

really intends to make any. There are so many phrases like 'very close to,' 'hardly distinct from,' 'differs only by,' 'probably not distinct from,' etc., in this class of contribution that our ideas become very confused after reading it.

May I suggest that the following points, if generally followed, would considerably improve our present methods of synonymic work and would enable the compilers of the Zoological Record to include more details in their pages.

- (1) Every new synonym established should be indicated by some suitable abbreviation such as (n.syn.) at the end of the reference and in bold-faced type.
- (2) That reasons for the synonymy and the means by which it is established be indicated.
- (3) The citation of the full reference to the valid species and the new synonyms together with type localities. The references may be reduced to author's name, year and page if a separate bibliography is given.
- (4) It would be useful in the case of papers more than a few pages in length to give a brief summary indicating the new work included and listing the new synonymy established.
- (5) A useful refinement would be the addition of a brief note indicative of the scope of each reference where these are quoted, e.g. (orig. descr.), (distribution), (new to Belgian Congo), etc.

46 Gipton Wood Avenue, Leeds 8.

December 12th, 1937.

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## THE HIPPOBOSCIDAE (DIPTERA) RECORDED FROM THE PACIFIC ISLANDS.

BY GORDON B. THOMPSON.

In this paper I have endeavoured to bring together all the references to Hippoboscidae recorded from the Pacific Islands. It appears that fifteen species of this interesting family of Diptera, the members of which are all parasitic on birds or mammals, have been recorded from this region. Of the fifteen species definitely recorded by name three at least have been introduced by man, *i.e.* *Hippobosca equina* Linn., *Melophagus ovinus* (Linn.) and *Pseudolynchia maura* (Bigot). These three species are parasites respectively of the horse, sheep and pigeon. Six species occur on or around most of the islands and have also been recorded from localities outside the area under consideration. The species parasitic on tropical marine birds may be expected to occur around any of the islands from which they have not yet been recorded. *Lynchia nigra* (Perty) has so far only been recorded from the Galapagos Is. and the Hawaiian Is. Three species have only been recorded thus far from the Galapagos Is. and a single species, *Lynchia samoana* Ferris, is at present only known from Samoa.

The species *Ornithoica stipituri* (Schiner) originally described from Australia, New South Wales, has been recorded from New Britain. The apparent endemicity of these species must for the present, however, be regarded as doubtful.

In drawing up this list I have adopted the following plan. Under the heading of the species I have listed the reference to the original description, then all the references to definite synonyms as recognised at present, together with references in the literature to descriptions and figures which would aid in the identification of the species. In the notes given below each species I have analysed all the records, giving within brackets after the authors' names the complete references to the records.

All the abbreviations to the periodicals are, wherever possible, according to the 'World List of Scientific Periodicals' (1934). All the host-names have been checked according to G. M. Mathews' 'Systema Avium Australasianarum,' Parts 1 and 2, London, 1927 and 1930. In the event of my interpretation of some of the host-names proving to be incorrect I have given within brackets, immediately after the corrected host-name, the original name of the host as given by the author.

At the end of the paper I have given two tables. The first table contains a host-parasite list abstracted from the numerous records given in the paper. I have omitted from this table any doubtful records. The second consists of an analysis of the records in order to show from which islands the various species of Hippoboscidae have been recorded.

In conclusion, I should like to express my thanks to Dr. Jos. Bequaert for having kindly looked over my notes and for supplying me with some references which I had previously overlooked.

## HIPPOBOSCIDAE.

### Subfamily HIPPOBOSCINAE.

#### 1. *Hippobosca equina* Linn.

*Hippobosca equina* Linn., 1758, Systema Naturae, I, p. 607.

*Hippobosca equina* Linn., Schuurmans Stekhoven, 1926, Parasitology, XVIII, pp. 35-50, f. 11, 9 & 10; Pl. IV, 3 & 4.

*Hippobosca equina* Linn., Ferris, 1930, Philipp. J. Sci., XLIII, pp. 539-544, f. 1; 2, a; 3; 4, a, b, d-h.

*Hippobosca equina* Linn., Bequaert, 1930, Psyche. Camb., Mass., XXXVII, pp. 310-312.

Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 256) recorded this species from New Caledonia, Noumea. In 1906, Austen (Illus-

trations of British Blood-Sucking Flies, London, p. 64) recorded it from Fiji Is. and New Caledonia. Bryan (1924, Proc. Hawaii ent. Soc., V, pp. 346-347) recorded the species from New Hebrides, Tanna Is. Buxton (1927, Researches in Polynesia and Melanesia, London, p. 56) stated that it had not been introduced into any of the Polynesian Is., which he visited, but he saw it in great numbers in New Caledonia. It was also common in the New Hebrides, Vila, and he learned there that it had only been introduced a few years previously. Curran (1929, Amer. Mus. Novit., No. 375, p. 15) recorded the species as *Hippobosca* sp. from New Caledonia. Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 43) also recorded this species from New Caledonia. According to Bequaert (1930, loc. cit.) this species was introduced into New Caledonia about 1890. It is the common parasite of equines.

#### Subfamily MELOPHAGINAE.

##### 2. *Melophagus ovinus* (Linn.).

*Hippobosca ovina* Linn., 1758, Systema Naturae, I, p. 607.

*Melophagus ovinus* (Linn.), Ferris & Cole, 1922, Parasitology, XIV, p. 192, f. 8, 9 A, B, C, D.

Recorded from Hawaii by Muir (1928, Proc. Hawaii ent. Soc., VII, pp. 4-5) for the first time and later by Swezey and Williams (1932, op. cit., VIII, p. 188). Bryan (1934, op. cit., VIII, p. 458) includes it in his list of the Hippoboscidae recorded from the Hawaiian Is. Apparently it has not been recorded from any other of the Pacific islands. It is a common and world-wide parasite of sheep.

#### Subfamily ORNITHOMYINAE.

##### 3. *Ornithomyia plicata* (v. Olfers).

*Ornithomyia plicata* v. Olfers, 1816, De vegetativis et animatis corporibus in corporibus animatis reperiundis commentarius, Berlin, Pt. I, p. 102.

? *Hippobosca australasiae* Fabricius, 1805, Syst. Antliat, p. 337.

*Ornithomyia nigricans* Leach, 1818, Mem. Wern. nat. Hist. Soc., II, p. 558, Pl. XXVII, f. 7-10.

*Hippobosca sitiens* Boisduval, 1835, Voyage de l'Astrolabe, Faune ent. de l'Océan Pacifique, II, p. 667, Pl. 12, f. 16.

*Ornithomyia kanakorum* Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 244.

*Ornithomyia nigricans* (Leach), Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 338-343.

- ? *Ornithoctona vitrina* Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 343-344.
- Ornithoctona nigricans* (Leach), Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 20-21.
- Ornithoctona nigricans* (Leach), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 215-218, f. 7, 8.

*Hippobosca australasiae* Fabricius is probably the same as *O. plicata* (v. Olfers) (Dr. J. Bequaert, *in litt.*). In the original description Fabricius says 'in insulis Oceani Pacifici.' *Hippobosca sitiens* Boisduval was described from Fiji Is., Vanikoro.\* Bigot's *O. kanakorum* was described from New Caledonia. Speiser (1904) described his species *O. vitrina*, which is in all probability a synonym of *O. plicata* (v. Olfers), from Tonga Arch., Wawao I. Ferris (1929) recorded this species from Samoa, Upolu, Vailima, off *Ptilinopus perousii perousii* Peale (*Ptilopus perousii*) and from Samoa, Malololelei, off an undetermined host. Ferris (1927) recorded it from New Hebrides, Tanna, off *Circus juxta wolfi* Gurney (*Circus wolfi*). Bau (1929, Zool. Anz., LXXXV, p. 11) recorded *Ornithoctona plicata* (v. Olfers) from Fiji Is., Viti; and *Ornithoctona australasiae* (Fabricius) from Duke of York I., Caroline Is., Ponape I., and Samoa, off *Didunculus strigirostris* Jardine. Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, pp. 34-35) recorded the species from New Caledonia.

Bau (1929, Zool. Anz., LXXXV, p. 11) recorded *Ornithoctona haitiensis* (Bigot), regarded as a synonym of *O. erythrocephala* (Leach) by Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 39) from New Caledonia, without indication of host. Bequaert (1933, Rev. chil. Hist. nat., XXXVII, p. 163) regards *O. haitiensis* (Bigot) as a distinct species. This record is certainly based on some error either of identification or of labelling (Dr. Bequaert *in litt.*).

(To be continued.)

*Mayflies: A consideration of Anglers' and Entomologists' Claims to a Popular Name.*—An entertaining article by Martin E. Moseley appears under the above title in the 'Salmon and Trout Magazine,' No. 88, September, 1937, a locale in which it is perhaps born to blush unseen by any but the 'right-minded' (*i.e.* fisherman) entomologist.

