STUDIES ON BRAZILIAN MOSQUITOES.
III. THE GENUS CULEX.

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Plates 8–13

I. INTRODUCTION.

During my trip to Brazil in 1925 my main interest, of course, was in the mosquitoes of the Anopheline group, and the greater part of my time was devoted to the study of the taxonomy and life-histories of the species of *Anopheles*, particularly of that group of species which was already known, from the studies of Dr. Mark F. Boyd (1926), to include the only important malaria-carriers of the region. This being the case I was not able, of course, to undertake a really exhaustive study of any of the Culicine mosquitoes. However, such Culicine larvae and pupae as were met with during my collecting trips were saved and bred out, and in a small proportion of cases I found time to make isolations of some of the larvae and preserve the larval and pupal skins in connection with the adult bred out from them.

Obviously, then, the following list of species obtained can make no pretense of being a complete survey of the genus *Culex* even for those parts of Brazil which I visited. More intensive study would undoubtedly bring more species to light, even in the coastal lowlands of the state of Rio de Janeiro, where most of my collecting was done. During my two short trips into the interior of the state of Minas Geraes my attention was so centered on the Anophelines that very few Culicines were secured. But the Brazilian species of *Culex* have been so little studied by modern methods involving the examination of the male hypopygial structures that even these fragmentary records are worth presenting.

* This paper is the third of a series presenting results obtained during a trip to Brazil extending from January 15 to July 8, 1925. This trip was undertaken upon the invitation and at the expense of the International Health Board of the Rockefeller Foundation, during a leave of absence from the Department of Medical Zoology, School of Hygiene and Public Health, Johns Hopkins University.

The majority of my specimens were collected by myself, mainly in the coastal lowlands of the state of Rio de Janeiro. I am deeply indebted, also, to members of the staff of the Rockefeller Commission, particularly to Dr. N. C. Davis, who very kindly presented me with a collection of Culicine mosquitoes which he bred out from larvae found in bromeliads and in ground pools among the mountains near Angra dos Reis (see Davis, 1926), and to Dr. J. H. Janney, who secured a number of bred specimens of both Anopheline and Culicine mosquitoes for me from the County Health Units under his direction. I must also express my great indebtedness to Dr. Harrison G. Dyar of the U. S. National Museum, who has given me a great deal of assistance in working up all of my Brazilian mosquito collections and who has been kind enough to suggest names for all the new species described in this paper.

Beside the gaps in my collection due to insufficient time for detailed study, it should be pointed out that I did not happen to find any water-holding tree-holes during my stay in Brazil. Thus the subgenera *Carrollia* and *Anoedioporpa*, whose larvae are practically confined to such situations, are entirely unrepresented in my series, although species of these groups presumably occur in the region. Ground pools, marshes, ponds, etc., yielded a number of species of the subgenera *Culex* and *Choeroporpa*, as well as a few species of *Aedinus*, *Melanoconion* and *Mochlostyrax*. And from the rich flora of epiphytic Bromeliads I obtained a number of species of *Microculex*, the majority of which, curiously enough, belong to the group of species in which the outer division of the lobe of the side-piece of the male hypopygium is represented by a distinct capitate lobe bearing a small number of setae, etc. Previously only two species (*consolator* and *pleuristriatus*) were known in this group.

It has been necessary to describe a number of the forms which I secured as new species. Since previous studies of the Brazilian species of *Culex* have been confined almost entirely to descriptions of the coloration and scalation, especially of the females, it is not always possible to be sure just what form or forms were under observation in the work of Peryassu (1908), for example. A further complication is introduced by the probability that many of the species described by Lutz and Theobald were obtained by the former in the neighborhood of Sao Paulo, in the interior plateau region, where the fauna is probably different from that of the coastal region in many respects. I have already indicated that this is true in the case of

the Anophelines (Root, 1926), and what little evidence is available goes to show that the same holds true for the Culicines.

Besides these forms which are described as new in the present paper, a number of previously described species were obtained. Some of these were widely distributed forms which were already well known in the Central American region. Several others were among those which have been described by Miss Evans (1924) from the Amazon region, and must presumably have a rather wide range in Brazil.

In the descriptions of new species given below, but little emphasis has been laid on the adult coloration and scalation, since in most cases this is not sufficient for the identification of the species. In the drawings of male hypopygia, which are of more value than anything else in enabling others to recognize the species, I have not attempted to include all of the structures which were present. The lobes of the side-piece, the mesosome, and, in most cases, the clasper and the lobes of the ninth tergite, have been carefully drawn with the camera lucida, but I have thought it best not to complicate the drawings by attempting to include the other basal structures or the hairs and scales of the outer side of the side-piece, unless there was something unusual about them.

Similarly, in the drawings of larval structures, the various hairs and hair-tufts of the eighth segment are not included, although the head-hairs, the air-tube and the anal segment are shown in detail.

II. List of species obtained and descriptions of new species.

Unless it is otherwise stated, all localities given are in the state of Rio de Janeiro, Brazil. The type material of all the new species described is deposited in the U. S. National Museum.

A. Subgenus *Culex*. All rather large, light brown species.

1. *Culex* (*Culex*) *corniger* Theo. Santa Cruz—Feb. 26, 1925.

2. *Culex* (*Culex*) *coronator* Dyar and Knab. This species was found in two forms, agreeing exactly in adult coloration and in the structure of the mesosome, but differing decidedly in the structure of the lobe of the side-piece. This latter is so variable in *coronator* that it seems unnecessary to designate the two forms by different names, but the facts are perhaps worth recording, since no intermediate forms were seen.

In typical *coronator*, the lobe of the side-piece is vertically placed

and is more or less distinctly divided into two portions, the inner one bearing two stout and one slender rods, while the outer one has a large group of setae. Just beyond the lobe the side-piece bears a small patch of short hairs, about half as long as the setae of the lobe. Larvae of this form were isolated several times and all of them showed a considerable number of spines in the "crown," just before the tip of the air-tube. It was usually found breeding in dirty pools without vegetation, in shallow dirt wells and in borrow-pits, but was sometimes found in pools with vegetation. Records for this form are: Itaguahy —Feb. 12, Santa Cruz—Feb. 26, Rio de Janeiro (Federal District)— Mar. 1, Vigoria Geral—Apr. 23, Bangu—June 11, Itaperuna—June 17, Agua Limpa (State of Minas Geraes)—Mar. 27; all 1925.

In atypical *coronator*, the lobe of the side-piece is curved or horse-shoe-shaped, with the upper arm nearly vertical and the lower one transverse. A line of long, stout setae runs all around the curve, but no definite rods and no division of the lobe can be seen. The patch of hairs on the side-piece beyond the lobe lies more apically, just before the tip of the side-piece, and the individual hairs are longer, about as long as the setae of the lobe. I made only a single isolation of this form and this larval skin shows only a single, ventral spine to represent the subapical "crown" of the air tube. This form was usually found breeding in pools with vegetation, although it was sometimes taken in bare, dirty puddles or wells. Records for this form are: Sant' Anna—Feb. 19, Itamby—Mar. 10, Porto das Caixas —Apr. 15, Bangu—June 11, mountains near Angra dos Reis—Jan. (Dr. N. C. Davis); all 1925.

On the only occasion when I collected both forms on the same day (Bangu—June 11) they were not breeding together. The typical form was bred from a small, muddy borrow-pit, without any vegetation, in company with *Anopheles tarsimaculatus* and *Psorophora cingulata*, while the atypical form came from small pools with much grass and weeds, in company with *Anopheles tarsimaculatus*, *A. argyritarsis*, *Uranotaenia lowii*, *Culex declarator* and *Culex plectoporpe* n. sp.

3. *Culex* (*Culex*) *declarator* Dyar and Knab. Sant' Anna—Feb. 5, Porto das Caixas—Mar. 3, Bangu—June 11; Agua Limpa (State of Minas Geraes)—Mar. 27; all 1925. We also have in the collection of the School of Hygiene and Public Health a male specimen of this species presented by Dr. L. W. Hackett and bearing the label "Culex coronator D. & K.—Isla Guaratiba, Brazil—22.3.22, Dr. Peryassu."

4. *Culex* (*Culex*) *quinquefasciatus* Say. Santa Cruz—Feb. 26, 1925.

5. *Culex* (*Culex*) *mollis* Dyar and Knab. Sant' Anna—Mar. 10, 1925.

