The latter has a large invaginated portion with almost no sclerotization and a deep central invagination. All other types with a large expanse and a deeply invaginated portion have either lateral, mesal, or apical bars fairly well developed. The depth of sternite 1S in *panisca* seems to indicate that it did not originate from any form in which this structure had already become reduced to the extent found in *loreta*, fig. 11.

This is one of the rarer members of the genus. Since its original description only the two following records have been encountered: Headquarters 15th N. D., Canal Zone, Panama, February 26, 1957, at light, R. M. Altman; and Isla Verde near San Juan, Puerto Rico, May-June 1958, at light, Irving Fox. These two additions increase the known range to Cuba, Puerto Rico, Honduras, and Panama.

Empoasca eccla Ross and Moore

In this species apodeme 1S is exactly like that in *panisca*, fig. 8, substantiating the early belief that the two species are closely related. No material of this species has come to our attention since it was originally described from Panama and Honduras.

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A REVISION OF THE GENUS PHOLEOMYIA IN NORTH AMERICA (DIPTERA, MILICHIIDAE)[1]

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ABSTRACT

The biology of the Milichiidae is briefly summarized, and observations are reported on association of certain *Pholeomyia* species with attine ants. Sixteen species are recognized and keyed; some of these are known presently only from Neotropical areas such as the West Indies, Mexico, and parts of Central America. New species described are *Pholeomyia* **latifrons** (Bahamas), *P.* **poli, tifacies** (W. Indies, Mexico to Brazil), *P.* **hurdi** (Mexico)-*P.* **nitidula** (Georgia), *P.* **dampfi** (Central America), and *P.* **texensis** (Texas). Brief diagnoses are given of the other 10 species, their distribution is summarized, and numerous earlier misidentifications are corrected.

The milichiid genus *Pholeomyia* is a well-known genus of small flies, partly because males of many species have a strikingly silvery abdomen and partly because two species, *leucogastra* (Loew) and *indecora* (Loew), are commonly identified in collections. However, little has been known of the species, and most females have not been definitely associated with the distinctive males. Recently, W. L. Brown, Jr., of Harvard University, submitted for identification a female *Pholeomyia* on which he and E. O. Wilson had made an interesting field observation of association with ants. The effort to identify the specimen resulted in a review of available material, discovery of several new species, correction of numerous misidentifications in collections, and recognition of most females in the genus. This paper presents a key to 16 species, descriptions of 6 new species, brief diagnoses of the others, and important corrections on several.

The southern limits of the area covered by this paper are admittedly not well defined. Basically, the study was intended to cover the Nearctic species and those Neotropical species whose ranges overlap the Nearctic. Where material was available from areas adjoining the Nearctic, such as the Bahamas, Cuba, Puerto Rico, and Mexico, it has been included. Insufficient material and unavailability of types have made it impossible to review all the Neotropical species, but such review is badly needed. The described Neotropical species, most of which are from Paraguay and Bolivia, appear to be distinct from those included here.

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Most of the material recorded here is in the collection of the U. S. National Museum [USNM]. Important collections have also been received through the kindness of J. F. McAlpine of the Canadian Department of Agriculture, C. H. Curran of the American Museum of Natural History [AMNH], W. L. Brown, Jr., of the Museum of Comparative Zoology [MCZ], and Paul D. Hurd of the University of California at Berkeley. I am especially indebted to M. Beier of the Naturhistorisches Museum in Vienna for the loan of two males and two females of Bilimek material of the type species, *Pholeomyia leucozona* Bilimek, and to A. L. Melander of Riverside, California, for the loan of the holotype of *P myopa* Melander from his personal collection.

BIOLOGY

Malloch (1934, Dipt. Patagonia & S. Chile, Pt. 6, fasc. 5: 461) has summarized the habits of the family by saying that "the larvae of most species feed in manure or decaying vegetable or animal matter." Some adults have been found to feed on the juices of the prey of predacious insects and spiders. Adults of some species of *Milichia*, *Phyllomyza*, and other genera are myrmecophilous. Species of *Milichia* in Africa seem to be closely associated with ants, according to observations by Farquharson (1922, Trans. Ent. Soc. London 1921: 444–447). Adults of *M. proectes* Collin, for example, were observed to "solicit and receive regurgitated food from ants in the track running up the trunk of *Crematogaster*-ant trees" (Poulton, in Collin, 1922, Trans. Ent. Soc. London 1921: 513). Several other species described by Collin at that time were also seen to receive food from the ants.

The observations of Brown and Wilson stimulate speculation as to the relation of the fly and the ant. The specimen of *Pholeomyia*, a female that was subsequently captured and identified as *decorior* Steyskal, was observed at De Leon Springs, Florida, on June 10, 1957, in a grassy roadside strip bordering a dense, moist woods. The fly "was following on the ground close behind a worker of *Trachymyrmex septentrionalis* McCook that was carrying a grass blade. The fly kept a very close and constant distance, about 1 cm. behind the ant, and followed every twist and turn made by the ant. The day was a hot one, and the pace of the ant was rather rapid. When the first attempt to capture the fly was unsuccessful, the fly was disturbed and flew quickly the short distance up to the branch-tip of an herb about 3–5 cm. high. A second *Trachymyrmex* was captured and placed free on the ground near the fly's perch, and the fly pounced down and followed the second ant for a brief period in the same way it had followed the first." "The closeness and tenacity of the fly tracking that little *Trachymyrmex* along the ground" clearly indicated that the ant was being followed. It is possible that the fly, in order to locate an ant nest for oviposition, was following an ant returning from a foraging expedition. I am indebted to Dr. Brown for his kind permission to report the interesting observation.

The type series of *P. texensis*, n. sp. from San Antonio, Texas, "emerged from refuse taken from a nest of the leaf-cutting ant, *Atta texana*," according to information furnished by the collector, E. V. Walter of the Entomology Research Division. A large nest of the ant was excavated, and several species of insects were found in the waste material of the fungus gardens, which is often placed in abandoned cavities, at that time of year (January) often deep in the nest (7–10 feet in the present case). A quantity of the material was placed in jars and held until the insects emerged.

This rearing and the observation of *decorior* following *Trachymyrmex* in Florida suggest some association with fungus-growing ants of the tribe Attini. However, this may be true only of certain species of *Pholeomyia*, because the genus ranges far north of the limit of the fungus-growing ants. Under *P. dampfi*, n. sp., it is recorded that Dampf reared a series (presumed to be conspecific with the type series) from bat dung found far back in caves in Guatemala. Perhaps the apparent myrmecophilous habit of some species is merely a lead to decaying vegetable or animal matter suitable for oviposition.

Pholeomyia Bilimek

Pholeomyia Bilimek, 1867, Verh. Zool.-Bot. Gesell. Wien 17, Abh.: 903. Type-species, *P. leucozona* Bilimek (monotypy).

Rhynchomilichia Hendel, 1903, Wien. Ent. Ztg. 22: 250. Type-species, *Lobioptera argyrophenga* Schiner (orig. desig.) (misident., changed to *R. schineri*, n. sp., by Hendel, 1932, Konowia 11: 137).

Rhynchomilichia: Becker, 1907, Ann. Mus. Nat. Hung. 5: 521.

Pholeomyia (= *Rhynchomilichia*): Hendel, 1911, Wien. Ent. Ztg. 30: 40.

Paramilichia Malloch, 1913, Proc. U. S. Nat. Mus. 46: 130, 135. Type-species, *Milichia longiseta* Becker (monotypy).

Pholeomyia (= *Rhynchomilichia*, = *Paramilichia*): Hennig, 1939, Arb. Morph. Taxon. Ent. Berlin-Dahlem 6: 85.

Pholeomyia: Steyskal, 1943, Ent. News 54: 99–102 (key to N. Amer. species).

Becker (1907) published a revision of the genus, as *Rhynchomilichia*, and included twelve species and two named varieties, eight of the species and the two varieties being new. Eight species and one variety were from Bolivia, Peru, or Paraguay, and are thus out of the range of this paper. Hendel (1911) called attention to the fact that *Pholeomyia leucozona* Bilimek also belonged with this group. For the North American species,

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keys were published by Melander (Sept. 1913) for six species (one new) and one variety, and by Malloch (Dec. 1913) for five species. A seventh species was added by Aldrich (1925) and an eighth by Steyskal (1943), the latter giving a key to the males of the eight North American species. All three available keys to the North American species were based entirely or chiefly on the male sex, and for almost all the species it has been considered impossible to identify the females with certainty.

Hendel (1932, Konowia 11: 137) resurrected *Rhynchomilichia* on the character of almost covered, bare lunule, whereas *Pholeomyia* has the lunule visible, with two small bristles. At the same time he noted his misidentification of *argyrophenga*, and changed the type of *Rhynchomilichia* to *R. schineri*, new species (=*argyrophenga* sensu Hendel, 1903, not Schiner). He was followed in this distinction by Malloch (1934, Dipt. Patagonia and S. Chile, Pt. 6, fasc. 5: 461, 462), although the latter did indicate that the character of the lunule seemed rather inadequate. Hennig considered the two synonymous, and I agree. The species show different degrees of exposure of the lunule and of development of a pair of bristles on it.

The species of *Pholeomyia* are uniform for many characters: Head large; front obviously narrower in male than in female, in both usually narrowing slightly toward antennae, smooth, with two rows of interfrontal hairs and sometimes a few others anteriorly, the interfrontal hairs not on definite stripes except in *politifacies*, n. sp.; eye large, occupying most of the head in profile, long axis vertical, hind margin usually not emarginate, only shallowly so in several species; cheek narrower in male than in female, lower margin with a row of strong bristles that ascend anteriorly above the oral margin; antenna short, second segment longer than third, the latter usually small, broader than long; arista slender, base enlarged, flagellum (except in *politifacies*) appearing bare, but minutely pubescent under high magnification. Chaetotaxy: Inner and outer vertical, postvertical, proclinate and divergent ocellar, 3 upper and 3 lower orbital (4–6 lower in *decorior*) pairs of bristles; outer verticals generally strong in female, weaker in male, completely undeveloped only in male *indecora*; anterior upper orbital proclinate in male, lateroclinate or anterolateroclinate in female; one pair of proclinate, usually approximated bristles or bristlelike hairs on lunule, varying from short, weak and scarcely visible to long and strong.

