A Review of the Genus *Eidmanniella* (Mallophaga: Menoponidae) from the Pelecaniformes[1]

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ABSTRACT

Descriptions and a key are given for 6 recognized species, including a new species, ***Eidmanniella nancyae*** from *Phalacrocorax nigrogularis*. Neotypes are designated for *E. pellucida* (Rudow) and *E. pustulosa* (Nitzsch). There are 4 new synonymies: *E. pellucida* (= *Menopon knowani* Kellogg & Chapman), *E. subrotunda* (= *M. eurum* Piaget), and *E. albescens* (= *M. singularis* Kellogg & Kuwana and *E. sula* Tendeiro).

The genus *Eidmanniella* was erected by Kéler (1938) to include species of *Menopon* found on members of the families Sulidae and Phalacrocoracidae (Pelecaniformes). Clay (1947), in a preliminary key to the genera of Menoponidae, also restricted the application of *Eidmanniella* to these lice. However, more recently Hopkins and Clay (1952), by recognizing 10 species of *Eidmanniella*, and Emerson (1964), by recognizing 6 species of North American

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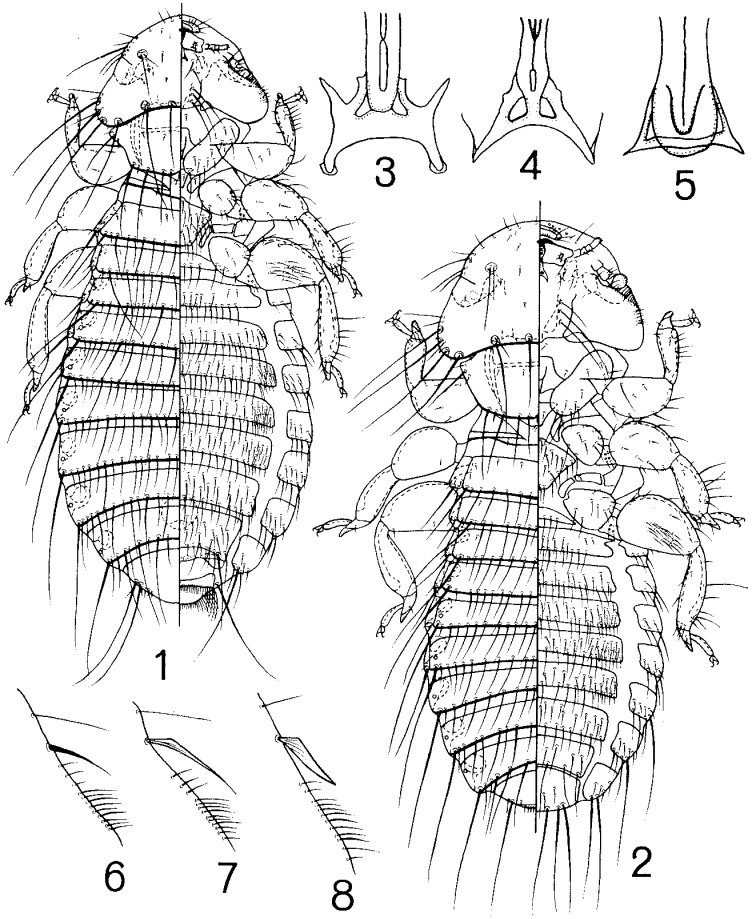

FIG. 1, 2.—*E. pellucida.* 1, Female; 2, male.
FIG. 3–5.—Sitophore sclerite of hypopharynx. 3, *E. nancyae;* 4, *E. pellucida;* 5, *E. albescens.*
FIG. 6–8.—Subocular setae. 6, *E. pellucida;* 7, *E. pustulosa;* 8, *E. nancyae.*

Eidmanniella, have chosen to include lice from hosts within the Fregatidae (Pelecaniformes) as also representing *Eidmanniella.* Our study of these lice has led us to conclude that *Eidmanniella* should be confined to its original limits and that the frigate-bird lice should be placed in a new genus (Ryan and Price 1969). Thus, the present work was undertaken to reexamine the status of all 11 names we currently associate with *Eidmanniella,* to redescribe the recognizable species, to describe a new species, and to provide a key for the identification of these species.

