BULLETIN OF THE UNIVERSITY OF UTAH

Volume 31 April 23, 1941 No. 11

New American Millipeds

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BIOLOGICAL SERIES, Vol. VI, No. 4

PUBLISHED BY

THE UNIVERSITY OF UTAH

SALT LAKE CITY

THE UNIVERSITY PRESS
UNIVERSITY OF UTAH
SALT LAKE CITY

NEW AMERICAN MILLIPEDS

By Ralph V. Chamberlin

Family ANDROGNATHIDAE

Genus EUCYBE, new

Having the proportions and general structure of *Ischnocybe*. It differs from this genus in having the first tergite strongly keeled and tuberculate. Other tergites with sharply elevated tubercles in two transverse series, some tubercles present on basal part of keels. Pores not stipitate, opening on the lateral margin of the keels, the margin being thickened in region of pore. Segments typically less than 60 in number.

Genotype.—*Eucybe clarus*, new species.

Eucybe clarus, new species

Head conspicuously elevated, the vertex narrow in antero-posterior direction; surface densely and very shortly hirsute. Antennae with sixth article subcylindrical, thickest and much longest.

Body narrowed toward both ends. Collum as wide as head but narrower than second tergite; keels somewhat raised at lateral ends as with those of following segments, corners rounded and lateral margin convex; surface with two transverse series of tubercles.

On tergites of segments of middle part of body there are two series of sharply defined tubercles which are mostly compressed in transverse direction with free surface more or less sharp; anterior row normally of 12 tubercles, of which the outermost of each side is definitely on the keel and the posterior row of 10 tubercles.

Keels with anterior corners strongly rounded; the posterior corners on anterior keels also well rounded and scarcely produced, but in going caudad the corners are gradually more and more produced; processes of keels of penult segment produced cauded so that their inner margins are subparallel and their apices nearly on a level with the widely rounded caudal end of the last tergite; tergites in general very finely and densly granular, with fine short setae like those on head. Anal tergite with long setae projecting from caudal margin.

Number of segments in female holotype, 55.

Width of female holotype, 1.2 mm.

Locality.—California: Monterey Co., Hastings Reservation. February, 1941. One adult female, several immature specimens. Dr. J. M. Linsdale.

Brachycybe potterinus, new species

First tergite moderately wider than the head; its keels bent obliquely ectocephalad, rounded at the ends; metazonite with anterior margin between keels essentially straight except for a notch at the middle produced by the median dorsal sulcus, its dorsal surface crossed by two transverse series of tubercles as on the following tergites.

On ordinary segments of the middle region of the body, there are mostly from 24 to 30 tubercles in each series, 2 or 3 of those on keel at outer end of series commonly much reduced in size. Repugnatorial pores in usual position on lateral margin just a little in front of the caudal end.

Anal tergite exceeded by the apices of the keels of the penult segment; 6 long setae projecting from its caudal margin. Anal valves very convex, a little exceeding the anal tergite.

Number of segments 45 in holotype, an adult male.

Width, 3 mm.

Locality.—California: Potter Creek, near Potters Cave. One male taken July 15, 1937, by R. V. Chamberlin.

Differs from *rosea*, among other points, in the much smaller number of body segments.

Family CAMBALIDAE

Nannolene cincta, new species

Pl. 1, fig. 1

A form resembling *N. burkei* in size and general structure but differing superficially in having the body strongly ringed with dark bands about the prozonites alternating with yellowish bands over the more elevated metazonites in place of the conspicuous large spots along the sides of *burkei*. The dark bands narrow somewhat down the sides and tend to fade out beneath. Each dark ring is bisected across dorsum by a yellow line, this interrupted at the mid-dorsal line. Anal tergite entirely dark while usually one to three segments preceding it lack the dark annuli. Legs and antennae yellow.

Eye-patch triangular with apex toward base of antennae. Ocelli in 4 or 5 series: e. g., 7, 7, 5, 3, 2, and 9, 9, 8, 5; totals of 24 and 29 respectively.

Number of segments, 54-57, as against 50-51 in *burkei*.

Length, about 25 mm.; width, 1-1.2 mm.

Locality.—Washington. Arlington. September 11, 1935. One male and four females taken by Chamberlin and Ivie.

California: Guernsey Creek. September 7, 1935. Several specimens of both sexes.

Differing from other known species in the relatively broader tongue of the sternite of the anterior gonopods of the male which is typically furrowed down its middle. Coxal piece of anterior gonopods characteristically bent caudad at level of distal end of sternite or appearing transversely furrowed at that level.