Thorax heavily pollinose, grayish or brownish; mesonotum well covered with hairs. Chaetotaxy: several humeral, 1+1 notopleural, 1 presutural, 1 supraalar, 1 intraalar, 2 postalar, 2–5 dorsocentral, 1–4 or 5 acrostical, and 2 scutellar pairs of bristles; 3 or more strong bristles on mesopleuron; 2 or 3 sternopleural bristles; females generally more strongly bristled and haired on mesonotum than males.

Abdomen, like thorax, heavily pollinose, uniformly dark in females, often ornamented with silvery areas in males, and often broadened and flattened in male; sterna 4 and 5 of male often characteristically beset with bristles and hairs (figs. 6–10); male terminalia (figs. 1–5) rather small and inconspicuous, the ninth tergum with a pair of appendages developed as forceps and differing slightly in shape and size in the various species, the para-anal processes (=cerci of some authors) well developed.

Venation generally as figured for *Milichia leucogaster* [sic] by Williston (1908, Manual N. Amer. Dipt., ed. 3, p. 293, fig. 19). The figure of *Pholeomyia indecora* in Curran's manual (1934, Fam. and Gen. N. Amer. Dipt., p. 337, fig. 19) is that of the broadened wing of female *indecora*; the male wing is longer, the marginal cell is not as broad, and the costal excision is not as deep.

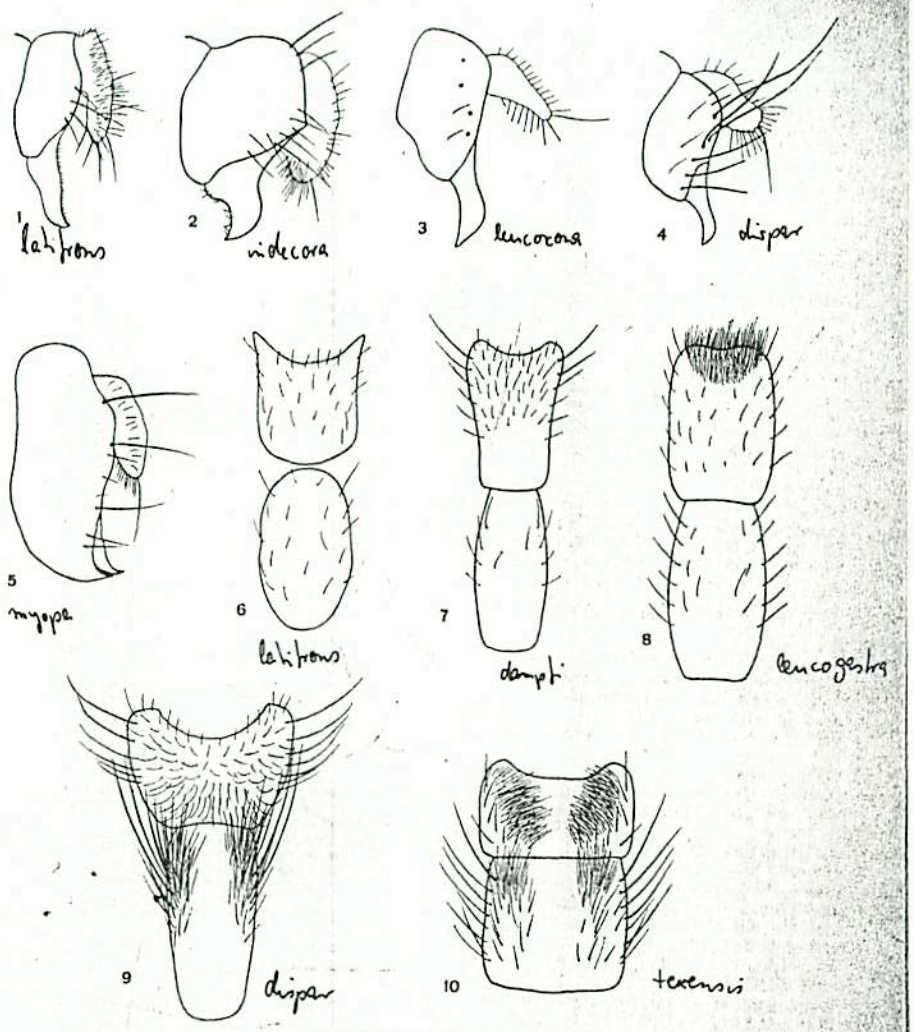
The male terminalia show only slight difference in most species. However, it was discovered that in the males the arrangement of bristles and hairs on the fourth and fifth sterna is very distinctive. Five main kinds, illustrated in figs. 6–10, were observed in the species included in this paper. The largest number of species (six) have the kind shown for *dampfi* (fig. 7), which is only a little different from the plain type in fig. 6, shared by four others. Three species (and possibly *robertsoni* Coquillett) have the distinct kind shown in fig. 9. Figs. 8 and 10 represent unique kinds.

It is interesting to note the character of the mesopleural bristles, because in the past their presence has been recorded but not the number. The typical number in *Pholeomyia* is four strong bristles in a single row. Only *expansa* Aldrich has a greater number, with seven to eight bristles in two irregular rows. Only *indecora* and *latifrons*, n. sp., have three bristles in a single row. While some variation is to be expected in a bristle character, it appears from the considerable material available that the character is remarkably consistent.

KEY TO THE NORTH AMERICAN SPECIES OF PHOLEOMYIA[1]

1. Three to four pairs of dorsocentral bristles, the anterior pair at or close to the mesonotal suture; postvertical bristles parallel to subparallel..... 2
   Two pairs of dorsocentrals, close together on posterior slope of mesonotum; postvertical bristles (except in *decorior*) cruciate at tips, or at least convergent to tips..... 5
2. Antennae, palpi, legs, and halteres yellow (Nicaragua to Argentina).....1. **longiseta** (Becker)
   These structures black or black-brown..... 3

[1]Long series of two new species were received unexpectedly as this paper was in proof, and they have been described in an addendum, with notes on their position in the key. Interesting biological notes accompany one series. Future rearing work in the warm temperate and tropical regions may well reveal a large fauna in this group.



EXPLANATION OF PLATE

Pholeomyia spp.: FIGS. 1–5, male terminalia in side view, showing ninth tergum and left appendage (forceps) and left para-anal process (cercus); FIGS. 6–10, male fourth and fifth sterna.

FIG. 1, *latifrons* (paratype, Rum Cay, Bahamas); 2, *indecora* (Lafayette, Ind.); 3, *leucozona* (Mexico); 4, *dispar* (Rosser, Tex.); 5, *myopa* (Homestead, Fla.); 6, *latifrons* (paratype, Rum Cay, Bahamas); 7, *dampfi* (Petén, Guat.); 8, *leucogastra* (Santiago de las Vegas, Cuba); 9, *dispar* (Rosser, Tex.); 10, *texensis* (paratype, San Antonio, Tex.).

3. Proboscis slender and elongate, the distal section equal to or slightly longer than length of head at vibrissae; face decidedly concave in profile, the epistoma sharply warped forward; male with abdomen dark brown and outer vertical bristles long and strong (Bahamas; ?Cuba) ..... 2. **latifrons,** n. sp.

Proboscis not elongate, distal section obviously shorter than head; face vertical or only weakly concave, the epistoma not strongly warped forward 4

4. Costal excision deep, two or more times the length of fore crossvein, longer in female than in male; mesopleuron with three bristles in a single row along posterior margin; wing light brownish tinted; male with abdomen dark brown and outer vertical bristles absent (present in female) (widespread, Canada and U. S., especially eastern) ..... 3. **indecora** (Loew)

Costal excision shorter, only 1.5 times the length of fore crossvein; mesopleuron more heavily bristled, typically with seven bristles in two rows; wing whitish; male with dorsum of abdomen silvery except for narrow first tergum, and outer vertical bristles long and strong (Calif.) ..... 4. **expansa** Ald.

(Only the male is known to me, but the first three characters are common to both sexes in the other species examined and undoubtedly characterize female *expansa*.)

5. Face polished black; arista sparsely but distinctly pubescent, the hairs at least as long as diameter of enlarged base of arista (West Indies, Centr. Amer., Brit. Guiana, Brazil) ..... 5. **politifacies,** n. sp.

Face leaden-gray pollinose, subshining; arista apparently bare, microscopically pubescent under high magnification 6

6. Proboscis slender and elongate, the distal section obviously longer than head; face concave in profile, the epistoma conspicuously warped forward 7

Proboscis of short to moderate length, the distal section clearly shorter than head; face vertical or nearly so, the epistoma not strongly warped forward 8

7. Postvertical bristles parallel to subparallel; apex of ocellar triangle, immediately anterior to median ocellus, usually with a pair of short, approximated, proclinate and divergent bristles; 4–6 pairs of strong, mesoclinate lower orbital bristles; male abdomen dark brown (southeastern U. S.) ..... 6. **decorior** Steys.

Postvertical bristles cruciate at tips or convergent; apex of ocellar triangle without bristles; 3 pairs of lower orbitals, interspersed with fine orbital hairs; dorsum of male abdomen silvery on segments 2 through 5 (Mexico) ..... 7. **hurdi,** n. sp.

8. Males 9

Females (unknown for *nitidula* and *robertsoni*, and somewhat doubtful in the species near *leucogastra*.) 17

(Males)

9. Dorsum of abdomen, except first tergum and distal half of fifth, densely covered with rusty reddish, appressed pubescence and pollen; mesonotum heavily brown pollinose (Fla. to Brazil) ..... 8. **myopa** Mel.

Dorsum of abdomen marked with some areas of silvery pollen 10

10. Silvery areas confined to sides of fifth tergum, a narrow median stripe and apex dark brown, concolorous with rest of abdomen; calypteres brown; wing hyaline, brownish tinted; (Md. to Fla.) ..... 9. **pseudodecora** (Beck.)

