

Generic Status of Some Nemobiinae (Orthoptera: Gryllidae) in Northern North America¹

V. R. VICKERY AND DIANE E. JOHNSTONE

Lyman Entomological Museum, Macdonald Campus of McGill University,
Ste. Anne de Bellevue, Province of Quebec, Canada

ABSTRACT

The northern species of Nearctic Nemobiinae are shown to be generically distinct from the Old World genera, *Nemobius* Audinet-Serville, 1839, and *Pteronemobius* Yakobson & Bianki, 1904, to which they had previously been assigned. Three subgenera, *Allonemobius* Hebard, 1913, *Neonemobius* Hebard, 1913, and *Eunemo-*

bis Hebard, 1913, are raised to generic rank to include most of these species. A new generic name, *PICTONE-MOBIUS*, is proposed for the anomalous species, *Nemobius ambiguus* Scudder, 1877. Lectotypes are designated for *Nemobius cubensis* Saussure, 1874, and *Nemobius tartarus* Saussure, 1874.

The generic name *Nemobius* Audinet-Serville, 1839, has been applied to many species of North American Nemobiinae for many years. Hebard (1913a) recognized that this was a heterogenous

assemblage and separated the northern species into 3 groups to which he applied subgeneric names. Much more recently, Chopard (1956) indicated that these North American species should be placed in *Pteronemobius* Yakobson & Bianki, 1904 (type-species, *Nemobius tartarus* Saussure, 1874). Chopard

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(1967) listed these species in *Pteronemobius* and Vickery (1969) used the same generic name for 2 species of cricket from the Province of Quebec, Canada (but incorrectly attributed *sylvestris*, the type-species of *Nemobius*, to Fabricius instead of to Bosc). In the same paper, Vickery indicated that unpublished work by Vickery and Johnstone showed that these North American species differ generically from *Nemobius*.

The present paper presents the results of the just mentioned work, showing that North American species, previously placed in *Nemobius*, do not belong in either *Nemobius* or *Pteronemobius*. Where generic names are used alone in this paper, the specimens studied belong to the type-species of the genera. Three of the 4 subgenera proposed by Hebard (1913a), namely *Allonemobius* (type-species, *Gryllus fasciatus* De Geer, 1773); *Neonemobius* (type-species *Nemobius cubensis* Saussure, 1874); and *Eunemobius* (type-species, *Nemobius carolinus* Scudder, 1877) are here elevated to full generic rank. The 4th subgenus proposed by Hebard (1931a), *Brachynemobius* (type-species, *Nemobius (Brachynemobius) panteli* Hebard, 1913a) occurs in Mexico and we did not study the species because of lack of material.

One species, *Nemobius ambitiosus* Scudder, 1877, does not fit within the limits of any of these 3 genera, so we propose a new genus for it.

Pictonemobius, new genus

Type-species.—Here designated: *Nemobius ambitiosus* Scudder, 1877 (described from Fort Reed, Florida, U.S.A.).

This genus is easily distinguished from all other North American Nemobiinae by the striking markings. The face is shiny black with a narrow transverse ivory bar between the eyes, with a 2nd pale transverse bar on the vertex grading into reddish brown on the occiput and pronotum; hind femora broad, usually with 2 distinct fuscous stripes; tegmina of male nearly quadrate, pitch-brown, with a pale line laterad and continued on the rounded terminal edge; tegmina of female short, less than half as long as the hind femora, usually buff with darker brown spots; female ovipositor straight, slightly longer than the hind femora, scarcely, if at all, expanded at the apex; hind tarsi short and weak; interior spine of proximal tarsal segment nearly as long as, to longer than, the distal tarsal segments and claws (Fig. 1). Male genitalia and other characters are defined in following sections.

The prefix of the name *Pictonemobius* alludes to the fact that the type-species, *ambitiosus*, is one of the most attractive of the Nearctic nemobiine crickets, and is also derived from "Pict," the ancient inhabitants of northern Britain, in honour of our friend and colleague, Dr. D. K. McE. Kevan, who claims Pictish ancestry.

HIND TIBIAE

Chopard (1956) distinguished between *Nemobius*

and *Pteronemobius* on the basis of characters found on the hind tibiae, namely the numbers of pairs of subdistal spines (3 in *Nemobius*, 4 in *Pteronemobius*) and on the presence of a specialized glandular spine on the hind tibiae of *Pteronemobius* males. The apparent reason for transferring the North American species to *Pteronemobius* is that they possess this latter character.

Glandular Tibial Spines of Males.—Males of *N. sylvestris* (Bosc) do not have specialized glandular tibial spines (Fig. 2), but such spines are present in *Pteronemobius concolor* (F. Walker, 1871) (of which *tartarus*, the type-species of *Pteronemobius* by original designation, is a junior synonym (Chopard 1967)) (Fig. 3). Glandular spines are present on males of all of the North American species which were examined, *A. fasciatus* (Fig. 4), *N. cubensis* (Fig. 5), *E. carolinus carolinus* (Fig. 6), *P. ambitiosus* (Fig. 7), and other species in these genera which are not illustrated.

The Lyman Entomological Museum has a specimen of *Allonemobius allardi* (Alexander & Thomas) which has 2 fully developed glandular spines on the right hind tibia while the left one has a single glandular spine. A specimen of *P. ambitiosus*, in the Lyman Museum exhibits the same condition. T. J. Walker, University of Florida, Gainesville, has a specimen of the latter species in which 3 glandular spines occur on one tibia (personal communication, 1970).

