; pl. 65, fig. 2. Slide No. 309b (♂), "type fig'd." HOST: *Colaptes auratus*. Species represented by a single ♂, which thus becomes the *type*. This parasite is clearly a *Philopterus*, and is evidently a "straggler" from some unknown host, since the normal parasite of the Flicker is a species of *Penetrinus*.

Docophorus laticeps americanus Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 11; pl. 1, figs. 4 and 7. Slide No. 448a, "type fig'd." (♀). HOST: *Cinclus americanus* = *C. mexicanus unicolor* Bonaparte.

The species is represented by 1 adult ♀ and 2 juv. specimens, slide 448a, and this ♀ automatically becomes the *type*.

The species is certainly a *Philopterus*, but with the head and abdomen of a rather unusual shape. The type is in very poor condition. The chaetotaxy of the abdomen is long, fine, and very abundant, but not clearly visible due to food matter in the abdomen.

Docophorus atricolor Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 93; pl. 3, fig. 9. Type slide No. 63a (♂♀) "fig'd." A second slide, also No. 63a, is marked "type" (3♀♀). The figured specimen is from a "Murrelet" sp., while the second is from *Brachyramphus marmoratus*.

The specimens of the two slides are very similar, if not the same thing. In the description Kellogg gives the name of the "Murrelet" as *Synthliboramphus antiquus*, and the male was described and figured. Therefore, the ♂ specimen on slide No. 63a becomes the *lectotype*, and the two ♀♀ *syntypes*, and the true host is *Synthliboramphus antiquus*. It is a *Craspedonirmus*.

Col. Emerson has recently published a review of the genus *Craspedonirmus* (Ann. & Mag. Nat. Hist., ser. 12, vol. 8, p. 718, September 1955), in which this species, as well as *D. graveiceps* are treated. The results of his studies show that this species should be placed under the synonymy *C. colymbinus* (Denny) as well as *D. graveiceps* Kellogg, whose host is either *Gavia arctica* or *G. stellata*.

Docophorus californiensis Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 483; pl. 66, fig. 6. Slide No. 361a (♂-1 juv.), "type, fig'd." HOST: *Melanerpes formicivorus bairdi* Ridgway.

The ♂ on slide No. 361a is selected as the *lectotype* of the species, the ♀ becoming a *syntype*.

It belongs in the genus *Penetrinus*.

There are several slides with specimens from other species of Woodpeckers which are labelled *californiensis*, but these may be disregarded as hosts for this species, as well as specimens bearing the same name from *Elanus leucurus* and *Pipilo carmani*.

Docophorus distinctus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 477; pl. 65, fig. 5.

Docophorus domesticus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 475; pl. 65, fig. 4. Type slide No. 319a, "fig'd." (♂-2 juv.). HOST: *Progne subis* (Linné). The ♂ on slide 319a was figured, and thus becomes the *lectotype* of the species. It is a *Philopterus*.

A series of slides labelled *D. domesticus*, later collected from *Progne modesta*, Indefatigable Id., are not the same as the types of *domesticus*, according to a comparison which I made some time ago from authentic material.

Docophorus evagans Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 480; pl. 66, fig. 2. Slide No. 307a (♂-3 juv.), "type fig'd." The ♀ was figured and thus becomes the *lectotype* of the species. HOST: *Dryobates pubescens medianus* (Swainson). It belongs to the genus *Penetrinus*, of the type commonly found on the Picidae.

Docophorus fissi-signatus Kellogg & Paine, 1911

Ent. News, vol. 22, p. 19, fig. 1. Slide No. 1267a (♀ and ♂-?) marked as "type" but not indicated as "figured." However, the figure presented with the original description, is that of a female, and the specimen on slide 1267a which is clearly that of a female, is selected as the *lectotype* of the species.

The second specimen, which according to Kellogg & Paine is a female, is not clearly discernible as such, due to foreign matter covering posterior portion of abdomen. It seems to me to be a male. The host given on the type slide is "Desert Curlew." Dr. Hopkins has been able to determine that the host indicated is *Theristicus branickii* Berlepsch & Stolzman.

The parasite belongs to the genus *Ibidococcus*.

Docophorus fuliginosus Kellogg, 1896
Figure 44A

Proc. Cal. Acad. Sci. (2) VI, p. 80; pl. 3, fig. 2. Slide No. 148a (♂) "type fig'd." HOST: *Charadrius* = *Squatarola squatarola* (Linné). The single ♂ figured and described, automatically becomes the *type* of the species. It is a *Saemundssonina*. A figure of the male genitalia, drawn from

the type, is given.

Docophorus graviceps Kellogg, 1896
Figure 44B, 44C, 44D

Proc. Cal. Acad. Sci. (2) VI, p. 82; pl. 3, fig. 3. Slide No. 125b (♂) "type fig'd." HOST: *Fulica americana* = *Gavia* sp. See reference under *D. atricola* to article by Col. Emerson referring also to the present species.

The true host for this species is *Gavia arctica pacifica*. It is a *Craspedonirmus*.

Docophorus incisus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 474; pl. 65, fig. 3. Slide No. 230a, "type fig'd." (♂). HOST: *Sialia stalis* Linné. The ♂ on slide 230a, which was figured and described, is selected as the *lectotype* of the species. It is a *Philoaterus*.

Slide No. 235a (♀) and labelled *incisus*, with host as *Ampelis cedrorum*, seems to be the same thing and is probably a "straggler" from *Sialia*.

Docophorus insolitus Kellogg, 1896
Figure 44E

Proc. Cal. Acad. Sci. (2) VI, p. 94; pl. 4, fig. 5. Slide No. 163c (♂♂), "type fig'd." HOST: *Ptychorhamphus aleuticus* Pallas. The best of the two females on slide 163c is selected as the *lectotype* of the species.

A rather aberrant form of *Saemundssonina*, with long, narrow head and elongated oval abdomen, but it undoubtedly belongs in that genus.

Docophorus insulicola Kellogg & Kuwana, 1902

Wash. Acad. Sci. IV, p. 466; pl. 28, fig. 6. Slide No. 1085a (♂), "type fig'd." HOST: *Certhidea albemartei* Gould. The ♂ on slide 1085a is selected as the *lectotype* of the species. It is a *Philoaterus*.

There are three slides (♂♂) from *Pyrocephalus intercedens* and 1♀ from *Geospiza fuliginosa*, all of which are the same as the type, and which must be considered as "stragglers" from *Certhidea*, the true host, since the ♂ from that host was figured. I have 2♀♀ of a *Philoaterus* from *Pyrocephalus rubinus* which are very different from Kellogg's figure of *insulicola*, which furnishes added proof that *Certhidea* is the correct host for this species.

Docophorus jungens Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 481; pl. 66, fig. 4. Slide No. 309a (♂♂) "type fig'd." HOST: *Colaptes auratus luteus* Bangs. The female is figured, but the male is described. A second slide (3♀♀) is marked "type fig'd.", this from the same host, but from a different locality. Since there is no ♂ on this slide I have selected the ♀ (in

best condition) on slide 309a as the *lectotype* of the species.

The host is apparently correct, since the parasite is a *Penenirmus* of the type commonly taken on Woodpeckers. The genitalia of the male has a large basal plate but the parameres are short and pointed and thickened basally. The endomera are obscured, but there seems to be a rather long penis present.

Docophorus kansensis Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 91; pl. 3, fig. 8. Slide No. 11b (♀) "type fig'd." HOST: *Colymbus nigricollis californicus*. This parasite is unquestionably a *Philoaterus* and it is quite impossible that its host could be that given by Kellogg. It must be placed in the class of "host unknown." The ♀ on slide No. 11b automatically becomes the *type* of the species.

Docophorus excisus major Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 490. There are three slides marked "type", but none are marked as "figured." Slide No. 374a (♀) from *Tachineta bicolor* is broken in half. Slide 372a contains 6♀♀ from *Petrochelidon lunifrons*, and slide No. 344 (♀) from *Progne subis*. All are *Philoaterus* and quite similar in appearance, but are at least subspecifically distinct. Since two hosts are mentioned in the description it becomes necessary to take the first as the true host, therefore I select as the *lectotype* of the species a female on slide No. 372a, with *Petrochelidon lunifrons* = *Petrochelidon a. albifrons* Rafinesque as the *type* host.

