

**FRANCLEMONTIA INTERROGANS (WALKER), A
NEW GENUS FOR AN OLD SPECIES
(LEPIDOPTERA: NOCTUIDAE: AMPHIPYRINAE)**

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Abstract.—The identity of *Leucania interrogans* Walker, 1856, described from an unknown type locality, is confirmed, and a lectotype is designated for it. It is a distinctive and rarely collected species of amphipyrene noctuid of the southeastern U.S. that belongs to neither *Leucania* nor *Phragmatiphila*, where placed by previous authors. A comprehensive search failed to reveal any genus to which *interrogans* might be referred, and *Franclemontia*, new genus, is proposed for it. The possible sister-group relationship of this new genus to atypical North American elements of *Chortodes* is suggested. All members of this large group of amphipyrene genera are believed to be host-specific stem borers in marsh grasses.

Walker (1856:114) described *Leucania interrogans* from two specimens from the Milne collection in the British Museum but gave no type locality. Hampson (1910:270) transferred *interrogans* to his newly described genus *Phragmatiphila* and provided an illustration of one of the syntypes, but their country of origin remained unknown for about a century. John G. Franclemont, while stationed at Fort Rucker, Ozark, Dale Co., Alabama, in the early 1940's, collected a specimen that he subsequently recognized as *P. interrogans*. After Hampson, however, no mention of the name is also in the 1983 check list (Franclemont and Todd, *in* Hodges et al., 1983). The Milne collection is known to have contained material purchased from John Abbot (Doubleday [1839], *in* Scudder, 1869:123), and Abbot was about the only source of moths from the southeastern United States prior to Doubleday's stay at St. Johns Bluff, Duval County, Florida, in 1838. Georgia is therefore the probable type locality.

Few have been collected, probably no more than eight or ten specimens, including the two types in the Natural History Museum, London (BMNH). A male and female (Figs. 3, 4) from The Wedge Plantation, McClellanville, Charleston County, South Carolina, are deposited in the National Museum of Natural History (USNM). Others include the specimen collected by Franclemont at Fort Rucker, Alabama and another from McClellanville, South Carolina (Cornell Univ. Coll.); and one from near Pensacola, Escambia County, Florida that was reported by Kimball (1965:103) from the Shirley M. Hills collection, and probably identified for Kimball by Franclemont. The present location of the Hills collection could not be determined. I have been advised of two other specimens in private collections but have not seen them. The species remained in the genus *Phragmatiphila* from 1910 to the present, although it bears little resemblance to the type species of that genus, the European *Phragmatiphila nexa* (Hübner) (Figs. 5-7, 12).

Phragmatiphila nexa appears to be more closely related to species of the North American genus *Meropleon* Dyar, which I revised earlier (1982). Although the male

genitalia of the two genera agree closely, the female genitalia differ enough to dissuade me from synonymizing them. Also, *P. nexa* has a conspicuous, s-shaped, white discal spot on the forewing not present in any species of *Meropleon*. A similarly shaped but less conspicuous s-shaped discal spot is present in *P. interrogans*, however, and this may be why Hampson associated the species with *Phragmatiphila*.

A review of similar moths worldwide, including other species of *Phragmatiphila* as now understood (Poole, 1989, vol. 2:800) failed to reveal anything that could be considered congeneric with *interrogans*. In the event that such a species exists, it to would need a generic name. I establish the following genus to accommodate this rare and little-known species.