Mr. Moseley's own summary of his complaint is that 'we anglers would therefore seem to have a legitimate grievance. The name of our crowning glory has been basely filched from us.'

After a survey of some of the earliest works both on angling and on ento-

\* It is possible that this refers to the island of that name in the Santa Cruz Islands. There is no indication in the original work.

which has continued ever since to grow in popularity. The eleventh of the series, on December 15th, was the last occasion on which many of us saw him.

Major Austen leaves two daughters to whom we would offer our very deep sympathy in their bereavement.—K.G.B.

THE HIPPOBOSCIDAE (DIPTERA) RECORDED FROM THE  
PACIFIC ISLANDS.

BY GORDON B. THOMPSON

(Concluded from p. 17.)

4. *Olfersia aenescens* C. G. Thomson.

*Olfersia aenescens* Thomson, 1869, Kongliga Svenska Fregatten Eugénies Resa, etc., Stockholm, II, Zool., Insecta, I, Diptera, Pt. 12, pp. 610-611.

*Olfersia erythroopsis* Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 239.

*Pseudolfersia diomedae* Coquillett, 1901, Proc. Wash. Acad. Sci., III, p. 379.

*Pseudolfersia spinifera* Ferris and Cole (not of Leach), 1922, Parasitology, XIV, pp. 196-198, f. 13, 14 A and C (in part).

*Olfersia erythroopsis* Bigot, Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102-104.

Thomson's description was based on a specimen from Keeling I. Bigot's specimen of *O. erythroopsis* was collected in New Caledonia. Coquillett (1901) recorded this species from Galapagos Is., Albe-Marle I., off *Diomedea irrorata* Salvin. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 133, and 1933, Psyche, Camb., Mass., XL, p. 103) recorded it from Galapagos Is., Indefatigable I., no host given; Hood I., off *Diomedea irrorata* Salvin; the Marquesas Is.; Society Is., Moorea, and Caroline Is., Ponape. Bequaert (1933) gives the following hosts for this species, *Phaëthon rubricauda* Boddaert, *Sula leucogaster* (Boddaert) and *Anous minutus* Boie.

5. *Olfersia fossulata* Macquart.

*Olfersia fossulata* Macquart, 1843, Mém. Soc. Sci., Lille, p. 434.

*Olfersia fossulata* Macquart, Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102, 105.

*Olfersia fossulata* Macquart, Bequaert, 1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 132.

The original description was based on a specimen from Brazil without indication of host. Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Daphne Major I.,

off *Pelecanus occidentalis* Linn. (*Pelecanus fuscus occidentalis*). This species is parasitic chiefly on tropical marine birds. Coquillett (1901, Proc. Wash. Acad. Sci., III, p. 379) recorded it as *Pseudolfersia fossulata* from Galapagos Is., Wenman I., without indication of host.

6. *Olfersia spinifera* (Leach).\*

*Feronia spinifera* Leach, 1818, Mem. Wern. nat. Hist. Soc., II, p. 557, Pl. XXVI, f. 1-3.

*Olfersia spinifera* (Leach) Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 220-223, f. 10, 11.

*Olfersia spinifera* (Leach) Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 102-103.

*Olfersia spinifera* (Leach) Bequaert, 1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., pp. 132-133.

Alfken (1904, Zool. Jber., Syst., XIX, p. 581) recorded this species from Hawaii off *Fregata minor strumosa* Hartert (*Fregata aquila*). Bryan (1914, Proc. Hawaii ent. Soc., III, p. 15) and Bryan (1917, op. cit., III, p. 273) recorded, without name, a Hippoboscid taken from a sea-bird on the island of Moku Manu (or Bird Island), Hawaiian Is., which in all probability refers to *O. spinifera* (Leach). Johnson (1924, Zoologica, N.Y., V, p. 91) recorded it from Galapagos Is., Tower I., off *Fregata* sp. (*Fregata aquila*). Bryan (1926, Proc. Hawaii ent. Soc., VI, p. 236) recorded a series of *Olfersia spinifera* (Leach), a parasite of Frigate birds, found in abundance on islands visited by the Tanager expedition of 1923, also a specimen from Kauai, Puu Ka Pele. In 1926, Bryan (Bull. Bishop Mus. Honolulu, 31, p. 94) recorded this species from the following islands, off Frigate birds: Laysan I., Lisiansky I., Nihoa I., Necker I., French Frigate Shoals, Johnston I. and Wake I.

Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 46) recorded a specimen from Hawaiian Is., Honolulu, and specimens from Society Is. (Tahiti), Moorea, off *Scaeophæthon rubricauda rothschildi* Mathews (*Phaëton rubricauda*). Curran (1932, Nyt. Mag. Naturv., LXXI, p. 366) recorded it from Galapagos Is., Floreana or Charles I., off *Fregata* sp. Bequaert (1933, loc. cit.) recorded the species from Galapagos Is., Tower I., of *Fregata minor ridgwayi* Mathews, *Fregata* sp. and off an unknown host, also from Nihoa I. (near Hawaiian Is.) and the British Solomon Is. without

\* Austen (1902, Ann. Mag. Nat. Hist., [7]. XII, p. 266) recorded this species from Christmas I., off '*Sula sula*' but as it is doubtful whether it refers to Christmas I. in the Indian Ocean or the one in the Pacific I have not included the record.

indication of definite hosts. *O. spinifera* (Leach) is a common parasite of *Fregata* spp. (Frigate or man-o'-war birds in the Pacific and Atlantic Oceans. Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) includes the species in his list of Hippoboscidae recorded from the Hawaiian Is. and in 1935 (op. cit., IX, p. 42) recorded it from Manana (Rabbit I.), north of Oahu.

7. *Myiophthiria reduvioides* Rondani.

*Myiophthiria reduvioides* Rondani, 1875, Ann. Mus. Stor. nat. Genova, VII, p. 464; 1878, op. cit., XII, p. 154.

*Myiophthiria reduvioides* Rondani, Speiser, 1904, Ann. Mus. Stor. nat. Genova, XLI, pp. 349-350.

*Myiophthiria reduvioides* Rondani, Ferris, 1925, Philipp. J. Sci., XXVIII, pp. 337-338, f. 5.

*Myiophthiria reduvioides* Rondani, Austen, 1926, Parasitology, XVIII, pp. 359-360.

*Myiophthiria reduvioides* Rondani, Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 218-219, f. 9.

Rondani's original description was based on material from Sarawak. In 1878 Rondani recorded specimens from Fiji, Viti, off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia vanikorensis*) and *E. fuliginosus* (a bat)—the latter host is undoubtedly accidental. Austen (1926) recorded this species from Fiji, near Suva, in a cave, on *Collocalia francica assimilis* Streseman. Ferris (1927) recorded it from New Hebrides, Hog Harbour, off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia francica vanikorensis*). Bau (1929, Zool. Anz., LXXXV, p. 11) recorded the species off *Collocalia fuciphaga vanikorensis* (Q. and G.) (*Collocalia vanikorensis* Quoy and G. Voy.).

8. *Pseudolynchia maura* (Bigot).

*Olfersia maura* Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 237.

*Lynchia maura* (Bigot), Ferris, 1925, Philipp. J. Sci., XXVII, pp. 416-417, f. 2, 3.

*Pseudolynchia maura* (Bigot), Bequaert, 1925, Psyche, Camb., Mass., XXXII, pp. 273-274.

Swezey (1912, Proc. Hawaii ent. Soc., II, p. 188) recorded two specimens, without name, obtained by a Hawaiian pigeon-fancier. Ehrhorn (1913, op. cit., II, pp. 206-207) recorded the abundance of a pigeon-fly at a certain place in Honolulu and noted that this fly had become very common in Honolulu. Knab (1916, Insec.

Inscit. menst., IV, p. 3) recorded *P. maura* (Bigot) from the Hawaiian Is. Bryan (1917, op. cit., III, p. 272) recorded the parasite by name and added that it was then very common on pigeons in Honolulu. Bequaert (1925, loc. cit.) recorded the species from domestic pigeons in the Hawaiian Is. Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) included the species in his list of Diptera occurring in the Hawaiian Is., with the following remark: 'general — about pigeons.'

9. *Microlynchia pusilla* (Speiser).

*Lynchia pusilla* Speiser, Zeit. syst. Hym. Dipt., II, pp. 157-158.

*Microlynchia pusilla* (Speiser), Ad. Lutz, Neiva and da Costa Lima, 1915, Mem. Inst. Osw. Cruz., VII, p. 185, Pl. XXVII, f. 6, and Pl. XXVIII, f. 6.

*Microlynchia pusilla* (Speiser), Ferris, Canad. Ent., 1930, LXII, pp. 66-67, f. 3, 4.

Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 135) recorded this species from Galapagos Is., Hood I., off *Buteo galapagoensis* (Gould).