Abdominal segments 2 to 5 with some silvery areas on terga; wing and calypteres often whitish 11

11. Dorsal aspect of terga 2 to 4 entirely silvery, or at most with small median brown triangle at base of second, and each with a single row of black, well-spaced, hairlike bristles along posterior margin, the second tergum in one species with 6 to 8 additional scattered hairs on mesal third 12

Dorsal aspect of tergum 2, or each of terga 2 to 4, with broad, black or brown mesal area 15

12. Wing distinctly whitish; calypteres white; dorsum of fifth tergum almost entirely silvery, only a narrow black band distad to the row of marginal bristles; front velvet black posteriorly, often narrowly reddish anteriorly; second tergum with single row of bristles along posterior margin 13

Wing hyaline, brownish tinted; calypteres brown, at least on outer margin; dorsal aspect of fifth tergum broadly black at apex, the remainder silvery; front brown to black 14

13. Sternopleuron with 5–7 erect, strong, bristle-like hairs and bristles; fifth abdominal sternum posteriorly with a dense patch of fine hairs, the fourth sternum sparsely bristled (fig. 8) (Cuba, Mexico) ..... 10. **leucogastra** (Loew)

Sternopleuron typically with only three bristle-like hairs and bristles, an occasional additional one weak and inconspicuous; fifth abdominal sternum not with dense posterior patch of hairs, but fourth sternum with moderately dense posterolateral areas of long hairs and bristles (fig. 9) (southern U. S.) ..... 11. **dispar** (Beck.)

14. Second abdominal tergum with a group of 6–8 well-spaced black setae on mesal third of segment, in addition to row along posterior margin; mesonotum, viewed from behind, appearing very dark brown to blackish; anterior dorsocentral bristle long and strong, over three-fourths the length of posterior doroscentral, and farther from it than it is from nearest acrostical; front long and narrow, the length 1.66 times the width at vertex; fourth and fifth sterna similar to those of *dispar* (cf. fig. 9), the fourth with posterolateral areas of long hairs and bristles (Ga.) ..... 12. **nitidula,** n. sp.

Second abdominal tergum with only one row of well-spaced, black, hairlike bristles along posterior margin; mesonotum brownish pollinose, but viewed from behind appearing bluish-gray to greenish-gray pollinose; anterior dorsocentral bristle relatively short, half the length of posterior bristle and separated from it by slightly less than distance from latter to nearest acrostical bristle; front relatively broad and short, the length 1.25–1.30 times the width at vertex; fourth and fifth sterna (fig. 7) sparsely bristled (Guatemala, Mexico) ..... 13. **dampfi,** n. sp.

15. Second tergum with few hairs, about one irregular row in addition to that along posterior margin; third and fourth terga extensively brown in dorsal aspect, the brown spot on third forming a large triangle with its broad base on posterior margin, the fourth brown on posterior half to two-thirds, silvery anteriorly and on sides; fifth tergum sparsely haired, only one row of six hairs and a scattered hair or two anterior to the posterior marginal row of bristles (Fla.) ..... 14. **robertsoni** (Coq.)

Second tergum with numerous hairs in about 2–3 irregular rows, almost the full width of tergum, in addition to the row of hairlike bristles along posterior margin; third and fourth terga usually entirely silvery; fifth tergum rather densely haired, with 4–5 rows covering most of surface 16

16. Hind margin of eye, about midway, distinctly although shallowly emarginate; second tergum with about three irregular rows of hairs, the third and fourth each with two rows; fifth tergum almost entirely silvery; mesonotum and scutellum, viewed from behind, bluish-gray to greenish-gray pollinose; fourth and fifth sterna as in fig. 10, with dense lateral areas of fine hairs (Texas) ..... 15. **texensis,** n. sp.

Hind margin of eye straight, not at all emarginate; second tergum with more numerous hairs, in about six irregular rows, the third and fourth each with a single row, along the posterior margin; fifth tergum chiefly black, silvery pollinose basally; mesonotum and scutellum, viewed from behind, definitely brown to brownish-gray pollinose; fourth and fifth sterna as in *dampfi* (cf. fig. 7), without conspicuous patches of fine hairs (Mexico) ..... 16. **leucozona** Bilimek

(Females)

(Unknown for *nitidula* and *robertsoni*)

17. Front, mesonotum, and scutellum concolorous, distinctly yellowish-gray pollinose, in strong contrast to the dark brown abdomen; wing brownish tinted ..... 8. **myopa** Mel.

Mesonotum and scutellum brown to brownish-gray pollinose, in a few species bluish- or greenish-gray when viewed from behind; front brown to blackish, sometimes reddish anteriorly, but never yellow-gray pollinose 18

18. Cheek narrow but distinct, equibroad throughout its length, and not linear, half or more the greatest breadth of a palp 19

Cheek narrowing posteriorly, at one place virtually linear, only one-fourth to one-fifth the breadth of a palp; wing and calypteres brownish tinted 22

19. Front relatively broad and short, the width at vertex equal to length, often giving the illusion of being wider than long 20

Front obviously longer than broad, the width at vertex 0.81 to 0.88 times the length 21

20. Interfrontal hairs minute and inconspicuous, not set on definite plate; sternopleuron with 5–7 erect, strong bristlelike hairs in addition to the three bristles (Cuba, Mexico) ..... 10. **leucogastra** (Loew)

Interfrontal hairs coarser and more conspicuous, usually appearing set on distinct though incomplete, linear interfrontal plate; sternopleuron with 3 bristles; hind margin of eye, about midway, distinctly although shallowly emarginate (Texas) ..... 15. **texensis,** n. sp.

21. Wing whitish, especially on alula and anal areas; calypteres white (southeastern U. S.) ..... 11. **dispar** (Beck.)

Wing brownish tinted; calypteres brownish, especially on outer side (Md. to Fla.) ..... 9. **pseudodecora** (Beck.)

22. (Females of *leucozona* Bilimek and *dampfi*, n. sp., come here. The two available specimens of the former are unfortunately too poor to be compared satisfactorily with the type series of *dampfi*, but females of the two species are unquestionably very close. It is possible that the large third antennal segment of female *dampfi* will be a useful character, but lack of antennae on the available females of *leucozona* makes it impossible to tell at this time.)

1. Pholeomyia longiseta (Becker)

Milichia longiseta Becker, 1907, Ann. Mus. Nat. Hung. 5: 530 (Paraguay).
Paramilichia longiseta: Malloch, 1913, Proc. U. S. Nat. Mus. 46: 135 (Nicaragua).
Pholeomyia longiseta: Hennig, 1939, Arb. Morph. Taxon. Ent. Berlin-Dahlem 6: 86 (redescribed).

Diagnosis.—Front grayish-yellow pollinose; postverticals subparallel or slightly divergent; anterior pair of interfrontals proclinate, as strong as lower orbitals; face weakly concave, the epistoma not projecting in profile; cheek broad, nearly equal to breadth of third antennal segment; proboscis short. Thorax and abdomen concolorous in both sexes, grayish pollinose, the mesonotum more or less yellowish gray and the scutellum partly brownish gray; four pairs of dorsocentral bristles. Abdomen not dissected, but fifth sternum of male appears to be much like that of *latifrons* (cf. fig. 6), but with longer posterolateral bristles. Wing and calypteres brownish; costal excision deep, twice the length of fore crossvein.

In addition to the specimen from Nicaragua recorded by Malloch [USNM], I have seen material from the Argentine provinces of Formosa and Chaco, adjoining Paraguay [Inst. Miguel Lillo, Tucumán, Argentina]. Malloch's specimen is badly broken, but apparently belongs to this species. All agree with Hennig's redescription based on specimens from Paraguay.

The species stands out strongly in the genus *Pholeomyia* because of its yellow antennae, palpi, legs and halteres, all of which are black or blackbrown in the other known species. With this habitus, it is not surprising that a distinct genus was proposed for it. However, the structural characters are typical of *Pholeomyia*, and I agree with Hennig in placing it there. It is definitely Neotropical, but is included here because it may range into the area covered by this review.

2. Pholeomyia latifrons, new species

(Figures 1, 6)

Near *indecora*, with three pairs of dorsocentral bristles and concolorous thorax and abdomen in male, but with broader front and strong outer vertical bristles, and both sexes with broader cheek, elongate proboscis, and concave face with epistoma strongly warped forward.

Male.—Black to black-brown; cheek reddish brown; veins yellow; wing distinctly whitish; calypteres white; thorax and abdomen concolorous, brownish-gray pollinose.

Front broad, wider than an eye, at the vertex 0.45 and at lunule 0.40 times the width of head; postvertical bristles parallel or subparallel; outer verticals long and strong, subequal to inner verticals and postverticals; lunular bristles moderately strong; face concave, gray pollinose, the epistoma well warped forward and visible in profile; parafacial broad, clearly evident in profile; cheek relatively broad for the genus, 0.15 times the height of head and equal to breadth of third antennal segment; proboscis elongate, distal section longer than the head.

Mesonotum with three pairs of long, strong, well-spaced dorsocentral bristles, the anterior opposite the ends of mesonotal suture; two pairs of acrostical bristles far back on posterior slope of mesonotum, the anterior weak; mesopleuron with three strong bristles in a single row. Abdomen with terga 2–5 rather densely beset with

short black hairs, except for narrow band along anterior margin of each tergum; sterna 4 and 5 simple, sparsely beset with short hairs (fig. 6); terminalia (fig. 1) with long forceps and para-anal processes.

Wing venation as in *indecora*; costal excision short, not as long as fore crossvein, the anterior bristle, on lappet above the excision, prominent, longer than fore crossvein.

Female.—Similar to male in general habitus, differing in sterna, terminalia and following characters: Front broader, obviously wider than an eye, and slightly over half the width of head; cheek slightly wider than in male, 0.18–0.20 times the height of head; wing broader than in male, the subcostal and marginal cells conspicuously broadened, although not as extreme as in *indecora*.

Length of body, 3 mm.; of wing, 2.75 mm.