Franclemontia, new genus

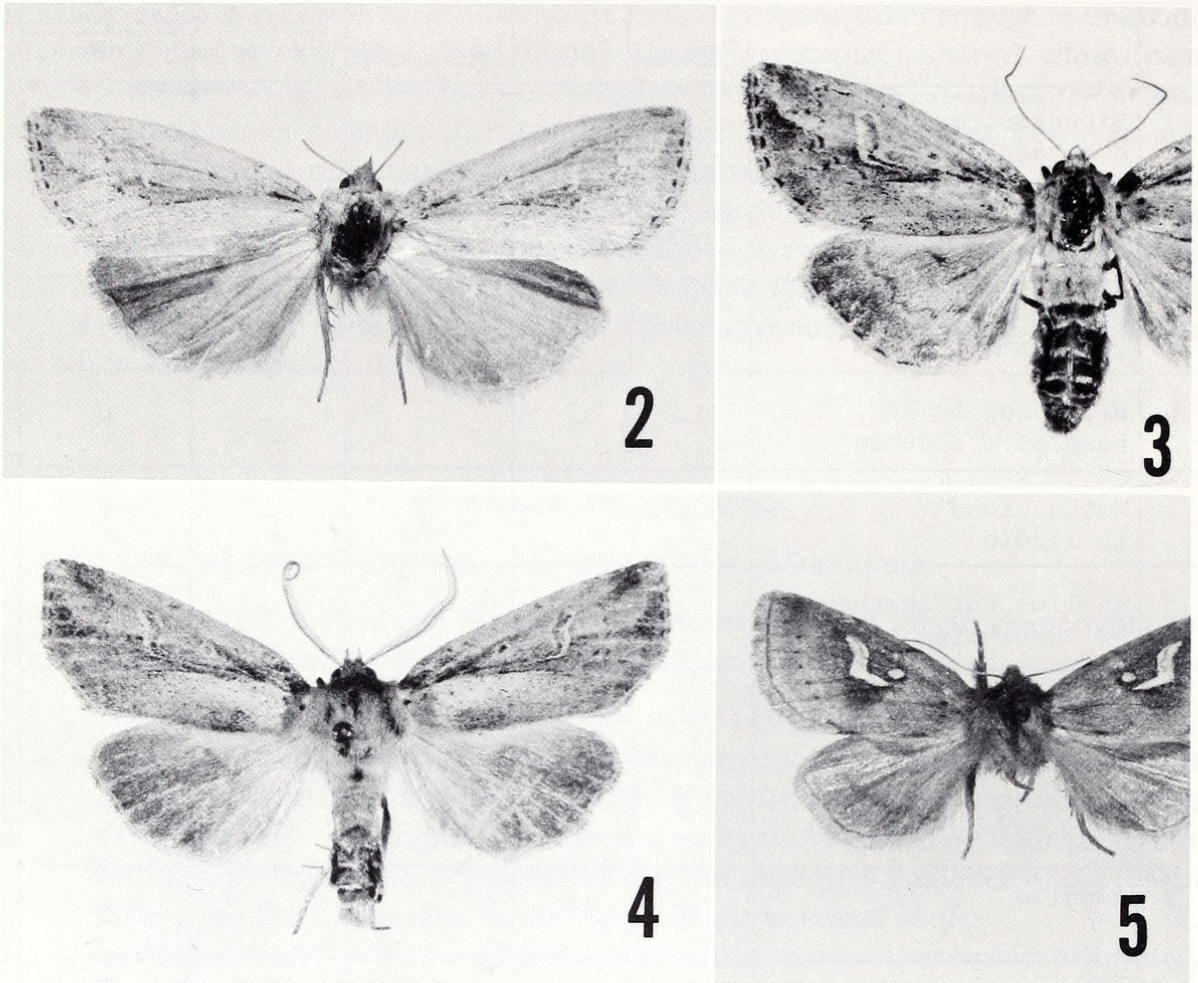
Type species: *Leucania interrogans* Walker, 1856. Monotypic.