6. *Culex* (*Culex*) *chidesteri* Dyar. This species was bred from larvae collected in the main channel of the river (at a point where it was choked with vegetation, mainly water hyacinth) at Porto das Caixas—Feb. 24, Mar. 3, 1925. It was previously known only from a few specimens caught on the hospital screens at Colon, Panama.

Larva. (Fig. 1.) Antenna with the tuft outwardly placed, the part beyond slender. All head hairs denuded in my single skin. Lateral hairs of abdominal segments 3 to 6 in twos. Lateral comb of eighth segment a triangular patch with about four rows of scales. One of the dorsal hairs of anal segment long and unbranched, the other shorter, with about four unequal branches. Lateral hair of anal segment two-branched. Air-tube over six times as long as wide, pecten occupying less than basal third. Air-tube with seven pairs of laterally-placed hair-tufts, all in a straight line, none displaced. Each tuft consists of four or five short hairs. Integument of larva short-pilose all over thorax and abdomen.

7. *Culex* (*Culex*) *nigripalpus* Theobald. One male, Bangu—June 11, 1925. The larval and pupal skins were preserved and agree fairly well with Central American skins of this species in our collection.

8. *Culex* (*Culex*) *acharistus* new species.

Female. Proboscis brown, not white-ringed. Mesonotum brown-scaled, with silvery scales along the sides, at edges of ante-scutellar depression, on scutellum, and in small patches on disc of mesonotum. Stem of second marginal cell less than one fourth as long as cell. Legs brown, with white spots at tips of femora and tibiae. Hind tarsi not definitely white-ringed. Abdomen brown with definite white basal bands dorsally on all segments.

Male. Proboscis not white-ringed. Male palpi five-jointed, with a white ring at junction of 2d and 3d segment and with a line of white scales ventrally on all the 4th segment and base of 5th. Stem of second marginal cell about one fourth as long as cell. Coloration otherwise as in female.

Male hypopygium (Fig. 2). Lobe of side-piece with a seta, three rods, a small leaf, and a seta. The first seta is curved, expanded and flattened in its terminal third. Between it and the first of the rods is a small tubercle which seems not to bear any appendage.

Mesosomal plate not heavily chitinized, with a broad, curved tooth which is longer than any of the other structures. Just outside this tooth is a small tubercle and, more dorsally placed, a narrow plate ending in two divergent points and a low rounded plate. A well-developed lateral process present.

Tenth sternites fairly well chitinized, densely tufted with pointed spines at tip, and with a long, curved basal arm.

This form differs from most species of the subgenus *Culex* in the unusual position of the modified seta on the lobe of the side-piece. It was bred from larvae collected in marshy expansions of mountain streams and from the side-pools of a small, rapid river near Agua Limpa (State of Minas Geraes)—Mar. 27, 1925. No larvae were preserved.

9. *Culex* (*Cules*) *lygrus* new species.

Female. Proboscis brown, not white-ringed. Mesonotum brown-scaled with practically no silvery scales. Stem of second marginal cell about one fifth as long as cell. Legs brown, femora and tibiae not conspicuously white-tipped, hind tarsi with inconspicuous white rings at the joints. Abdomen brown with broad, basal, white bands dorsally on all segments.

Male. Proboscis brown, not white-ringed. Male palpi five-segmented, with narrow white ring at junction of 2d and 3d segments and with a white spot ventrally at base of 4th segment. Stem of second marginal cell about half as long as cell. Hind tarsi with white rings very obscure or absent. Otherwise as in female.

Male hypopygium (Fig. 3). Lobe of side-piece with three rods, a seta, a leaf and a seta. The seta between the rods and the leaf is curved, expanded and flattened in its terminal third.

Mesosomal plate well chitinized, with a long, broad, curved tooth which is longer than the other structures. Dorsal to this tooth is a long slender plate which sometimes appears slightly curved. Anterior to this plate is a broader plate ending in a number of strong teeth. Lateral process well-developed, straight, ending bluntly.

Tenth sternites not very heavily chitinized, densely tufted with pointed spines at tip and with a very long and slender, curved, basal arm.

This species was bred from larvae taken at Porto das Caixas—June 9, Bangu—June 11, and Magé—June 21, 1925, in small ditches and pools with much vegetation. It is probably the Brazilian representative of *Culex dolosus* Arribalzaga (*bonariensis* Brethes) of Argen-

tina. The male hypopygium is very nearly identical with that of *dolosus*, except that in the latter species the lateral process of the mesosome is bent sharply posteriorly and its tip is pointed. This is shown very clearly in Brethes' figure (1916, Fig. 7, p. 214) and a slide in the National Museum agrees. The Brazilian form is, therefore, described as a new species, although it may later have to be reduced to a subspecific status.

B. Subgenus *Melanoconion.*

10. *Culex* (*Melanoconion*) *exedrus* new species. A small, dark brown species.

Female. Proboscis dark brown. Mesonotum dark brown, sparsely covered with brownish scales. A few silvery scales at sides, at edges of ante-scutellar depression and on all three lobes of scutellum. Legs dark brown, femora white below, both femora and tibiae white-tipped. Abdomen dark brown with basal white bands on most of the segments, often changing to baso-lateral white spots on the 8th segment. Wings dark brown-scaled, except that a small patch near base of first longitudinal vein is white-scaled. This white-scaled area also bears two or three long dark bristles.

Male. Coloration as in female. Male palpi dark brown, longer than proboscis.

Male hypopygium (Fig. 4). Side-piece about twice as long as wide, strongly narrowed at tip, with a patch of long, stout hairs near base on ventral surface. These hairs extend to beyond tip of clasper. The divided lobe occupies the outer third of the inner ventral surface.

The inner division of the lobe is divided into two parts, one a pedestal bearing terminally a stout spine with truncate tip and basally a longer, slender spine with swollen end; the other consisting of a long, flattened, blade-like spine on a pedestal and two fairly long hairs near the base of the pedestal. The outer division of the lobe is a tall column, widened at tip and bearing at tip two long and one shorter setae and another long seta whose tip is flattened and slightly expanded. The column also carries, a little before the tip, a large, triangular, ribbed leaf. Between the outer division of the lobe and the tip of the side-piece is a tubercle with a small, ribbed, leaf-like structure.

Clasper not particularly modified, slender beyond the enlarged base. Tenth sternites comb-shaped, with 7 to 10 teeth. Tips of mesosomal plates bluntly pointed, slightly enlarged before tip. Lobes of ninth tergite small and oval, fairly well separated, with a large patch of short hairs toward inner side near tip.

This species resembles *spissipes* Theo. and *commevynensis* Bonne-Wepster and Bonne in having a leaf-like structure placed between the outer division of the lobe and the tip of the side-piece. It differs from these species in the number of setae at the tip of the outer division of the lobe and in the structures which compose the inner division of the lobe. It was bred several times from larvae collected among thick aquatic vegetation in rivers, lagoons and ponds. The records are: Porto das Caixas—Feb. 24, Mar. 3, June 9, Paracamby—Apr. 22, 1925.

C. Subgenus *Aedinus.*

11. *Culex* (*Aedinus*) *accelerans* new species. A very small, uniformly dark species with short male palpi.

Male. Male palpi only one fifth as long as proboscis. Coloration entirely dark brown, abdomen with greenish reflections on dorsal surface. No light markings on legs or abdomen.

Male hypopygium (Fig. 5). Side-piece about two and one half times as long as wide, hardly narrowed at all at tip. Lobe of side-piece consists of a tall column bearing two short, stout, pointed spines. This columnar structure bears a few hairs near its base and is preceded and followed by a few hairs. Clasper rather stout on basal two thirds, abruptly narrowed in terminal third, but without the modified tip of *amazonensis* (see Evans, 1923, Fig. 1).

Tenth sternites comb like, with 7 or 8 teeth. Mesosomal plates simple, provided basally with small inner and larger outer lobe-like projections, the tips close together and bluntly pointed. Lobes of ninth tergite fairly well separated, each rather tall and stout, slightly curved outward at half their length, with a few short, marginal hairs at tip.

This species is evidently con-subgeneric with *Culex* (*Aedinus*) *amazonensis* Lutz as identified by Evans (1923). The mesosome and the lobes of the ninth tergite, particularly, are nearly identical: The clasper and the lobe of the side-piece, however, are decidedly simpler and less modified in *accelerans.* A single male of this species was bred from a pupa collected among dense aquatic vegetation in a lagoon connected with the river at Porto das Caixas—Apr. 15, 1925.