Holotype male and allotype, Governor's Harbour, Eleuthera Island, Bahama Islands, Mar. 31, 1953 (E. B. Hayden), in the American Museum of Natural History. Paratypes, 21 ♂♂, 5 ♀♀, Bahama Islands, collected by E. B. Hayden, L. Giovannoli, and G. B. Rabb on the Van Voast-American Museum of Natural History Bahamas Expedition. The paratypes represent a scattering of localities on San Salvador, Fortune, Mayaguana, and New Providence Islands, the Turks and Caicos Islands, and Rum, Fish, North, and Abaco Cays, Feb. 4 to May 10, 1953 [AMNH and USNM].

Eight other specimens (4 ♂♂, 4 ♀♀) from the Bahamas Expedition are not in good condition and have not been considered paratypes. The only additional localities are The Bight and Bennett's Harbour, Cat Island, Mar. 22 and 24, respectively.

This species is close to *indecora*, with three pairs of dorsocentrals, parallel postverticals, brown-black male abdomen, and only three bristles on the mesopleuron. Males of the two can readily be separated by the broader front and strong outer vertical bristles of *latifrons*, and by the male terminalia (cf. figs. 1, 2). Females are more difficult to distinguish, but the decidedly longer proboscis and projecting epistoma of *latifrons* enable one to recognize it. Further useful characters are the broader parafacial and whitish wing and calypteres of *latifrons*. Females of *indecora* are also more heavily bristled, with 4–5 pairs of dorsocentrals.

I know of no mainland records of *latifrons*, but it may well occur, at least occasionally, in southeastern United States. Any presumed *indecora* from that area should be carefully checked.

One male, Havana, Cuba (C. F. Baker) [USNM] probably belongs here, but may represent another species. The mesopleuron has three smaller bristles in two rows between the two large lower bristles, and the costal excision of the wing is slightly more pronounced, but I can find no other differences. The male terminalia are like those of *latifrons*. For the present, I regard it as a variant of *latifrons*.

3. Pholeomyia indecora (Loew)

(Figure 2)

Lobioptera indecora Loew, 1869, Berl. Ent. Ztschr. 13: 50 (Centuria 8, no. 94) (Nebr.).
Lobioptera indecora: Coquillett, 1900, Proc. U. S. Nat. Mus. 22: 268 (N. H. to Ga.; for the Vieques Island record, however, see *politifacies*).
Mtilichia indecora: Baker, 1904, Invertebrata Pacifica 1: 26 (Ormsby Co., Nev.).
Rhynchomilichia indecora: Becker, 1907, Ann. Mus. Nat. Hung. 5: 523.
Pholeomyia indecora: Melander, 1913 (Sept.), Jour. New York Ent. Soc. 21: 238 (N. H. to Fla. and west to Nebr. and Idaho; the West Indies record is probably based on Coquillett, 1900, for which see *politifacies*).
Pholeomyia indecora: Malloch, 1913 (Dec.), Proc. U. S. Nat. Mus. 46: 134 (N. H to Ga. and Texas; the Vieques Island record belongs under *politifacies*, and the Tabasco, Mexico, specimen is *myopa*).

Diagnosis.—Thorax and abdomen concolorous in both sexes, black, gray to grayish-brown pollinose. Postvertical bristles parallel or subparallel; outer vertical bristles strong in female, undeveloped in male; cheek relatively broad for the genus, in female nearly as broad as the third antennal segment, narrower in male; front of male much narrower than an eye, at the narrowest slightly over one-fourth the width of head; face weakly concave, gray pollinose; proboscis short. Three to five pairs of dorsocentral bristles, stronger in female than in male; mesopleuron almost always with three strong bristles in a single row. Wing hyaline, light brownish; calypteres brownish; costal excision deep, two or more times the length of fore crossvein; wing in female notably shorter and broader than in male, the marginal cell strikingly broadened, and costal excision longer than in male. The male terminalia (fig. 2) show broader and stouter forceps than the other species. The fourth and fifth abdominal sterna of the male are like those of *latifrons* (cf. fig. 6), sparsely beset with short hairs.

Approximately 240 specimens are before me, from Calif., Conn., D. C., Ga., Idaho, Ill., Ind., Iowa, Kans., Maine, Md., Mass., Mich., Nebr., Nev., N. H., N. J., N. Y., N. C., Penn., Vt., Va. in the United States, and from Alta., B. C., N. S., Ont., Quebec, and Sask. in Canada. I have also studied the holotype in the Museum of Comparative Zoology. Far western records are few: Fallen Leaf, Lake Tahoe, Calif.; Moscow and Montpelier, Idaho; Ormsby Co., Nev.; Victoria, Comex, and Squamish, B. C.

This is the most common, or at least most often-collected species of the genus. In eastern North America it is the only known species with three pairs of dorsocentral bristles. In the west, *P. expansa* must be considered, but *indecora* is easily distinguished by the black-brown abdomen of the male and by the fewer mesopleural bristles in both sexes. In the southeastern states, *latifrons* from the Bahamas must be considered a possible immigrant. Misidentifications have been numerous in the past, and no less than six different species have been found in collections identified as *indecora*, most of these being the drab females which lack striking characters.

P. indecora has been recorded several times from Puerto Rico, but I doubt that it occurs there. The published records that I have been able to recheck belong elsewhere (Vieques Island specimen, by Coquillett, 1900 = *politifacies*; Caguas and Barceloneta specimens, by Wolcott, 1936 = *myopa*; Mayaguez and Mona Island specimens, by Curran, 1928 = *myopa*; and other available West Indian specimens are not *indecora*). The published records of *indecora* from Jamaica are also probably erroneous; however, the material on which they were based has not been examined (Johnson, 1919, Bull. Amer. Mus. Nat. Hist. 41: 449; Gowdey, 1927, Cat. Ins. Jamaica, p. 89).

4. Pholeomyia expansa Aldrich

Pholeomyia expansa Aldrich, 1925, Proc. U. S. Nat. Mus. 66 (Art. 18): 1 (Mt. Lowe, Calif.).

Diagnosis (male).—Thorax and narrow first abdominal tergum black, thinly brownish pollinose, the remaining terga brilliant silvery. Postvertical bristles parallel to slightly divergent; outer verticals strongly developed, subequal to inner verticals; cheek narrow, but wider than haustellum; proboscis not unusually elongate, distal section obviously much shorter than length of head; face weakly concave; front broader than usual in male, at vertex two-fifths and at lunule one-third the width of head. Four pairs of dorsocentrals; mesopleuron strongly bristled, with 7–8 bristles in two irregular rows. Abdominal sterna 4 and 5 sparsely beset with hairs, as in *latifrons* (cf. fig. 6), sternum 5 about as figured but sternum 4 much reduced, little over one-fifth the width of 5. Wing conspicuously whitish; calypteres dark brown; costal excision shorter than in *indecora*, only 1.5 times the length of fore crossvein.

I have seen only the holotype and seven paratypes, all males [USNM].

Although only the male is known to me, the first three characters used for *expansa* in the key are common to both sexes in other species of *Pholeomyia* and undoubtedly serve for the female of *expansa* as well. The broad, silvery abdomen is a striking feature. The other species in the group with 3–4 pairs of dorsocentrals, *indecora* and *latifrons*, have the male abdomen entirely brown-black, concolorous with the thorax.

5. Pholeomyia politifacies, new species

Small gray species with face predominantly polished black, and arista long pubescent.

Female.—Black, the wing and calypteres whitish; front subshining black, contrasting with the gray pollinose orbits, ocellar triangle, and linear interfrontal stripes; body subshining, the thorax bright gray pollinose, seen from behind a faint bluish or greenish gray; abdomen black-brown pollinose.

Front broad, at vertex almost half the width of head, narrowing slightly towards antennae; postvertical bristles cruciate at tips; outer verticals well-developed; each row of interfrontal hairs set on a linear plate, reminiscent of *Desmometopa*; posterior margin of eye, about midway, with a slight but perceptible indentation; face concave, smooth and polished, a little gray pollen dorsally near antennal bases; cheek narrow; proboscis not greatly elongated, the distal section shorter than head; arista distinctly pubescent, the hairs at least as long as diameter of enlarged base of arista.

Thorax with two pairs of dorsocentral bristles, the anterior short and weak, half or less than the length of posterior, and close to it, the distance between the two dorsocentral bristles less than the distance from posterior dorsocentral to a prescutellar acrostical bristle; mesopleuron with four strong bristles in a single row. Wing not conspicuously shortened and broadened as is often the case in the female sex; costal excision short.

Length of body, 1.75 mm.; of wing 2 mm.

Holotype female, Cambito, Prov. Trujillo, Dominican Republic, Dec. 22, 1955 (J. Maldonado Capriles). Type No. 64303 in the U. S. National Museum, deposited by courtesy of the collector. Paratypes, all females: Vieques Island, Puerto Rico, Feb. 1899 (August Busck) [recorded as *Lobioptera indecora* Loew by Coquillett, 1900, Proc. U. S. Nat. Mus. 22: 268]; near Marine Hotel, Barbados, Sept. 14, 1918 (H. Morrison); Turrialba, Costa Rica, March 1954, light trap (C. H. Batchelder) [all, USNM]; two females, La Caja, near San José, Costa Rica, 1930 (H. Schmidt) [Deut. Ent. Mus.].

A series of about 65 specimens, all females, Mayaguez, Puerto Rico, Mar. 30, 1950 (H. E. Warmke), collected at flowers of *Hevea brasiliensis* [USNM], is unfortunately in too poor condition to be included in the type series. It does demonstrate the consistency of the characters upon which the new species is founded, and it indicates that the species is probably fairly common, although small and inconspicuous. Two damaged females are also available from near Georgetown, British Guiana, Sept. 22, 1918 (H. Morrison) [USNM].