The features that distinguish this genus are summarized in the accompanying list (Fig. 1), and the following notes will explain them:

1. *Franclemontia interrogans* (Figs. 2–4, 8–11) is unique among the genera to which it seems most closely related in having wide, bipectinate male antennae. Although I mentioned (1982:231) that *Meropleon titan* has bipectinate male antennae with short branches, they are really more lamellate than pectinate. *Franclemontia* has true bipectinate male antennae with branches whose length may equal nearly 4 times the thickness of the antennal shaft.
2. Neither *F. interrogans* nor species of *Meropleon*, or any other species examined, have the sharp, bladelike, transverse frontal process that distinguishes *P. nexa*, and which is visible even without removing the frontal vestiture. Species of most genera have a somewhat convex, rounded front, although the “*Chortodes*” species that I listed as Group B have an obtusely conical front with a decumbent, pointed apex.
3. *Phragmatiphila nexa* (Fig. 5) has a conspicuous, s-shaped or z-shaped reniform spot somewhat similar in shape to the less distinct reniform of *F. interrogans*.
4. The male of *interrogans* has a pair of eversible scent glands with coremata or long hair pencils, each contained in a lateral pocket at the base of the abdomen (Fig. 10). These recessed bundles of hair extend for the length of the first three abdominal segments. No similar structures were found to be present in any of the related grass-feeding amphipyrine genera investigated, although they appear elsewhere in the Amphipyrinae.
5. The uncus is flattened and widest in the middle, tapering both toward the apex and base. *Phragmatiphila nexa* is the only other species examined that has this type of uncus. That of the Australian *Bathytricha truncata* Turner is also wide but not tapered.
6. The anellus is thick and leathery and finely and densely scobinate over much of its surface in *Phragmatiphila* and *Meropleon*, but not so in *Franclemontia*, *Chortodes*, or other genera studied except *Bathytricha* from Australia.
7. The juxta is deeply notched or v-shaped in *Franclemontia* and *Phragmatiphila* but not in other genera. “*Chortodes*” Group B is unusual in having the juxta shaped like a spear point or arrowhead.