Docophorus mirnotatus Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 65; pl. 5, fig. 6. Slide No. 678a (♀) "type fig'd." HOST: *Junco hyemalis thurberi* = *J. oregonus thurberi* (Anthony).

Since the species is based on a single ♀, this female on slide No. 678a automatically becomes the *type*. It is a *Penenirmus*, and while there is some doubt of a *Penenirmus* being found on a *Junco*, Col. Emerson advises me that he has specimens of this genus from several species of Sparrows, so that the host may be correct.

Docophorus mirus Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 67; pl. 5, fig. 7. Slide No. 647a (♀) "type fig'd." HOST: *Thryomanes bewicki spilorus* Vigors. There is another slide (♂) which is also marked "type", from the same host. A third slide, with 4 specimens, from *Dendroica townsendi*, is also labelled *mirus*, but they are different from the type figured. The female on slide No. 647a is selected as the *lectotype*. They are all *Philoaterus*.

Docophorus pertusus var. *monachus*
Kellogg & Paine, 1911

Ent. News, vol. 22, p. 75, fig. 1. One ♀ on slide marked "type." HOST: *Rallus virginianus* =

R. limicola zetarius Peters. The specimen on the slide marked as the "type" is a female. In the description it is given as a male, but the figure given is clearly that of a female. This female automatically becomes the *type* of the species. It is an *Incidifrons*.

Docophorus montereyi Kellogg, 1896
Figure 45F

Proc. Cal. Acad. Sci. (2) VI, p. 87; pl. 3, fig. 6. Slide No. 151b (♂) is marked as "fig'd.", but does not bear the usual "type" sticker. The host on this slide is *Oidemia de&landi*, but is marked as a "straggler."

There are three other slides marked as "type", but none of them as "fig'd." One slide is from *Brachyrhamphus marmoratus* and the other two are from *Synthliborhamphus antiquus*. All are *Saemundssonina*. No species of this genus has been recorded from any duck so that the specimen from *Oidemia* may be safely classed as a "straggler", but from which of the two hosts marked as "types" did it straggle? If the first host mentioned in the text (*Synthliborhamphus*) is selected as the true host of the parasite, we must decide whether the "straggler" which was figured, and probably described, came from that host or from *Brachyrhamphus*. A careful comparison of this "straggler" with specimens from the other two hosts mentioned above shows that it almost certainly came from *Synthliborhamphus*, since there is a slight, but noticeable, difference between the parasites from the two hosts. No specimen from the third host mentioned by Kellogg was found (*Ptychorhamphus aleuticus*).

In conclusion it may be safely assumed that the true host of *Saemundssonina montereyi* is *Synthliborhamphus antiquus*, and the ♂ on slide No. 151b may be selected as the *lectotype* of the species. Undoubtedly the species was figured and described from this male specimen.

Docophorus latifrons var. *occidentalis*
Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 6; pl. 1, figs. 5 & 8. Slide No. 428a (♂♂) "type fig'd." HOST: *Coccyzus americanus occidentalis* Ridgway. The better of the two females on slide 428a is selected as the *lectotype* of the species, the other female and the two males being *syntypes*. It is a *Cuculoecus*.

Docophorus procox Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 54; pl. 5, fig. 1. Slide No. 468a (4♀-2 juv.) "type fig'd." HOST: *Cephus columba* Pallas. The most perfect ♀ on slide No. 468a is selected as the *lectotype*, the remaining specimens being *syntypes*.

All are in very poor condition. The species is a *Saemundssonina*.

Docophorus quadriceps Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 85; pl. 3, fig. 5. Slide No. 129a (♂) "type fig'd." HOST:

Fulica americana. The ♀ on slide No. 129a is selected as the *lectotype*.

These are unquestionably *Philoaterus*, and the host given is certainly an error. The true host is possibly some species of the Passeriformes.

I might suggest that *D. quadriceps* resembles rather strongly *P. transversifrons* Carriker, from *Micrastur ruficollis interstes* Bangs. Miss Clay has informed me that she has several species of *Philoaterus* of the type of *transversifrons* which were also taken on Raptores.

Docophorus rutteri Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 12; pl. 1, fig. 3. Slide No. 449a (♀) "type fig'd." HOST: *Parus atricapillus occidentalis* Baird. The ♀ on slide No. 449a being the only specimen of the species, and having been figured, automatically becomes the *type* of the species. It is a typical *Philoaterus*.

Docophorus singularis Kellogg & Chapman, 1899
Figure 45G, 45H

Occ. Pap. Cal. Acad. Sci. VI, p. 61; pl. 5, fig. 5. Slide No. 567 (♂♀) "type fig'd." HOST: *Pica nuttalli* = *Pica pica nuttalli* Audubon.

The better of the two females on slide No. 567 is selected as the *lectotype* of the species, the other female and the male being *syntypes*.

This is a typical *Philoaterus*. The host given on the type slide is "*Pica nuttalli*", and not *Dryobates nuttalli* as given in the text of the description. The host "*Pica*", given on the slide label is undoubtedly correct. The parasite is quite similar to other known species from the Corvidae, while the male genitalia resemble closely those of *Philoaterus underwoodi* (Carriker), from *Psittorhinus mexicanus*. The chaetotaxy of the abdomen is abundant, very fine and very long. Figures of the head and male genitalia, drawn from the ♂ *syntype*, are presented.

Docophorus taurocephalus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 471; pl. 65, fig. 1. Slide No. 307a (♂♀) "type fig'd." HOST: *Archibuteo* = *Buteo lagopus sancti-johannis* (Gmelin).

The ♂ on slide No. 307a was figured, and is selected as the *lectotype* of the species. It is a *Craspedorhynchus*.

Docophorus transpositus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 378; pl. 65, fig. 6. Slide No. 317a (♀) "type fig'd." HOST: *Nolothrus ater*, error = *Fulica americana* (fide Emerson).

The ♀ on slide No. 317a, only specimen of the species, becomes the *type*. This is clearly a species of *Incidifrons*, as has been pointed out by Col. Emerson.

Docophorus validus Kellogg & Chapman, 1899

Proc. Cal. Acad. Sci. (2) VI, p. 56; pl. 5, fig. 2. Slide No. 489b (♀) "type fig'd." HOST: *Puffinus episthomelas* Coes. The ♀ on slide No. 489b, figured and the only specimen, becomes the type of the species. It is a *Saemundssonina*.

Genus NIRMUS Nitzsch, 1818

Nirmus actophilus Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 78; pl. 6, fig. 4. Slide (4♀♀) "type fig'd." HOST: *Calidris arenaria* = *Crocethia alba* (Pallas). The best specimen on the slide containing 4♀♀ is selected as the lectotype of the species, the others becoming syntypes. It is a *Luniceps*.

Nirmus fuscomarginatus var. *americanus*
Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 69; pl. 5, fig. 9. Slide No. 460a (5♀♀) "type fig'd." HOST: *Colymbus nigricollis californicus* (Heerman). The best of the five females on slide 460a is selected as the lectotype of the species, the other four become syntypes. Another slide from *Cephus columba*, marked "type", may be disregarded. All are in very poor condition. It belongs in the genus *Aquanirmus*.

Nirmus atopus Kellogg, 1896

Occ. Pap. Cal. Acad. Sci. VI, p. 18; pl. 2, fig. 4. Slide No. 405b (♀) "type fig'd." HOST: *Playa cayana thermophila* P. L. Sclater. The species is represented by a single female, on slide No. 405b, which becomes the type. It is a *Cuculicola*.

The type is in very poor condition, especially head and thorax, but undoubtedly the host is correct. I have many specimens of this species from various races of *Playa cayana*.

Nirmus audax Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. (2) VI, p. 25; pl. 2, fig. 8. Slide No. 437a (♀) "type fig'd." HOST: *Psaltiriparus flaviceps* = *Auriparus f. flaviceps* = *Sundeval*. The single female on slide No. 437a, only specimen of the species, automatically becomes the type. It is a *Brüelia*.