We thank Dr. Theresa Clay, British Museum

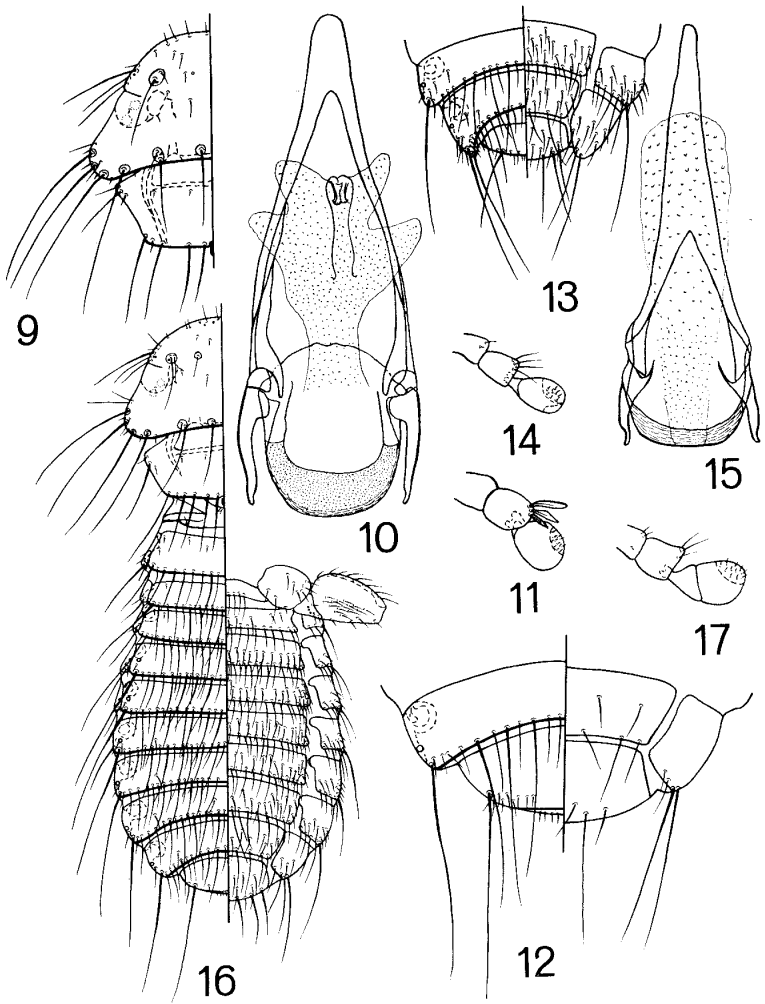

FIG. 9–12.—*E. nancyae.* 9, Dorsal head, prothorax; 10, male genitalia; 11, antenna; 12, male terminalia.
FIG. 13.—*E. albescens,* male terminalia.
FIG. 14, 15.—*E. pellucida.* 14, Antenna; 15, male genitalia.
FIG. 16, 17.—*E. pustulosa.* 16, Male; 17, antenna.

(Natural History), and Dr. K. C. Emerson, Arlington, Virginia, for sending us specimens pertinent to this study and for examining the manuscript.

In the following descriptions the values in parentheses following a statement of range from type-host material represent ranges of material considered to be conspecific but from other host species. Unless stated to the contrary, reference to tergites, pleurites, or sternites pertains to the abdomen and illustrations are based on specimens from the type-host. The postspiracular setae, even though they may be recessed from the margin, are included in the marginal tergal setal counts. Measurements are given in millimeters. The nomenclature of the host species follows that of Peters (1931).

Genus *Eidmanniella* Kéler, 1938

Eidmanniella Kéler, 1938: 81. Type-species: *Menopon brevipalpe* Piaget (here considered a junior synonym of *E. pellucida* (Rudow)).

Members of this genus possess the following characteristics. Head: wider than long, temples expanded; with fine preocular slit; eyes displaced medioanteriorly from lateral margin; cavity between laterodorsal and lateroventral margins roofed over distally by fusion of these margins; with 4 middorsal setae, with inner posterior to outer; each temple margin with 4 very long setae; both pairs of occipital setae very long, with small seta located immediately lateroanterior to outer occipital seta; subocular setae as in Fig. 6–8; antennae 4- or apparently 3-segmented when last 2 segments so closely fused as to appear essentially as 1 segment; last antennal segment longer than wide, cylindrical; gular plate rounded, evenly pigmented, with 2–4 setae on each side; and sitophore sclerite of hypopharynx weakly to strongly developed (Fig. 3–5).