The presence of the glandular spine clearly separates *Pteronemobius* and the Nearctic genera from *Nemobius*. The external structure of the glandular spine is quite constant, as described by Hebard (1913a) and is practically identical in *Pteronemobius* and in the North American genera.

Distal Tibial Spurs.—The distoventral spurs in *Nemobius* are slightly unequal in length, the inner spur being shorter, straight or nearly so (Fig. 8). The inner spur of *Pteronemobius* is longer than the outer one, relatively straight, while the outer spur is bent slightly outward apically (Fig. 9). Both spurs are very slender. In both *Allonemobius* (Fig. 10) and *Neonemobius* (Fig. 11) the spurs are more robust, the inner one consistently longer than the outer one. The condition in *Pictonemobius* is similar (Fig. 12). In *Eunemobius* (Fig. 13) the distoventral spurs are about equal in length, with the inner spur definitely curved inward.

Serrulations on Tibial Spines.—Hebard (1913a) pointed out that the tibial spines in *Allonemobius* (Fig. 4) and *Neonemobius* (Fig. 5) are minutely serrulated beneath, while *Eunemobius* (Fig. 6) lacked these serrulations. Similar serrulations occur in *Pictonemobius* (Fig. 7), and also in *Pteronemobius* (Fig. 3) but are lacking in *Nemobius* (Fig. 2).

EXTERNAL MALE GENITALIA

Johnstone² has homologized the male genital structures of the nemobiine crickets with those of the

² D. E. Johnstone. The structure and homologies of the male genitalia of the Nemobiinae (Orthoptera: Gryllidae) with notes on their function. (Manuscript in preparation.)