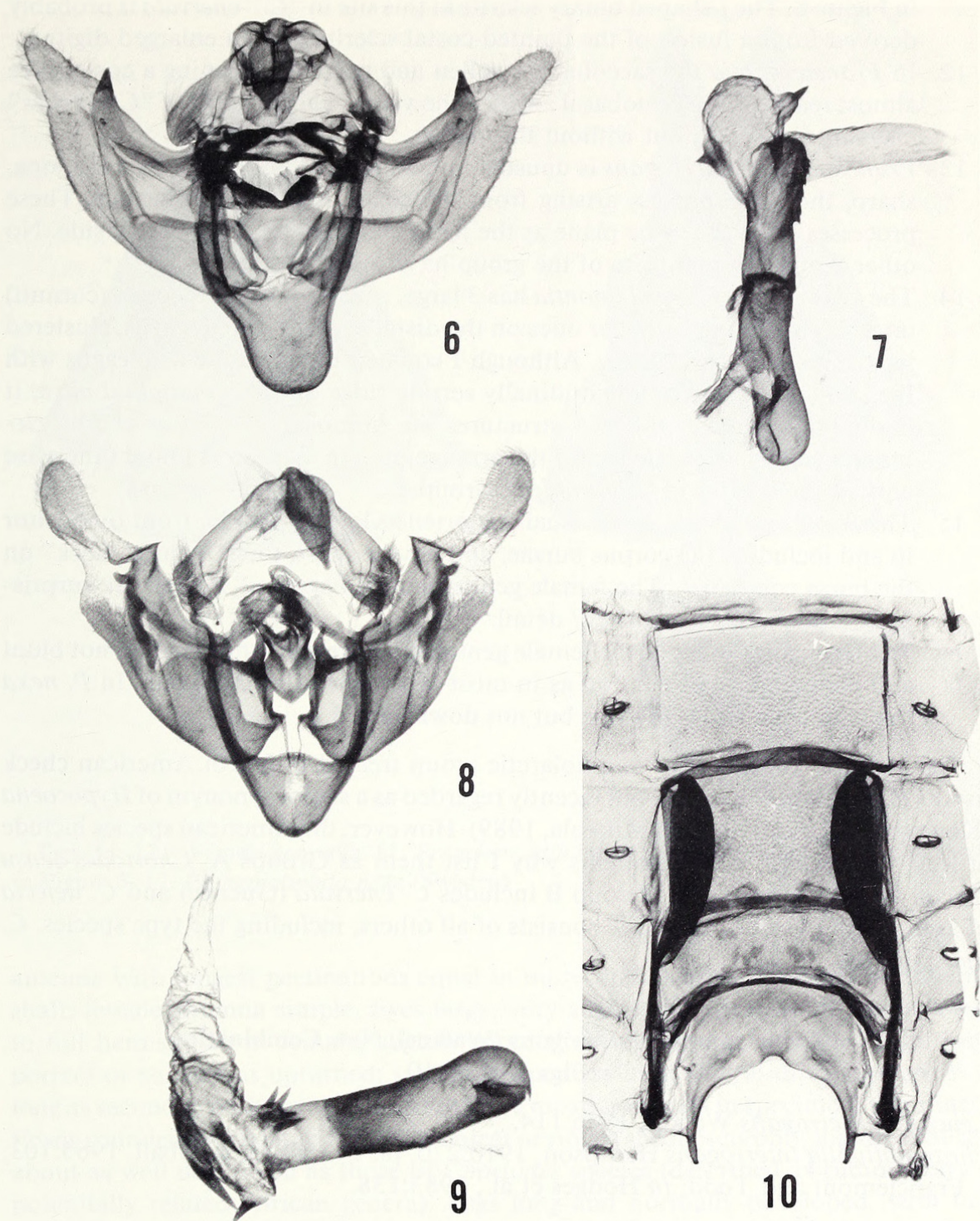
		Francel.	Phrag.	Meropleon	Chortodes Group A	Chortodes Group B
1	Bipectinate ♂ antenna	+	-	-	-	-
2	Frontal process absent	+	-	+	+	-
3	S-shaped reniform	+	+	-	-	-
4	Hair pencils at base of ♂ abdomen	+	-	-	-	-
5	Uncus broad in middle	+	+	-	-	-
6	Anellus not leathery or scobinate	+	-	-	+	+
7	Juxta notched or V-shaped	+	+	-	-	-
8	Cucullus developed (may be rudimentary)	+	-	-	+	+
9	Ampulla	+	+	-	+	+
10	Digitus	+	-	-	-	+
11	Large costal sclerite and costal process	+	+	+	-	+
12	Sacculus swollen, with large costal lobe	+	-	-	-	+
13	Clavus a long, pointed process	+	-	-	-	-
14	Aedoeagus with ventro- distal serrate ridge	+	+	-	-	+
15	♀ genitalia short, stout	+	-	-	-	+
16	Ovipositor lobes straight, pointed	+	-	-	-	-

Fig. 1. Selected characters of *Franclemontia* and related genera. Plus and minus signs indicate presence or absence. *Francel.* = *Franclemontia*; *Phrag.* = *Phragmatiphila* (others spelled out).



Figs. 2–5. Adult moths. 2. *Franclemontia interrogans* (Wlk.) ♀. Lectotype (BMNH). 3. *F. interrogans* ♀. Wedge Plantation, McClellanville, S.C., 29 April 1973, R. B. Dominick (USNM). 4. *F. interrogans* ♂, same locality, 7 April 1977, D. C. Ferguson (USNM). 5. *Phragmatiphila nexa* ♂. Germany (USNM). Magnification: 2×.

8. The valve of the male genitalia of *Franclemontia* has a fairly well-formed cucullus, although no coronal spines are present. However, every stage from no cucullus to a fully developed triangular one may elsewhere be found within one genus (e.g., *Chortodes*).
9. A small ampulla is present in *F. interrogans* and *P. nexa*, although that of *nexa* is minute.
10. A digitus, or digitus-like process, occurs in *Franclemontia*, although elsewhere in this immediate group a possible homologue may be seen only in one of the two species of “*Chortodes*” Group B (“*C. enervata* (Guenée)).
11. The large, bowed, concave, costal sclerite of the valve, which is an especially conspicuous feature of all species of *Meropleon*, is similar in *P. nexa*. It is present in modified form in *F. interrogans* and *Chortodes enervata*. The costal sclerite, when present, has a pointed or scoop-shaped free end $\frac{1}{2}$ to $\frac{2}{3}$ of the way out the costa. In *F. interrogans* this free process is about halfway out and takes the form of a triangular costal process of unique form, as may be seen