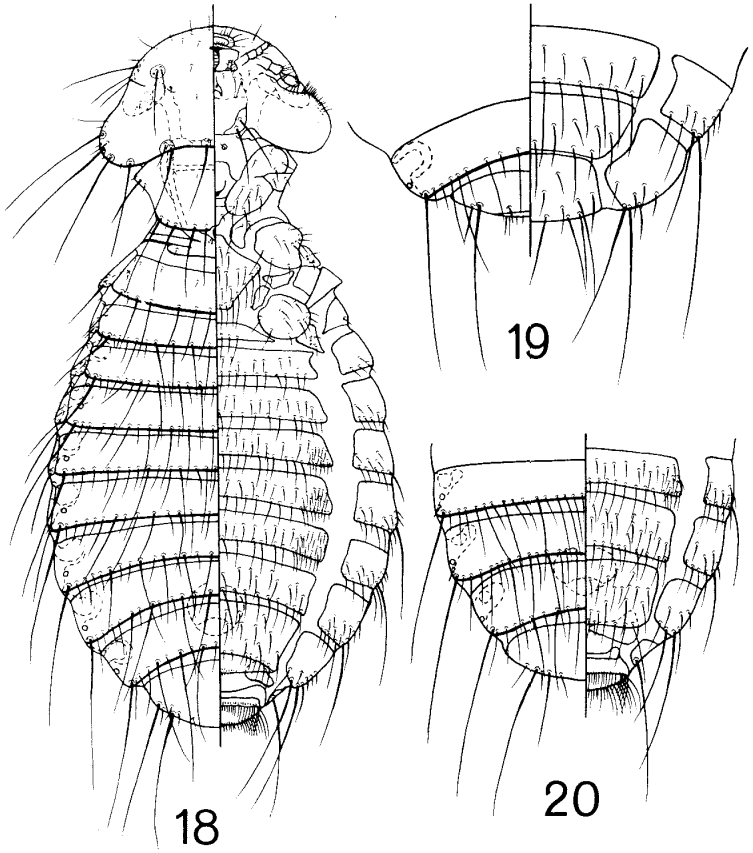

FIG. 18, 19.—*E. subrotunda*. 18, Female; 19, male terminalia.
FIG. 20.—*E. pustulosa*, female terminalia.

Thorax: prosternal plate with variably developed spine (Fig. 28–32), without longer setae; mesosternal plate roughly triangular, broadest anteriorly, with 1 pair of short median setae; and sparse setal brush on venter of each femur III.

Abdomen: with little sexual dimorphism except that associated with tergal chaetotaxy, terminalia, and size; tergites I–VIII essentially of similar lengths, undivided; postspiracular setae very long on II–VIII, somewhat shorter on I; short marginal seta lateral to postspiracular seta on both I and II; with well-developed internal pleural thickenings; sparse brushes of setae on each side of sternites IV–VI; female with sternites VII and VIII not fused, with marginal vulval setae as in Fig. 21–23, and with internal structure of genital chamber as in Fig. 33; and male with sternites VIII and IX not fused and genitalia as in Fig. 10 or 15.

The hosts for known members of this genus belong to 2 families of the Pelecaniformes: *Morus* and *Sula* of the Sulidae and *Phalacrocorax* and *Haliëtor* of the Phalacrocoracidae.

Eidmanniella pellucida (Rudow)

(Fig. 1, 2, 4, 6, 14, 15, 21, 24, 31, 33)

Menopon pellucidum Rudow, 1869: 400. Type-host: *Phalacrocorax capensis* (Sparrman).
Menopon brevipalpe Piaget, 1880: 498. Type-host: *Phalacrocorax (Graculus) carbo* (L.).
Menopon sigmoidale Picaglia, 1885, Atti Soc. Ital. Sci. Natur. 28: 87. Type-host: *Graculus lucidus* = *Phalacrocorax carbo lugubris* Rüppell.
Menopon kuwani Kellogg & Chapman, 1902, J. N. Y. Entomol. Soc. 10: 26. Type-host: *Phalacrocorax penicillatus* (Brandt). NEW SYNONYMY.

FEMALE.—Illustrations for specimens from *P. carbo*. As in Fig. 1. Inner middorsal head setae minute, not over 0.015 long. Antennae as in Fig. 14, with slender setae on 2nd segment and weak division between last 2 segments. Subocular setae as in Fig. 6, with stouter longer seta anterior to 3 or so, shorter, finer setae. Sitophore sclerite of hypopharynx weakly developed (Fig. 4). Pronotum marginally with 16 (14–17) setae; prosternal median process close to that of Fig. 31. Margin of metanotum with 17–18 (16–21) setae; metasternal plate with 40–48 (25–46) setae. Marginal tergal setae: I, 28–29 (23–32); II–III, 30–34 (26–36); IV–VI, 31–36 (25–38); VII, 27–33 (21–31); VIII, 21–22 (17–24). Without anterior tergal setae. Last tergite (Fig. 24) with 7–8 (6–10) short inner posterior setae laterally located adjacent to very long setae. Sternal setae (including those in brushes): I, 7–12 (7–11); II, 34–35 (31–44); III, 50–65 (49–67); IV, 91–100 (80–112); V, 95–100 (85–116); VI, 84–87 (72–95); VII, 51–54 (47–60). Fused sternites VIII–IX (vulva) marginally with 14–15 (13–15) setae in even to irregular row as in Fig. 21 or 22; anteriorly with 24–26 (22–31) setae. Anus ventrally with 60–68 (52–72) fringe setae, dorsally with 51–56 (48–75). Dimensions: preocular width, 0.47–0.50 (0.45–0.52); temple width, 0.73–0.74 (0.64–0.73); head length, 0.35–0.38 (0.30–0.39); prothorax width, 0.61–0.62 (0.52–0.63); metathorax width, 0.79–0.83 (0.68–0.79); total length, 2.46–2.59 (2.22–2.48).