I have seen four males referable to *politifacies*, two each from Higuito, San Mateo, Costa Rica (Pablo Schild), and from Tecantins, Alcobaca River, Pará, Brazil, Dec. 6, 1926 (E. G. Holt) [USNM]. The Costa Rica specimens are in poor condition. The Brazil specimens are in fair condition, but because the locality is so far distant from the type locality I have not included them in the type series. The front is strongly narrowed anteriorly, as usual in males, and the face is

narrow. The linear interfrontal stripes so evident in the females are weak and not continuous, with traces showing near the bases of the hairs. The cheek is linear. The facets in the anterior half of each eye are distinctly enlarged. The outer vertical bristles are shorter than in the female, but are still distinct. The polished face is sometimes difficult to see in the male because the face is narrow and often hidden by the antennae. Abdominal sterna 4 and 5 are like those of *dampfi* (cf. fig. 7). The male terminalia resemble those of *leucozona* (cf. fig. 3), but the posteroapical angle of the forceps is more rounded and the forceps appears less "boot-shaped."

I have seen a few specimens of what appears to be this species from Mataiea, Tahiti, Society Islands (Mumford and Adamson) [Bishop Museum, Honolulu].

6. Pholeomyia decorior Steyskal

Pholeomyia decorior Steyskal, 1943, Ent. News 54: 100 (Brunswick Co., N. C.).

This species was originally described as having very narrow silvery fasciae on the anterior margins of second to fourth terga. However, the appearance is deceiving; actually there are no silvery fasciae, and the abdomen is entirely black, brownish pollinose and subshining. The species is still valid, and the unicolorous abdomen in the male is unique among the known North American species having only two pairs of dorsocentrals. Only *indecora* and *latifrons*, both with three pairs of dorsocentrals, have an entirely black-brown abdomen in the male. The habitus is much like that of *indecora* Loew, which has three pairs of dorsocentral bristles.

Except for the above correction, the species has been adequately described by Steyskal. The diagnostic characters are as follows: Thorax and scutellum concolorous in both sexes, black, subshining, thinly brown pollinose; postvertical bristles subparallel to slightly divergent; outer verticals well developed in both sexes; 4–6 pairs of lower orbitals, convergent to cruciate at tips; apex of ocellar triangle, immediately anterior to median ocellus, typically with a pair of approximated, proclinate and divergent, bristly hairs; cheek linear in male, slightly wider in female; face gray pollinose, concave in profile, the epistoma conspicuously warped forward; proboscis slender, elongate and geniculate, both distal section and haustellum as long or longer than the head. Dorsocentral bristles in two pairs. Wing brownish tinted; calypteres white. Females may be recognized by the same combination of characters as the males. Abdominal sterna 4 and 5 are like those of *dampfi* (cf. fig. 7).

I can record only eight specimens besides the male holotype: Female, "N. C."; female, DeLeon Springs, Fla., June 10, 1957 (E. O. Wilson, W. L. Brown, Jr.); male, Levy Co., Fla., Mar. 7, 1954 (H. V. Weems, Jr.); female, Alachua Co., Fla., Mar. 18, 1956 (R. A. Morse) [all USNM]; female, Tifton, Ga., July 18, 1896 [Sabrosky Coll.]; female, Atco., N. J., June 6 (C. W. Johnson) [MCZ]; female, Jacksonville, Fla., (Mrs. A. T. Slosson) [AMNH]; female, Gainesville, Fla., Apr. 25, 1952 (O. Peck) [Canad. Dept. Agr.]. The holotype is now deposited in the U. S. National Museum.

The New Jersey specimen was recorded as *Rhynchomilichia indecora* by Johnson (1910, Diptera, in Smith, Insects of New Jersey, Ann. Rept. N. J. State Mus., p. 813). The other records of *indecora* in that list are correct. The Jacksonville, Fla., specimen is probably that recorded as *indecora* by Johnson (1913, Bull. Amer. Mus. Nat. Hist. 32: 89). The North Carolina specimen was determined as *indecora*, probably by Coquillett.

P. decorior possesses two characters that are unique in the group with two pairs of dorsocentral bristles, namely the subparallel postverticals, and the larger number of strong anterior orbitals. In that group it also differs from all but *hurdi* in the projecting epistoma and slender and elongate proboscis. Another unique character, the pair of bristly hairs at the apex of the ocellar triangle, is present in seven of the eight available examples, and in the holotype, and is probably typical although occasionally variable.

7. Pholeomyia hurdi, new species

Species superficially like *leucogastra*, with two pairs of dorsocentral bristles and dorsum of abdomen predominantly brilliant silvery, but the proboscis slender and elongate, face concave, and epistoma projecting.

Male.—Predominantly black; front dull black, the orbits and lunule subshining; thorax quite shining though finely dark gray pollinose; scutellum duller, with brownish pollinosity; abdominal terga 2 through 5 brilliant silvery except for narrow apical margin of 5, distad of the submarginal row of bristles; wing hyaline or whitish hyaline with yellow veins; calypteres white.

Front appearing relatively narrow, at vertex slightly over one-third width of head but strongly narrowing to one-fifth the head width measured at the lunule; lunule conspicuously subquadrate, the dorsal margin straight, the surface with a weak pair of hairs; postverticals strongly cruciate; outer verticals strong, equal to postverticals; eye large, facets of anterior two-fifths moderately enlarged, the hind margin straight; face pollinose, concave, the epistoma well warped forward and very evident in profile; parafacial and cheek linear; proboscis slender and elongate, the distal section and haustellum each well over the length of head; third antennal segment relatively small; arista minutely pubescent.

Mesonotum with two pairs of dorsocentral bristles, the anterior strong but only two-thirds the length of posterior, and set closer to the posterior than the latter is to the prescutellar acrostical bristle, the latter as long and strong as a posterior dorsocentral; intrapostsuturals not developed, so the dorsocentral and acrostical bristles stand out as long and strong bristles surrounded by short, appressed clothing hairs; mesopleuron with four bristles in a single row; sternopleuron with a single thick bristle, preceded by a weak hairlike bristle only a little longer than the hairs.

Abdominal terga almost devoid of hairs and bristles, the second through fourth each with a row of short, well-separated black bristles along posterior margin, the fifth with a submarginal row of longer bristles, with a few short hairs interspersed; terga 2–5 of approximately equal length, but in most specimens telescoped by drying or because of immaturity so that the length of second tergum is often twice the combined lengths of 3 and 4; sterna 4 and 5 like those of *dampfi* (cf. fig. 7); male terminalia near *dispar* (cf. fig. 4), the forceps slender but shorter than in *dispar*.

Wing venation ordinary for the genus; costal excision short.

Female.—As described for male, except for terminalia and as follows: Front broader, at the vertex wider than an eye and nearly two-fifths the width of head, almost parallel-sided, narrowing only slightly and at lunule measuring one-third the head width; face correspondingly broad; eye facets uniform in size. Abdomen black, quite shining though finely brownish pollinose, the entire dorsum beset with hairs.

Length of body and of wing, 2.75 mm.

Holotype male and allotype, Ahuacatlan, Nayarit, Mexico, July 18–22, 1951 (P. D. Hurd), in the collection of the California Academy of Sciences. Paratypes: 7 males, 4 females, same data as holotype; 4 males, 1 female, 15 km. N. of Chapalilla, Nayarit, Mexico, July 19, 1951 (Hurd); 1 female, 4 mi. W. of El Cercado, Nuevo Leon, Mexico, June 6, 1951 (Hurd); 1 female, Guadalajara, Jalisco, Mexico, July 23, 1951 [Calif. Acad. Sci. and USNM]. The allotype and five topotypical paratypes were taken at flowers of *Donnellsmithia Hintonii* M. & C.; four of the Chapalilla series were labeled "*Baccharis*," and the Guadalajara female "*Baccharis glutinosa*." Six other specimens from Chapalilla and Guadalajara are somewhat damaged and are not included in the type series.

Although it resembles *leucogastra* in the color of the male abdomen, the elongate proboscis and projecting epistoma mark *hurdi* as distinct from all species considered in this paper except *decorior* and *latifrons*, which are quite different on other characters.

I am pleased to name this species after the collector, who has secured fine series of many interesting Diptera on this and other collecting trips.

8. Pholeomyia myopa Mel.

(Figure 5)

Pholeomyia myopa Melander, 1913, Jour. New York Ent. Soc. 21: 238 (Haiti).

Diagnosis, male.—Front fine-grained, velvety brown; mesonotum and scutellum brownish pollinose; abdomen, except first tergum and distal half or three-fifths of fifth, rusty reddish; wing and calypteres brown. Front narrow, at the vertex 0.30 times the width of head, narrowing to 0.15 at the lunule; postverticals cruciate; outer verticals present, but short and hairlike; face nearly vertical, the epistoma not projecting; cheek linear; proboscis short. Mesonotum with two pairs of dorsocentral bristles; mesopleuron with four strong bristles in a single row. Sterna 4 and 5 of abdomen as in *dampfi* (cf. fig. 7); terminalia (fig. 5) characteristic, with greatly enlarged ninth tergum. Length, 3 mm.

Female.—Front, mesonotum and scutellum concolorous, yellowish-gray pollinose; abdomen dark brown to brown-black, subshining; wing and calypteres paler than in male, the former yellowish to light brown, the latter yellowish white. Front narrower than usual in female *Pholeomyia*, at the vertex 0.36 times the width of head, narrowing slightly toward antennae; outer vertical bristles long and strong.

Distribution.—Besides the type from Haiti, I have before me 45 specimens from Florida (Homestead, Key West, Key Largo, Stock Island, and Monroe County), the Bahamas (Darby, New Providence, and Grand Bahama Islands), Cuba (Guantanamo), Dominican Republic (Ciudad Trujillo, San Pedro de Macoris, and two localities in Prov. Trujillo), Puerto Rico (Mona Island, Lajas, Caguas, Barceloneta, Rio Piedras, and Mayaguez), Mexico (Tabasco), Costa Rica (San Mateo), Panama Canal Zone (Camaron), Venezuela (San Esteban), Trinidad (Maracas Valley), and Brazil (Tapajos in Pará).

The specimen from Mexico [USNM] was recorded as *indecora* by Malloch (1913, Proc. U. S. Nat. Mus. 46: 134), the specimens from Mayaguez and Mona Island, Puerto Rico [AMNH], as *indecora* by Curran (1928, Scient. Survey Porto Rico and Virgin Is. 11(1): 68), and the specimens from Caguas and Barceloneta, Puerto Rico [USNM], as *indecora* by Wolcott (1936, Insectae Borinquenses, Puerto Rico Univ. Jour. Agr. 20: 392).