D. Subgenus *Microculex.* Including small to very small species, some of which are without any definite markings while others are strikingly ornamented.

12. *Culex* (*Microculex*) *pleuristriatus* Theo.

This species was originally described from Brazil and has been reported from Trinidad and Surinam. I found in Brazil two species of this type, identical in their adult coloration, but differing in male hypopygia and larval details. I shall follow the usage of Howard, Dyar and Knab (1915) by applying the name *pleuristriatus* to the present species and describing the other form as *C. gairus* n. sp.

In the male hypopygium of *pleuristriatus*, the capitate lobe which forms the outer division of the lobe of the side-piece bears five long setae terminally and a single short seta near its base; there is a patch of long hairs on the outer surface of the side-piece, just before its tip, and the clasper (Fig. 7) is abruptly narrowed, just beyond its middle and bears a large patch of minute, non-papillated hairs in the region where the narrowing occurs and on either side of it.

The larval integument is glabrous, the air-tube has five pairs of ventral hair-tufts, and the dorsal tuft of the air-tube is three-branched.

This species was common and widely distributed in the part of Brazil where I collected. Specimens were bred from larvae or pupae collected from Bromeliads at the Rio de Janeiro Botanical Garden (Federal District)—Feb. 7, Feb. 15, May 24, at Porto das Caixas—June 29, and from the mountains near Angra dos Reis—Jan., 1925 (Dr. N. C. Davis).

13. *Culex* (*Microculex*) *imitator* Theo.

Typical specimens of *Culex imitator* (with the inner edge of the silvery markings at the sides of the mesonotum somewhat curved, the male palpi conspicuously white-banded, and the hind tarsi with broad white rings which occupied nearly half of the fourth segment and the basal two thirds of the fifth) had a dense patch of hairs on the side-piece of the male hypopygium, surrounding the base of the lobe which represents the inner division of the lobe of the side-piece and extending without interruption two thirds of the distance from this point to the tip of the side-piece. Except for the two stout setae at the tip of the lobe, there were no specialized setae, and the retrose hooks of the mesosomal plates were gently curved.

On two occasions I bred out atypical specimens, which hardly seem distinct enough to deserve separate names. In both of these lots the inner edges of the lateral silvery markings of the mesonotum were straight and the white bands of the hind tarsi were reduced, occupying about one fifth of the fourth segment and one half of the fifth. In both, also, the male hypopygium had the patch of hairs on the side-piece more or less divided into two patches, one surrounding

the base of the lobe and the other centering about midway between the lobe and the tip of the side-piece. In both there was a single strong seta just beyond the base of the lobe.

In one of these atypical forms (Magé—Apr. 9, 1925, bred from larvae collected by Dr. N. C. Davis) the male palpi were conspicuously white-banded and the retrose hooks of the mesosomal plates were strongly curved. In the other (Magé—June 21, 1925) the male palpi were practically without white banding and the retrose hooks of the mesosomal plates were nearly straight. Until more information about them is available, it seems best to leave these forms under *imitator*.

Typical specimens of *imitator* were bred from larvae or pupae collected from Bromeliads at Sant' Anna—Feb. 9, Botanical Garden, Rio de Janeiro (Federal District)—Feb. 15, Apr. 12, May 24, June 14, Rio Soberbo—May 1, Porto das Caixas—June 29, 1925.

14. *Culex* (*Microculex*) *gairus* new species.

Adult. Coloration as in *pleuristriatus*, that is, mesonotum mainly covered with yellowish brown scales, with dark brown ones forming seven poorly defined spots, male palpi long and white-banded, hind tarsi with narrow white rings, occupying about basal sixth of fourth segment and basal third of fifth.

Male hypopygium (Fig. 6). Outer division of lobe of side-piece a distinct, capitate lobe which bears two short and two long setae terminally and a single short one near its base.

Inner division of the lobe made up of a short lobe bearing two stout setae terminally, with three shorter setae and a few hairs on the side-piece, just before the base of the lobe. No patch of long hairs on outer surface of side-piece, just before the tip.

Clasper long and stout, hardly narrowed at middle, with a forked terminal spine and two small, papillated hairs, but no minute, non-papillated hairs.

Mesosomal plates extending far beyond the retrose teeth, which are large and gently curved.

Tenth sternites comb-like, with 10 or 11 teeth. Lobes of ninth tergite broad and very low, well separated, each with 6 to 8 long hairs.

Larva (Fig. 8). Antennae short and uniform, a two-branched tuft at outer third. Anterior head hairs fairly long, three-branched. Anterior dorsal head hairs long, two- or three-branched. Posterior dorsal head hairs shorter, about 6-branched. Pre-antennal hairs about five-branched.

Lateral hairs of abdominal segments 3 to 6 in threes. Lateral

comb of eighth segment a triangular patch with about three rows of scales. Individual comb-scales slender, evenly fringed at tip. Dorsal hairs of anal segment unbranched, one longer than the other. Lateral hair of anal segment long, four-branched.

Air-tube about four times as long as wide, pecten extending to basal third. Air-tube with four pairs of ventral tufts, one pair of dorsal tufts. Three anterior pairs of ventral tufts three-branched, last pair single hairs. Dorsal tufts four-branched. Integument of larva strongly pilose all over thorax and abdomen.

This species was not as common as *pleuristriatus*. Males were bred from larvae collected from Bromeliads at the Rio de Janeiro Botanical Garden (Federal District)—Feb. 15, 1925, and were also found among the specimens brought back from the mountains near Angra dos Reis (Jan., 1925) by Dr. N. C. Davis.

15. *Culex* (*Microculex*) *hedys* new species.

Male. Male palpi long, dark brown. Mesonotum dark brown, without silvery markings. Hind tarsi with very narrow basal white rings, about as in *pleuristriatus*.

Male hypopygium (Fig. 9). Outer division of lobe of side-piece represented by a large patch of short hairs.

Inner division of the lobe consisting of a short lobe bearing two stout setae at tip, and a third smaller seta just beyond the base of the lobe. A few scattered hairs on and near base of lobe.

Clasper very short and broad, with two small papillated hairs and a small patch of minute, non-papillated hairs, the latter at about the middle of its length. Terminal spine forked.

Mesosomal plates extending well beyond retrose teeth which are short, broad and straight.

Tenth sternites comb-like, with 7 or 8 teeth. Lobes of ninth tergite small, tall and slender, well separated, each with three long hairs.

A single male of this species was bred by Dr. N. C. Davis from Bromeliads in the mountains near Angra dos Reis —Jan., 1925. The specimen was later destroyed by museum pests, hence the scanty notes on coloration.

16. *Culex* (*Microculex*) *aphylactus* new species.

Adult. Male palpi long. Proboscis, palpi and mesonotum dark brown, without white markings. Tarsi dark brown, without white rings. Abdomen dark brown, with small white baso-lateral spots on the posterior segments.

Male hypopygium (Fig. 10). Outer division of lobe of side-piece a capitate lobe bearing one long and five short setae, arranged in pairs.

Inner division of the lobe consists of a short lobe bearing two stout setae at tip. External and basal to this lobe are a number of hairs.

Clasper short, slender, and appearing curved, which may be due to deformation during mounting. It bears two small papillated hairs and a forked terminal spine.

Mesosomal plates extend far beyond the small retrose hooks, each of which is shaped much like a shoe with a very slender and pointed toe.

Tenth sternites comb-like, with 6 or 7 teeth. Lobes of ninth tergite short and stout, convergent, with four or five long hairs on each.

One male and two females of this species were bred from larvae collected from Bromeliads in the woods near the place where the railroad from Magé to Therezopolis crosses the Rio Soberbo—May 1, 1925. This locality is not in the coastal lowlands, but among the mountains of the Serra dos Orgaos.

17. *Culex* (*Microculex*) *trychnus* new species.

Adult. Male palpi long, white-banded. Proboscis and mesonotum dark brown, without white markings. Hind tarsi with broad basal white rings, the fourth segment having its basal fourth white on the outer side, its basal half white on the inner side and the fifth segment with its basal two thirds white. Abdomen dark brown with broad basal white bands dorsally on all segments.

Male hypopygium (Fig. 11). Outer division of lobe of side-piece a capitate lobe bearing five setae, three of medium size and with their tips curved or hooked, one long one and one short one. Between the first three setae and the other two there arises a long, flattened filament.