MALE.—Illustrations for specimens from *P. carbo*. As in Fig. 2. Head and thorax as for female, except 16–17 (15–19) marginal metanotal setae and metasternal plate with 31–33 (26–35) setae. Marginal

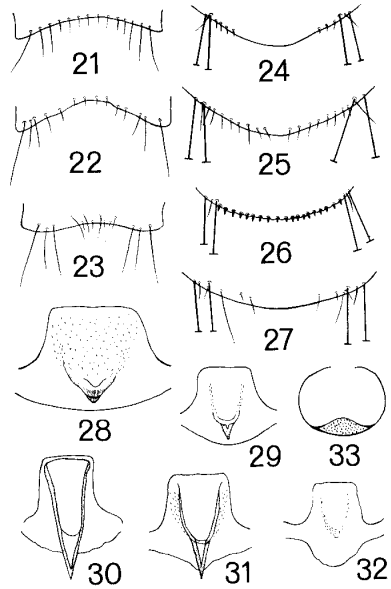

FIG. 21–23.—Female vulval margin. 21, *E. pellucida*; 22, *E. subrotunda*; 23, *E. pustulosa*.
FIG. 24–27.—Dorsal terminal margin of female abdomen. 24, *E. pellucida*; 25, *E. nancyae*; 26, *E. albescens*; 27, *E. subrotunda*.
FIG. 28–32.—Prosternal plate. 28, *E. subrotunda*; 29, *E. albescens*; 30, *E. nancyae*; 31, *E. pellucida*; 32, *E. pustulosa*.
FIG. 33.—*E. pellucida*, female internal genital chamber structure.

tergal setae: I, 20–21 (16–25); II–IV, 23–26 (20–29); V, 25–28 (19–27); VI, 22–25 (18–25); VII, 20–22 (14–23); VIII, 13–18 (10–17). Without anterior tergal setae. Last tergite with 2 (0–2) minute inner posterior setae, ca. 0.01 long. Sternal setae (including those in brushes): I, 6–7 (3–7); II, 24 (22–27); III, 33–34 (25–40); IV, 56–59 (48–68); V, 59–63 (46–64); VI, 53–54 (38–55); VII, 26–28 (29–33); VIII, 16–19 (14–21). Sternite IX (genital plate) with 5–6 very long posterior setae and 3 (3–6) shorter anterior setae. Male genitalia as in Fig. 15. Dimensions: preocular width, 0.37–0.41 (0.34–0.45); temple width, 0.53–0.55 (0.54–0.63); head length, 0.31–0.32 (0.26–0.33); prothorax width, 0.47–0.49 (0.39–0.47); metathorax width, 0.57–0.58 (0.45–0.59); total length, 1.74–1.78 (1.31–2.04); genitalia length 0.37–0.40 (0.30–0.46), width 0.13–0.15 (0.12–0.16).

Kéler (1938) was concerned with the small size reported by Rudow (1869) in the description of *E. pellucida*—only 0.75 mm long—and he questioned exactly where *pellucida* might fall generically, but placed it in *Eidmanniella*. Hopkins (1940) supplied excellent evidence that measurements given by Rudow are "the wildest of guesses" and that no reliance whatever should be placed on them. We see no reason for not considering the *Eidmanniella* from *P. capensis* to represent what Rudow (1869) had before him.

Clay and Hopkins (1955) discussed the status of the remaining known Rudow material; specimens of *M. pellucidum* were not included and must therefore be presumed to have been destroyed during World War II. Because of this we feel it best to designate a neotype from the type-host material and thereby stabilize the species identity for future workers.

Both Bedford (1939) and Emerson (1947) claimed that *M. brevipalpe* is a junior synonym of *E. pellucida;* our findings are in agreement that these lice are conspecific. Kéler (1938) stated that *M. kuwani* was very close to *M. brevipalpe;* we agree in that we can find no differences of substance between series from these hosts. It would appear as if *E. pellucida* is broadly distributed among at least 10 species of *Phalacrocorax* from North and South America, Europe, Africa, and New Zealand.

Material Examined.—Neotype ♀, *P. capensis,* Hydra Bay, Cape Colony, 27 Jan. 1913, Brit. Mus. 1954–318; in collection of the British Museum (Natural History). Neoparatypes: 1 ♀, 2 ♂, same data as neotype; 2 ♀, *P. capensis,* Claremont, Cape Town, 9 June 1953, Brit. Mus. 1954–694. Other material: 19 ♀, 8 ♂ (including 1 ♀, 1 ♂ paratypes of *M. brevipalpe* Piaget), *P. carbo,* Ethiopia, Kenya, England, Shetland Is.: 5 ♀ (including ♀ type of *M. kuwani* Kellogg & Chapman), 2 ♂, *P. penicillatus,* USA; 2 ♀, *P. albiventer* (Lesson), Argentina; 5 ♀, 7 ♂, *P. aristotelis* (L.), Scotland, Ireland; 22 ♀, 13 ♂, *P. auritus* (Lesson), USA, Canada; 2 ♀, 1 ♂, *P. bougainvillii* (Lesson), Ecuador, Peru; 1 ♀, *P. gaimardi* (Lesson), S. America; 3 ♀, 4 ♂, *P. punctatus* (Sparrman), New Zealand; 3 ♀, 3 ♂, *P. varius* (Gmelin), New Zealand.

Eidmanniella subrotunda (Piaget)

(Fig. 18, 19, 22, 27, 28)

Menopon subrotundum Piaget, 1880: 453. Type-host: *Gracula sulcirostris* = *Phalacrocorax sulcirostris* (Brandt).

Menopon eurum Piaget, 1880: 502. Type-host: *Carbo javanicus* = *Haliëtor niger* (Vieillot). NEW SYNONYMY.