I am indebted to Dr. Melander for the loan of the holotype, which enabled me to confirm the identify of my material and to ascertain that it has only two pairs of dorsocentral bristles instead of three as originally stated. The apparent third pair of dorsocentrals is intrapostsutural, each bristle of the pair set between and slightly in advance of the posterior dorsocentral and posterior acrostical bristles. In the male sex, the species is unique in the genus in having the dorsum of the abdomen chiefly rusty reddish. The fe-

males that appear to be associated differ markedly from the male in the color of the front and thorax, but they are consistently associated by locality and by the fact that neither sex can be matched with any other available species. It is concluded, therefore, that the species is sexually dimorphic in the color of front and thorax as well as in the normally dimorphic appearance of the abdomen. The male terminalia (fig. 5) are unique among the species that I have examined.

9. Pholeomyia pseudodecora (Becker)

Rhynchomilichia pseudodecora Becker, 1907, Ann. Mus. Nat. Hung. 5: 524, pl. 12, fig. 6 (Tifton, Ga.).
Pholeomyia pseudodecora: Melander, 1913, Jour. New York Ent. Soc. 21: 238.

Diagnosis.—Front velvet black, reddish on anterior fourth to third: thorax and abdomen black-brown, dark brown pollinose, concolorous in both sexes except for distal portion of male abdomen, in which the fifth tergum is silvery except for narrow median stripe and apex, and the extreme sides of third and fourth terga are obscurely silvery-gray; wing brownish tinted; calypteres brown.

Front at narrowest one-fourth the head width in male, two-fifths in female; postverticals cruciate; outer verticals long and strong in female, very short and hardly noticeable in male; face gray pollinose, weakly concave, epistoma not strongly projecting; cheek linear in male, narrow in female; proboscis not elongate, distal section shorter than head. Two pairs of dorsocentral bristles; mesopleuron with four strong bristles in a single row. Abdomen not dissected in the limited material, but sterna 4 and 5 approximately as in *dispar* (cf. fig. 9), the lateral areas on 4 less dense.

Distribution.—I have seen only two males of this species: Augusta, Ga., Apr. 5, 1946 (P. W. Fattig), and Alachua Co. Fla., Oct. 21, 1956 (R. A. Morse) [USNM]. In addition, there are five females which I identify as *pseudodecora*: Augusta, Ga., same data as male noted above; 2, Tifton, Ga., 1896 (previously identified as *indecora*); Bladensburg, Md., Oct. 2, 1914 (R. C. Shannon) [all, USNM]; Alachua Co., Fla., Aug. 12, 1955 (R. A. Morse) [Fla. State Plant Board Colln.].

Becker's figure of the male abdomen makes identification of this species very easy. However, he described the calypteres as whitish, whereas they are brown, or at least brown-margined, in the only males before me. He probably also had female *leucogastra* confused here, because he described the female wing as "somewhat whitish." It may also be noted that the extreme sides of the third and fourth terga are narrowly and obscurely silvery, although this was overlooked by Becker, who described only the dorsal aspect.

If I have correctly associated the females, *pseudodecora* and *leucogastra* are very close in that sex, and can easily be confused. From comparison with the males, I have placed those females with whitish wing and calypteres as *leucogastra*, and those with brownish wing and calypteres as *pseudodecora*. The small series of each available for study makes it impossible to do more than make a tentative association at this time.

10. Pholeomyia leucogastra (Loew)

(Figure 8)

Milichia leucogastra Loew, 1861, Wien. Ent. Monatschr. 5: 43 (Cuba).
Lobioptera leucogastra: Loew, 1869, Berlin. Ent. Ztschr. 13: 50 (Centuria 8, no. 95).
Rhynchomilichia leucogastra: Becker, 1907, Ann. Mus. Nat. Hung. 5: 523.
Pholeomyia leucogastra: Melander, 1913, Jour. New York Ent. Soc. 21: 238.

Diagnosis.—Front velvet black, reddish on anterior fourth to third; abdomen of male brilliant silvery, only the first tergum and narrow distal margin of fifth black; abdomen of female concolorous with thorax; wing and calypteres conspicuously whitish. Postvertical bristles cruciate; outer verticals present in both sexes, though short and weak in male; face gray pollinose, weakly concave; cheek linear in male, slightly wider in female; proboscis not elongated, distal section obviously shorter than head. Two pairs of dorsocentral bristles; mesopleuron with four strong bristles in a single row; sternopleuron with 5–7 erect, strong bristles and bristlelike hairs. Abdominal terga 2–4 of male each with a single row of black, hairlike bristles along posterior margin; fifth sternum of male posteriorly with a dense patch of fine hairs, the fourth sparsely bristled (fig. 8); male terminalia as in *dispar* (cf. fig. 4). Length 3.5 mm.

Distribution.—I have seen the following typical *leucogastra*: 2 males, Santiago de las Vegas, Cuba, Feb. 11, 1926; 5 males, same locality, Mar. 31, 1938 (J. Fernandez) [USNM]; 3 males, 2 females, Chilpancingo, Guerrero, Mexico, 3700 ft., Aug. 7, 1954 (J. G. Chillcott; 1 male, Lagos de Moreno, Jalisco, Mexico, 6400 ft., Aug. 19, 1954 (Chillcott); 1 male, 34 mi. S. of Cuernavaca, Morelos, Mexico, 2600 ft., Aug. 4, 1954 (Chillcott) [Canad. Dept. Agr.].

Many of the specimens standing in collections as *leucogastra* must be referred elsewhere. For example, of those recorded by Malloch (1913, Proc. U. S. Nat. Mus. 46: 135), the specimen from Victoria, Tex., is *texensis*, that from Rosser, Tex., is *dispar*, and the two from Georgia are *nitidula*.

P. leucogastra and *dispar* are the most whitish species of the group having conspicuously whitish wing and calypteres and brilliant silvery male abdomen. The characteristically velvet black front, reddish anteriorly, is shared only with *pseudodecora*. *P. leucogastra* and *dispar* are easily confused superficially, but can be distinguished in the male sex by the characteristic bristling of the sterna of the fourth and fifth abdominal segments (cf. figs. 8 and 9). These can almost always be seen in dried specimens, especially that of *leucogastra*, unless the abdomen is badly collapsed. A somewhat variable character, but apparently quite good for both sexes, is the bristling of the sternopleuron. In *leucogastra*, there are a number of erect bristles and bristlelike hairs, apparently typically five but sometimes more. In *dispar*, there are only three, and occasional additional hairs are small and inconspicuous.

11. Pholeomyia dispar (Becker), new status

(Figures 4, 9)

Rhynchomilichia leucogastra var. *dispar* Becker, 1907, Ann. Mus. Nat. Hung. 5: 523, 529 (Tifton, Ga.).
Pholeomyia leucogastra var. *dispar:* Melander, 1913, Jour. New York Ent. Soc. 21: 238.

Diagnosis.—As described for *leucogastra* except as follows: Sternopleuron typically with only three strong bristles and bristlelike hairs, an occasional additional hair weak and inconspicuous; fourth and fifth abdominal sterna of male as in fig. 9, the fourth with a conspicuous group of long hairs on each side on posterior half, the fifth with numerous hairs and bristles but not with a dense posterior marginal area of fine hairs as in *leucogastra* (cf. fig. 8); male terminalia as in fig. 4, the forceps slender.

Distribution.—I have before me 14 males of the species, and 4 females which I associate with them: 5 males, 2 females, Tifton, Ga., Oct. 1896 (topotypic); female, Hudson, Fla., July 13, 1930 (P. W. Oman); male, Goliad, Tex., Oct. 29, 1915; male, Rosser, Tex., Aug. 23, 1905 (F. C. Bishopp), published as *leucogastra* by Malloch (1913); female, Virginia Beach, Va., June 23, 1933 (J. M. Aldrich) [all, USNM]; 4 males, Tifton, Ga. (topotypic); 2 males, Ormond, Fla. (C. W. Johnson); male, St. Augustine, Fla., Apr. 12, 1919 [MCZ]. The females had been placed under *indecora*, the males under *leucogastra*.

Becker attempted to distinguish *leucogastra* and variety *dispar* on the relative lengths of the second abdominal tergum compared with the third and fourth combined, but in the series before me this is merely a matter of telescoping of the abdominal segments. However, he did validate the name *dispar*. I have before me a number of males from the type locality, and probably from the same lot, originally from the Hough collection, as the type material in the Bezzi collection. With this material for analysis, I adopt the name *dispar* for the species. It is superficially very close to *leucogastra*, and following Becker, has usually been identified as a variety of it. The best distinguishing features are the fourth and fifth sterna of the males (cf. figs. 8 and 9).

12. Pholeomyia nitidula, new species

Large species with two pairs of strong, well-spaced dorsocentrals and short proboscis, mesonotum appearing shining black as viewed from behind, and terga 2–5 almost entirely silvery.

Male.—Predominantly black; abdominal terga 2–5 silvery except for a small mesal black triangle at base of second tergum and the black apical two-fifths to half of the fifth tergum; wing light brown-tinted; calypteres brown.

Front relatively long and narrow, the length 1.6 times the width at vertex; front at vertex obviously narrower than an eye, 0.35 times the head width, narrowing to 0.19 times at the lunule; postverticals cruciate at tips; outer verticals evident, but slender; eye large, anterior facets moderately enlarged, hind margin virtually straight, with a barely perceptible shallow emargination about midway; face pollinose, slightly concave, epistoma not strongly warped forward and not strongly projecting in profile; parafacial reduced to a line; cheek linear; proboscis well developed, but not unusually elongate, the distal section not longer than the head; third antennal segment small; arista microscopically pubescent.

Mesonotum with two pairs of dorsocentral bristles, the anterior large and strong and well removed from the posterior pair, the interval longer than that between the posterior dorsocentral and the prescutellar acrostical; intrapostsutural longer than mesonotal hairs, but still slender and hairlike and not prominent; mesopleuron with four strong bristles in a single row; sternopleuron with three bristles, only the posterior strong.