10. *Lynchia albipennis* (Say).

*Olfersia albipennis* Say, 1823, J. Acad. nat. Sci. Philad., III, p. 101.

*Olfersia albipennis* Say, Swenk, 1916, J.N.Y. ent. Soc., XXIV, pp. 126-128.

Say's original specimen was collected off *Ardea herodias* Linn., probably in Eastern Nebraska, U.S.A.

Under the name '*Ornithoponus intertropicus*' (not of Walker), Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Indefatigable I., Seymour Bay, off *Butorides sundevalli* Reichenow. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., pp. 134-135) recorded the species as follows: Galapagos Is., Narborough I., off *Ardea herodias cognata* Bangs; James I., no host given; N. Seymour I., no host given; Tower I., off *Nyctanassa violacea pauper* (Sclater and Salvin).

11. *Lynchia nigra* (Perty).

*Hippobosca nigra* Perty, 1833, Delectus Anim. Artic. Brazil, III, p. 190, Pl. XXXVII, f. 15.

*Ornithomyia intertropica* Walker, 1849, List. Dipt. Brit. Mus., IV, p. 1144.

*Olfersia arcata* Speiser, 1902, Zeit. syst. Hym. Dipt., II, pp. 149-151.

*Lynchia intertropica* (Walker) Ferris, 1930, Canad. Ent., LXXII, p. 69, f. 513, C. & H.

*Lynchia nigra* (Perty), Bequaert, 1933, Psyche, Camb., Mass., XL, pp. 70, 79.

Perty's specimen came from Brazil but he gave no indication of the host. Walker's species, considered by Bequaert (1933) to be a synonym of Perty's *Lynchia nigra*, was described from specimens from the Galapagos Is., without indication of host. Speiser described the species *O. arcata* on the basis of a single specimen from the Hawaiian Is., Molokai, without indication of host. At the same time Speiser received additional material from the Hawaiian Is. (Fauna Hawaiiensis, 1902, III, pp. 87-89; see also Grimshaw, op. cit., p. 77) and the following host and localities were given: Hawaiian Is., Kona, off 'Short-eared Owl,' and Lanai. As pointed out by Bequaert, it is interesting to note that Speiser (Fauna Hawaiiensis, 1902, p. 87) claimed that the type, from Molokai, was found on a Frigate-bird, *Fregata aquila*, a statement not made in his previous paper. Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 264) recorded a specimen from 'ear of an owl' from Hawaiian Is., Honolulu, as *Ornithomyia intertropica* Walker (see also Bull. ent. Res., 1911, p. 172). Under the name '*Ornithoponus americanus*' (not of Leach) Johnson (1924, Zoologica, N.Y., V, p. 91) recorded this species from Galapagos Is., Indefatigable I., Seymour Bay, off *Buteo galapagoensis* (Gould), and Curran (1932, Nyt. Mag. Naturv., LXXI, p. 366) recorded it from Indefatigable I., Santa Cruz, without indication of host. Bequaert (1933, Proc. Calif. Acad. Sci., XXI, 4th Ser., p. 134) recorded the species from Indefatigable I., off *Buteo galapagoensis* (Gould).

12. *Lynchia samoana* Ferris.

*Lynchia samoana* Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 17-19, t.f. 5, 6.

Ferris' original material was taken from Samoa, Upolu, Malo-  
lolelei, off *Turdus samoensis* Tristr. (*Merula samoensis*) and *Sub-  
myiagra vanikorensis* (Q. and G.) (*Myiagra vanicorensis*).

13. *Ornitheza metallica* (Schiner).

*Ornithomyia metallica* Schiner, 1864, Fauna Austriaca, II, p. 646.

- Ornithomyia noumeana* Bigot, 1885, Ann. Soc. ent. Fr., (6), V, p. 240.
- Ornithomyia aenescens* Bigot, 1885, Ann. Soc. ent. Fr., (6), V, pp. 244-245.
- Ornitheza metallica* (Schiner), Massonat, 1909, Ann. Univ. Lyon, N.S. (1), t. 28, pp. 200-295, Pl. I, f. 11-12.
- Ornitheza metallica* (Schiner), Ferris, 1925, Philipp. J. Sci., XXVII, pp. 419-420, f. 5 (♀ only).
- Ornitheza metallica* (Schiner), Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, pp. 14-16, f. 3, 4 (♂).
- Ornitheza metallica* (Schiner), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 213-214, f. 6.