FEMALE.—Illustrations for specimens from *H. africanus* (Gmelin). As in Fig. 18. Close to *E. pellucida,* except for the following. Pair of minute prosternal setae anterior to plate arising from distinct sclerite; prosternal median process short and blunt, as in Fig. 28. With only 14–15 (13–15) marginal metanotal setae. Marginal tergal setae quantitatively close to those of *E. pellucida,* but with I–II having 2–4 shorter setae on each side immediately mediad to postspiracular setae and with most of I–VI tending to have somewhat longer setae. Last tergite (Fig. 27) with 8 (5–8) short to long inner posterior setae.

MALE.—Essentially as for female, except for reduced number of abdominal setae, details of terminalia (Fig. 19) and genitalia, and smaller size. With only 15 (14–15) marginal metanotal setae. Marginal tergal setae: I, 23 (21–26); II–III, 28–29 (25–29); IV–V, 32–33 (28–31); VI, 29 (24–30); VII, 24 (23–25); VIII, 18 (15–20). Sternites I–VIII and genitalia as for *E. pellucida.* Genital plate (Fig. 19) with tendency for shorter posterior setae. Dimensions: preocular width, 0.49 (0.48–0.50); temple width, 0.64 (0.67–0.69); head length, 0.33 (0.32–0.33); prothorax width, 0.45 (0.47–0.49); metathorax width, 0.63 (0.63–0.66); total length 1.60 (1.69–1.74); genitalia length 0.57 (0.57–0.63), width 0.15 (0.16–0.19).

The short blunt median prosternal process and the reduced number of marginal metanotal setae offer the best means for separating *E. subrotunda* from *E. pellucida.*

Kéler (1938) stated that *M. subrotundum* is very similar to *M. eurum* but still specifically well distinguished from it, without going into detail as to how it is different. A study of the type-material of *M. subrotundum* has failed to disclose any significant differences from the type-specimen of *M. eurum,* additional type-host material of *M. eurum,* or material from 2 other host species. The illustration of the male genitalia by Piaget (1880: Pl. XXXV, Fig. 2a) appears to differ grossly from any other *Eidmanniella* we have seen. However, this difference must be a result of illustrative interpretation, since the genitalia of the lectotype are essentially as in Fig. 15.

Material Examined.—1 ♀, 1 ♂ (paratype and lectotype, respectively, of *Menopon subrotundum* Piaget), *P. sulcirostris,* no other data; 2 ♀, *P. fuscicollis* Stephens, Ceylon; 2 ♀ (including type of *M. eurum* Piaget), 1 ♂, *H. niger,* India; 2 ♀, 2 ♂, *H. africanus,* W. Transvaal, Southern Rhodesia.

Eidmanniella eurygaster (Nitzsch)

Menopon eurygaster Nitzsch, 1866, Z. Ges. Naturwiss. 28: 393. Type-host: *Halieus brasiliensis* = *Phalacrocorax olivaceus olivaceus* (Humboldt).

FEMALE.—No specimens available for study.

MALE.—Indistinguishable from *E. subrotunda,* except for the following minor differences. Margin of metanotum with 18 setae. More sternal setae on: III, 46; IV, 75; V, 84; VI, 74. Larger in most dimensions: preocular width, 0.54; temple width, 0.73; head length, 0.35; prothorax width, 0.54; metathorax width, 0.69; total length, 1.88; genitalia length 0.70, width 0.19.

With only a single male available from the type-host of *E. eurygaster,* it was difficult to reach a decision on the status of the species. Its close relationship to *E. subrotunda* leads us to suspect that, with sufficient materials, including females, it might be shown to be conspecific with *E. subrotunda.* However, with suggestions of quantitative differences in a few setal counts and in slightly larger dimensions, we believe it best at this time to retain the separation of *E. eurygaster* and *E. subrotunda.*

Material Examined.—1 ♂, *P. olivaceus,* Chile.

Eidmanniella nancyae, n. sp.

(Fig. 3, 8–12, 25, 30)

Type-host: *Phalacrocorax nigrogularis* Ogilvie-Grant and Forbes.

FEMALE.—As for *E. pellucida* (Fig. 1), except for the following. Inner middorsal head setae long, 0.035 or longer (Fig. 9). Antennae as in Fig. 11, with 2nd segment having 3 flat bladelike setae. Subocular setae unique (Fig. 8), with broad flat seta anterior to short fine setae. Sitophore sclerite of hypopharynx weakly developed, but of somewhat different shape (Fig. 3). Prosternal median process sharply pointed (Fig. 30) but plate and process longer than other known species. Margin of metanotum with 14–17 setae; metasternal plate with 27–40 setae. Marginal tergal setae: I, 24–35; II–III, 28–36; IV–VI, 31–44; VII, 30–41; VIII, 19–29. Without anterior tergal setae. Last tergite (Fig. 25) with 13–16 short to medium fine inner posterior setae extending almost completely across posterior margin. Sternal setae (including those of setal brushes): I, 9–11; II, 38–47; III, 51–68; IV, 78–95; V, 88–106; VI, 74–93; VII, 39–53. Marginal vulval chaetotaxy as in Fig. 22, with 14–15 setae; anteriorly with 10–15 setae. Dimensions: preocular width, 0.44–0.51; temple width, 0.72–0.76; head length, 0.30–0.36; prothorax width, 0.56–0.60; metathorax width, 0.78–0.83; total length, 2.50–2.68.