Inner division of the lobe consists of a fairly long lobe bearing two stout setae at its tip. On the lobe and at its base are a few scattered hairs.

Clasper fairly long and slender, with a few minute non-papillated hairs, two small papillated hairs and a forked terminal spine.

Mesosomal plates much as in *imitator*, the plates extending only a little beyond the bases of the large, gently curved, retrose hooks.

Tenth sternites comb-like, with 8 or 9 teeth. Lobes of ninth tergite low and rounded, well separated, each with a few long hairs.

One male and one female of this species, together with typical

specimens of *imitator*, were bred from the same lot of larvae which yielded *aphylactus*. Rio Soberbo—May 1, 1925.

18. *Culex* (*Microculex*) *microphyllus* new species.

Adult. Male palpi long. Proboscis, palpi and mesonotum dark brown, without white markings. Tarsi dark brown, without white rings. Abdomen dark brown, with indefinite basal white bands on most of the segments.

Male hypopygium (Fig. 12). Outer division of lobe of side-piece a capitate lobe bearing a pair of short setae, another short seta with a flattened tip, a small leaf, and a longer seta.

Inner division of the lobe a short lobe bearing two stout setae at its tip. There are numerous short hairs on the lobe and near its base.

Clasper very short and stout, with two small papillated hairs and a forked terminal spine.

Mesosomal plates extending far beyond the bases of the large retrose hooks, which latter are bent sharply outward near their tips.

Tenth sternites comb-like, with 6 or 7 teeth. Lobes of ninth tergite small, rounded, not very far apart, each with two or three long hairs.

This species resembles *consolator* Dyar and Knab from Trinidad in having a leaf of the outer division of the lobe of the side-piece, but *consolator* has the male palpi and the hind tarsi white-banded. Specimens of *microphyllus* were bred from larvae collected from Bromeliads at the Rio de Janeiro Botanical Garden (Federal District)—Feb. 15, and at Magé—May 26, 1925.

E. Subgenus *Choeroporpa.* All the following species (with the exception of *C. automartus* n. sp.) are small, dark brown forms without definite markings.

19. *Culex* (*Choeroporpa*) *educator* Dyar and Knab.

This species was already known to range from Costa Rica to the Guianas. Specimens were bred from larvae taken in weedy jungle pools at Sant' Anna on Feb. 24 and Mar. 10, 1925.

20. *Culex* (*Choeroporpa*) *leprincei* Dyar and Knab.

The range of this species was already known to extend from the southern United States to the Guianas, and it was not surprising to find it in Brazil, also. Specimens were bred from larvae collected among Azolla and other water plants in an open space in the great river-flat marsh at Porto das Caixas—Mar. 12, 1925. Larval and pupal skins were preserved and seem to agree exactly with others in our collection from Georgia, Porto Rico and Honduras.

21. *Culex* (*Choeroporpa*) *clarkei* Evans.

This species was originally described by Evans (1924) from the River Amazon, and proved to be quite common in the coastal lowlands of the state of Rio de Janeiro. Males were bred from larvae taken among the aquatic vegetation along the sides of small streams and rivers and in lagoons connected with them. Porto das Caixas—Mar. 3, Mar. 12, Apr. 15, May 29, Itaperuna—June 17, 1925.

22. *Culex* (*Choeroporpa*) *innominatus* Evans.

This species also was originally described from the Amazon and from Venezuela. It was found to be common and widely distributed in central Brazil. The larvae were taken in small marshy ponds, in ditches, and in lagoons connected with rivers. Sant' Anna—Feb. 19, Porto das Caixas—May 29, Paracamby—Apr. 22, Lassance (State of Minas Geraes)—May 12, 13, 1925.

Larva (Fig. 13). Antennae with the tuft outwardly placed, the part beyond slender. Dorsal head hairs long, anterior ones single, posterior ones double, ante-antennal hairs long, multiple. Lateral hairs of abdominal segments 3 to 6 in threes. Lateral comb of eighth segment a triangular patch with about two irregular rows of scales. Individual comb-scales rather short and broad, with a strong terminal point and weaker fringing ones. One of the dorsal hairs of anal segment long, unbranched, the other shorter, with two unequal branches. Lateral hair of anal segment very short, two-branched.

Air-tube over five times as long as wide, pecten occupying a little more than basal two fifths. Air-tube with five pairs of multiple tufts ventrally, none displaced, and two pairs of small tufts dorsally. Integument of larva decidedly short-pilose on thorax and last four abdominal segments. On the rest of the abdomen pile is present, but so inconspicuous that this region might easily be considered glabrous.

23. *Culex* (*Choeroporpa*) *dyius* new species.

Male hypopygium (Fig. 14). Outer division of lobe of side-piece slender, widened at tip, with a short inner arm bearing a long curved pointed filament and a short stout pointed filament. Outer group consisting of two stout and two slender filaments, all with pointed, curved and flattened tips. Middle filament long and slender, arising at base of inner arm. No leaf present. A short hair arises from a tubercle near the insertion of the middle filament.

Inner division of the lobe forked, the outer of the two divergent arms a little longer than the inner one, each bearing a long, stout rod slightly swollen and beaked at tip.

Clasper narrowly snout-shaped, slightly pilose above near tip, terminal spine slender.

Each mesosomal plate ends in a slender outer arm and a broader inner arm which bears one large tooth and a number of smaller ones. No third point is visible

Tenth sternites comb-like, with 10 or 11 teeth. Lobes of ninth tergite small, oblong, close together, with a few fairly long hairs.

The male specimen from which the type slide was made has unfortunately been lost, and no record remains of the locality and date. It was probably obtained in the coastal lowlands of the state of Rio de Janeiro in May or June. 1925.

24. *Culex* (*Choeroporpa*) *oedipus* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and mesonotum dark brown scaled. Legs dark brown, without white markings, except that the femora are white below. Wings dark brown scaled. Abdomen dark brown, with green and coppery reflections, with basal white bands on most of the segments.

Male hypopygium (Fig. 15). Outer division of lobe of side-piece short, with a stout inner arm bearing a long curved pointed filament and a short stout pointed filament. Outer group consists of four slender filaments, of which one appears pointed at tip, one very slightly clubbed, one decidedly clubbed and one curved, flattened and pointed. Middle filament long, stout near base, arising between inner and outer arms. No leaf present. Near the insertion of the middle filament is a tubercle bearing a strong seta.

Inner division of the lobe forked, the outer arm much longer than the inner one and appearing much swollen at its tip. The outer arm bears a short, stout rod with beaked tip, the inner arm a longer rod, slender for about two thirds of its length, then sharply curved and swollen, with a beaked tip.

Clasper narrowly snout-shaped, the pile extending from near tip to the upper curve and becoming longer posteriorly. Terminal spine slender, widened at tip.

Each mesosomal plate ends in a short, stout lateral arm and a very broad inner arm with its terminal margin finely serrate. A sharp, slender third point on the stem.

Tenth sternites comb-like, with 9 to 13 teeth. Lobes of ninth tergite rather small, rounded, slightly separated, with a number of fairly long hairs.

The most striking peculiarity of this species is the swollen tip of

the outer arm of the inner division of the lobe of the side-piece. It was bred from larvae collected in jungle pools at Magé—Feb. 4, and Sant' Anna—Mar. 10, 1925.

25. *Culex* (*Choeroporpa*) *plectoporpe* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and mesonotum dark brown scaled. Legs dark brown except that femora are white below. Wings dark brown scaled. Abdomen dark brown with green and coppery reflections, baso-lateral white spots on all segments, venter with broad, basal, dirty white bands.

Male hypopygium (Fig. 16). Outer division of lobe of side-piece short and stout, with a short inner arm bearing a long curved pointed filament and a shorter, slender filament. Outer group consists of three long slender filaments of which one has its tip slightly expanded, another has its tip decidedly expanded and curved, while the third has its tip slightly expanded and sharply bent. Middle filament fairly stout, shorter than the filaments of the outer group and inserted between the outer group and the base of the inner arm. Near the insertion of the middle filament is a tubercle from which arises a short leaf with pointed tip, about as long as the middle filament.

Inner division of the lobe very broad, with two divergent arms of about equal length, both bearing short rods with swollen and beaked tips.