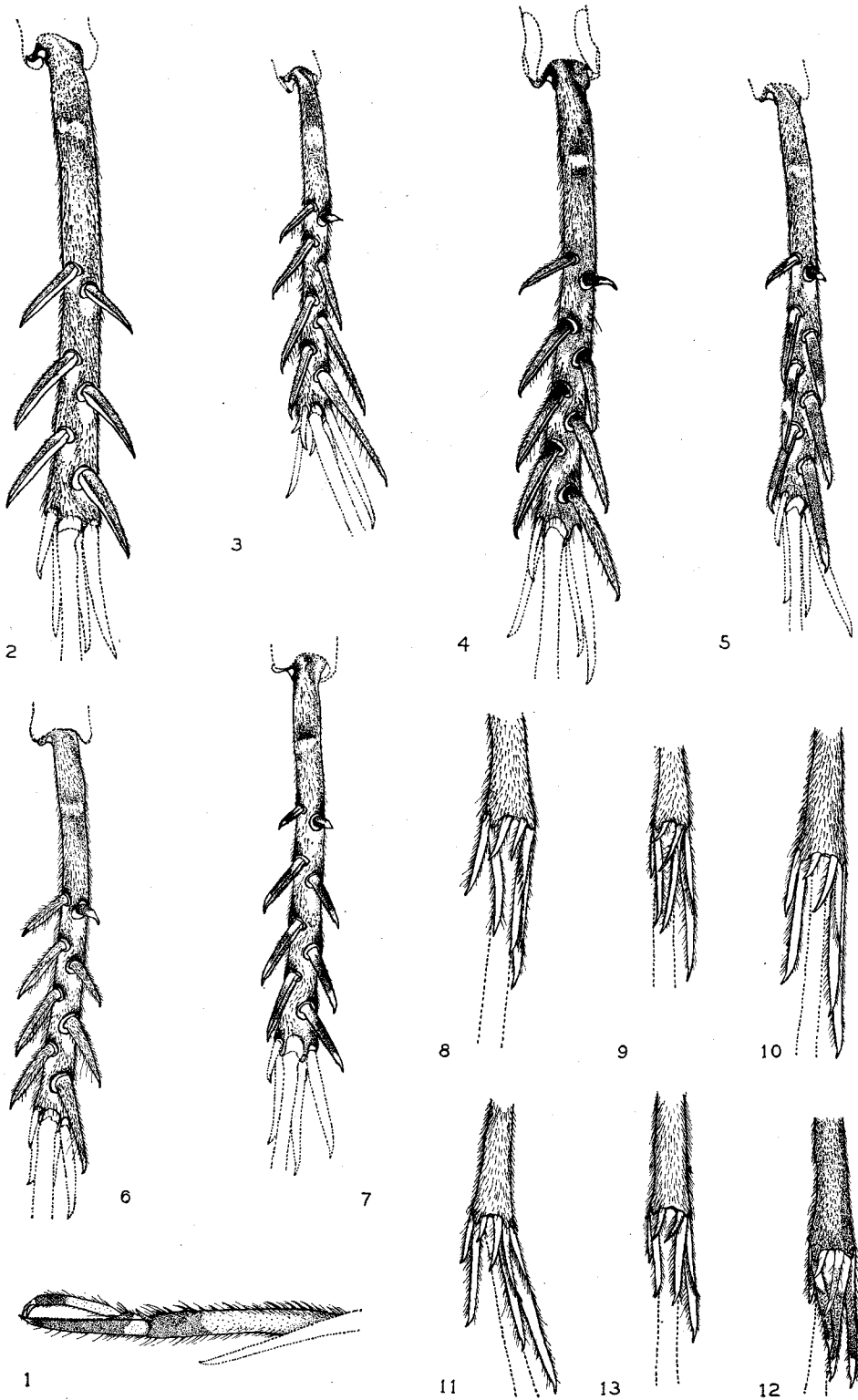


FIG. 1.—Tarsus of *P. ambitiosus*. FIG. 2-7.—Hind tibiae, dorsal aspect. 2, *N. sylvestris*, England. 3, *P. concolor*, Nepal. 4, *A. fasciatus*, Quebec, Canada. 5, *N. cubensis*, Florida, U.S.A. 6, *E. c. carolinus*, Quebec, Canada. 7, *P. ambitiosus*, Florida, U.S.A. FIG. 8-13.—Distoventral tibial spurs. 8, *N. sylvestris*. 9, *P. concolor*. 10, *A. fasciatus*. 11, *N. cubensis*. 12, *P. ambitiosus*. 13, *E. c. carolinus*.

grylline crickets and has clarified the terminology applied to the various components in each group. The terms used in this paper are those used by Johnstone².

N. sylvestris (Fig. 14a, 14b, 14c).—The male phallic complex of *Nemobius* is quite different from those of any of the other genera discussed here. The whole structure is much more triangulate in dorsal aspect, the epiphallus broadly V-emarginate anteriorly and narrowly tapered posteriorly (Fig. 14a); epiphallus shows no definite lines of demarcation of lateral epiphallic plates, although lateral plates are indicated by irregularly pigmented areas; no transverse epiphallic sulcus (well developed internally in some other genera as a ridge or plate for attachment of muscles); posterior portion of the epiphallus constricted, forming a pair of dorsally contiguous subtriangulate-lobate processes (which do not occur in the other genera); mesal lobes, if present, are fused ventrally on the posteromesal edges of the lateral epiphallic plates; rami very thin, folded back medially, then continued to and fused with the widely divergent, elongate apodemes of the united dorsal lobes (no such fusion occurs in the other genera); terminal third of the united dorsal lobes not capsule-like in structure (as in some other genera) but continued posteriorly as a longitudinal, moderately shallow, grooved structure, similar to the "guide rod" of certain grylline crickets.

The relatively great difference in form of the male phallic structures in *Nemobius* indicates that they may not operate in precisely the same manner, as in other genera considered here, in formation of the spermatophore, or in copulation with, and in transfer of the spermatophore to, the female. That these functions do indeed differ is shown by reference to Gerhardt (1913, 1921), Ragge (1965), and Gabbutt (1954) for *N. sylvestris*, and to Fulton (1931), and Johnstone² for North American species; Alexander and Otte (1967) discuss *sylvestris* and 1 Nearctic species, *Allonemobius* (as *Nemobius*) *allardi*.

P. concolor (Fig. 15a, 15b, 15c).—The phallic complex is much smaller than in *Nemobius*, tapered rectangulate in dorsal aspect (Fig. 15a), with no pronounced posterior constriction; anterior border of epiphallus moderately bifid, paired longitudinal epiphallic sulci incomplete, the lateral epiphallic plates delineated on only the posterior half or less of the epiphallus and consequently limiting the mobility of the lateral plates, so that it is unlikely that they could function as clasping organs; the transverse epiphallic sulcus appears as a median marginal depression, marking the dorsal division of the epiphallus into anterior and posterior portions, but the transverse epiphallic sulcus does not have a prominently developed internal sclerotization, and the dorsal marginal epiphallic apodeme for muscle attachment is weakly formed; 4 pairs of terminal epiphallic processes on the lateral epiphallic plates, which are posterolateral in position, the inner processes short, situated mesally and connected by a transparent sclerotic sheet; rami very short, poorly developed, barely ex-

tending from the anterolateral corners of the epiphallus; mesal lobes small, elongate, swollen at bases, very closely associated ventrally with the mesal edges of the lateral epiphallic plates, nearly immovable; terminal third of the united dorsal lobes in the form of a small pouchlike structure, on the ventral side of which is the extremely short grooved moulding site of the tip of the spermatophore duct.

A. fasciatus (Fig. 16a, 16b, 16c).—Phallic structures large, nearly as large as in *Nemobius* and much larger than in *Pteronemobius* (*P. concolor* and 9 other species examined); epiphallus tapered, subrectangulate; anterior border of epiphallus deeply U-emarginate, marginal apodeme long, thick, prominent, medially cleft; transverse epiphallic sulcus short and well defined, strongly developed internally and continuous with the broad marginal apodeme; terminal portion of dorsal plate of epiphallus (posterior to the transverse sulcus) weak and contracted, the terminal margin deeply emarginate and bearing posterolaterally a pair of lobes; the paired longitudinal epiphallic sulci mark off the lateral epiphallic plates, which are laterally oblique in position on the edges of the dorsal epiphallic plate and capable of ventromesad movement; 4 pairs of terminal processes present on the epiphallus, 1 pair, mentioned hereinbefore, on the posterior dorsal plate and 3 pairs on the lateral plates, 1 pair of the latter developed internally and extended anteriorly; rami thin, comparatively long, with uneven margins, lines of fusion with epiphallus present but rami remain flexible; mesal lobes triangulate in outline, pouch-like in section, well developed, freely mobile, situated mesad from the lateral epiphallic plates and with membranous attachment to these plates and laterally to the edges of the united dorsal lobes; terminal third of the united dorsal lobes formed as a globular concavity, relatively unsclerotized ventrally but with a rigid dorsal transverse sclerite uniting the bases of the apically divergent apodemes of the united dorsal lobes.