MALE.—As for female, except for following differences. Marginal tergal setae: I, 24–27; II–III, 25–29; IV, 31–35; V–VI, 32–37; VII, 31–33; VIII, 23–24. Sternal setae (including those of setal brushes): I, 8–11; II, 34–43; III, 47–67; IV, 71–89; V, 79–95; VI, 74–87; VII, 33–41; VIII, 7–13. Terminalia as in Fig. 12; last tergite with 14–17 short, fine inner posterior setae; genital plate with 2 very long, 4 medium to long setae located posteriorly, without anterior setae. Male genitalia (Fig. 10) much larger than any other known members of *Eidmanniella;* genital sac with indication of small sclerite; endomeral plate with more extensive surface sculpturing. Dimensions smaller than for female: preocular width, 0.45–0.47; temple width, 0.64–0.68; head length, 0.32–0.34; prothorax width, 0.51–0.54; metathorax width, 0.65–0.69; total length, 2.20–2.30; genitalia length 0.65–0.75, width 0.25–0.27.

Several features, including the unique spatulate setae of the 2nd antennal segment and subocular row, the male genitalia, the prosternal plate, and the chaetotaxy of the terminalia of both sexes easily separate *E. nancyae* from other known members of the genus.

Material Examined.—Holotype ♂, *P. nigrogularis,* Persian Gulf, 16 Mar. 1961, G. S. Willis, Brit. Mus. 1962–399; in collection of the British Museum (Natural History). Paratypes: 3 ♀, same data as holotype; 15 ♀, 17 ♂, *P. nigrogularis,* Aden, Dec. 1948, Meinertzhagen 17897.

Eidmanniella pustulosa (Nitzsch)

(Fig. 7, 16, 17, 20, 23, 32)

Menopon pustulosum Nitzsch, 1866, Z. Ges. Naturwiss. 28: 393. Type-host: *Sula alba* = *Morus bassanus* (L.).

FEMALE.—Setal lengths and locations much as for male (Fig. 16). Inner middorsal head setae at least 0.04 long. Antennae as in Fig. 17, with fine setae on 2nd segment and clear line of division between 3rd and 4th segments. Subocular setae as in Fig. 7, with slightly broadened, flat seta anterior to short, fine setae. Sitophore sclerite of hypopharynx weakly developed, as in Fig. 4. Margin of pronotum with 18–20 (18–21) setae; prosternal median process rounded (Fig. 32) or occasionally bearing very small, inconspicuous point; minute setae anterior to plate on definite small sclerite. Margin of metanotum with 18–20 (19–23) setae; metasternal plate with 28–33 (24–35) setae. Marginal tergal setae: I, 24–28 (25–32); II–VI, 26–31 (25–35); VII, 26–33 (24–30); VIII, 18–23 (18–21). Typically without anterior tergal setae. Terminal portion of abdomen as in Fig. 20. Last tergite with 5–8 (3–5) short to long inner posterior setae. Sternal setae (including those of brushes): I, 5–10 (5–11); II, 33–43 (33–44); III, 49–58 (48–57); IV, 61–70 (64–68); V, 64–78 (61–77); VI, 54–67 (54–69); VII, 37–51 (38–51). Vulva (Fig. 20, 23) with 13–17 (13–17) marginal and slightly submarginal setae, including medially 4 short marginal and 4 longer submarginal setae set apart from longer corner setae; anteriorly with 19–26 (17–21) setae. Anus with 66–75 (72–81) setae in ventral fringe, 56–64 (60–68) in dorsal fringe. Dimensions: preocular width, 0.47–0.53 (0.49–0.51); temple width, 0.71–0.77 (0.74–0.76); head length, 0.34–0.38 (0.33–0.35); prothorax width, 0.56–0.64 (0.60–0.63); metathorax width, 0.73–0.78 (0.72–0.80); total length, 2.40–2.72 (2.57–2.70).

MALE.—As in Fig. 16. Head, thorax, and marginal tergal setae as for female. Occasionally with anterior tergal setae: I, 0; II, 0 (0–1); III, 0 (0–6); IV, 0 (1–13); V, 0–2 (2–19); VI, 0–7 (1–23); VII, 0–11 (3–25); VIII, 0–10 (1–21). Last tergite with 2–4 (2–3) small to minute inner posterior setae and with 0–2 (0–12) anterior setae. Tendency for fewer sternal setae than for female: I, 4–7 (4–8); II, 22–34 (28–33); III, 38–50 (34–49); IV, 52–62 (47–61);

V, 54–63 (54–64); VI, 42–62 (47–63); VII, 32–43 (33–41); VIII, 14–24 (17–22). Genital plate with 5–9 (6) medium to long marginal setae, 6–18 (12–18) anterior setae. Genitalia as in Fig. 15. Dimensions smaller than for female: preocular width, 0.46–0.47 (0.44–0.48); temple width, 0.62–0.64 (0.62–0.66); head length, 0.33–0.35 (0.31–0.33); prothorax width, 0.50–0.52 (0.49–0.53); metathorax width, 0.57–0.58 (0.57–0.63); total length, 1.87–1.90 (1.83–2.05); genitalia length 0.60 (0.48–0.60), width 0.16 (0.16–0.18).