Figs. 6–10. Male genitalia. 6. *Phragmatiphila nexa* (Germany). 7. Same specimen, aedeagus. 8. *Franclemontia interrogans*, genitalia of specimen shown in Figure 4. 9. Same specimen, aedeagus. 10. Same specimen, abdominal sterna 1–4, showing eversible structures with hair pencils (Character 4).

in Figure 8. The j-shaped binary sclerite at this site in "*C.*" *enervata* is probably derived from a fusion of the pointed costal sclerite and an enlarged digitus.

12. In *Franclemontia* the sacculus is swollen and rounded, forming a costal lobe almost reaching the costobasal angle of the valve. The sacculus of "*Chortodes*" *enervata* is similar, but without the clavus.
13. *Franclemontia interrogans* is unusual in having a clavus in the form of a long, sharp, thornlike process arising from the costal lobe of the sacculus. These processes lie in the same plane as the juxta and flank it, one on each side. No other American members of the group have a clavus.
14. The aedoeagus of *Franclemontia* has 3 large, acute, dentate processes (cornuti) on the vesica, and 5 smaller ones on the distal end of the aedoeagus, clustered in two groups subventrally. Although I equated those on the aedoeagus with the similarly situated, longitudinally serrate ridge of *Phragmatiphila nexa*, it is doubtful whether the two structures are homologous. Those of *Franclemontia* suggest *Meropleon* and the arrangement in *P. nexa* is found otherwise only in the species of "*Chortodes*" Group B.
15. The female genitalia are unusually shortened longitudinally, from ovipositor to and including the corpus bursae, and have a short, thick, rugose "neck" on the bursa copulatrix. The female genitalia of "*Chortodes*" *defecta* are surprisingly similar in almost every detail.
16. The ovipositor lobes of the female genitalia are straight and pointed, not blunt and bent somewhat ventrad as in most other genera of the group. In *P. nexa* they are rounded at the tips but not downcurved.

The genus *Chortodes* Tutt is a holarctic group treated in North American check lists as *Hypocoena* Hampson, but recently regarded as a senior synonym of *Hypocoena* (Kononenko, Lafontaine and Mikkola, 1989). However, the American species include at least two genera, which explains why I list them as Groups A, *Chortodes sensu stricto*, and B, "*Chortodes*." Group B includes *C. enervata* (Guenée) and *C. defecta* of authors (not Grote). Group A consists of all others, including the type species, *C. morrisii* Dale.

