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CULEX ROOTI, A NEW CULEX FROM PANAMA
(Diptera: Culicidae)

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On November 24, 1934, a number of mosquito larvae and pupae were collected from ground pools a few miles east of Panama City, R. de P. The mosquitoes found were *Anopheles neomaculipalpus*, Curry, *Culex conspirator*, Dyar & Knab., *C. iolambdis*, Dyar, *C. pilosus*, D. & K., and two male *Culex* of which no description could be found. Mr. W. H. W. Komp, who has recently had the opportunity to examine the types of the genus *Culex* in the U. S. National Museum, declared that this is a new species, and also made suggestions concerning the description. I am naming this mosquito in memory of the late Dr. F. M. Root, whose untimely death is deeply mourned by all those who have had the pleasure of knowing him and working with him.

***Culex (Mochlostyrax) rooti*, new species**

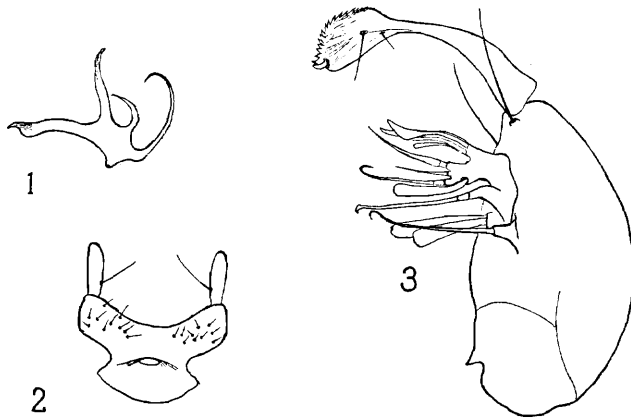
Clasper narrowed just before expanded "head," which is set at a slight angle with the plane of the shaft. "Head" not abruptly expanded, somewhat flattened dorsoventrally, the outer margin with a fine pilosity at crest, followed to the tip by a number of closely appressed triangular lamellae. Terminal horn very small; a short stout appendiculate spine inserted below and proximal to the tip of clasper. Two fine setae from tubercles arise from the outer aspect of the "head," the more distal being very fine and long. On the outer aspect of the "head" the membrane is finely striate, giving the appearance of sparse fine setae.

Side-piece rounded conical, somewhat flattened interiorly; a long coarse seta on inner aspect just below insertion of clasper; another situated on the dorsal side of the side-piece but having the appearance of being inserted at the base of the column of the outer division of the lobe of the side-piece. Whole surface clothed with long sparse setae, somewhat finer and more numerous on outer margin of outer curvature.

Outer division of lobe of side-piece with a short thick column bearing five appendages, or sets of appendages, all rather widely separated. The most proximal is a group of five appressed filaments; the smallest is curved, spatulate, with a slightly expanded truncate tip, about two-thirds the length of the others. The other four are widened just before the tip, there abruptly bent and narrowed to a point. The next most

proximal is a single stout flattened filament, with a central thickening, inserted on the outer aspect of the column, and slightly exceeding the five preceding filaments. Next in order is a fine, round, pointed filament with a long insertion, placed midway between the flattened filament and the long hook-tipped filament lying next to it, and about two-thirds the length of the latter. Inserted below and proximal to the hook-tipped filament is a large flattened filament, spatulate, in-folded, striate, the shaft bent upwards from near the insertion, the tip rounded.

The inner division of the lobe of the side-piece is unique, resembling most closely that of *Culex innovator* Evans. The two usual filaments with capitate tips are present, but instead of being inserted at the tip of a column, or at most on two divergent arms of a column, as is usual, the column is divided into two distinct parts, which have migrated a considerable distance apart. The more distal column arises just



Culex rooti, new species; male

1, Inner mesosomal plate. 2, Ninth tergites. 3, Side-piece of male terminalia.

internal to and proximal to the column of the outer division of the lobe of the side-piece, and is short, about one-third the length of the nearly straight beak-tipped filament it bears. The more proximal column arises a little internal to and more proximal to the distal column, and is about half the length of the outer column, somewhat more slender, and bears a more slender beak-tipped filament slightly bent before the tip.

Just external to the inner column, and slightly nearer it than to the outer column, two subequal spatulate filaments arise from sessile insertions, being broader towards the tips, which are rounded, and resembling the large flattened striate filament on the outer division of the lobe of the side-piece.