N. cubensis (Fig. 17a, 17b, 17c).—The phallic complex in this genus is similar in general form to *Allonemobius* but definitely smaller in size; the posterior V-emargination of the epiphallus narrower than in *Allonemobius*; mesal lobes similar to those of *Allonemobius*, usually more freely mobile (but, in one species, near *mormonius* (Scudder), which is still being studied, they appear to be partially fused beneath the mesal edges of the lateral epiphallic plates).

E. carolinus (Fig. 18a, 18b, 18c).—Phallic complex rectangulate, not noticeably tapered; anterior border of the epiphallus shallowly declivent, V-emarginate, with the marginal apodeme very short, not centrally cleft, the transverse epiphallic sulcus inverted T-shaped, with a strong internal ridge from the anterior border, with the arms extending adjacent to the paired longitudinal epiphallic sulci, which are transverse rather than longitudinally oblique in position; lateral epiphallic plates nearly posterior in position, very strongly sclerotized and much expanded dorso-mediad; posterior portion of the dorsal epiphallic plate very small and weak, shallowly bilobate termi-

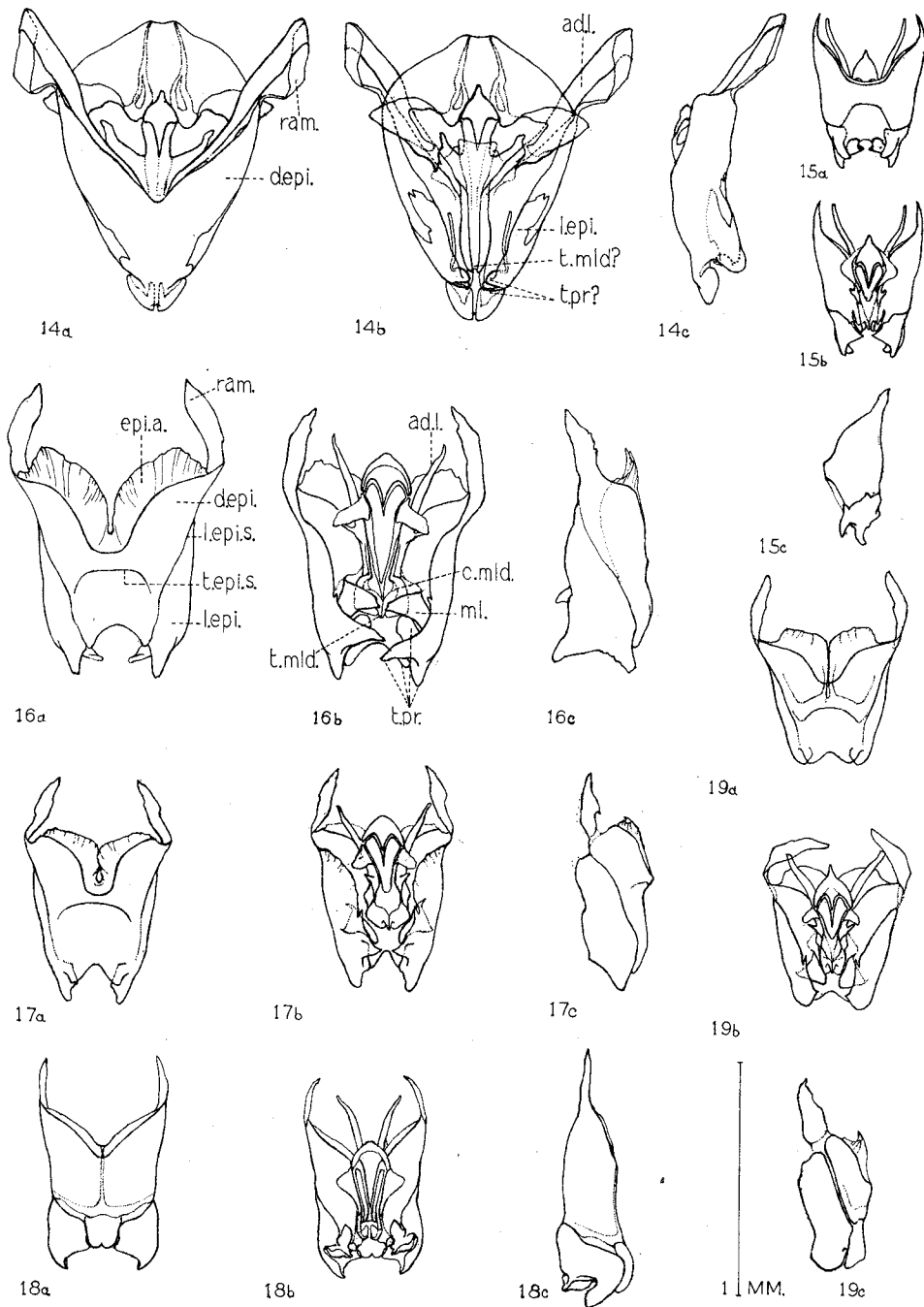


FIG. 14-19.—External male genitalia (a) dorsal aspect, (b) ventral aspect, (c) lateral aspect. 14, *N. sylvestris*. 15, *P. concolor*. 16, *A. fasciatus*. 17, *N. cubensis*, lectalotype, Cuba. 18, *E. c. carolinus*. 19, *P. ambiguus*. (d.epi., dorsal plate of epiphallus; lepi., lateral plate of epiphallus; t.epi.s., transverse epiphallic sulcus; lepi.s., longitudinal epiphallic sulcus; epia., marginal apodeme of epiphallus; t.pr., terminal processes of epiphallus; ml., mesal lobes; ram., ramus; adl., apodemes of the united dorsal lobes; c.mld., mould-capsule for terminal portion of spermatophore tube; t.mld., mould-site for tip of spermatophore tube).

nally but without a deep central emargination; 3 pairs of terminal epiphallallic processes developed, 1 pair of extremely short rounded lobes (described hereinbefore), the lateral plates with 2 pairs of external processes (internal processes, as in *Allonemobius* and *Neonemobius*, not developed in *Eunemobius*); a pair of minute oval sclerites, lying partially retracted and fused beneath the lateral epiphallallic plates probably represent the mesal lobes; rami short, usually lanceolate, and more evenly bordered than in other genera; terminal third of the united dorsal lobes not forming a posterior capsular area, but continued as a very weak platform for the end of the spermatophore duct, and terminating in a pair of small contiguous lobes, dorsal transverse sclerite absent. Because the moulding site for the tip of the spermatophore duct is flat rather than elevated, it is probable that the terminal part of the duct is straight in this genus (as it is in *Nemobius* (Gabbutt 1954) and not abruptly recurved as in *Allonemobius* (Johnstone²).