Franclemontia interrogans (Walker), New Combination

Figs. 2–4, 8–10

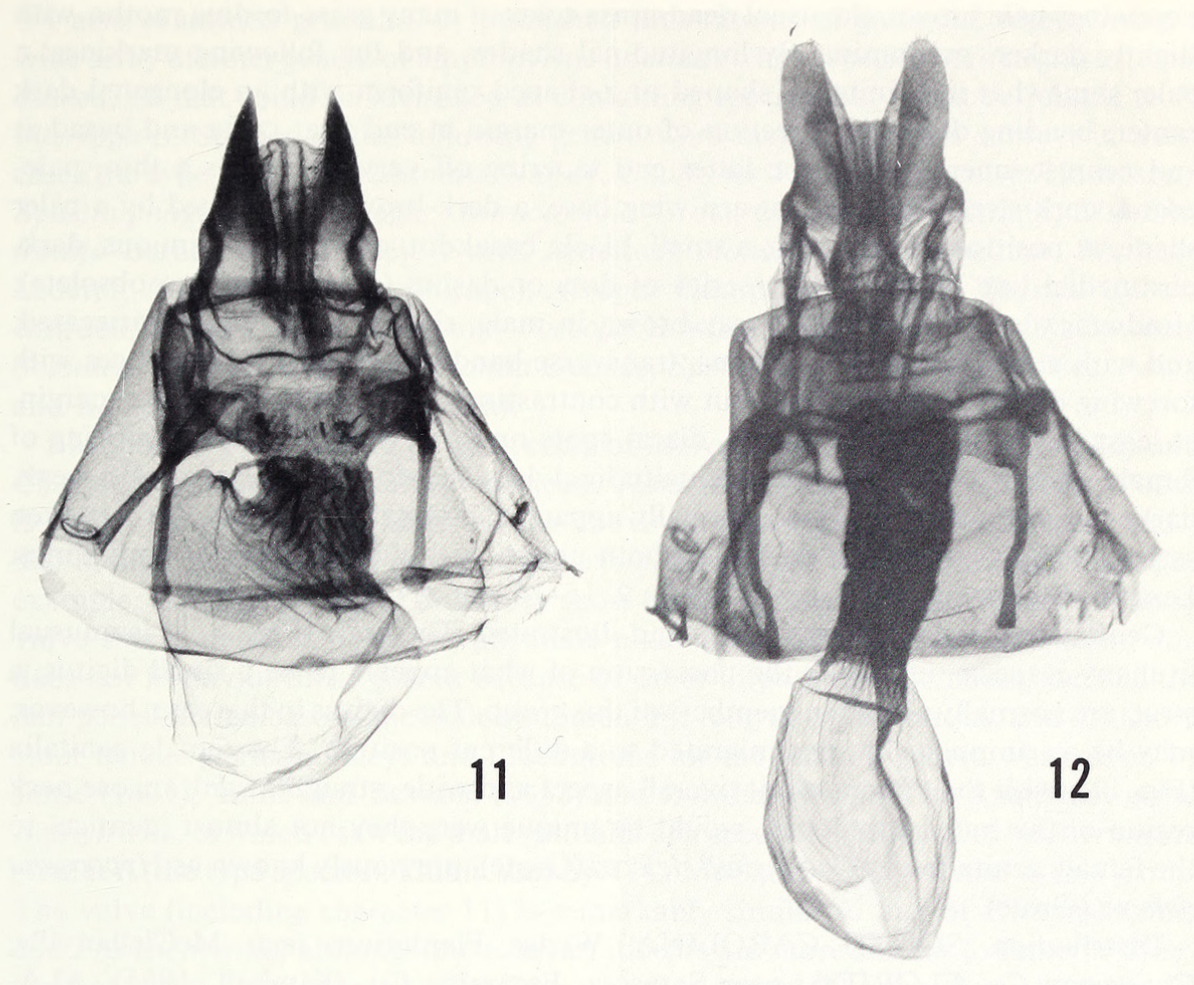
Leucania interrogans Walker, 1856:114.

Phragmatiphila interrogans Hampson, 1910:270, pl. 143, fig. 3; Kimball, 1965:103; Franclemont and Todd, in Hodges et al., 1983:138.

Type locality: Not given [probably Georgia—see earlier comment].

Types: Described from a male and female, of which the female was illustrated by Hampson (1910, pl. 143, fig. 3) and is figured again in this paper (Fig. 1). I hereby designate this female syntype as the lectotype. The male syntype cannot now be found, although its genitalia are preserved in a vial in the collection of The Natural History Museum, London.