Nirmus boeophilus Kellogg, 1896

Proc. Cal. Acad. Sci., p. 107; pl. 5, fig. 7. Slide No. 2071 (♀) "type fig'd." HOST: *Aegialitis vocifera* = *Charadrius v. vociferus* Linné. The single female noted above, only specimen of the species, automatically becomes the type.

The type specimen is in very good condition and is clearly a *Quadriceps*.

Nirmus caracarensis Kellogg & Mann, 1912

Ent. News, Vol. 23, p. 59. Types (♂♂) not figured. HOST: *Polyborus* sp. = *P. lentosus* = *P. lutosus* Ridgway. According to studies made by the author (Rev. Brasil. Ent. 5; May 1956, p. 124) this species belongs in the genus *Acutifrons Guilmaræes*. The male on the "type" slide is described and thus becomes the lectotype of the species. In the description of the species three males, only, are mentioned, but the slide which is marked "type" contains 1♂ and 1♀.

Nirmus complexivus Kellogg & Chapman

Occ. Pap. Cal. Acad. Sci. VI, p. 75; pl. 6, fig. 3. Slide No. 472b (4♀♀) "type fig'd." HOST: *Calidris arenaria* = *Crocethia alba* (Pallas). Another slide from the same host is marked "type", contains 5♀♀, all in very poor condition. A third slide, marked "type", is from *Tringa minutilla* (2♀♀). The specimens from *Tringa* are not the same as those from *Crocethia*, and may be disregarded.

The best specimen of the four females on slide 472b is herewith selected as the lectotype of the species. The remaining three females on this slide and the five females on the other slide marked "type" may be classed as syntypes.

The species belongs in the genus *Carduiceps*.

Nirmus infectus var. *connexus*
Kellogg & Mann, 1912
Figure 451

Ent. News, vol. 23, p. 13; Jan. Slide No. 1245a (♂♀) "type" (not figured). HOST: *Phalaropus lobatus* = *Lobipes lobatus* Linné. No host is given on the slide containing the types, but in the text of the description. The ♂ on slide No. 1245a is selected as the lectotype, the ♀ as a syntype. It is a *Quadriceps*.

Nirmus longus domesticus Kellogg & Chapman, 1899
Figure 45J

Occ. Pap. Cal. Acad. Sci. VI, p. 93. Slide No. 669b (♂). HOST: *Hirundo rustica erythrogastrer*. This specimen, according to the authors, was supposed to be very closely related to *N. longus* (see fig. No. 47Q by Carrier), differing from the type of *longus* in having but three instead of six lateral metathoracic hairs; in the more elongated head, and in the distinctness of the median, uncolored longitudinal line of the abdomen.

The authors go on to say (after giving the body and head measurements of *domesticus*) that it is about the same size as the type species (= *longus*), and twice the length of *gracilis* Nitzsch (from the European Swallow). However, the figure of *gracilis*, as given by Piaget, is nothing like the louse labelled as the type of *domesticus* (see fig. 7), but very similar to the specimen marked as being the "type" of *longus* (see fig. by author of *longus*).

The "type" of *domesticus*, slide No. 669b, is a typical *Brüelia*, but of an entirely different form

from both the figure and specimen of *longus*. Just where the error is located in this confusion is not perfectly clear. It would seem, however, that the type of *longus* (slide No. 320b-♂) is correct, and the figure of it which was published by Kellogg represents that female, but the drawing was badly done. However, the parasite on Slide No. 69b (♂), supposedly the type of *domesticus*, is not *domesticus* at all, but was wrongly labelled both as to species and host, and must be discarded as the type of *domesticus*. The real *domesticus*, as intended by Kellogg and Chapman, is certainly very close to *longus*, and may not be separable.

Nirmus ductilis Kellogg and Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 89; pl. 6, fig. 8. "Type fig'd." (♀), slide No. 577b. HOST: *Empidonax difficilis* Baird. Slide No. 782, labelled *N. ductilis*, from *Amphispiza belli* is not the same thing and may be disregarded. The single female which is figured automatically becomes the type of the species.

Nirmus euprepes Kellogg & Chapman, 1902
Figure 46K

Journ. N.Y. Ent. Soc. vol. 10, p. 21; pl. 3, fig. 1. Slide No. 694 (♀♀) "type fig'd." HOST: *Arenaria interpres morinella* Linné. The better of the two females on slide 694 is selected as the lectotype of the species, the other female and male becoming syntypes. It is a typical *Quadriceps*. The figure of the male genitalia was drawn from the male syntype.

Nirmus eustiġmus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 493; pl. 67, fig. 3. Slide No. 379a (♀) "type fig'd." HOST: *Trochilus anna = Calypte anna* (Lesson). Represented by a single female which was figured, thus automatically becoming the type of the species.

This is a typical *Brüelia*, and the host is most certainly in error. I have examined very many specimens of Trochilidae for Mallophaga, but have yet to find *Brüelia* on any of them, only *Ricinus* and *Trochiloceetes*.

N. eustiġmus has the appearance of the type of *Brüelia* usually found on the Corvidae, at least on some of them.

Nirmus farraloni Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 103; pl. 5, fig. 4. Slide No. 8b (♀) "type fig'd." HOST: *Phalacrocorax auritus albociliatus* Ridgway. Slide No. 13b, from the same host also labelled "type." The female on slide No. 8b is selected as the lectotype of the species. It is a typical *Pectinopyġus*.

Nirmus foedus Kellogg & Chapman, 1899
Figure 46L

Occ. Pap. Cal. Acad. Sci. VI, p. 87; pl. 6, fig. 7. Slide No. 603 (♀) "type fig'd." HOST: *Phaino-*

opepla nitnes (lepta) van Tyne. The female on slide 603 is selected as the lectotype of the species. It has been placed in the genus *Picicola*.

There are five other slides labelled "*foedus*", from five different hosts. A careful analysis was made of these different specimens, and it is clearly evident that none are exactly the same as the actual type from *Phaino-opepla*.

There are differences in the length and width of head, in the degree of pointedness of the frons, etc. In the actual type the frons is strongly pointed, and the head comparatively short, with the sides of the preantennary area uniformly convex to the pointed tip; the temples are convex on the lateral margins and the temporal angles are rounded.

Nirmus glortosus Kellogg & Kuwana, 1902
Figure 46M

Proc. Wash. Acad. Sci. IV, p. 467; pl. 29, fig. 1. Slide No. 1060c (♂♂) is marked "n. sp.", but with no "type" label or indication that the figure published was made from it. HOST: *Sterna fuliginosa = S. fuscata crissalis* (Lawrence).

The published figure is that of a male, and was undoubtedly made from one of the males on slide 1060c. The best of the three males on this slide is selected as the lectotype of the species. It is a *Quadriceps*.

The pair on slide No. 1072, from *Progne modesta* are the same species as those on slide 1060, and were undoubtedly "stragglers" from the type host.

Nirmus hebes Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 101; pl. 5, fig. 3. Slide No. 486 (♀) "type fig'd." HOST: *Sterna maxima*. This specimen is in very bad condition and impossible to identify. I agree with Hopkins & Clay that the name should be discarded.

Nirmus illustris Kellogg, 1896
Figure 46N, 46O

Proc. Cal. Acad. Sci. (2) VI, p. 494; pl. 67, fig. 4. Slide No. 343 (♂♂) "type fig'd." HOST: *Agelatus phoeniceus* (Linné.). The better specimen of the two males on slide No. 343 is selected as the lectotype. It is a *Brüelia*.

Nirmus infectus Kellogg & Kuwana, 1901

Proc. Acad. Nat. Sci. Phila., 1900, p. 153; pl. 7, fig. 2. Slide No. 1198a (♀). It is not marked as "fig'd", but bears a "type" sticker. HOST: *Phalaropus fulicarius* (Linné.). No other specimen was found. While in the description it is stated that a single female was taken, and this was actually figured, the female on slide No. 1198 must be considered as the type of the species.

It belongs in the genus *Quadriceps*.

Nirmus interpositus Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. (2) VI, p. 23; pl. 2, fig. 7. Slide No. 470a (3♂♂) "type fig'd." HOST: *Dendroica vieilloti* = *D. petechis aequatorialis* Sundeval.