Clasper narrowly snout-shaped, with a triangular flap projecting laterally from its dorsal margin. If the mount is strongly compressed, this flap may be forced to lie in the same plane as the rest of the clasper (see Fig. 16*a*). The pile is short and extends only from near the tip to the beginning of the flap. Terminal spine slender.

Each mesosomal plate ends in a short slender lateral arm and a broad inner arm with its terminal margin finely serrate. A third sharp point just below the level of origin of the lateral arm.

Tenth sternites comb-like, with 8 or 9 teeth. Lobes of ninth tergite obovate, fairly large, approximate, with numerous fairly long hairs.

This species is remarkable, especially for the broadness of the base of the inner division of the lobe of the side-piece and for the peculiar lateral flap near the tip of the clasper. It was bred from larvae collected in a ditch and some small pools, all full of grass and water-weeds, at Bangu—June 11, 1925.

26. *Culex* (*Choeroporpa*) *serratimarge* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and

mesonotum dark brown scaled. Legs dark brown, except that femora are white below. Wings dark brown scaled. Abdomen dark brown with green and coppery reflections, with prominent baso-lateral white spots on segments 4 to 8. Venter with broad basal dirty white bands.

Male hypopygium (Fig. 17). Outer division of lobe of side-piece short and very stout, divided into three short arms at tip. The longest of these arms bears a long curved pointed filament and a shorter, very slender filament. Another arm bears the middle filament, but no leaf. The third arm bears the outer group of filaments, consisting of one very long, slender filament with a clubbed tip, and two shorter flattened filaments with pointed tips.

The inner division of the lobe is forked, the outer arm slightly longer than the inner. The outer arm bears a short rod, swollen and beaked at tip, and the inner arm bears a longer and more slender rod, beaked at tip, but not swollen.

Clasper rather broadly snout-shaped, the pile long and mostly concentrated in a tuft some distance before the tip. Terminal spine slender, widened at tip.

Each mesosomal plate ends in a short lateral arm and a broad inner arm whose terminal margin bears one large tooth and numerous smaller ones. A short, sharp third point on stem.

Tenth sternites comb-like, with about 13 teeth. Lobes of ninth tergite approximated, very large and broad, with a broad prolongation laterally which bears several rows of very long hairs, extending to tip of side-piece. Basal part of lobes with numerous shorter hairs.

The most obvious peculiarity of this species lies in the large size and peculiar form of the lobes of the ninth tergite and their long tufts of hair. A single male of this species was bred from a larva collected in a jungle pool at Sant' Anna—Apr. 27, 1925.

27. *Culex* (*Choeroporpa*) *cenus* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and mesonotum dark brown scaled. Legs dark brown, except that femora are white below. Wings dark brown scaled. Abdomen dark brown with green and coppery reflections, with small baso-lateral white spots, obvious only on the posterior segments. Venter of abdomen with broad, basal, dirty white bands.

Male hypopygium (Fig. 18). Outer division of lobe of side-piece rather long and slender, with a short inner arm which bears a long curved pointed filament and a short stout pointed filament. Near base of inner arm are two insertions close together from which arise

a short, slender middle filament and an asymmetrical, rounded leaf. The outer group, arising at a lower level, consists of four short slender filaments with curved flattened pointed tips.

Inner division of lobe with a fairly broad base and two divergent arms of which the outer is decidedly the longer. The outer arm bears a slender, curved, capitate rod, the inner arm an almost straight, stouter rod, with a swollen, capitate tip.

Clasper narrowly snout-shaped, the pile short and extending from near tip to about the middle of the "head." Terminal spine slender.

Mesosomal plates each end in a sharp, slender lateral arm and a broader inner arm with a sharp point externally. A sharp, slender third point is present at about the level of the lateral arm.

Tenth sternites comb-like, with 8 to 11 teeth. Lobes of ninth tergite fairly large, rounded, with-a slight projection at their internal basal angles, with many fairly long hairs.

This was a rather common species which seems not to agree with any yet described. Males were bred from larvae or pupae collected in jungle pools, in the pools of a road-side ditch, and in the side-eddies of a river. Sant' Anna—Feb. 5, Apr. 27, Magé—June 21, Porto das Caixas—June 29, 1925.

28. *Culex* (*Choeroporpa*) *automartus* new species.

Male. Male palpi about as long as proboscis. Proboscis and palpi dark brown scaled. Occiput with narrow curved silvery scales and dark bristles. Mesonotum yellowish-brown, sparsely covered with dark brown scales. On each side, just before the base of the wing, is a yellowish-brown area with a large, round, black spot in the center of it. Pleurae greenish, with an irregular dark bar across them. Legs dark brown except that the femora are white below. Wings dark brown scaled. Abdomen brown with coppery reflections. Venter of abdomen dark.

Male hypopygium (Fig. 19). Outer division of lobe of side-piece short, divided into three short arms at tip. The longest of these bears a long curved pointed filament and a short stout pointed filament. Another bears a slender middle filament and a slender leaf. The shortest of the three bears the outer group, consisting of three short, curved, pointed, somewhat flattened filaments.

The inner division of the lobe is fairly long and slender, not divided, bearing at its tip two short, slender, capitate rods.

Clasper narrowly snout-shaped, weakly pilose above, with a stout, straight terminal spine.

The mesosomal plates are not divided at their tips, but end in sharp points preceded by a slight swelling.

Tenth sternites comb-like, with about four teeth. Lobes of ninth tergite very small, rounded, widely separated, each with a few, fairly long, hairs.

This little species is peculiar in several ways. The form of the clasper and the structure of the lobe of the side-piece show clearly that it belongs to the *Choeroporpa*, but the simple tips of the mesosomal plates and the small size of the lobes of the ninth tergite remind one of *Melanoconion*, while the unusual mesonotal coloration is matched only by *Culex* (*Microculex*) *ocellatus* Theo. The greenish, dark-barred pleurae of *automartus* are also reminiscent of *Microculex*. So far as I know, this is the first species of the subgenus *Choeroporpa* which has been reported as breeding in the water held by the leaf-bases of epiphytic Bromeliads. These collections of water, of course, are the usual habitat of the larvae of *Microculex*, and in the Central American region several species of *Culex* proper have also adopted this breeding-place.

My single male specimen of *Culex automartus* was bred from a pupa collected from a Bromeliad in the Rio de Janeiro Botanical Garden (Federal District) on May 24, 1925.

29. *Culex* (*Choeroporpa*) *andricus* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and mesonotum dark brown scaled. Legs dark brown, except that the femora are white below. Wings dark brown scaled. Abdomen dark brown with green and coppery reflections, with small baso-lateral white spots on nearly all segments. Venter of abdomen dark.

Male hypopygium (Fig. 20). Outer division of lobe of side-piece fairly long, slender at base, broad and indistinctly divided into three short arms at tip. A short, broad inner arm bears the usual long, curved, pointed filament and a short stout pointed filament which is larger than usual and has its insertion distinctly separated from that of the longer filament. A middle arm bears a long, stout middle filament, near whose insertion there is a tubercle bearing a stout seta. No leaf is present. A short outer arm bears the outer group of three slender filaments, all of which are curved, flattened and somewhat clubbed at tip.

Inner division of the lobe forked, outer arm much longer than inner one. Outer arm bears a short, capitate rod, swollen near base and tip. Inner arm bears a long, slender capitate rod.

The clasper is probably of the usual *Choeroporpa* type, but in my single slide the tips of both claspers have been destroyed.

Mesosomal plates each end in a short, stout lateral arm and a shorter and stouter inner arm which has a sharp point externally. A sharp, curved third point at the same level as the lateral arm.

Tenth sternites comb-like, with about 8 teeth. Lobes of ninth tergite rather small, irregularly oblong, close together, but not quite touching, and with a number of fairly long hairs internally and basally.

My single male of this species was bred from a larva collected in a small pond full of vegetation near Lassance (State of Minas Geraes) —May 13, 1925. All the other small *Culex* in my Lassance collections are specimens of *Culex innominatus* Evans.

30. *Culex* (*Choeroporpa*) *evansae* new species.

Male. Male palpi longer than proboscis. Proboscis, palpi and mesonotum dark brown scaled. Legs dark brown, except that femora are white below. Wings dark brown scaled. Abdomen dark brown with green and coppery reflections, with small baso-lateral white spots on all segments. These spots are visible only in lateral view, the abdomen appearing all dark in dorsal view. Venter of abdomen with broad, basal, dirty white bands.