Description: Although the generic description serves also to characterize the species, inasmuch as there is only one, I offer the following supplementary information to eliminate any doubt that might remain concerning the identity of the species. Male



Figs. 11, 12. Female genitalia. 11. *Franclemontia interrogans*, genitalia of specimen shown in Figure 3. 12. *Phragmatiphila nexa* (Sweden).

antenna with longest pectinations equal to more than 3 times diameter of antennal shaft; female antenna simple. Eyes large, very slightly elliptical, protuberant, equal to full hemisphere in female, slightly more than hemisphere in male. Palpi long, porrect or somewhat upturned; second segment as long as eye, third segment $\frac{1}{3}$ as long as second in both sexes (palpal vestiture mostly worn off in specimens examined). Frons rounded and bulging, but not conical or ridged. Proboscis only slightly reduced, about as well developed as those of *Chortodes* species (described as rudimentary in potentially related African genera). Legs long and normally developed, with long hindtibial spurs, the longest being slightly longer than the second palpal segment; hind leg slightly shorter and with tibia more swollen in female; legs roughly and loosely scaled, with thin posterior fringe of longer, hairlike scales; epiphysis reaching almost to end of foretibia. Vestiture of vertex and thorax consisting of long hairlike scales, but with some broad scales concealed beneath; thorax and abdomen without special scale tufts or crests.

Hindwing with vein M_2 obsolescent. Shape of male and female forewings differ; that of male normal except that outer margin is noticeably angled at vein M_3 ; female forewing not angulate on outer margin but with costa unusually convex or arched.

Forewings pale brown, the usual dead-grass color of many grass-feeding moths, with slightly darker, predominantly longitudinal shades, and the following markings: a pale, somewhat indefinitely s-shaped or z-shaped reniform with an elongated dark center, bending distad in direction of outer margin at end near costa and basad at end nearest inner margin; the latter end tapering off very acutely as a thin, pale-edged, dark streak directed toward wing base; a dark-brown dot, ringed by a paler shade, at position of orbicular; a small, black, basal dot; and a weak, sinuous, dark, postmedial line broken into a series of dots or dashes (antemedial line obsolete). Hindwing almost unicolorous gray brown in male; slightly paler, more variegated, and with a distinct, dusky, sinuous, transverse band in female. Undersurfaces with forewing darker than hindwing but with contrastingly paler costa and outer margin, at least in female; diffuse, dusky, discal spots on both wings, that on hindwing of female preceded by a thin, short, longitudinal dark streak; hindwing also with weak, dark, convex postmedial line, especially apparent in female. Terminal line a broken series of dark crescents or dashes on both upper- and undersurfaces of both wings. Length of forewing: ♂, 15 mm (N = 1); ♀, 15–16 mm (N = 2).

Genitalia. Discussed under genus and illustrated. The male (Figs. 8, 9) is unusual in many respects, including the possession of what appears to be a small digitus, a structure normally absent in members of this group. The digitus in this case, however, may be an ampulla that has migrated to a different position. The female genitalia (Fig. 11), with their short, stout overall aspect and wide, straight, rigid, rugose neck region of the bursa copulatrix, would be unique were they not almost identical to the female genitalia of "*Chortodes*" *defecta* (Grote), previously known as *Hypocoena defecta* (Grote).

Distribution. SOUTH CAROLINA: Wedge Plantation, near McClellanville, Charleston Co. FLORIDA: near Sarasota, Escambia Co. (Kimball, 1965). ALABAMA: Fort Rucker, near Ozark, Dale Co. (Franclemont Coll., Cornell Univ.). The types are probably from Georgia, but this is speculative.

Flight period. The only collection dates available are 7, 15 and 21 April for South Carolina; 6 April for Florida; and 5 April for Alabama. The species is undoubtedly univoltine, as are probably all grass-boring Amphipyrinae in North America.

Habitat. The South Carolina specimens were taken at light near old, abandoned, plantation rice fields (now brackish) at the edge of the vast Santee Delta marshes, on the south side of the South Santee River about 8 km (5 miles) upstream from the coast. I would therefore have guessed that the species is associated with some select microhabitat in salt or brackish estuarine marshland; the Florida site could have been similar. However, the locality in Alabama is not coastal.