P. ambitiosus (Fig. 19a, 19b, 19c).—In general outline, the phallic structures are somewhat similar to those of *Allonemobius* but smaller, in the size range of *Neonemobius*; transverse epiphallallic sulcus prominent, broadly arcuate; emargination of anterior border of dorsal epiphallallic plate quite shallow, and sclerotic area immediately anterior to the transverse sulcus comparatively large; terminal margin of the dorsal epiphallallic plate broadly and shallowly emarginate; terminal processes extremely blunt and rounded, difficult to distinguish, those of the lateral epiphallallic plates appearing to merge into a single pair of obtuse cones, the most ventral of the processes represented by 2 diminutive subacute protuberances (Fig. 19b); internal process (very prominent in *Allonemobius* and *Neonemobius*) nearly obsolete; rami long, flat, and broad, more extended and mobile than in the other genera, the lines of separation between the rami and epiphallus clearly evident; mesal lobes prominent, triangulate and mobile, with membranous attachments to the lateral epiphallallic plates and the united dorsal lobes; terminal third of the united dorsal lobes formed as a small pouch, which is not globular in outline and which has no strongly sclerotized transverse dorsal structure (as is typical of *Allonemobius* and *Neonemobius*).

OVIPOSITORS

The ovipositor of *Nemobius* differs from those of all other genera discussed here in being unarmed on both dorsal and ventral valves, except for minute dentations borne laterally on the dorsal valves (Fig. 20). It is straight and long in proportion to body length. Straight ovipositors, as long as, or longer than, the hind femora, are also found in *Allonemobius* and *Pictonemobius*. In each genus, the ovipositors are armed with teeth on the upper valve only, but that of *Allonemobius* is expanded at the proximal end of the toothed apex (Fig. 21), while that of *Pictonemobius* (Fig. 22) is not expanded at this point.

Pteronemobius has a short ovipositor (Fig. 23).

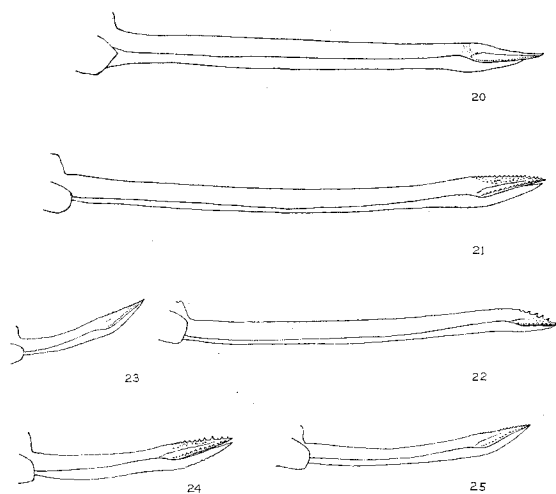


FIG. 20-25.—Ovipositors, lateral aspect. 20, *N. sylvestris*. 21, *A. fasciatus*. 22, *P. ambitiosus*. 23, *P. concolor*. 24, *E. c. carolinus*. 25, *N. cubensis*, lectotype, Cuba.

which is relatively straight, very acute at the apex, with the teeth of the dorsal apical margin small and rounded. The ovipositor of *Eunemobius* is also short and broad (Fig. 24), but the dorsal apical teeth are very coarse and widely spaced. In addition, there are minute, widely spaced dentations on the apical part of the ventral valve. *Neonemobius* has a gently curved ovipositor, ca. $\frac{2}{3}$ as long as the hind femora (Fig. 25). The teeth of the dorsal valve take the form of extremely fine serrulations rather than of distinct denticles.