Abdominal terga 2–4 each with a row of well-spaced, hairlike bristles near posterior margin, the second with a few additional scattered hairs on mesal third; fifth tergum with a number of hairs on the black apical portion; sterna 4 and 5 and the terminalia as in *dispar* (cf. figs. 4, 9).

Wing venation ordinary for the genus; costal excision moderately deep, slightly longer than the fore crossvein.

Length of body and of wing, 3 mm.

Female.—Unknown.

Holotype and one paratype, both males, Georgia, August (Collection Coquillett). Type No. 64304 in the U. S. National Museum.

This species belongs to a group confused with *leucogastra* in past determinations. The specimens were recorded as *leucogastra* by Malloch (1913, Proc. U. S. Nat. Mus. 46: 135). The species is very close to *dispar*, having the same kind of terminalia and fourth and fifth abdominal sterna in the male (cf. figs. 4, 9). The differences are in color characters, except for the presence of additional setae on the mesal third of the second abdominal tergum in *nitidula*, and it is possible that *nitidula* may ultimately be demonstrated to be only a variant of *dispar*.

13. Pholeomyia dampfi, new species
(Figure 7)

Near *leucogastra*, with two pairs of dorsocentral bristles and dorsum of abdomen of male predominantly brilliant silvery, but the wing hyaline or light brown-tinted, calypteres brown, and mesonotum bluish-gray or greenish-gray, viewed from behind.

Male.—Predominantly black to black-brown; abdominal terga 2–5 brilliant silvery except for small median basal triangle on second and the distal two-thirds or more of the fifth; mesonotum and scutellum finely brownish pollinose, the former appearing bluish-gray or greenish-gray when viewed from behind; wing faintly brown-tinted, almost hyaline; calypteres brown.

Front relatively broad and short for the genus, its length 1.25–1.30 times its width at vertex, the width at vertex 0.40 times and at lunule 0.27 times the width of head; postverticals cruciate at tips; outer verticals strong, subequal to the postverticals; eye large, the anterior facets only slightly enlarged, hind margin virtually straight, with an almost imperceptible concavity midway; face pollinose, weakly concave, the epistoma not evident in profile; parafacial only a line; cheek very narrow, almost linear; proboscis short, distal section not as long as head; third antennal segment slightly larger than usual in the genus, broader than long; arista microscopically pubescent.

Mesonotum with two pairs of dorsocentral bristles, the anterior pair relatively short, half the length of the posterior, and separated from them by slightly less than the distance from posterior dorsocentral to the nearest acrostical; intrapostsutural bristle, between posterior dorsocentral and acrostical bristles, only weakly developed, little longer than hairs; four strong mesopleural bristles in a single row; three sternopleural bristles, the posterior longest and strongest.

Dorsum of abdominal terga 2 through 4 typically with only a single row of well-spaced hairlike bristles near posterior margin; fifth tergum with numerous hairs on posterior two-thirds or more, chiefly on the dark part of the tergum and ending at the submarginal row of long bristles; abdominal sterna 4 and 5 as in fig. 7, sparsely beset with bristles and hairs, the laterals on 5 well developed; male terminalia as in *leucozona* (cf. fig. 3).

Wing venation ordinary for the genus; costal excision short.

Female.—As described for male, except for the terminalia and abdominal sterna, and as follows: Abdomen entirely brown to black, the entire dorsum beset with hairs; front broad, slightly broader than long and wider than an eye, at the vertex slightly over and at lunule slightly under two-fifths the width of head, the sides appearing virtually parallel; face correspondingly broad; eye facets uniform in size; third antennal segment larger than usual in the genus, nearly twice as broad as apical diameter of second segment.

Length of body and of wing, 2.5 mm.

Holotype male, allotype, and 20 paratypes (10 males, 10 females), Caves of Jobitzinal, near Flores, Petén, Guatemala, Nov. 29, 1925, captured in cave (A. Dampf); 1 male paratype, Teapa, Tabasco, Mexico, July 27, 1954, in cave (Ryckman, Christianson, Fisher). In the U. S. National Museum, Type No. 64305.

Dr. Aldrich noted in his card catalogue (U. S. Nat. Mus.) that Dampf wrote in December 1926 "that he had reared a lot more from bat dung, and says they follow the bats into the caves several hundred meters." No material of this rearing is available for verification, although the circumstances suggest that the same species was probably involved.

Three other males from the same lot as the type, and a male from Guatemala City, Guatemala, 5000 ft., March 1932 (C. N. Ainslie) [USNM] differ in having the central two-thirds of the second tergum extensively haired, rather than the single row. I can find no other differences, and conclude that this is only an occasional variant from the typical form. One male shows an intermediate condition, with more and finer bristles in the marginal row, and a few scattered hairs on the disk of the tergum.

This species is close to *leucogastra*, and stood in the collection under that name. It is likewise close to *dispar* and *nitidula*, and the four form a small complex of some difficulty. However, the fourth and fifth sterna of the males are of three quite different kinds (cf. figs. 7–9).

14. Pholeomyia robertsoni (Coquillett)

Milichia robertsoni Coquillett, 1902, Jour. New York Ent. Soc. 10: 187 (Inverness, Fla.).
Rhynchomilichia robertsoni: Becker, 1907, Ann. Mus. Nat. Hung. 5: 526.
Pholeomyia robertsoni: Melander, 1913, Jour. New York Ent. Soc. 21: 238.

Diagnosis (male).—Thorax brown-gray pollinose; abdomen with terga 2–4 silvery on sides and anterolaterally, the second and third each brownish-gray dorsally in a broad triangular area with base along posterior margin, the fourth likewise but its silvery pollen forming a continuous anterior marginal band; fifth tergum predominantly silvery, brown-black on distal fourth to third, beyond the row of bristles; wing and calypteres whitish.

Postvertical bristles cruciate; outer verticals well developed for a male; face gray pollinose, moderately concave; cheek linear; proboscis not elongate, distal section shorter than head. Mesonotum with two pairs of strong dorsocentral bristles; mesopleuron with four strong bristles in a single row. Second to fourth abdominal terga with a few hairs, in about one irregular row, in addition to the posterior marginal row of hairlike bristles. Wing with costal excision small. Length of wing, and probably of the body (collapsed in type), 2 mm.

The holotype [USNM] and only specimen known to me is collapsed, but fortunately the above diagnostic characters can be seen. It has not been dissected, so that the pattern of the dorsum of the abdomen will not be spoiled unless and until absolutely necessary. The abdomen is too curled for proper examination of the fourth and fifth sterna, but it appears that they may resemble those of *dispar* (cf. fig. 9), although the side hairs are not as densely placed.

One male, Elfers, Fla., Apr. 14, 1952 (J. R. Vockeroth) [Canad. Dept. Agr.] may be *robertsoni*, but the brown areas on terga 2 through 4 are much reduced, those on 3 and 4 to narrow median areas along posterior margins of each tergum. It is possible that this represents variation in *robertsoni*.

15. Pholeomyia texensis, new species
(Figure 10)

Small species near *leucogastra*, with two pairs of dorsocentrals and short proboscis, but abdominal terga 2–4 with two to several rows of hairs or hairlike bristles, those terga chiefly silvery but at least tergum 2 broadly brown on mesal third or more.

Male.—Predominantly black to brown-black; abdominal terga 2 through 5 predominantly silvery, the second always broadly brown on mesal third or more, the third and fourth typically entirely silvery but occasionally with some brown mesally along posterior margin, the fifth black on extreme sides and sometimes at apex mesally; mesonotum and scutellum grayish or light brownish-gray pollinose, the former appearing bluish-gray or greenish-gray when viewed from behind; wing and calypteres apparently light brownish, but color possibly affected by the poor condition of preservation.

Front relatively short and broad, its length only 1.17 times its width at vertex, the front at vertex 0.44 times the head width, narrowing to 0.26 times at the lunule; postverticals cruciate at tips; outer verticals well developed; eye large, anterior facets moderately enlarged, hind margin of eye distinctly though shallowly emarginate about midway; face pollinose, weakly concave, epistoma not strongly warped forward, and not evident in profile; parafacial reduced to a line; cheek narrow but wider than usual, over half the breadth of a palp; proboscis short, distal section not as long as head; third antennal segment small; arista microscopically pubescent.

Mesonotum with two pairs of dorsocentral bristles, the anterior pair moderately well developed; intrapostsuturals not developed; four strong mesopleural bristles in a single row; three sternopleural bristles, the posterior strong.

Dorsum of abdomen sparsely covered with coarse hairs, the second tergum with two to three rows, the third and fourth each with one row of coarse hairs, the rows more or less irregular, in addition to the posterior submarginal row of hairlike bristles on each tergum; fifth tergum more extensively haired, only a basal band bare; sterna four and five (fig. 10) with unique pattern of dense sublateral areas of fine hairs flanking a median bare stripe; terminalia as in *dispar* (cf. fig. 4).

Wing venation ordinary for the genus; costal excision of moderate depth, about twice the length of fore crossvein.

Female.—As described for male, except for terminalia and sterna, and as follows: Abdomen entirely brown to black-brown, the dorsum with numerous coarse hairs; front nearly square, as broad as long and approximately half the width of head; face correspondingly broad; eye facets of uniform size; cheek slightly broader than in male, but still narrow; interfrontal hairs quite distinct, and often appearing set on incomplete, linear, interfrontal plates.

Length of body and of wing, 2–2.25 mm.

Holotype male, allotype, and 15 paratypes (9 males, 6 females), San Antonio, Tex., Jan. 30, 1935 (E. V. Walter), "nest of cut ant"; male paratype, Victoria, Tex., Apr. 1, 1907 (J. D. Mitchell). In the U. S. National Museum, Type No. 64306. Seven other specimens (4 males, 3 females) of the San Antonio series are in poor condition and are not included in the type series. The circumstances of the rearing of this series are noted in the introduction under the heading of "Biology." The Victoria specimen was recorded as *leucogastra* by Malloch (1913, Proc. U. S. Nat. Mus. 46: 135).

The unique pattern of hairs of bristles on the fourth and fifth sterna of the male is the surest distinguishing feature of this species.