DISCUSSION

Each of the genera herein used for comparison (Fig. 1) has other distinguishing features not mentioned. For example, *Phragmatiphila nexa* is the only member of the complex with a signum, which is small and depicted edgewise on the right side of the bursa in Figure 12. Species of *Meropleon* are consistent in having a unique fringe of persistent (hard-to-remove) scales on the posterior margin of the seventh sternum of the female abdomen. Males of both species of "*Chortodes*" Group B have a distinctive juxta that is shaped like an arrowhead or spear point.

I also examined genitalia, or published illustrations of genitalia, representing a wide array of other genera of amphipyrid noctuids whose species bore in grass stems, indeed, all that could be identified as containing species that might be related to *F. interrogans*. Species of the following genera were included in this survey, in most cases the type species: *Archanara* Walker, *Chortodes* Tutt (= *Hypocoena* Hampson), *Spartiniphaga* McDunnough, *Ommatostola* Grote, *Benjaminiola* Strand, *Mammifrontia* Barnes and Lindsey (North America); *Nonagria* Ochsenheimer, *Photodes* Lederer, *Rhizedra* Warren (Europe); *Acrapex* Hampson, *Busseola* Thureau, *Carelis* Bowden, *Conicofrontia* Hampson, *Poecopa* Bowden, *Poeonoma* Tams & Bowden, *Sciomesa* Tams & Bowden, *Sesamia* Guenée, *Speia* Tams & Bowden (Africa, Asia), and *Bathytricha* Turner (Australia).

I examined the genitalia of all species of *Meropleon* Dyar (Ferguson, 1982) and *Chortodes* in related revisionary projects. *Nonagria*, widespread in the Old World, is clearly more different. Many of the above-mentioned genera are African, and I had thought that the sister group of *Franclemontia* might be found among them. For example, *Conicofrontia* and *Sciomesa* show certain similarities to *Franclemontia* in valve shape, and *Sciomesa* has pectinate male antennae. However, *Franclemontia* does not fit any of those genera because of other important differences, such as the hair pencils at the base of the male abdomen, the long thornlike clavus, and the short, stout female genitalia. Keys and illustrations for the African genera were given by Janse (1939), Tams and Bowden (1953) and Bowden (1956). The Australian genus *Bathytricha*, of which I saw the male genitalia of a specimen believed to be *B. truncata* (Walker) (the type species), kindly sent by T. L. McCabe, is also related to this group. The valve (including character 11) is remarkably similar to that of *Phragmatiphila* and *Franclemontia*, although the sclerites it bears are more similar to those of *Chortodes enervata*. It has bipectinate male antennae (character 1), a broad uncus (character 5), a scobinate anellus (character 6), a rudimentary cucullus (character 8), and a cockscomb-shaped sclerite on the aedoeagus (character 14). However, characters 3, 4, 7, 9, 12, and 13 appear to be absent. In the end I concluded that the closest relatives of *Franclemontia* are also North American, and almost certainly the species of *Chortodes* Group B.

Curiously, this whole complex of genera appears to be unrepresented in the neotropics. For example, the only New World species of *Acrapex*, an otherwise Old World tropical genus, is also found in the warm-temperate zone of eastern North America, not in the American tropics (Ferguson, 1991).

My inspiration for the generic name *Franclemontia* needs little explanation. I was one of Dr. Franclemont's earlier graduate students, and one whose career in Lepidoptera systematics might never have happened had our paths not crossed. It is an honor to me to be the one to name a genus after him, and I have tried to fit the name to an appropriate moth.

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I thank R. W. Poole, a colleague in the Systematic Entomology Laboratory, for answering queries concerning the world fauna and the possible relationships of *Franclemontia*; and Linda Pitkin and Martin Honey, the Natural History Museum, London, for sending on loan the type material of *Leucania interrogans* Walker. I am indebted to the late R. B. Dominick of The Wedge Plantation, whose hospitality and interest in Lepidoptera gave me access to one of the

few known habitats of this species and led to this research on it. I thank Richard L. Brown, Ray Gagné, Ronald W. Hodges, and Timothy L. McCabe for reviewing the paper.

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