STRIDULATION

It has not been possible to compare directly the stridulation of Nearctic and Old World genera. Stridulation is a useful taxonomic character at the specific level, as are the numbers of stridulatory pegs of males, the length of the file, and the size and spacing of the pegs on the files, all of which are related to stridulation (Alexander and Thomas 1959; Alexander and Bigelow 1960; Walker 1962, 1963). However, it is not improbable that stridulation of some Old World species could be very similar to that of various Nearctic species, even though they belong in different genera, because, as an isolating mechanism, stridulation need not differ between species that are otherwise isolated. As a case in point, the 2 grylline species, *Gryllus pennsylvanicus* (Burmeister) and *G. veletis* (Alexander & Bigelow), are sympatric over much of their distributional ranges and have practically identical stridulation, but they are seasonally isolated (Alexander and Bigelow 1960).

It is worthy of note that the stridulation of *N. sylvestris* (as recorded by Ragge and Burton, the recording accompanying the book on British orthopteroids by Ragge (1965)), is quite dissimilar to that of any known species in North America. The stridu-

lation of species of Old World *Pteronemobius* has not, to our knowledge, been studied.

CYTOLOGY

Many authors have added to knowledge of the cytology of the nemobiine crickets. Varying chromosome complements indicate the variability of the group and also indicate to some extent the relationships within the group. Within the North American species formerly assigned to *Nemobius*, 3 distinct cytological groups occur: one with $2n \delta = 15$; one with $2n \delta = 19$; and one with $2n \delta = 7$ chromosomes. These chromosome numbers were recorded by Davenport (1960³) and some of the counts have been confirmed by Lim.⁴ The 3 groups coincide precisely with the 3 genera *Allonemobius* ($2n \delta = 15$), *Neonemobius* ($2n \delta = 19$), and *Eunemobius* ($2n \delta = 7$). The following species have been examined: *A. fasciatus*, (Honda 1926, Baumgartner 1929, Davenport 1960,³ Lim⁴); *A. allardi*, (Davenport,³ Lim⁴); *A. griseus* (E. M. Walker), (Davenport,³ Lim⁴); *A. tinnulus* (Fulton), (Davenport³); *A. maculatus* (Blatchley), (Davenport³); *N. palustris* (Blatchley), (Davenport,³ Lim⁴); *N. variegatus* (Bruner), (Davenport³); *E. c. carolinus*, (Davenport,³ Lim⁴); *E. melodius* (Alexander & Thomas), (Davenport³); *E. confusus* (Blatchley), (Davenport³). *P. ambitiosus* has a $2n \delta = 19$ chromosome complement, but the karyotype differs considerably from those of species of *Neonemobius*.

Favrelle (1936) reported a $2n \delta = 17$ chromosome complement in *N. sylvestris*; while within the genus *Pteronemobius* (sensu Chopard 1967) are found species with $2n \delta$ chromosome complements varying from 11 to 19 (Ohmachi 1927, 1935, 1958). It would appear that this "genus" is in fact a heterogeneous assemblage.

DISCUSSION AND ASSIGNMENT OF SPECIES

It is clear that the Nearctic species previously assigned to *Nemobius* do not belong in that genus nor in *Pteronemobius*. Hebard (1913a) separated these species into subgeneric groups. Present evidence indicates that Hebard was essentially correct in the placement of species and that the subgenera should be elevated to generic status. Fulton (1931) indicated that male genitalia substantiated Hebard's grouping of the species, and the work of Davenport (1960³) and Lim⁴ on cytology also support this arrangement. One species was found to differ sufficiently from the others that a new generic name is proposed for it. Not all of the North American species were available for study. It is probable that some undescribed species occur. The following is the placement of some, but not all, of the Nearctic species.

Allonemobius Hebard, 1913

Type-species.—*Gryllus fasciatus* De Geer, 1773 (by original designation); type-locality of type-species, Pennsylvania, U.S.A.

Included Species.—*A. maculatus* (Blatchley, 1900); *A. griseus griseus* (E. M. Walker, 1904); *A. griseus funeralis* (Hart, 1906) (not seen); *A. sparsalis* (Fulton, 1930); *A. tinnulus* (Fulton, 1931); *A. allardi* (Alexander and Thomas, 1959).

Pictonemobius Vickery & Johnstone

Type-species.—*Nemobius ambitiosus* Scudder, 1877 (by original designation); type-locality of type-species, Fort Reed, Florida, U.S.A.

This, so far, is a monotypic genus. Mays has found *ambitiosus* to be a complex of species but his species "531 B" (the one used here) is considered to be true *ambitiosus* (T. J. Walker, personal correspondence, 1970).

Neonemobius Hebard, 1913

Type-species.—*Nemobius cubensis* Saussure, 1874 (by original designation); type-locality of type-species, Cuba.