The larger number of marginal pronotal setae, the type of subocular setae, and the weakly developed median process of the prosternal plate in combination with the long inner middorsal head setae distinguish *E. pustulosa* from other known species of *Eidmanniella*.

Since, to the best of our knowledge, the type-specimens of *E. pustulosa* no longer exist, it seems advisable at this time to stabilize the identity of this species by designation of a neotype from the material we have for study.

Material Examined.—Neotype ♂, *Sula bassana,* Cheddar, Somerset, 26 Sept. 1957, P. F. Bird, Brit. Mus. 1958–149; in collection of the British Museum (Natural History). Neoparatypes: 3 ♀, 2 ♂, same data as neotype; 5 ♀, 5 ♂, *M. bassanus,* Hoy, Orkneys, British Isles, 5 Aug. 1938, G. H. E. Hopkins; 1 ♂, *S. bassana,* Ross-shire, Oct. 1935, Meinertzhagen 4384; 9 ♀, 20 ♂, *M. bassanus,* Orient, N. Y., Oct. 1938, Roy Latham; 3 ♀, 4 ♂, *S. bassana,* Montauk, N. Y., Oct. 7, 1930, Roy Latham. Other material: 1 ♀, 1 ♂, *M. serrator* (G. R. Gray), New Zealand: 15 ♀, 17 ♂, *M. capensis* (Lichtenstein), French Cameroons, S. W. Africa, Natal, Cape Province.

Eidmanniella albescens (Piaget)

(Fig. 5, 13, 26, 29)

Menopon albescens Piaget, 1880: 491. Type-host: *Sula australis* = *Morus serrator* (G. R. Gray).
Menopon singularis Kellogg and Kuwana, 1902, Proc. Wash. Acad. Sci. 4: 485. Type-host: *Anous stolidus*—error. Probably some species of *Sula*. NEW SYNONYMY.
Eidmanniella sula Tendeiro, 1958, Garcia de Orta 6: 443. Type-hosts: *Sula leucogaster leucogaster* (Boddaert) and *S. l. plotus* Forster. NEW SYNONYMY.

FEMALE.—Illustrations and data for specimens from *S. leucogaster*. Inner middorsal head setae at least 0.05 long. Antennae as in Fig. 17. Subocular setae as in Fig. 6. Sitophore sclerite of hypopharynx well-developed, as in Fig. 5. Pronotum marginally with 14–18 (14–16) setae; prosternal plate with short, pointed median process (Fig. 29); minute setae anterior to this plate located on small sclerites. Margin of metanotum with 14–17 (14–20) setae; metasternal plate with 38–48 (32–45) setae. Marginal tergal setae: I, 23–30 (26–29); II–III, 29–36 (27–35); IV–V, 32–41 (31–38); VI, 30–36 (30–34); VII, 27–33 (24–31); VIII, 19–24 (18–22). Without anterior tergal setae. Last tergite as in Fig. 26, with 15–23 (13–19) short, blunt spiniform inner posterior setae distributed across margin. Sternal setae (including those of brushes): I, 6–12 (5–7); II, 48–66 (40–54); III, 82–91 (61–91); IV, 96–112 (80–112); V, 99–122 (82–114); VI, 82–107 (75–105); VII, 60–72 (55–71). Vulva marginally with 11–16 (13–15) setae as in Fig. 22, anteriorly with 21–31 (23–30) setae. Anus ventrally with 48–74 (50–67) fringe setae, dorsally with 35–64 (52–70). Dimensions: preocular width, 0.47–0.59 (0.51–0.57); temple width, 0.70–0.87 (0.76–0.82); head length, 0.37–0.43 (0.34–0.40); prothorax width, 0.55–0.64 (0.55–0.59); metathorax width, 0.73–0.87 (0.73–0.85); total length, 2.20–2.80 (2.05–2.83).

MALE.—Illustration and data for specimens from *S. leucogaster*. Head and thorax as for female. Possibly somewhat fewer marginal tergal setae: I, 19–25 (21–23); II–III, 27–30 (26–30); IV–VI, 29–32 (28–32); VII, 26–30 (26–29); VIII, 19–22 (15–21). Occasional sparse lateroanterior tergal setae: I–V, 0–3; VI, 0–5; VII–VIII, 0–4. Posterior segments as in Fig. 13. Last tergite with 0–2 (0–2) minute inner posterior setae; without anterior setae. Fewer sternal setae than for female: I, 5–8 (5–7); II, 33–49 (38–40); III, 46–59 (49–53); IV, 59–68 (58–63); V, 65–78 (66–71); VI, 60–68 (55–63); VII, 41–50 (36–45); VIII, 23–27 (19–30). Genital plate with 4–6 (3–7) long posterior setae, 8–13 (8–14) anterior setae. Genitalia as in Fig. 15. Smaller than female: preocular width, 0.47–0.50 (0.46–0.50); temple width, 0.68–0.70 (0.65–0.71); head length, 0.33–0.35 (0.32–0.36); prothorax width, 0.48–0.52 (0.46–0.50); metathorax width, 0.60–0.63 (0.59–0.62); total length, 1.78–1.85 (1.75–1.95); genitalia length 0.57–0.63 (0.57–0.65), width 0.15–0.19 (0.15–0.18).