Male hypopygium (Fig. 21). Outer division of lobe of side-piece short, broadened at tip, with a short inner arm which carries the usual long, curved, pointed filament and short, stout, pointed filament. Close to the base of the inner arm are two insertions from which arise a long slender middle filament and a short, asymmetrical leaf with a long, narrow lateral expansion. The outer group is not as compact as usual and includes two stout and two slender filaments, all flattened, curved and pointed at tip.

Inner division of the lobe forked, outer arm longer than inner one. Each arm bears a capitate rod, that of the inner arm being longer than the other and swollen before tip.

Clasper broadly snout-shaped, the "head" much longer in proportion to the "stem" than is usually the case. The upper slope of the head seems to be plicate rather than pilose. The terminal spine is slender, widened at tip.

The mesosomal plates each end in a stout lateral arm and a broader inner arm with a few large serrations terminally. A sharp third point arises from the stem a little below the level of origin of the lateral arm.

Tenth sternites comb-like, with about 9 teeth. Lobes of ninth

tergite fairly large, ellipsoidal, touching each other, with many long hairs.

Larva (Fig. 22). Antennae with the tuft outwardly placed, the part beyond slender. Dorsal head hairs long, anterior ones single, posterior ones shorter and double, ante-antennal hairs multiple. Lateral hairs of abdominal segments 3 to 6 in threes. Lateral comb of eighth segment a triangular patch with about four irregular rows of scales. Individual comb-scales rather slender, with a delicate terminal point and weaker fringing ones on both sides of it. One of the dorsal hairs of anal segment long and single, the other shorter and with two unequal branches. Lateral hair of anal segment very short, single.

Air-tube about six times as long as wide, pecten occupying about basal third. Air-tube with 5 pairs of multiple tufts ventrally, none displaced, and two pairs of small tufts dorsally. Integument of larva decidedly short-pilose on thorax and last four abdominal segments. On the rest of the abdomen the pile is present, but very inconspicuous.

When I first began working up my Brazilian specimens of *Culex*, I thought that this species might be *tovari* Evans, described from Venezuela, because of the peculiar shape of the leaf on the outer division of the lobe of the side-piece. Dr. Dyar tells me, however, that he considers *tovari* to be a synonym of *leprincei*, a view which is borne out by Miss Evans' figure of the mesosome of *tovari*. *Evansae* differs from *leprincei* in several larval details, such as the degree of pilosity of the integument, the number of branches of the posterior pair of head-hairs, etc. There are also differences in the pupal skins. The breathing-trumpets of *evansae* are more slender than those of *leprincei* and the outer pair of long dorsal hairs on the posterior margin of the fifth abdominal segment of the pupa are long and double in *leprincei*, shorter and four- or five-branched in *evansae*.

Males of *evansae* were bred from larvae collected in small jungle pools at Magé—Feb. 26, by Dr. N. C. Davis, and from similar pools at Sant' Anna—Mar. 10, 1925.

F. Subgenus *Mochlostyrax*. Small, dark brown species.

31. *Culex* (*Mochlostyrax*) *innovator* Evans.

This peculiar species, whose male hypopygium shows a row of three broad, club-shaped filaments basally, before the inner division of the lobe of the side-piece, was originally described from the River Amazon by Miss Evans (1924). I bred males on two occasions from larvae collected among dense vegetation in overflowed areas near

small rivers at Sant' Anna—Feb. 5, and Porto das Caixas—Mar. 12, 1925.

Although I have no isolations of larval and pupal skins from which this species was bred out, I have some typical *Mochlostyrax* larvae, preserved in alcohol, which were collected from the place at Porto das Caixas from which *innovator* was bred. In life these larvae looked much like small larvae of *Aedeomyia squamipennis*, and had the same habit of attaching themselves temporarily to the trailing roots of Azolla and similar aquatic plants by the strong hooks at the tips of their air-tubes.

Larva (Fig. 23). Antennae with the tuft outwardly placed, the part beyond slender. Anterior pair of dorsal head hairs fairly long and single, posterior pair shorter and double, ante-antennal hairs multiple. Lateral hairs of third abdominal segment in threes, of abdominal segments 4 to 6 in twos. Lateral comb of eighth segment an irregularly single row of from 9 to 12 scales. Individual comb-scales long, slender, slightly curved, swollen near base. One of the dorsal hairs of the anal segment long and single, the other shorter, with about three unequal branches. Lateral hair of anal segment very small, three-branched, arising near the dorsal hairs.

Air-tube not quite three and one half times as long as wide, pecten occupying basal third and consisting of about 8 long, slender teeth, with delicate fringing points all along their ventral sides. Air-tube with about 8 pairs of long, ventral hair-tufts, none displaced, each made up of 4 or 5 hairs. Tip of air-tube with a pair of strong, branched hooks dorsally. Integument of larva very faintly short-pilose, the pile more conspicuous on the thorax.

I also have *Mochlostyrax* larvae from muddy rain-pools at Magé, like those in which *pilosus* breeds in the southern United States. These larvae differ from the ones just described in having the posterior pair of dorsal head hairs long and single and the pecten teeth much shorter and broader. Otherwise the two sets of larvae are very similar. The larvae from Magé probably belong to another species, but I did not succeed in breeding out the adults.

32. *Culex* (*Mochlostyrax*) *megapus* new species.

Male hypopygium (Fig. 24). Outer division of lobe of side-piece long and slender, somewhat widened at tip, with a rather long inner arm which bears the long, curved, pointed filament and short, stout, pointed filament usually found in this location in *Choeroporpa*. Near the base of the inner arm are two insertions from which arise a long,

slender middle filament and a short, slender leaf. Outer group composed of about three slender filaments, flattened, curved and pointed at their tips.

Inner division of the lobe rather stout, with two, slightly divergent arms, of which the outer is a little longer than the inner. Both arms bear long, slender, capitate rods.

Clasper with the "head" unusually long and broad almost to tip, its upper margin finely serrate for a considerable distance from the tip and then pilose for a short distance. Terminal spine long and slender, seeming to be abruptly bent near base.

The mesosomal plates each end in three short, sharp points.

Tenth sternites comb-like, with about 7 teeth. Lobes of ninth tergite very large, approximate, roughly obovate in shape, with inner and outer prolongations terminally. The inner prolongation is bare, but the outer one bears a large tuft of long hairs, which extend almost to tip of side-piece. The body of the lobe bears numerous shorter hairs.

I had placed this species in *Choeroporpa* when working up my collections, but Dr. Dyar says that the peculiar shape of the clasper will throw it into *Mochlostyrax*.

The specimen from which my single slide of this species was made was bred by Dr. N. C. Davis from a larva collected in a jungle pool in the mountains near Angra dos Reis—Jan., 1925. The specimen has since been destroyed by museum pests and my notes record only that it was a small, dark *Culex*, with long male palpi and without any striking markings.

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Explanation of Plates.

Plate 8.

FIG. 1. *Culex* (*Culex*) *chidesteri* Dyar. Lateral view of posterior end of larva, with a comb-scale and a pecten tooth much enlarged.
FIG. 2. *Culex* (*Culex*) *acharistus* new species. Male hypopygium.
FIG. 3. *Culex* (*Culex*) *lygrus* new species. Male hypopygium.
FIG. 4. *Culex* (*Melanoconion*) *exedrus* new species. Male hypopygium.

Plate 9.

FIG. 5. *Culex* (*Aedinus*) *accelerans* new species. Male hypopygium.
FIG. 6. *Culex* (*Microculex*) *gairus* new species. Male hypopygium.
FIG. 7. *Culex* (*Microculex*) *pleuristriatus* Theo. Side view of clasper of male hypopygium.
FIG. 8. *Culex* (*Microculex*) *gairus* new species. Dorsal view of head and lateral view of posterior end of larva, with a comb-scale and a pecten tooth much enlarged.
FIG. 9. *Culex* (*Microculex*) *hedys* new species. Male hypopygium.

Plate 10.

FIG. 10. *Culex* (*Microculex*) *aphylactus* new species. Male hypopygium.
FIG. 11. *Culex* (*Microculex*) *trychnus* new species. Male hypopygium.
FIG. 12. *Culex* (*Microculex*) *microphyllus* new species. Male hypopygium.
FIG. 13. *Culex* (*Choeroporpa*) *innominatus* Evans. Dorsal view of head and lateral view of posterior end of larva, with a comb-scale and a pecten tooth much enlarged.
FIG. 14. *Culex* (*Choeroporpa*) *dyius* new species. Male hypopygium.