Dr. Bernd Hauser, Muséum d'Histoire Naturelle, Geneva, Switzerland, has kindly loaned us Saussure's series of 9 syntypes, 4 ♂ and 5 ♀, from Cuba, which are at hand. Specimens from the mainland of the United States (Florida) have been compared with these types and are conspecific with them. A female syntypic specimen is here designated as lectotype. It bears 3 labels as follows: (1) white rectangle, "21 *Nemobius cubensis* Sauss." in Saussure's handwriting; (2) white rectangle, "CUBA"; (3) green rectangle, "*Nemobius cubensis* Sauss." handwritten, but not by Saussure. To these has been added a red label "Lectotype—*Nemobius cubensis* Saussure 1874. Designated by Vickery & Johnstone, 1970." The antennae are broken and the right hind leg is missing (Fig. 26, 27). This specimen was chosen because it is the only one of the series which was labelled "cubensis" by Saussure. A male of the syntypic series is designated as lectallotype (Fig. 28, 29). The genitalia of this specimen have been dissected for comparative purposes and are contained in glycerine in a microvial on the pin with the specimen.

Included Species.—*N. toltecus* (Saussure, 1859) (not seen); *N. variegatus* (Bruner, 1893) (*Nemobius* (*Neonemobius*) *bruneri* Hebard, 1913, is a junior synonym); *N. palustris* (Blatchley, 1900); *N. mormonius* (Scudder, 1896); *N. near mormonius*, probably new species, of southeastern U.S.A.

Eunemobius Hebard, 1913

Type-species.—*Nemobius carolinus* Scudder, 1877 (by original designation); type-locality of type-species, North Carolina, U.S.A.

Included Species.—*E. carolinus neomexicanus* (Scudder, 1896); *E. carolinus brevicaudus* (Bruner, 1904) (not seen); *E. trinitatus* (Scudder, 1896); *E. confusus* (Blatchley, 1903); *E. melodius* (Alex-

³R. Davenport. 1960. The cytotaxonomy of the genus *Nemobius* (Orthoptera: Gryllidae: Nemobiinae). Unpublished Ph.D. dissertation, Johns Hopkins University, Baltimore, Md. 49 p.

⁴H. C. Lim. Note on the chromosomes of the Nemobiinae (Orthoptera: Gryllidae) (submitted to Can. J. Zool.).

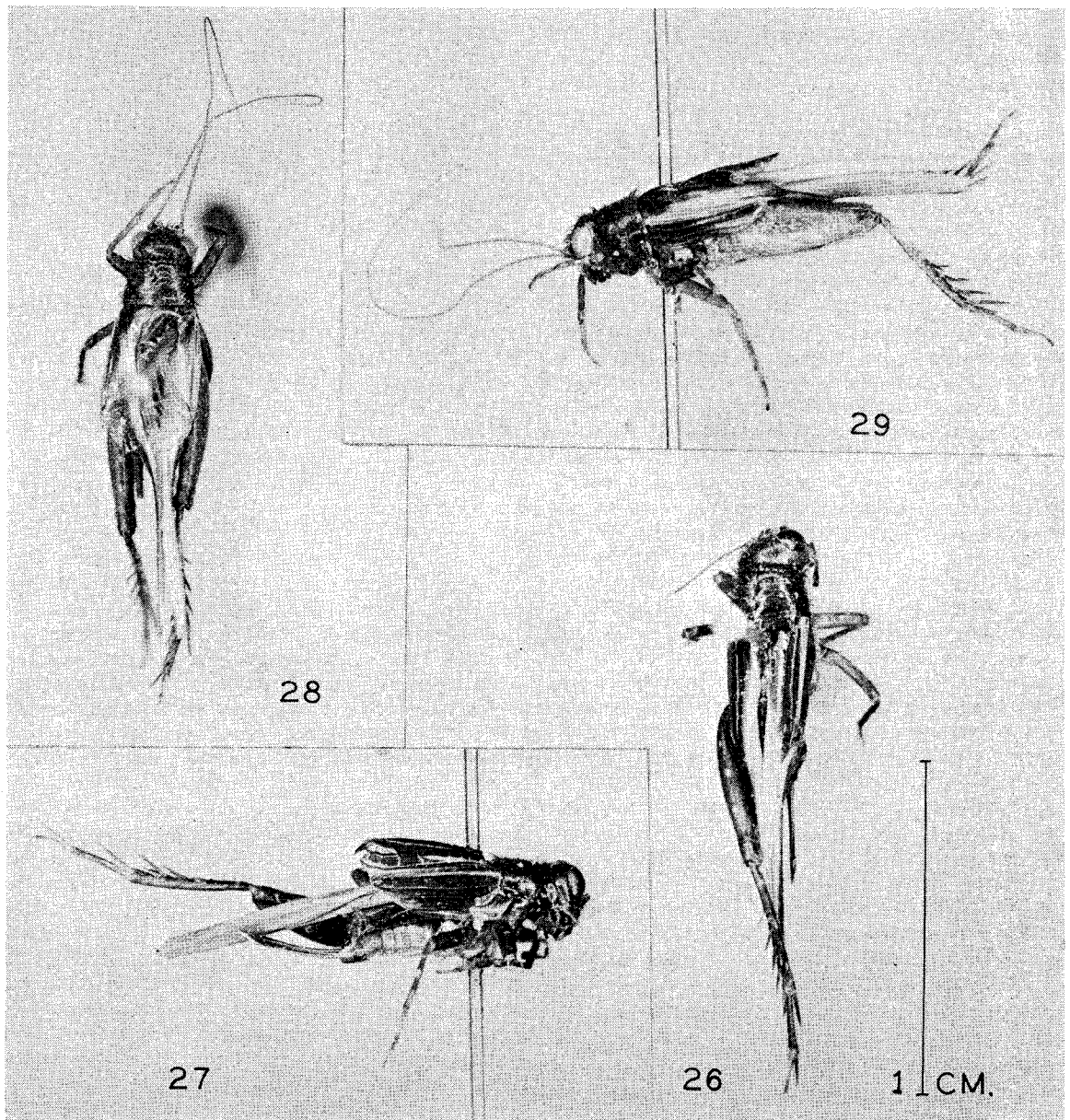


FIG. 26, 27.—Lectotype female, *N. cubensis*. 26, Dorsal aspect. 27, Lateral aspect. FIG. 28, 29.—Lectallotype male, *N. cubensis*. 28, Dorsal aspect. 29, Lateral aspect.