16. Pholeomyia leucozona Bilimek
(Figure 3)

Pholeomyia leucozona Bilimek, 1867, Verh. zool.-bot. Gesell. Wien 17, Abh.: 903 (Mexico).
Pholeomyia cacahuamilpensis Herrera, 1892, El Estudio; Organo Inst. Med. Nac. Mexico 4(8): 272. NEW SYNONYM (Unnecessary renaming of *leucozona*, on ground that cave species should have more appropriate names, this species being taken in the cave Cacahuamilpa).
Pholeomyia leucozona: Hendel, 1911, Wien. Ent. Ztg. 30: 40, figs. 5–7 (redescription, from type series).

Species with two pairs of dorsocentral bristles and short proboscis, the male with characteristically patterned abdomen.

Male.—Predominantly black; mesonotum and scutellum, viewed from behind, brown to brownish gray-pollinose; abdominal pattern near that of *Pholeomyia praesecta* Becker from Peru (Becker, 1907, Ann. Mus. Nat. Hung. 5: pl. 12, fig. 4) but the dark central area on tergum 2 nearly quadrate, almost covering the dorsal aspect of that tergum,

the sides silvery; terga 3 and 4 silvery, tergum 5 silvery at base but black on most of its surface; wing light brown; calypteres brown.

Head as figured by Hendel; front at vertex wider than an eye and 0.42 times the width of head, strongly narrowing towards the antennae; postverticals cruciate at tips; outer verticals strong; lunule only narrowly visible; hind margin of eye virtually straight; facets on anterior part of eye only slightly enlarged; face dull, pollinose; epistoma not strongly warped forward and not projecting in profile; cheek linear; proboscis short, distal section less than length of head; third antennal segment of moderate size; arista microscopically pubescent.

Mesonotum with two pairs of dorsocentral bristles, the anterior strong but only half the length of posterior; mesopleuron with four strong bristles in a single row; three sternopleural bristles, the posterior strong.

Dorsum of abdomen with numerous coarse hairs, the second with five to six irregular rows, the third and fourth each with a single row along posterior margin, and the fifth with numerous hairs over its surface except on the silvery band at base; sterna 4 and 5 as in *dampfi* (cf. fig. 7); terminalia as in fig. 3, the forceps slightly broader than in *dispar*, *leucogastra*, etc. (cf. fig. 4).

Wing damaged, but apparently ordinary for the genus, as figured by Hendel; costal excision relatively small, not as conspicuous as in Hendel's figure.

Female.—As described for male, except for terminalia, sterna, and as follows: Abdomen entirely brown to brown-black, the dorsum with numerous coarse hairs; front slightly broader than in male, at the vertex wider than an eye and 0.44 times the width of head, narrowing slightly towards the antennae but not as strongly as in male, the face obviously wider; eye facets of uniform size, all small; cheek linear, only insignificantly wider than in male.

Length of body, 2.5 mm.

I have before me two males and two females of Bilimek material from Mexico [Naturhist. Mus., Wien]. The specimens are no longer in good condition, but they have made it possible to see a number of the essential points, as described above. One male, which bears the handwritten labels "14. Jaenner," "Bilimek/Cacahua/milpa," and "Pholeomyia leucozona" in an old script, is apparently one of the original series, and I have labeled it as Lectotype. Two specimens, a male and a female, bear a printed label "Bilimek/Mexico/1871," the female with "Type" written on the label. The date of collection is subsequent to the original publication and although these specimens are apparently conspecific with the Lectotype, they cannot be considered as part of the original syntype series. The second female is labelled only "Mexico." In order to preserve the appearance of the Lectotype, already in none too good condition, the 1871 male was dissected for study of the sterna and terminalia (fig. 3).

This species, the type-species of the genus, is distinguished from its congeners as noted in the key.

ADDENDUM

Pholeomyia comans, new species

Small species near *texensis*, but the abdomen chiefly brown, and terga 2–5 with numerous hairs.

Male.—Predominantly brown to black; abdomen predominantly brown in dorsal aspect, with some silvery pollen on posterolateral corner of second tergum, on narrow bases of terga 3 and 4, broadening laterally, and narrowly on base of fifth tergum, especially sublaterally; mesonotum and scutellum as in *texensis;* wing apparently whitish, but possibly affected by mounting from fluid; calypteres whitish, light brown margined.

Structural details as in *texensis*, except as follows: Front very slightly wider; dorsum of abdomen densely covered with hairs, with approximately four irregular rows on terga 3 and 4 in addition to the posterior marginal row of bristles, the hairs finer and more closely set than in *texensis*; sterna 4 and 5 similar to *texensis* (cf. fig. 10), but the dense patches of hairs are larger and nearly coalesce mesally; male terminalia as in *dispar* (cf. fig. 4).

Female.—As described for *texensis*.

Length of body and of wing, 1.75—2 mm.

Holotype male, allotype, and 80 paratypes (40 males, 40 females), Flatwoods, Rapides Parish, Louisiana, emerged Feb. 18–28, 1959; reared from one-day old detritus taken immediately from fungus gardens at depth of 6 feet in nest of *Atta texana* (John C. Moser, U. S. Dept. of Agriculture, Southern Forest Experiment Station). In the U. S. National Museum, Type No. 64688.

The species is very close to *texensis*, but is easily distinguished by the predominantly brown, densely haired abdomen of the male. The male keys to couplet 15, and may be separated from the last three species in the key by the combination of brown color and dense hairs just described. The female runs directly to *texensis* in couplet 20, and I am unable to distinguish the two species in this sex. Perhaps it will be possible when females of *texensis* in better condition are available.

According to information kindly furnished by Mr. Moser, this is "the primary insect which breaks down the recent detritus in the detritus cavities. It is very abundant in all nests, and adults often fly out when the cavities are opened." Approximately 200 adults were reared, but a number are teneral and have not been included in the type series.

Pholeomyia obscura, new species

Small species near *texensis*, but the male abdomen entirely dark.

Male.—Black to brown-black, only the calypteres whitish, and the wing slightly so; mesonotum, when viewed from behind, only slightly bluish- or greenish-gray and then obscurely so.

Structural details as described for *texensis*, except as follows: Front more strongly narrowed anteriorly; interfrontal hairs, except the foremost in each row, fine, short, and inconspicuous against the velvety black front; second to fourth abdominal terga each with 1–2 irregular rows of hairs in addition to the posterior marginal row of bristles, the hairs finer and slightly more closely set than in *texensis*; sterna 4 and 5 approximately as in *dampfi* (cf. fig. 7); terminalia as in *dispar* (cf. fig. 4).

Female.—Unknown (see comment).

Length of body and of wing, 1.25–1.5 mm.

Holotype male, Austin, Texas, Nov. 9, 1958. In the U. S. National Museum, Type No. 64689. Paratypes, 40 males, Austin, Texas, Oct. 5, 10, 18, Nov. 9, 13, 1958, on flowers of *Parthenium hysterophorus* L. (Lynn Throckmorton).

A series of females was taken at the same time and place, but unfortunately males of *texensis* were also present, and I see no differences in the females. Very probably, females of *obscura* will run to *texensis* in the key, as do those of *comans*.

The males of *obscura* key only to couplet 9, and will be separated from all other males in the group that follows by the entirely black abdomen. The relatively plain bristle and hair pattern of sterna 4 and 5, as well as the entirely black abdomen, will separate *obscura* from *texensis* and *comans*, two closely related species in the same region. *P. obscura* most closely resembles *politifacies*, and could easily be mistaken for it except for the dull pollinose face of *obscura*.

MYCOPHILA FUNGICOLA FELT: A REDESCRIPTION AND REVIEW OF ITS BIOLOGY (DIPTERA, ITONIDIDAE)[1]

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ABSTRACT

Mycophila fungicola Felt has been recorded from California and the central and eastern United States. It is becoming an increasingly important pest of mushrooms in southeast Pennsylvania. The adult, pupa, and larva are redescribed and figured, and outstanding features of paedogenesis are outlined. This paper discusses the type of damage occasioned by the larvae, and records some important features of the biology of this species.

Mycophila fungicola was described from San Rafael, California, by Felt (1911), who was perhaps the first to note it as a pest of cultivated mushrooms in the United States. For a number of years the larva of this mushroom midge has been recorded in Virginia, southeastern Pennsylvania, Ohio, and Indiana as a minor pest. However, as long ago as 1942, Thomas stated that this fly appeared to be gaining in importance, and during the last 3 years a further increase in its abundance has occasioned considerable concern to growers in the Kennett Square area of Pennsylvania.

This paper is presented in response to increased requests for information about the morphology and biology of this potentially important fly. A redescription and detailed illustrations of the adult, larva, and pupal exuvium supplement the morphological information presented for *fungicola* by Felt (1911, 1913) and Pritchard (1947, 1953), and a further discussion summarizes the available information on its biology.

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Mycophila fungicola Felt

Mycophila fungicola Felt, 1911, Jour. New York Ent. Soc. 19: 33 (n. gen., n. sp.; descr. ♂); Felt, 1913, New York State Mus. Bull. 165: 161; figs. 38–40 (descr. larva, ♀; figs. male antenna, wing); Edwards, 1938, Proc. Roy. Ent. Soc. London (B), 7: 253 (comp. with *M. barnesi* n. sp. and *M. speyeri* Barnes; figs. for these two spp.); Pritchard, 1947, Ent. Americana (n.s.) 27: 64, 65 (redescr. of gen. and sp.; ♂ lectotype designated); Nayar, 1949, Proc. Roy. Ent. Soc. London (B), 18: 81; fig. 5–7 (in key to world species of *Mycophila*); Pritchard, 1953, Bull. California Ins. Surv. 2(2): 132 (key to *M. fungicola* and *M. barnesi*; both occur in California).

MALE.—*Head*.—Subspherical, eyes occupying most of head surface and dorsally united by a bridge not exceeding two facets in width. Antennal flagellum with nine full segments, or if with eight, the terminal segment constricted medially; distal margin of area of minute spines of segments 1 through 3 each with a short transparent appendage; proximal flagellar segment unlike those following in being narrowed prox-