Plate 11.

FIG. 15. *Culex* (*Choeroporpa*) *oedipus* new species. Male hypopygium.
FIG. 16. *Culex* (*Choeroporpa*) *plectoporpe* new species. Male hypopygium; 16*a*, tip of clasper, strongly compressed, 16*b*, side view of mesosome.
FIG. 17. *Culex* (*Choeroporpa*) *serratimarge* new species. Male hypopygium.
FIG. 18. *Culex* (*Choeroporpa*) *cenus* new species. Male hypopygium.

Plate 12.

FIG. 19. *Culex* (*Choeroporpa*) *automartus* new species. Male hypopygium.
FIG. 20. *Culex* (*Choeroporpa*) *andricus* new species. Male hypopygium.

FIG. 21. *Culex* (*Choeroporpa*) *evansae* new species. Male hypopygium; 21*a*, side view of mesosome.

FIG. 22. *Culex* (*Choeroporpa*) *evansae* new species. Dorsal view of head and lateral view of posterior end of larva, with a comb-scale and a pecten tooth much enlarged.

Plate 13.

FIG. 23. *Culex* (*Mochlostyrax*) *innovator* Evans. Dorsal view of head and lateral view of posterior end of larva, with a comb-scale and a pecten tooth much enlarged.

FIG. 24. *Culex* (*Mochlostyrax*) *megapus* new species. Male hypopygium.

PLATE 8

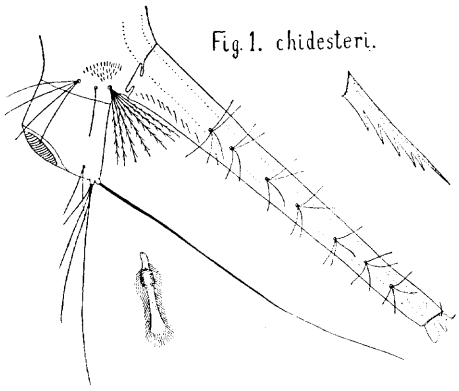


Fig. 1. chidesteri.

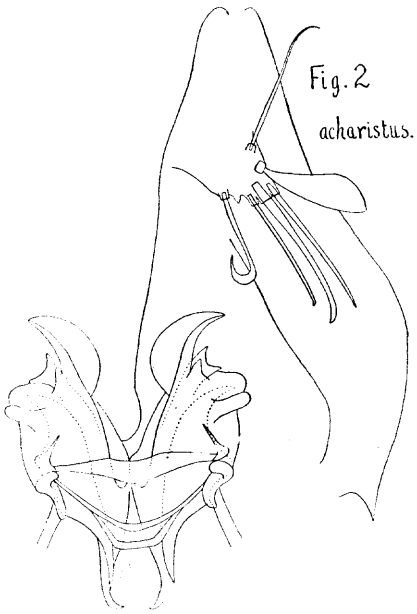


Fig. 2
acharistus.

Fig. 3. lygrus.

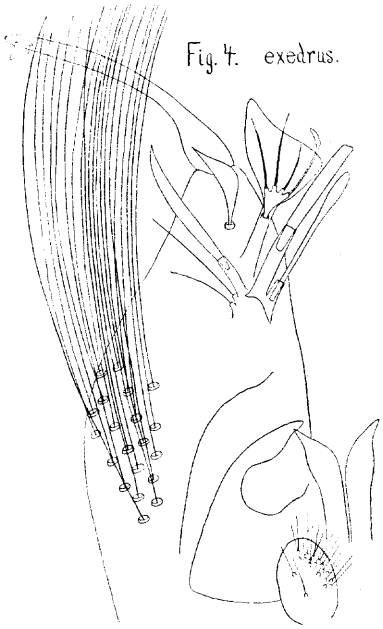


Fig. 4. exedrus.

Francis Metcalf Root.

PLATE 9

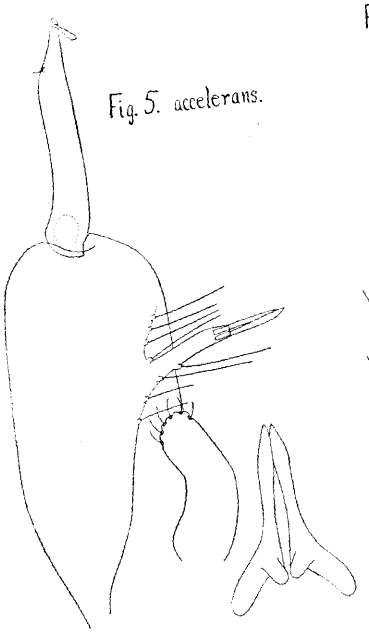


Fig. 5. accelerans.

Fig. 6. gairus.

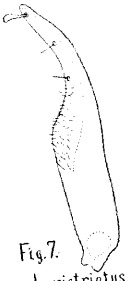
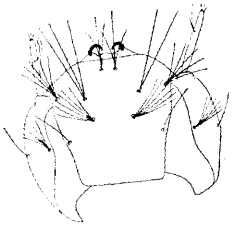


Fig. 7. pleuristriatus.



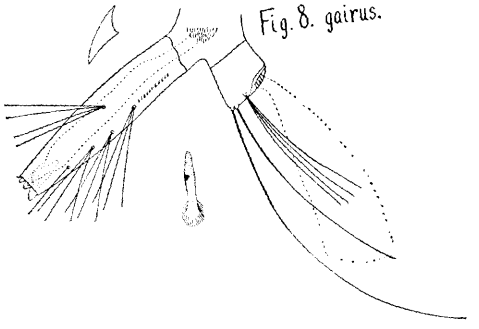


Fig. 8. gairus.

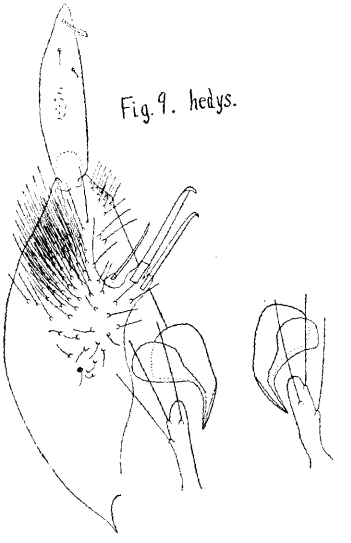


Fig. 9. hedys.

Francis Metcalf Root.

PLATE 10

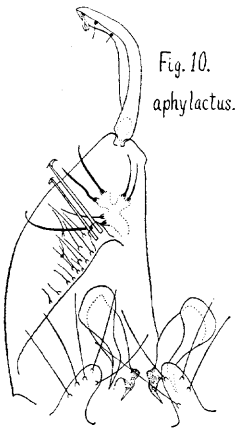


Fig. 10.
aphylactus.

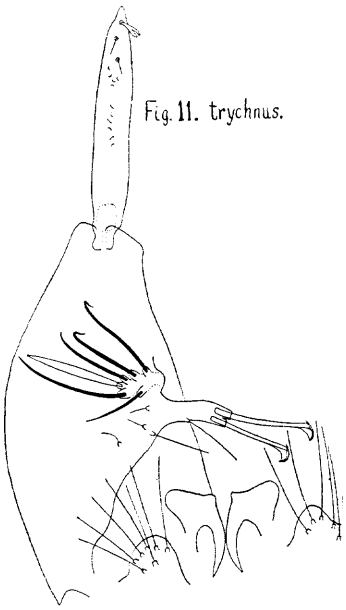


Fig. 11. trychnus.

Fig. 12. microphyllus.

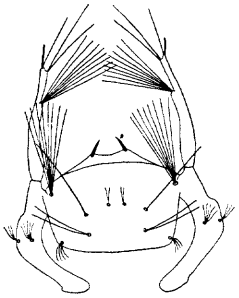
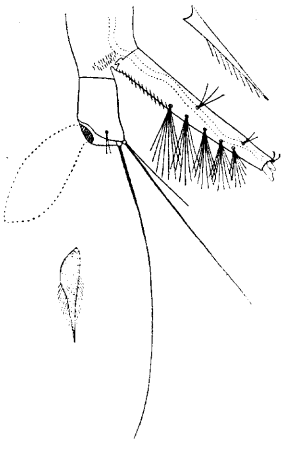


Fig. 13. innominatus.