ander & Thomas, 1957); *E.* near *melodius*, possibly new species, from Florida, U.S.A.

Some species have not been studied and their generic placement remains uncertain. It is also likely that other populations, in the United States of America, which are presently known, but which remain undescribed, will prove to be valid species. The subspecies, *Nemobius fasciatus abortivus* Caudell, 1904, which was placed in synonymy under *N. griseus griseus* by Hebard (1936), will be studied more closely as there is a possibility that this taxon may be distinct from *griseus* and *fasciatus*.

Saussure's types of *P. tartarus*, 2 ♂ and 1 ♀, were

examined and appear to be conspecific with *concolor*, thus confirming the synonymy indicated by Chopard (1967). The female holotype of *Eneoptera concolor* (not a male, as stated by Walker 1871) was kindly loaned to us by D. R. Ragge, British Museum (Natural History), London. A male specimen of *tartarus*, here designated as lectotype of *N. tartarus*, bears the following 3 labels: (1) narrow white rectangle "Samarkand" (in Russian); (2) white rectangle, "♂ Turkest. M.H.d. Sauss.," handwritten; (3) yellow rectangle "Nemobius tartarus Sauss.," handwritten. To these labels has been added a red rectangular one "Lectotype—Nemobius tartarus

Saussure, 1874, designated by Vickery & Johnstone, 1970."

It seems appropriate here to point out some obvious errors in Orthopterorum Catalogus, Pars 10, (Chopard 1967), all under *Pteronemobius*: (*fasciatus socius* Scudder, 1877) = *fasciatus* De Geer, 1773 (Alexander and Thomas 1959); *carolinus mexicanus* [sic] (= *carolinus neomexicanus* Scudder, 1896); (*fasciatus abortivus* Caudell, 1904) = *griseus griseus* E. M. Walker, 1904 (Hebard 1936); (*palustris aurantius* Rehn & Hebard, 1911) = *palustris* Blatchley, 1900 (Johnstone and Vickery⁵); (*macdunnoughi* Urquhart, 1938) = *carolinus carolinus* Scudder, 1877 (Urquhart 1941, Vickery and Kevan 1967); (*alleni* Morse, 1905) = *Hygronemobius alleni* (Morse), type-species of *Hygronemobius* Hebard, 1913b, by original designation; *liura* Hebard, 1915 is incorrectly listed as the type-species of *Hygronemobius*.

We do not agree with Chopard (1967) in assigning mere tribal status to the nemobiine crickets. The differences between the grylline and nemobiine crickets are much greater than between the Gryllini and other tribes of the Gryllinae, so subfamily status for the Nemobiinae should be maintained. Chopard (1968) elevated the oecanthine crickets to family rank. The basic differences between these 3 groups are at about the same level and the basic affinities of the 3 groups are best maintained by subfamily ranking within the Gryllidae for each of them. Elevation of 1 group to family rank, while reducing the other 2 groups to tribal rank distorts the true relationship.

Key to Nearctic Genera Formerly Placed in *Nemobius*.

1. Distoventral spurs of hind tibiae equal or nearly equal in length (Fig. 13); spines of hind tibiae without serrulations beneath; ovipositor of female with dentations on the ventral valve (Fig. 24) *Eunemobius*
- Distoventral spurs of hind tibiae unequal in length (Fig. 10); spines of hind tibiae concave beneath, with margins minutely serrulate; ovipositor of female without armature on the ventral valve (Fig. 21) 2
2. Size larger, hind femora of males 4.8-7.6 mm, females, 4.9-8.0 mm; face and/or occiput nearly always with distinct markings; ovipositor of female straight (Fig. 21) nearly as long as or longer than the hind femora 3
- Size smaller, hind femora of males 3.9-5.8 mm, females, 4.0-6.7 mm; face and/or occiput nearly always immaculate; ovipositor of female gently curved (Fig. 25), no more than $\frac{2}{3}$ as long as hind femora *Neonemobius*
3. Face black, with narrow transverse ivory bar between the eyes; tegmina of males pitchy-brown with pale lateral line continued around the apex; tegmina of females buffy with darker flecks; proximal segment of hind tarsus about as long as the interior spine of that segment; male genitalia without distinct terminal processes (Fig. 19) *Pictonemobius*
- Face not marked with a pale bar, vertex dark with longitudinal bars more or less distinct; tegmina

not distinctly marked with pale on darker color; proximal segment of hind tarsus at least twice as long as interior spine of that segment; male genitalia with distinct terminal processes (Fig. 10)

..... *Allonemobius*

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