I found no slide of this species bearing the host name of *Dendroica bryanti*, so I presume that *D. bryanti* of the description equals *D. vieilloti* of the slide. Since it was collected in Panama the host must be *aequatorialis*.

The specimens on the "type" slide are now in a lamentable condition, no details of the head being visible. Perhaps these details, as given in the published figure, were visible in the recently mounted specimens.

The best male on slide No. 470a is selected as the *lectotype*, the remaining two being *syntypes*. It is a *Brüelia*.

Nirmus lautisculus Kellogg & Chapman, 1899
Figure 46P

Occ. Pap. Cal. Acad. Sci. VI, p. 90; pl. 6, fig. 9. Slide No. 595b (♂) "type fig'd." HOST: *Amphispiza belli* (Cassi). Represented by a single male, on slide No. 595b, which becomes the *type* of the species.

This species seems to belong to the group parasitic on the Icteridae, and I believe the host to be in error. The ground color is hyaline, and the markings dark brown, with the pleurites darker brown. No further information available. Kellogg says that "it recalls *illustris*" (from *Agelaius*), in which he is quite correct. It is a typical *Brüelia*.

Nirmus longus Kellogg, 1896
Figure 47Q

Proc. Cal. Acad. Sci. (2) VI, p. 490; pl. 67, fig. 1. Slide No. 320b (♂) "type fig'd." HOST: *Petrochelidon lunifrons* = *P. a. albifrons* Rafinesque. The female on slide No. 320b is selected as the *lectotype*, the male becoming a *syntype*. The female was figured. The slide of specimens from *Tachycineta bicolor* could not be found. It is possible that the species was figured from that host, since the female on slide 320b does not seem to be the one figured by Kellogg. This is a very aberrant type of *Brüelia* and possibly should be placed in a different genus. (See *N. longus domesticus*.)

Nirmus fissus var. *major* Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 15; pl. 2, fig. 2. "Type fig'd." (2♀♀), one apparently immature. HOST: *Tringa* sp. The adult female on slide marked as "type" is selected as the *lectotype*, the other being a *syntype*. No other slide of this species was found. Kellogg mentions in the text a ♂, ♀ and several immature specimens, but the male was not found. The specimen figured is a female.

This is clearly a *Quadriceps* and evidently from some Shorebird.

Nirmus maritimus Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 72; pl. 6, fig. 1. Slide No. 163a (5♀♀) "type fig'd." HOST: *Ptychorhamphus aleuticus* Pallas. The best of the five females on slide 163a is selected as the *lectotype*, the remainder being *syntypes*.

There are 10 slides of this species marked "type", but only one as "fig'd."

Nirmus obtusus Kellogg & Kuwana, 1902
Figure 47R

Proc. Wash. Acad. Sci. IV, p. 468; pl. 29, fig. 2. Slide No. 1097d (♀) "type fig'd." HOST: *Sterna fuliginosa* = *S. fuscata crissalis* Lawr.

The female on slide 1097d automatically becomes the *type*. In the 1952 Checklist of Mallophaga it states that this host is probably in error, but the grounds for this supposition are unknown to me. It is a *Quadriceps*.

Nirmus opacus Kellogg & Chapman, 1899
Figure 47S

Occ. Pap. Cal. Acad. Sci. VI, p. 83; pl. 6, fig. 6. Slide No. 465b (♂) "type fig'd." HOST: *Aegialitis semipalmata* = *Charadrius hiaticula semipalmata* Bonaparte.

The ♀ on slide 465b was figured, and thus becomes the *lectotype* of the species, with the ♂ the *syntype*. It is a typical *Quadriceps*.

Nirmus orarius Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 104; pl. 5, fig. 5. Slide No. 110b (♀) "type fig'd." HOST: *Charadrius dominicus* = *Pluvialis d. dominicus* (Müller.) The female on slide No. 110b automatically becomes the *type*. It is a *Quadriceps*.

Nirmus pacificus Kellogg & Kuwana, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 70; pl. 5, fig. 8. Slide No. 468b (♀♀) "type fig'd." HOST: *Cephus c. columba* (Pallas). The better ♀ on slide 468b is selected as the *lectotype*, the other ♀ being a *syntype*. It is a *Quadriceps*.

Nirmus peninsularis Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 21; pl. 2, fig. 9. Slide No. 441a (4♀♀) "type fig'd." HOST: *Phainopepla nitens (leptida)* Van Tyne. The best ♀ on slide 441a is selected as the *lectotype*, the remainder being *syntypes*. This is a *Brüelia*.

Nirmus furvus var. *ravus* Kellogg, 1899
Figure 47T, 47U

Occ. Pap. Cal. Acad. Sci. VI, p. 14; pl. 2, fig. 1. Slide No. 426a (♂) "types." HOST: *Tringa* sp. = *Tringa macularia* Linné, in text. The figure published is evidently the female on slide No. 426a, although this is not indicated on the slide, and this ♀ is selected as the *lectotype* of the species, the ♂ being a *syntype*. It is a typical *Quadriceps*.

Nirmus simplex Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 492; pl. 67, fig. 2. Slide No. 229a (♀), "type fig'd." HOST: *Merula migratoria* = *Turdus m. migratorius* Linné. The single female on slide 229a, "figured", becomes the *type*. It is a *Sturnioecus*.

Nirmus splendidus Kellogg, 1899
Figure 48V

Occ. Pap. Cal. Acad. Sci. VI, p. 16; pl. 2, figs. 5 and 6. Slide No. 423a (♂♂), "type fig'd." HOST: *Poliborus cheriway* (*audubonii* Cassin). The best ♀ on slide No. 423a is selected as the *lectotype*, the remainder becoming *syntypes*.

There are three slides of this species, all from *Poliborus cheriway*, from three different localities and one slide with *Geococcyx californiensis* as the host (in very bad condition). This species has been very thoroughly treated by the author in the paper referred to under *N. caracarensis*. There can be no question as to the correctness of the host, while the parasite is apparently an *Acutifrons*, and closely related to *caracarensis*. It will be noted that the figure here presented of the male genitalia of the type is thoroughly typical of the genitalia of *Acutifrons*. The types are in bad condition.

Nirmus stenozonus Kellogg & Chapman, 1902
Figure 48W

Jour. N.Y. Ent. Soc. vol. 10, p. 158; pl. 13, fig. 3. Slide No. 1222a (♀♀), "type fig'd." HOST: *Lonchura punctulata nisoris* (Temminck). The ♀ was figured and thus becomes the *lectotype* of the species, the better of the two specimens, the other a *syntype*. It is a typical *Brüellia*.

Nirmus virgatus Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 19; pl. 2, fig. 5. Slide No. 411a (♂♂), "type fig'd." HOST: *Amblycercus holosericeus* (Lichtenstein). The better of the two females on slide No. 411a is selected as the *lectotype*. The ♀ was figured.

The genitalia are small and completely obscured, so that it was not possible to draw a figure of them. It belongs to the group of *Brüellia* commonly found on the Iseridae, so that the host is undoubtedly correct.

The pleurites are narrow and heavily sclerotized; the tergites are separated medially, with rounded interior ends, and are mostly clear, excepting a brown band along their margins, heavier on anterior side. The sternites are widely separated from the pleurites, continuous across the abdomen in median portion and are deeply colored (brown).

Nirmus vulgatus Kellogg, 1896

Occ. Pap. Cal. Acad. Sci. (2) VI, p. 495; pl. 67, fig. 5. Slide No. 238b (♀) "type fig'd." HOST: *Junco h. hyemalis* Linné. Another slide (389b) is also marked "type", and is from *Carpodacus frontatus* = *C. mexicanus frontatus*. The ♀ on slide No. 238b is selected as the *lectotype*. It is a *Brüellia*.

The specimen from *Carpodacus* is not the same species as the "type." The other hosts mentioned by Kellogg may be disregarded for the present.

This species belongs in a group which are very closely related, so that a very careful comparison must be made, especially of the male genitalia. No ♂ specimen of *vulgatus* was found in the collection.

Genus LIPEURUS Nitzsch, 1818

Lipeurus docophorides californicus
Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 103. Slide No. 318a (♀♀), "types", not figured. HOST: *Oreortyx pictus plumiferus* = *Oreortyx p. pictus* (Douglas).