The well-developed sitophore sclerite of the hypopharynx for both sexes and the possession by the female of the short blunt spiniform setae across the posterior margin of the last tergite are among the features separating *E. albescens* from all other known species of the genus.

M. albescens, based on 4 ♂ now in the British Museum (Natural History), was initially believed by us to be conspecific with *E. pustulosa;* a female and a male we examined from *Morus serrator,* presumably the type-host of *M. albescens,* proved to be *E. pustulosa.* However, a subsequent study of the type-material of *M. albescens* has shown it does not represent *E. pustulosa,* but is inseparable from the louse found on various *Sula* species. This situation raises the possibility that *M. serrator* may not be a true host for *E. albescens;* however, more collections are necessary from this host to answer this.

Emerson (1947) discussed the type-host of *E. singularis.* On the basis of an earlier redescription of the species by Ferris (1932) from a female supposedly from *Fregata minor* (Gmelin), Emerson concluded that the true type-host was probably *F. minor.* Kellogg was credited by Emerson (1947) with having recorded *E. singularis* from several hosts, some of which were obviously in error; included among these hosts were *Sula variegata* (Tschudi) (probably a misidentification of *S. dactylatra granti* Rothschild) and *S. nebouxii* Milne-Edwards. Hopkins and Clay (1952), in reference to Emerson (in litt.), indicated *E. singularis* to be a junior synonym of *E. aurifasciata* (Kellogg) from *F. magnificens* Mathews. More recently, in view of additional materials, Emerson (1964) stated "the type host is one of the species of *Sula* found on the Galapagos Islands." We have studied specimens from 5 species of *Sula,* including Kellogg's material in addition to specimens from *S. leucogaster,* and have found no indication of any differences among them.

Material Examined.—1 ♂ (paratype of *M. albescens*), *Morus serrator,* no locality data; 2 ♂ (type-specimens of *M. singularis*), *Anous stolidus,* Galapagos; 13 ♀, 9 ♂ (including 4 ♀, 3 ♂ paratypes of *E. sula*), *S. leucogaster,* Panama, Colombia, British West Indies, Java; 2 ♂, *S. dactylatra* Lesson, Hawaii, Galapagos, Pacific Ocean; 3 ♀, 2 ♂, *S. nebouxii,* Galapagos, Washington, D. C. Zoo; 4 ♀, 3 ♂, *S. sula* (L.), Indian Ocean, Pacific Ocean; 4 ♀, 4 ♂, *S. variegata,* Peru, Chile.

Because there is little sexual dimorphism in *Eidmanniella,* all couplets in the following key represent both female and male, except where indicated.

KEY TO THE SPECIES OF *Eidmanniella*

1. Prosternal median process rounded (Fig. 32) or bearing very small, inconspicuous point; head with long inner middorsal setae over 0.04 long; with more than 16 marginal pronotal setae ..... ***pustulosa*** (Nitzsch)
   Prosternal median process either obviously sharply pointed (Fig. 29–31) and head with minute to long inner middorsal setae, or, if prosternal process blunt and short (Fig. 28), then head with minute inner middorsal setae not over 0.015 long; usually not over 16 marginal pronotal setae 2
2. Inner middorsal head setae minute, not over 0.015; last tergite of female with not over 10 inner posterior setae; sitophore sclerite of hypopharynx as in Fig. 4 3
   Inner middorsal head setae long, 0.03–0.10; last tergite of female with more than 10 inner posterior setae; sitophore sclerite of hypopharynx as in Fig. 3 or 5 5
3. Prosternal median process obviously pointed (Fig. 31) ..... ***pellucida*** (Rudow)
   Prosternal median process short, blunt (Fig. 28) ... 4
4. Female. Male: with 14–15 marginal metanotal setae; sternite V with fewer than 80 setae, VI fewer than 65 ..... ***subrotunda*** (Piaget)
   Male: with 18 marginal metanotal setae; sternite V with over 80 setae, VI over 65 ***eurygaster*** (Nitzsch)
5. Sitophore sclerite of hypopharynx as in Fig. 3; male genitalia as in Fig. 10; subocular setae as in Fig. 8; female with last tergite with slender inner posterior setae (Fig. 25) ..... ***nancyae,*** n. sp.
   Sitophore sclerite of hypopharynx as in Fig. 5; male genitalia as in Fig. 15; subocular setae as in Fig. 6; female with last tergite having short spiniform setae (Fig. 26) ..... ***albescens*** (Piaget)

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