The two species described by Bigot (1885) and listed above as synonyms of *O. metallica* (Schiner) came from New Caledonia. *O. aenescens* Bigot was described without indication of host, whereas *O. noumeana* was taken from an 'Alcedo.' Under the name *Ornithomyia varipes* Speiser (1902, Fauna Hawaiiensis, III, pp. 89-91) recorded the species from Hawaii, Molokai. Austen (1903, Ann. Mag. nat. Hist., (7), XII, p. 262) also recorded the specimen referred to by Speiser (1902). Bryan (1934, Proc. Hawaii ent. Soc., VIII, p. 458) included Speiser's record in his list. The species recorded by Speiser and Austen is definitely not the true 'varipes' of Walker (1849) and in all probability refers to *O. metallica* (Schiner). Ferris (1927, p. 14) records this species from Samoa, Upolu, Vailima, off *Aplonis tabuensis brevirostris* (Peale) (*Aplonis brevirostris*), and from New Hebrides, Espiritu Santo and Tanna, off *Sauropatis juliae* H. (*Halcyon juliae*). Falcoz (1929, Encycl. ent., Diptera, V, fasc. 1, p. 31) recorded it from Loyalty Is., Maré, Netché and New Caledonia, Oubatché.

#### Subfamily ORNITHOICINAE.

##### 14. *Ornithoica pusilla* (Schiner).

- Ornithomyia pusilla* Schiner, 1868, Reise der Oesterreichischen Fregatte Novara um die Erde, etc., II, 6, p. 374.
- Ornithoica pusilla* (Schiner), Speiser, 1900, Ann. Mus. Stor. nat. Genova, XX, p. 559.
- ? *Ornithoica confluenta* var. *peroneura* Speiser, 1902, Fauna Hawaiiensis, III, pp. 91-92. (See also Grimshaw, op. cit., p. 77.)
- Ornithoica pusilla* (Schiner), Speiser, 1904, Zeit. syst. Hym. Dipt., IV, p. 86.

*Ornithoica promiscua* Ferris & Cole, 1922, Parasitology, XIV, pp. 202-205, f. 19-20.

*Ornithoica promiscua* Ferris & Cole, Ferris, 1927, Insects of Samoa, Pt. VI, fasc. 1, p. 11.

*Ornithoica pusilla* (Schiner), Ferris, 1927, op. cit., pp. 11-14, f. 1, 2.

*Ornithoica pusilla* (Schiner), Ferris, 1927, Philipp. J. Sci., XXXIV, pp. 207-209, f. 1.

*Ornithoica pusilla* (Schiner), Ferris, 1929, Canad. Ent., LXI, pp. 284-285, f. 2D, 4A.

Schiner's (1868) original specimen was taken in the Society Is. (Tahiti), off *Todiramphus veneratus veneratus* (Gm.) (*Halcyon veneratum*). Speiser's var. *peroneura* of '*Ornithoica confluenta* Say' is probably the same as *O. pusilla* (Schiner) (Dr. J. Bequaert *in litt.*). His records are as follows: Hawaiian Is., Kona, off 'Short-eared Owl' and off *Vestiaria coccinea* (Forster); another record from the Hawaiian Is., without exact locality, taken off *Chlorodrepanis virens stejnegeri* (Wilson) (*Himatione stejnegeri*). Speiser (1904) recorded a specimen, without indication of host, from Samoa. Aldrich (1923, Insec. Inscit. Menst., XI, p. 79) recorded the species from *Sauropatis pealei* (F. & H.) (*Halcyon tutuilae*), Samoa, Tutuila. Ferris (1927) gives the following localities and hosts: Samoa, Upolu, Malololelei, off *Submyiagra vanikorensis* (Q. and G.) (*Myiagra vanicorensis*); Apia, off *Demiegretta sacra* (Gm.), *Aplonis atrifusca* (Peale) and an undetermined host; New Hebrides, Espiritu Santo and Tanna, off *Sauropatis juliae* H. (*Halcyon juliae*).

15. *Ornithoica stipituri* (Schiner).

*Ornithomyia stipituri* Schiner, 1868, Reise der Oesterreichischen Fregatte Novara um die Erde, etc., II, 6, p. 374.

*Ornithoica stipituri* (Schiner), 1904, Zeit. syst. Hym. Dipt., IV, p. 86.

Schiner (1868) described this species on the basis of a specimen taken in New South Wales from *Stipiturus malachurus* (Shaw). Speiser (1904) recorded it from New Britain off *Sauromarptis tyro* (Gray) (*Sauromarptes tyro*) and *Macropygia (Dicruropsis) cacomantis*.