The better of the two females on slide No. 318a is selected as the *lectotype* of the species, the other female being a *syntype*. The species was placed in the genus *Lagopoecus* by Hopkins and Clay in the 1952 Checklist of Mallophaga.

It is most certainly a *Colinicola* Carriker, a genus placed in synonymy in the Checklist, but without sufficient cause.

Lipeurus gracilicornis major Kellogg, 1899

(*Nec L. major* Piaget, 1880) Occ. Pap. Cal. Acad. VI, p. 30; pl. 3, fig. 3. Slide No. 401a (♂♂), "type fig'd." HOST: *Fregata aquila* = *F. magnificens rothschildi* Matthews. The better of the two males on slide 401a is selected as the *lectotype* of the species, the remainder being *syntypes*. It is a *Pectinopygus*. The name being preoccupied by *major* Piaget, 1880, was renamed by Eichler *Pectinopygus fregatiphagus*.

Lipeurus introductus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 500; pl. 68, figs. 1 and 5. Slide No. 353b (♀♀-2♀♀ im.), "type fig'd." HOST: *Phasianus nuthomerus* = *Gennaeus nuthomerus* (Linné).

The better of the two females on slide No. 353b is selected as the *lectotype*, the remainder being *syntypes*. It is a *Colinicola*.

Lipeurus laculatus Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 93; pl. 7, fig. 1. Slide No. 466b (♀), "type fig'd." HOST: *Stercorarius pomerinus* Temminck. The female on slide 466b is selected as the *lectotype*. In the text of the description no mention is made of the taking of a female, but the female is described. In my notes made at the time of the examination of the type, it was put down as a female, but an error may have been made. The sex of the specimen figured is not clear. It is a *Perineus*.

Lipeurus longipilus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 119; pl. 7, fig. 7. Slide No. 128d (♂♂), "type fig'd." HOST: *Fulica americana* Gmelin. Slide No. 1540 (♀) a co-type, same host.

The best male on slide No. 128d is selected as the *lectotype*, the remainder being *syntypes*. It belongs in the genus *Fulicoffula*.

Lipeurus macrocephalus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 504; pl. 68, fig. 3. Slide No. 370a (6♀♀), "type fig'd." HOST: *Chordeiles virginianus henryi* = *C. minor henryi* Cassin.

The best of the six females on slide No. 370a is selected as the *lectotype*, the remaining five being *syntypes*. It belongs in the genus *Multicola*. There is a slide, No. 1950, labelled *macrocephalus* (♀♀), with host: "a Woodpecker." These are not *Multicola*.

Lipeurus fuliginosus major Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 101; pl. 7, fig. 3. Slide No. 494 (♂♂), "type fig'd." HOST: *Puffinus opisthomelas* Coues. The female on slide No. 494, which was figured, is selected as the *lectotype*, the male being a *syntype*. Specimens from *P. creatopus*, mentioned in the text, were not found. This is a *Naubates*.

Lipeurus picturatus Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 121; pl. 8, figs. 1 and 2. Slide No. 128e (♀ im.-2 juv.) "type fig'd." HOST: *Fulica americana* Gmelin. The immature female on slide No. 128e is selected as the *lectotype* of the species, the two juveniles being *syntypes*. This is a synonym of *Lipeurus longipilus* Kellogg, 1896, being an immature female and two juveniles of that species.

Lipeurus potens Kellogg & Kuwana, 1902

Proc. Cal. Acad. Sci. (2) VI, p. 477; pl. 30, fig. 1. There is a large series of slides labelled as this species, from seven different hosts, but the type

slide could not be located. In the original description of the species it states in the beginning that numerous males, females and young were taken on *Sula piscator*, but since it was recorded from so many different hosts (stragglers) this record cannot be accepted as being the true host, even if a specimen from that host had been figured. Fresh, authentic material of the species must be secured to fully establish the identity of the host. It is a *Pectinopygus*.

Lipeurus proterbus Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 51; pl. 3, fig. 4. Slide No. 447b (4♀♀) "type fig'd." HOST: *Laegopus laegopus* = *L. l. alexandrae* Grinnell. The best of the four females on slide No. 447b is selected as the *lectotype* of the species, the remainder being *syntypes*. The species was placed under the genus *Laegopoecus* in the 1952 Checklist of Mallophaga.

Lipeurus varius Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 116; pl. 7, figs. 3 and 4. Slide No. 296 (♀-♀ im.) "type fig'd." HOST: *Fulmaris glacialis* = *F. glacialis rogersi* Cassin. The adult female on slide No. 296 is selected as the *lectotype* of the species. Slide No. 256b (3♀♀) is also marked "type", from the same host. Two slides from *P. s. eluptscha*, bearing the name *varius*, and not marked "type", may be disregarded. It belongs in the genus *Perineus*.

Suborder AMBLYCEPA Kellogg
Genus COLPOCEPHALUM Nitzsch, 1818

Colpocephalum fumidum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 525; pl. 71, fig. 5. Slide No. 369a (♀) "type fig'd." HOST: *Psaltriparus minimus*. The single female on slide 369a automatically becomes the *type* of the species. This specimen is clearly an *Actornithophilus*, and the host given is certainly in error. In the 1952 Checklist the host is tentatively given as *Larus* sp., which is very likely correct.

Colpocephalum funebre Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 147; pl. 12, fig. 7. Slide No. 182c (♀) "type fig'd." HOST: *Larus glaucescens* Nauman. The female on slide 182c is selected as the *lectotype* of the species. A second slide, 705b (♀♀) from the same host, and a third (♀) from *L. hermani*, which may or may not be the same thing.

It is a typical *Actornithophilus*.

Colpocephalum kilauersti Kellogg & Chapman, 1902

Jour. N.Y. Ent. Soc. X, p. 161; pl. 14, fig. 1. Slide No. 1210a (♀) "type fig'd." HOST: *Heterac-*

ttis incanus = *Heteroscelus incana* (Gmelin).

The female on slide 1210a automatically becomes the type of the species. It is an *Actornithophilus*.

Colpocephalum milleri Kellogg & Kuwana, 1902

Wash. Acad. Sci. 4, p. 483; pl. 30, fig. 6. Slide 1054b (♂) is marked as "fig'd.", but has no "type" sticker, which may possibly have been lost. HOST: *Adus stolidus* = *A. s. galapagensis* Sharpe. The female is described but the male is figured, and therefore becomes the lectotype of the species (slide 1054b) and the female the syntype. There is a large series of slides bearing this name, but none is indicated as being the type of the species. The other hosts may be disregarded.

Colpocephalum spinulosum var. *minor*
Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 112; pl. 8, fig. 9. Slide No. 472a (♀) "type fig'd." HOST: *Calidris arenaria* = *Crocethia alba* (Pallas). Since this name is preoccupied by *C. minor* Piaget, 1880, it was renamed *Actornithophilus albus* by K. C. Emerson, 1948 (Ent. News 59, p. 178, figs. 1 and 2, from same host) and a lectotype was selected.

Colpocephalum perplanum Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 109; pl. 7, fig. 8. Slide No. 543b (♀) "type fig'd." HOST: *Lunda cirrhata* (Pallas). The species is represented by one specimen, the figured female on slide 543b, which automatically becomes the type. It is an *Actornithophilus*.

Colpocephalum tigrum Kellogg & Mann, 1912

Ent. News, vol. 23, p. 64. Slide No. 82b (♂) "type." HOST: *Aphriza virgata* and slide No. 48b (♂) from *Arenaria melanocephala*, also marked "type."

Since the type was not figured it becomes necessary to select a type host. The first host mentioned in the description, is *Arenaria melanocephala* (Vgors).

It is an *Actornithophilus*.

Colpocephalum timidum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 145 pl. 12, fig. 6. Slide No. 110a (♀♀) "type fig'd." HOST: *Charantus dominicus* = *Pluvialis dominicus* (Muller).

The better specimen of the two females on slide 110a is selected as the lectotype of the species, the other one becoming a syntype. It belongs in the genus *Actornithophilus*.

Colpocephalum unciferum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 146; pl. 12, figs. 1-3. The type of this species could not

be found. I found five slides bearing the name *unciferum*, each from a different host, but none were from Pelicans.