The single element of the paired inner mesosomal plate is also unique. The stem is flattened laterally. From a lateral view, there is a long ventrally directed arm, with a striate downcurved pointed

tip and a lateral shoulder. The middle point is directed upwards nearly at a right angle to the outer arm, as long as it, thinner, not flattened, slightly sinuate, with an imbricated pointed tip, laterally directed. A third long, hornlike, delicate point arises dorsal to the middle point, near the attachment of the basal hook; it is about half as long as the middle point, curved nearly in a semicircle, with a sharp infuscated point directed laterally outward. The basal hook is very slender and curved. The single element of the paired outer mesosomal plates is long, roughly triangular, with an extended grooved articulation where the inner plate attaches. The upper edge is arcuate.

The tenth tergites are membranous, no setae being present, the tips striate and pointed.

The ninth tergites show a close similarity to those of *C. pilosus*. The body is broadly U-shaped; the arms of the U are flattened, infuscated, round-tipped columns, each bearing a single long seta, inwardly and upwardly directed, inserted slightly below the middle of the column on the inner side. At the inner curve of each arm of the U-shaped plate is a patch of about 10 fine setae. Integral with the U-shaped plate and extending cephalad from it is a low, conical membranous area, the tip of the cone squarely truncate, leaving a lacuna.

The tenth sternites are rather long and slender, with seven long slender pointed teeth.

The other parts of the terminalia show no characteristic features.

The eighth abdominal segment is incurved ventrally, forming a V-shaped trough to which the conical membrane bearing the lacuna is attached.

The type slides, number 50942, have been deposited in the U. S. National Museum.

PYRETHRUM FLOWERS, by C. B. GNADINGER. Published by McLaughlin Gormley King Co., Minneapolis, Minn., September, 1933. 270 pages, 39 illustrations. Price \$3.50.

Within the last ten years considerable progress has been made in the use of certain plant derivatives as insecticides. Mr. Gnadinger presents the known facts regarding one of these, pyrethrum, and discusses its history, sources, value, chemistry and various uses. Outstanding because it is timely and authentic this work is of decided value to all whose professions or businesses require a knowledge of pyrethrum.

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Well chosen illustrations not only carry the product from its sources through phases of preparation to application but also depict many pieces of apparatus used in rearing insects and testing materials.—B. J. L.

**CULEX JUBIFER, A NEW SPECIES OF CULEX
FROM PANAMA**

(Diptera: Culicidae)

W. H. W. KOMP AND C. G. BROWN¹

***Culex (Choeroporpa) jubifer*, new species**

Clasper constricted before "head." Slightly distad of constriction on outer aspect is a small conical point. Beyond this the outer aspect of the clasper rises high, dome-like, then produced to a narrow snout-shaped tip, with upturned terminal horn and terminal appendicle. Below the dome-like outer aspect arises a crest of many long setae, extending back to the conical point; the setae toward the end of the clasper are directed upward and forward, those toward the base directed upward and backward, the most basal being recurved. A short, stout eye-seta is on the outer aspect, being preceded by a smaller seta below it.

Sidepiece with large infuscated projecting lobe on outer aspect at apex, bearing 11 or 12 long strong setae from large insertions. On inner aspect, at apex, are two small slender setae.

Outer division of lobe of side-piece a stout column, bearing in order, beginning from the outer aspect, the following appendages: 3 flattened filaments, one longer than the others, with a central thickening; on column below them, on inner aspect, a single long fine seta; next to the filaments a single shorter pointed filament; then a long hook-tipped filament; inserted basad of this on lower aspect of column is a long stout rod-like filament with abruptly widened square truncate head.

Inserted on side-piece between the outer division of the lobe of the side-piece and the apex, arising from a separate elevation, is a very large infolded leaf, with large insertion and long thick stem, nearly as long as the leaf itself. The leaf is strongly ribbed, with the outer edge slightly irregular, and with pointed tip.

Inner division of lobe of side-piece a long column, bent upwards before tip, and directed laterally. Arising from the tip of the column is a long filament with expanded, slightly hooked tip. Inserted below this is a second filament with knobbed tip, not quite reaching tip of first filament. A patch of exceedingly fine pilosity is on inner aspect of base of column.

Tenth sternites with 7 to 9 strong curved teeth.

Inner paired plate of mesosome is T-shaped, the two arms inclined slightly upwards, forming an obtuse angle. Ventral arm flattened, with sharp point directed laterally. Dorsal arm terminating in a long hooked tip, also directed laterally.

¹From the Gorgas Memorial Laboratory, Panama, R. de P.