16. ? *Ornithoica* sp.

Bryan (1921, Proc. Hawaii ent. Soc., IV, p. 454) recorded ? *Ornithoica* sp. on the basis of a specimen reared from a puparium found on the neck feathers of a pheasant, Hawaiian Is., Kauai.

Fullaway (1932, op. cit., VIII, p. 6) recorded a Hippoboscid, without name, from pheasants in Hawaii. Bryan (1934, op. cit., VIII, p. 458) lists the species in his check-list of the Diptera of the Hawaiian Is. These may refer to *O. pusilla* (Schiner) (Dr. Bequaert *in litt.*).

## HOST-PARASITE SUMMARY.

FAMILY OF BIRDS.	HOST.	PARASITE.
Treronidae.	<i>Ptilinopus perousii perousii</i> Peale.	<i>O. plicata</i> (v. Olfers).
Didunculidae.	<i>Didunculus strigirostris</i> Jardine.	<i>O. plicata</i> (v. Olfers).
Diomedeidae.	<i>Diomedea irrorata</i> Salvin.	<i>O. aenescens</i> (Thomson).
Laridae.	<i>Anous minutus</i> Boie.	<i>O. aenescens</i> (Thomson).
Ardeidae.	<i>Nyctinassa violacea pauper</i> (Sclater and Salvin).	<i>L. albipennis</i> (Say).
	<i>Butorides sundevalli</i> Reichenow.	<i>L. albipennis</i> (Say).
	<i>Demiegretta sacra</i> (Gm.).	<i>O. pusilla</i> (Schiner).
	<i>Ardea herodias cognata</i> Bangs.	<i>L. albipennis</i> (Say).
Sulidae.	<i>Sula leucogaster</i> (Bodd.).	<i>O. aenescens</i> (Thomson).
Fregatidae.	<i>Fregata minor strumosa</i> Hartert.	<i>O. spinifera</i> (Leach).
	<i>Fregata minor ridgwayi</i> Mathews.	<i>O. spinifera</i> (Leach).
	<i>Fregata</i> spp.	<i>O. spinifera</i> (Leach).
Pelecanidae.	<i>Pelecanus occidentalis</i> Linn.	<i>O. fossulata</i> Macquart.
Phaethontidae.	<i>Scaeophaëthon rubricauda</i> <i>rothschildi</i> Mathews.	<i>O. spinifera</i> (Leach).
Aquilidae.	<i>Buteo galapagoensis</i> (Gould).	{ <i>L. nigra</i> (Perty). <i>M. pusilla</i> (Speiser). <i>O. plicata</i> (v. Olfers).
	<i>Circus juxta wolffi</i> Gurney.	<i>O. pusilla</i> (Schiner).
Dacelonidae.	<i>Todiramphus v. veneratus</i> (Gm.).	<i>O. stipituri</i> (Schiner).
	<i>Sauromarptis tyro</i> (Gray).	{ <i>O. metallica</i> (Schiner). <i>O. pusilla</i> (Schiner).
	<i>Sauropatis juliae</i> H.	<i>O. pusilla</i> (Schiner).
	<i>Sauropatis pealei</i> (F. & H.)	<i>O. pusilla</i> (Schiner).
Micropodidae.	<i>Collocalia francica assimilis</i> Stresemann.	<i>M. reduvioides</i> Rondani.
	<i>Collocalia fuciphaga vanikorensis</i> (Q. and G.).	<i>M. reduvioides</i> Rondani.
Muscicapidae.	<i>Submyiagra vanikorensis</i> (Q. and G.).	{ <i>L. samoana</i> Ferris. <i>O. pusilla</i> (Schiner).
Turdidae.	<i>Turdus samoensis</i> Tristr.	<i>L. samoana</i> Ferris.
Drapanididae.	<i>Vestiaria coccinea</i> (Forster).	<i>O. pusilla</i> (Schiner).
	<i>Chlorodrepanis virens stejnegeri</i> (Wilson).	<i>O. pusilla</i> (Schiner).
Graculidae.	<i>Aplonis tabuensis brevirostris</i> (Peale).	<i>O. metallica</i> (Schiner).
	<i>Aplonis atrifusca</i> (Peale).	<i>O. pusilla</i> (Schiner).
Unplaced.	' <i>Macropygia (Dicruropsis)</i> <i>cacomantis.</i> '	<i>O. stipituri</i> (Schiner).