I have received in a letter from Col. Emerson the following note on this species: "I examined these, and could find no difference between the specimens from the two hosts listed (*Pelecanus californicus* and *P. erythrorhynchus*).

"Unfortunately, I could not compare them with fresh material from the hosts. Slide No. 3b2 is from the California Brown Pelican, Pacific Grove, Cal. and slide No. 6Xc is from the White Pelican, Lawrence, Kansas. Another slide labelled "tye" (sic) was from the Glaucus-winged Gull, Pacific Grove, Cal. (No. 179c), which is probably a "straggler" from the Calif. Brown Pelican. I don't have a record of which specimen was fig'd."

Until further research has been made of this material it is not possible to select a lectotype or indicate which of the two Pelicans is the correct host.

Colpocephalum uniforme Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 142; pl. 12, fig. 4. Slide No. 109c (♀) "type fig'd." HOST: *Recurvirostra americana* Gmelin. The female on slide 109c, which was "figured", automatically becomes the type of the species. A second slide, No. 1913 (♂), from the same host, but not marked as a type were evidently collected after the publication of the species. It is an *Actornithophilus*.

Genus *MENOPON* Nitzsch, 1818

Menopon alaskensis Kellogg & Chapman, 1902

Jour. N.Y. Ent. Soc. 10, p. 27; pl. 3, fig. 5. I did not locate the type of this species, but I have received from Col. Emerson the following note regarding it.

"Slide No. 707b is fig'd, from *Pinticola enucleator*. Kellogg marked through the type label on the slide from *Cinclus mexicanus*. It is a *Menacanthus*."

Menopon incomposita Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 123; pl. 8, figs. 4-5. "Type" slide "fig'd." (♀). HOST: *Phalacrocorax pencillatus* (Brandt). The single female, figured, which represents the species, automatically becomes the type. It is a *Piagetiella*.

Genus *EURYMETOPUS* Taschenberg, 1882

Eurymetopus murphyi Kellogg, 1914

There is a large series of slides in the Kellogg collection bearing the name "*Eurymetopus taurus*", one of which must have been used as the type of *murphyi* in 1914, but this specimen I was unable to find.

Col. Emerson suggests that perhaps Kellogg overlooked marking the slide as the "type", and that it would be proper to select a specimen as the lectotype from any of those mentioned on p. 135-6 of New Mallophaga I. Unfortunately, I did not pre-

serve the number of any of these slides, so that for the present it is not possible to select a *lectotype* for this species. It is a *Docophorides*.

Genus *PHYSOSTOMUM* Nitzsch, 1818

Physostomum angulatum Kellogg, 1896
Figure 48X

Proc. Cal. Acad. Sci. (2) VI, p. 515; pl. 70, fig. 5. Slide No. 335a (♀♀) "type fig'd." HOST: *Tyrannus tyrannus* Linné. The better of the two females on slide 335a is selected as the *lectotype* of the species, the other being a *syntype*.

There are several other slides bearing the same name, with 1♀ on each, and from three different hosts. These hosts may be disregarded until a careful study of the material can be made. It is unlikely that they will prove to be the same thing. It belongs in the genus *Ricinus*.

Physostomum fasciatus var. *arcuatus*
Kellogg & Mann, 1912

Ent. News, vol. 23, p. 65. "Type" (not figured) (♀♀). HOST: *Tyrannus vociferus* = *T. vociferans* Swainson. The better of the two females on the slide marked "type" is selected as the *lectotype* of the species, the other becoming a *syntype*. It is a *Ricinus*.

Physostomum australe Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 516; pl. 70, fig. 4. A single specimen recorded, "type fig'd." (♀). HOST: *Passerina versicolor* (Bonaparte). The single female figured automatically becomes the *type* of the species. It is a *Ricinus*.

Physostomum diffusum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 518; pl. 70, fig. 3. Slide No. 344a (♀) "type fig'd." HOST: *Ammotramus sandwichensis*. This was unquestionably intended to be *Passerculus sandwichensis*, possibly *alaudinus* Bonaparte, since that is the first host mentioned in the description. There are two other slides marked "type", but neither as "fig'd." These are from *Junco hyemalis* (3♀♀) and *Zonotrichia coronata* (6 specimens). There are slides from six other hosts bearing the name "*diffusum*", all of which may be disregarded as hosts for this species. The female on slide 344a is selected as the *lectotype* of the species. It is a *Ricinus*. A careful study of this material may disclose the fact that the species is found on more than one host, but I doubt whether there are any two subspecifically the same.

Physostomum invadens Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 50. "Type" slide (♀), not figured. HOST: *Chiroxiphia lanceolata* (Wagler). Another slide (♀) marked "type", from *Melanerpes waigleri*, which is clearly an error,

since the genus *Ricinus* is not found on the Picidae. This specimen seems to be the same as the ♀ from *Chiroxiphia*, as was probably a "straggler" from that bird. It is a *Ricinus*.

Physostomum microcephalum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 513; pl. 70, fig. 1. Slide No. 393 (♀) "type fig'd." HOST: *Carpodacus mexicanus frontalis* Say. The single female of this species taken, and figured, automatically becomes the *type* of the species. It is a *Ricinus*.

Physostomum pallens Kellogg, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 49; pl. 4, fig. 7. Slide No. 421 (3♀♀) "type fig'd." HOST: *Protonotaria citrea* (Boddaert). The best of the three females on slide No. 421 is selected as the *lectotype* of the species, the other two becoming *syntypes*. Slide No. 412a (♀), from *Elaenia subpazana*, and bearing the name "*pallens*" is not the same. It is a *Ricinus*.

Physostomum prominens Kellogg & Chapman, 1899

Occ. Pap. Cal. Acad. Sci. VI, p. 137; pl. 9, fig. 5. Slide No. 600 (1♀-1 juv.) "type fig'd." HOST: *Calypte costae* (Bourcier). The specimens are now in very poor condition. No sex is given on the slide or mentioned in the text, but the figure given is that of a female. This species is the *genotype* of the genus *Trochiloeetes*, later described by Paine & Mann.

Physostomum sucinaceum Kellogg, 1896

Proc. Cal. Acad. Sci. (2) VI, p. 514; pl. 70, fig. 2. Slide No. 382a (3♀♀) "type fig'd." HOST: *Empidonax flaviventris difficilis* = *E. d. difficilis* Baird.

The best of the three females on slide No. 382a is selected as the *lectotype* of the species, the other two being *syntypes*. It is a *Ricinus*.

Genus *TROCHILOEETES* Paine & Mann, 1913

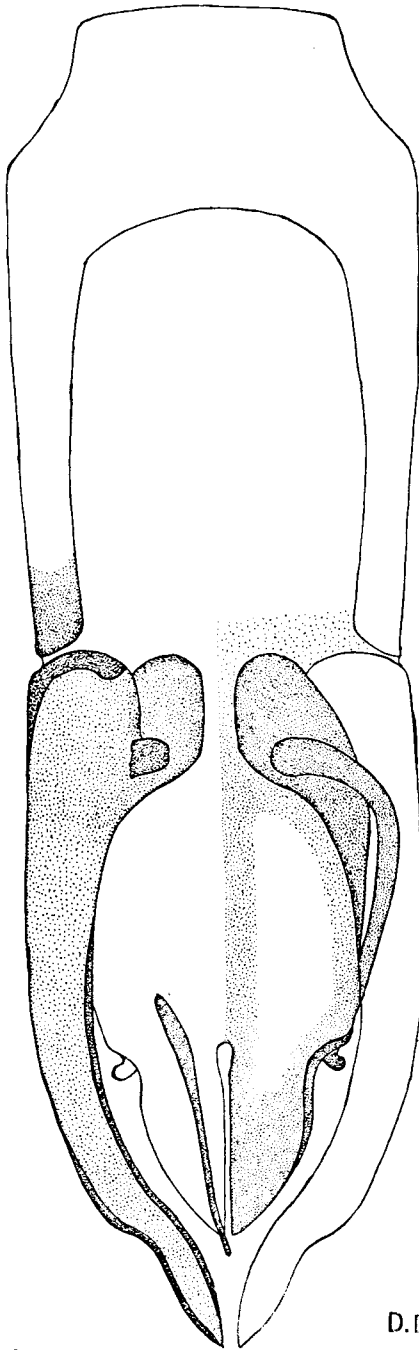
Trochiloeetes emiliae Paine & Mann, 1913

Psyche, Cambridge, Mass., vol. 20, p. 21, fig. 5. "Type" (♀) (figured). HOST: *Thalurania furcatorides* (Gould.) The female figured, only specimen of the species recorded, automatically becomes the *type*. The genus given above is the correct one.