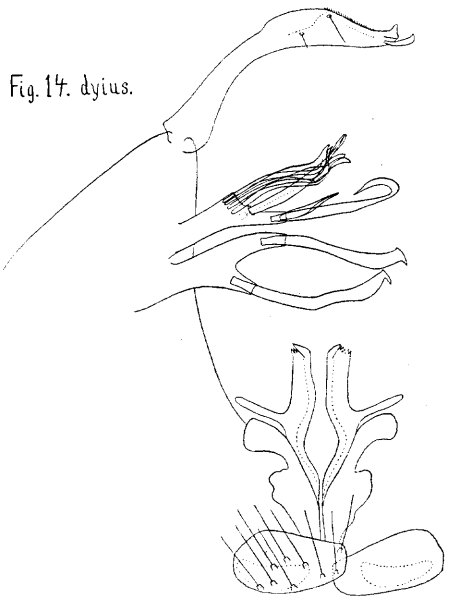


Fig. 14. dyius.

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PLATE 11

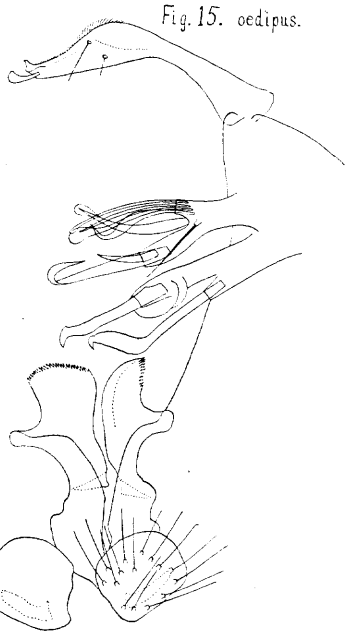
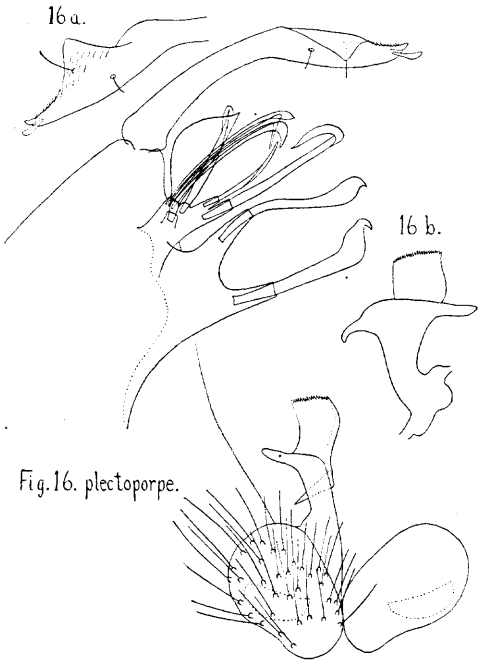


Fig. 15. oedipus.



16 a.

16 b.

Fig. 16. plectoporpe.

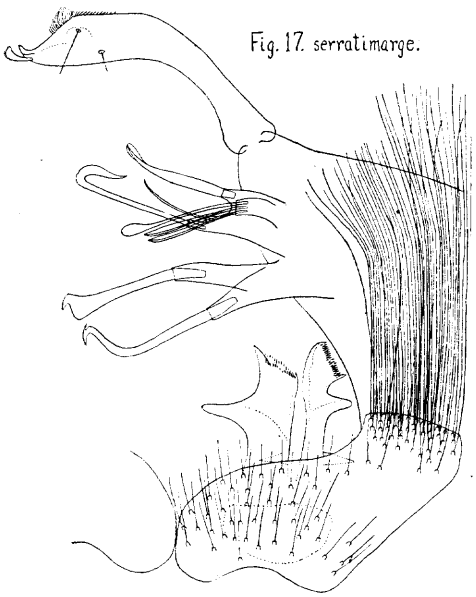


Fig. 17. serratimarge.

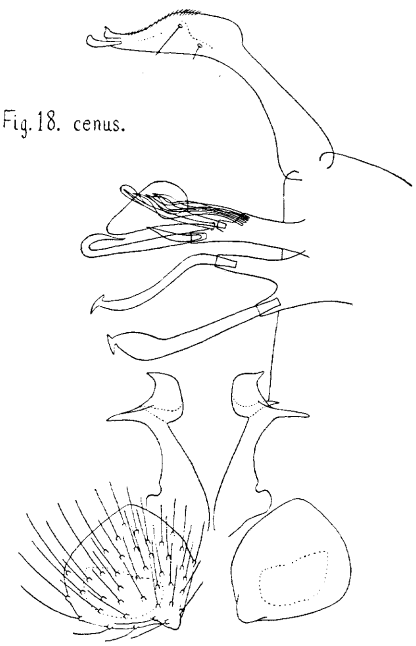


Fig. 18. cenus.

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PLATE 12

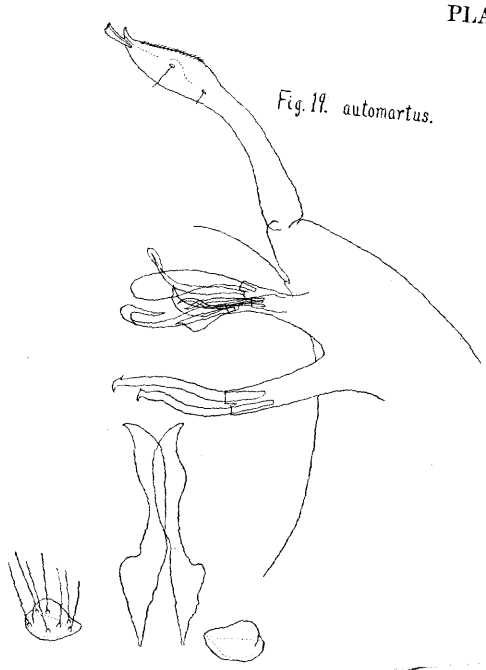

Fig. 19. automartus.

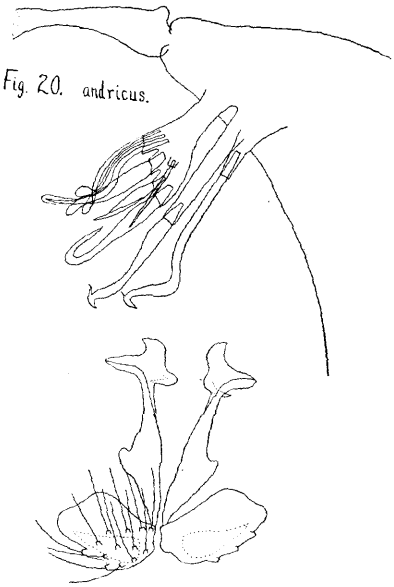

Fig. 20. andricus.

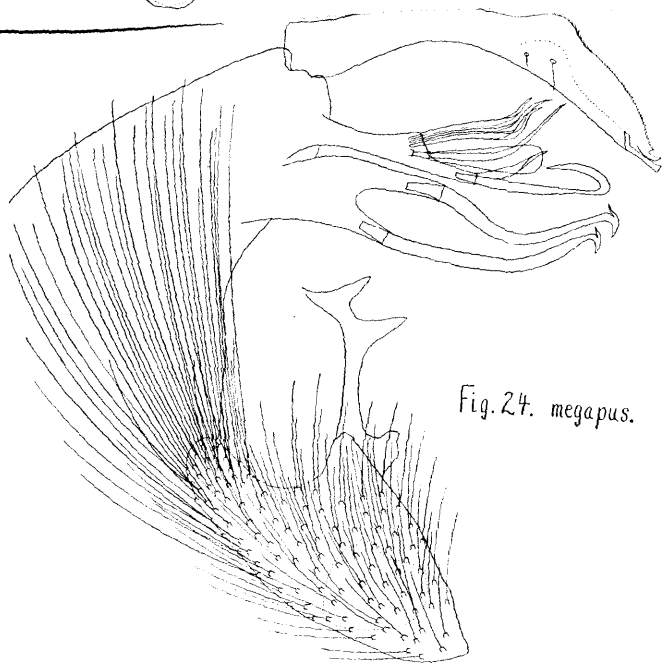

Fig. 24. megapus.

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