ANALYSIS OF THE RECORDS.

Marquesas Is.				+											
Society Is.				+		+									+
Samoa.			+									+		+	
Fiji Is.	+		+				+								
Tonga Arch.			+												
Loyalty Is.														+	
New Caledonia.	+		+	+										+	
New Hebrides.	+		+				+							+	+
Duke of York I.															
Brit. Solomon Is.							+								
New Britain.															+
Caroline Is.			+	+											
Nikoa I.							+								
Lisiansky I.							+								
French Frigate Shoals.							+								
Laysan I.							+								
Wake I.							+								
Johnston I.							+								
Necker I.							+								
Hawaiian Is.		+					+		+			+		+	
Galapagos Is.				+	+	+	+			+	+	+			

Species of  
Hippoboscidae.

1. *Hippobosca equina* Linn. ....
2. *Melophagus ovinus* (Linn.) .....
3. *Ornithoetona plicata* (v. Olfers) .....
4. *Olfersia aenescens* C. G. Thomson ....
5. *Olfersia fassulata* Macquart .....
6. *Olfersia spinifera* (Leach) .....
7. *Myiophthiria reduviodes* Rondani .....
8. *Pseudolynchia maura* (Bigot) .....
9. *Microlynchia pusilla* (Speiser) .....
10. *Lynchia albipennis* (Say) .....
11. *Lynchia nigra* (Perty) .....
12. *Lynchia samoana* Ferris .....
13. *Ornithoetona metallica* (Schiner) .....
14. *Ornithoetona pusilla* (Schiner) .....
15. *Ornithoetona stipturi* (Schiner) .....

## APPENDIX.

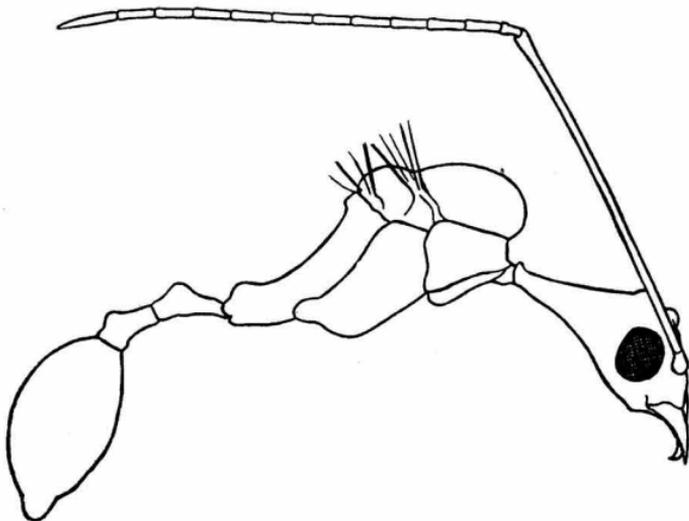
Since writing the above paper a further reference to Hippoboscidae recorded from a Pacific Island has come to my notice and for the sake of completeness I am including it.

Jepson (1911, Rept. Econ. Entom., Dept. Agric. Fiji, Council Paper 25, p. 27) recorded four species of Hippoboscidae from Fiji: '*Ornithoctona australasiae* F. off Wild Fowl, *Ornithoica pusilla* (Schin.) off hawk and two undetermined species from a parrot and a pigeon.'

53 Arodene Road, London, S.W.2.

September 30th, 1937.

SOME ANTS OF THE SUBGENUS *PLANIMYRMA* VIEHMEYER OF THE GENUS *APHAENOGASTER* MAYR: SUPPLEMENTARY NOTE.



Profile of ♂ of *Aphaenogaster* (*Deromyrma*?) *dromedarius* Emery?  
(see page 32).

The drawing for a text-figure of this subspecies, intended to accompany the description on p. 31 *antea*, was unfortunately lost in the Christmas post. A new drawing has been made, and the text-figure is issued herewith.—ED.

*Cis bilamellatus* Wood at Sherwood Forest.—In October last year I took a number of specimens of *Cis bilamellatus* in Sherwood Forest out of fungus growing on birch.—S. O. TAYLOR, 34 Nelson Street, Leicester: February 14th, 1938.

[The range of this interesting little beetle in England continues to extend. My friend Mr. E. Aubrook, of the University Museum (Department of Entomology), informs me that it was met with rather freely by Mr. E. W. Jones in fungus at Watlington, Oxon.—J.J.W.]