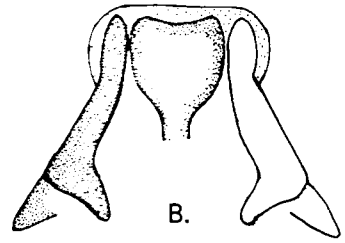
Genus *LAEMOBOTHRION* Nitzsch, 1818

Laemobothrion opisthocomi Cummings
Figure 48Y

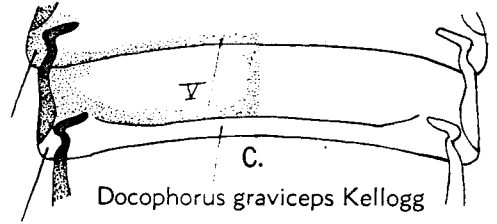
A figure of the male genitalia of this interesting species is here presented, since I do not believe it has been illustrated. I have no males in my own collection and took advantage of figuring the genitalia of a fine male in the Kellogg collection.



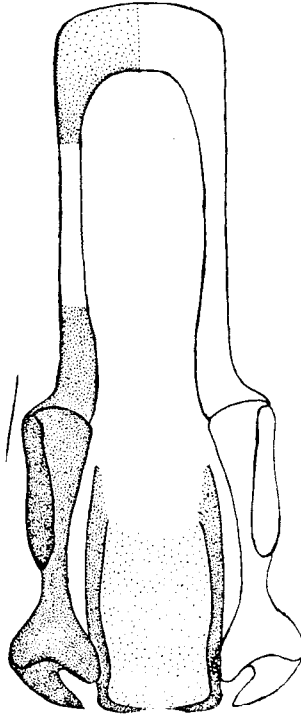
A. *Docophorus fuliginosus* Kellogg



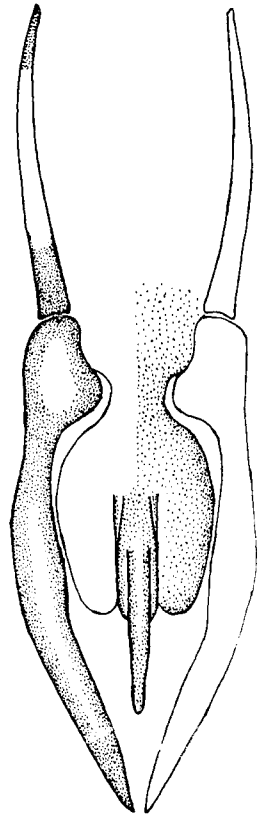
B.



C. *Docophorus graviceps* Kellogg



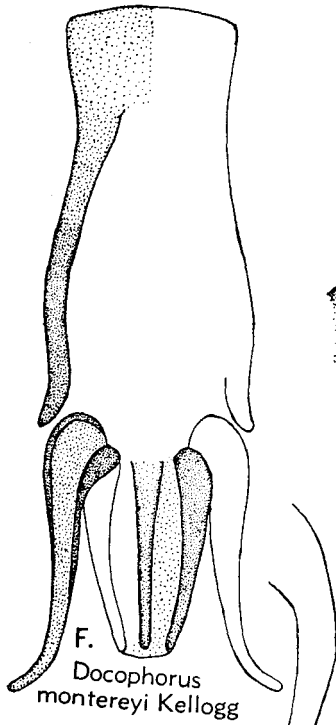
D. *Docophorus graviceps* Kellogg



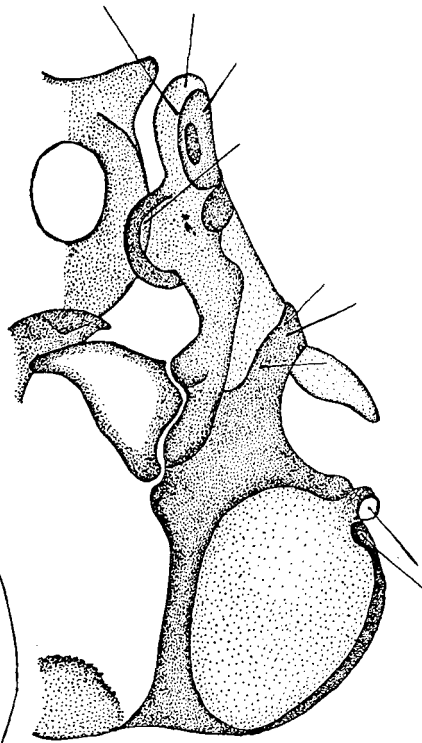
E. *Docophorus insolitus* Kellogg

Mallophaga, details

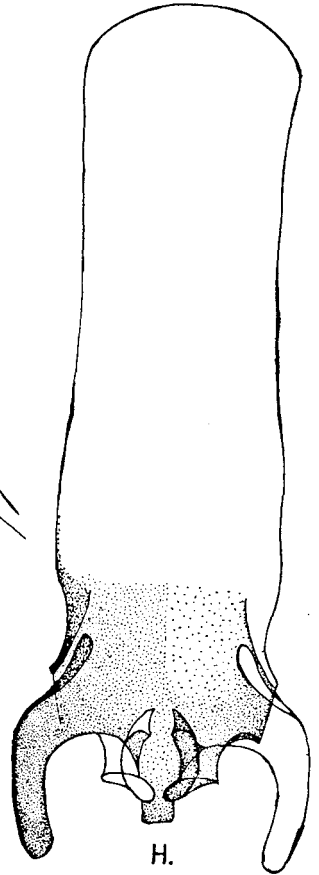
Figure 44



F.
Docophorus montereyi Kellogg

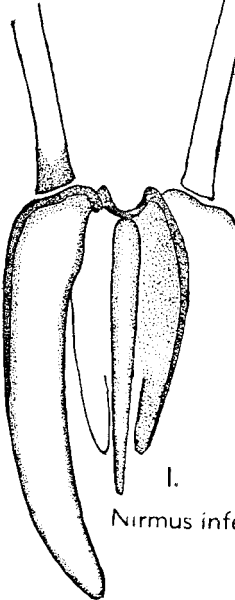


G.



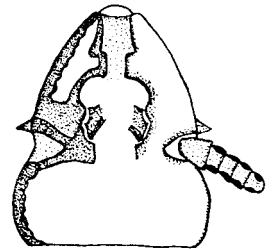
H.

Docophorus singularis Kellogg & Chapman

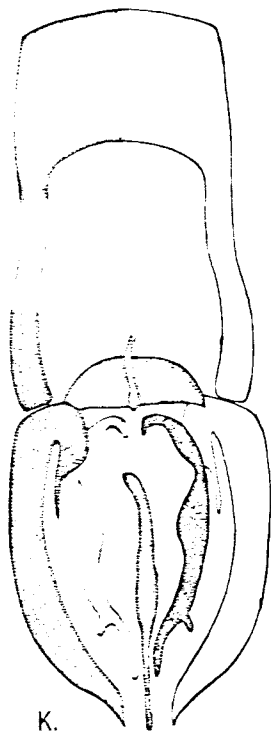


I.

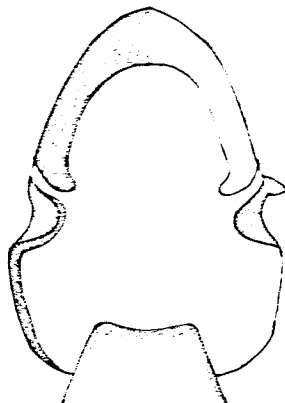
Nirmus infectus connexus Kellogg & Chapman



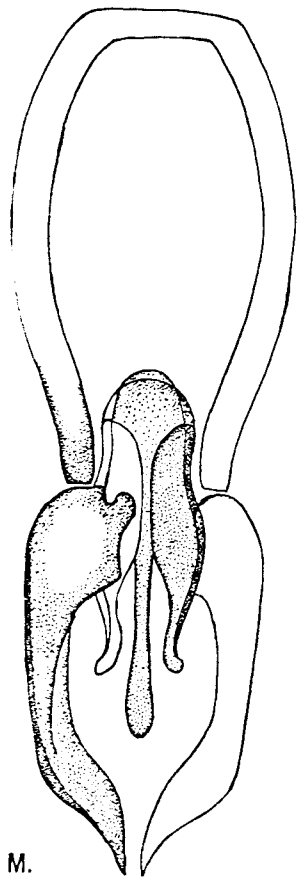
J. *Nirmus longus domesticus* Kellogg & Chapman



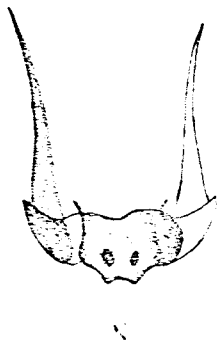
K.
Nirmus euprepes Kellogg & Chapman



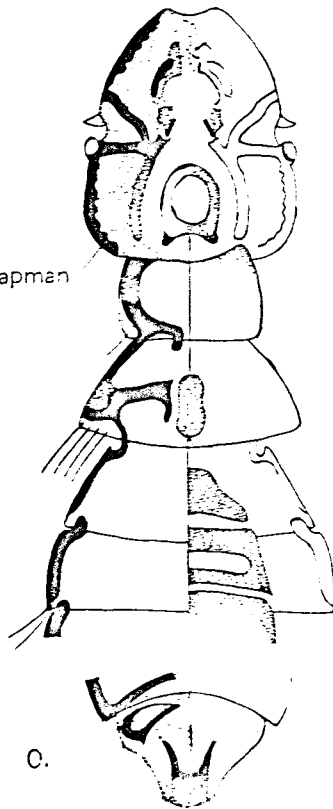
L.
Nirmus foecus Kellogg & Chapman



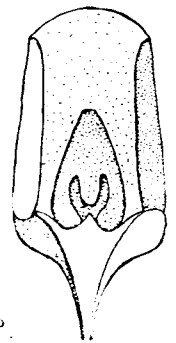
M.
Nirmus gloriosus
Kellogg & Kuwana

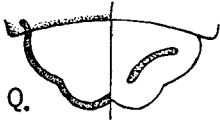
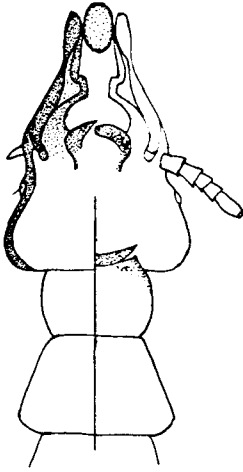


N.
Nirmus illustris Kellogg

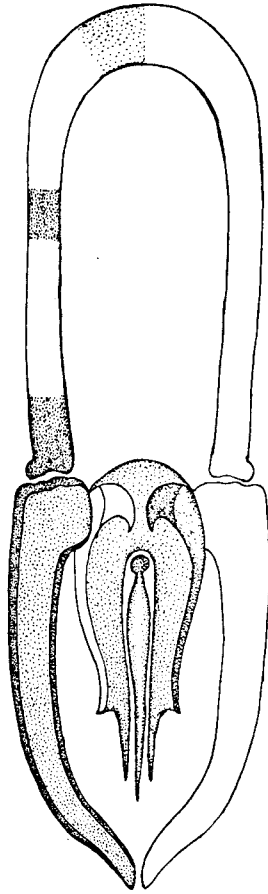


O.
Nirmus autisculus Kellogg & Chapman

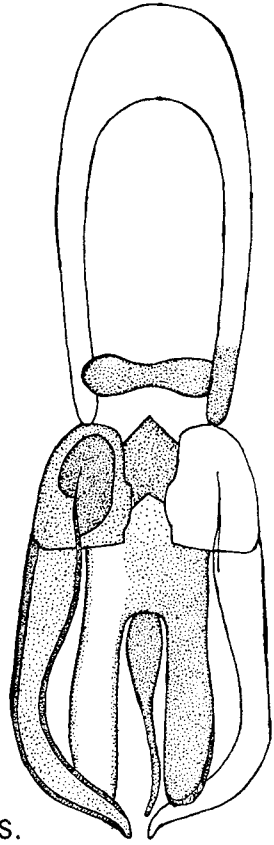




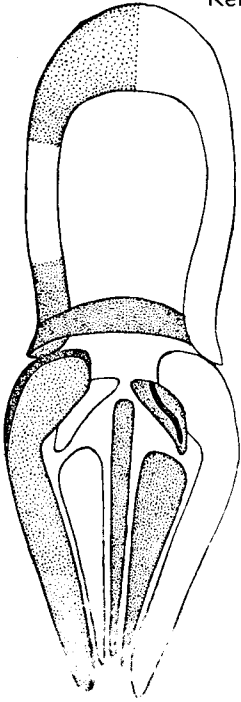
Q.
Nirmus longus
 Kellogg



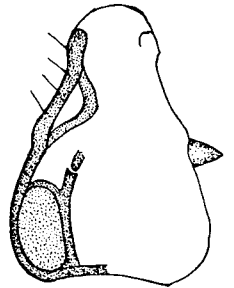
R.
Nirmus obtusus Kellogg & Kuwana



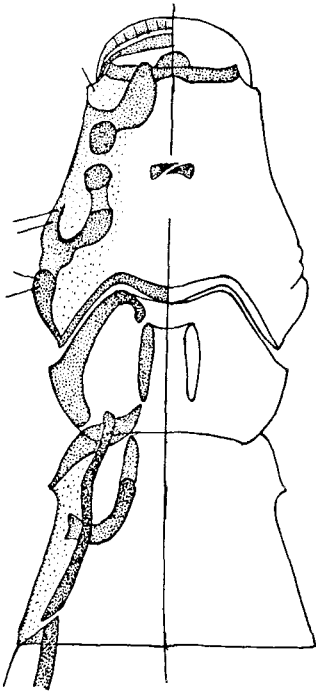
S.
Nirmus opacus
 Kellogg & Chapman



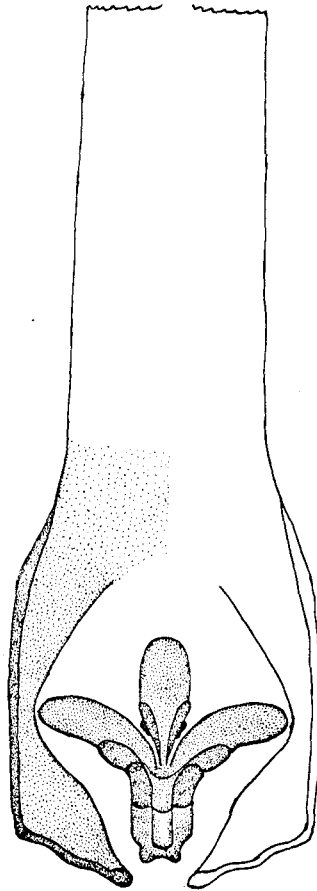
U.
Nirmus rufus Kellogg



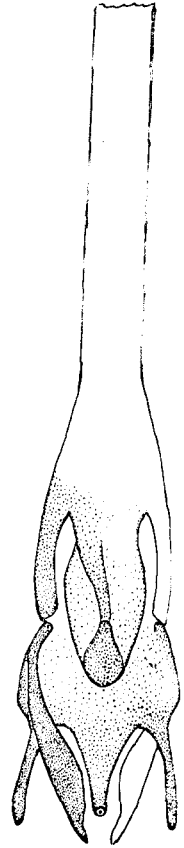
T.



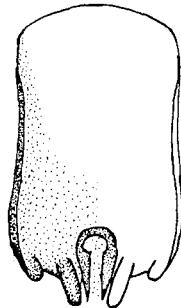
X.
Physostomum angulatum
Kellogg



V. *Nirmus splendidus* Kellogg



Y.
Laemobothrion
opisthocomi
Cummings



W. *Nirmus stenozoneus* Kellogg & Chapman