Nannolene catalina, new species

Resembling *burkei* and *cincta* in its large size, but differing superficially conspicuously in its nearly complete lack of color markings. The color is typically dark brown, varying to nearly black in one direction and to chestnut in the other, the chestnut more pronounced in the anterior segments. Legs light yellow to nearly white, contrasting thus sharply with the color of the body.

Eyes triangular, composed of numerous ocelli in 5 series, e.g., 7, 7, 6, 4, 2, a total of 26.

General conformation of the body segments as in *burkei*, etc.

The distinctive form of the male gonopods will be illustrated in another place.

The number of segments in the male type is 65, against a maximum known number of 51 in *burkei* and 57 in *cincta*.

Diameter, up to 1.4 mm., being thus greater than in any other known species.

Locality.—California: Catalina Id., Hamilton Canyon, Nov. 12, 1927.

Male holotype and two females taken "under stones on beach."

Three partly grown specimens taken "under stones on hillside", south of Avalon, Nov. 20, 1927, may also belong to this species.

Family CAMBALOPSIDAE

Genus TIGOLENE, new

A cambaloid genus resembling *Paiteya*, *Nannolene*, etc., in general appearance but differing from these and apparently allied to the cambalopsoid forms of India in not having a prementum set off by a distinct suture from the mentum proper. Eyes absent. Antennae clavate, the 5th and 6th articles thickest; head excavated on side for reception of basal joints of antennae. Body cylindrical, not depressed, smooth, differing from *Platydere* in being strongly constricted back of the first segment as in *Doilene* but lacking the mid-dorsal ridges present in the latter.

Genotype.—*Tigolene clementinus*, new species.

Tigolene clementinus, new species

Pl. I, fig. 2.

Brown in color, with venter, lower part of sides and legs yellowish, the anterior and posterior segments also paler.

Collum narrowed down sides and rounded at ends, the lower part of posterior border on each side curved with sharply impressed striae. Anterior border straight or weakly concave, the posterior convex.

Ordinary segments deeply constricted as in *Nannolene;* sharply longitudinally striate below on each side entirely across segment, striae over caudal border above, these weak and irregular.

Anal segment rather long; tergite rounded caudally, exceeded by the valves, which are smooth with margins not elevated.

No processes on anterior legs of male detected. Gonopods of male as figured.

Segments in male holotype, 50 or 60.

Diameter, 1 mm.

Locality.—California: San Clemente Island. Male holotype taken in May, 1939, by H. K. Raymenton. Transmitted by Prof. T. D. A. Cockerell.

Genus DOILENE, new

A cambalopsid genus resembling *Endere* in the thickened first segment behind which the body is conspicuously constricted into a neck. It differs from the other known genera in having a pair of low but distinct longitudinal crests, one a little each side of the mid-dorsal line. Eyes absent.

Genotype.—*Doilene carmelina*, new species.

Doilene carmelina, new species

The color is yellow throughout. Head in the type paler than first segment, nearly white.

The first segment decidedly wider than the head. Collum long, the lower margin nearly straight, a margining sulcus above it and a second one above posterior end of the latter.

Body somewhat flattened above between the porigerous thickenings which appear high on the body. Segments strongly striate on the sides below the level of the pores. The encircircling sulcus smooth throughout.

Anal valves exceeding the last tergite, the caudal margin of which is nearly straight.

Number of segments, 52.

Length of female holotype, about 26 mm.; diameter, 1.2 mm.

Locality.—California: Monterey Co., Hastings Reservation. A female and two males collected by Dr. J. M. Linsdale, of which one is immature. The gonopods of the adult male are wholly concealed and for the present are not dissected out for description.

Family ATOPETHOLIDAE

Atopetholidae Chamberlin, Proc. Biol. Soc. Washington, 1918, vol. 31, p. 167.
Onychelidae Verhoeff, Zool. Anzeiger, 1938, Bd. 122, M. 11/12, p. 18.

Atopetholus paroicus, new species

Pl. 1, fig. 5

General color black or nearly so with only a narrow stripe at caudal margin of segments paler. Caudal border of last tergite light colored. Legs and antennae brown to dark brown.

Antennae rather slender, scarcely thicker distad. Ocelli in six longitudinal series; e.g., 3, 6, 7, 7, 6, 5; those of two lowest series largest.

Distinguished especially by the form of the collum, the narrow lateral angle of which is curved caudad as shown in figure 5; without sulci except for the anterior margining one which does not extend up quite to the level of the eye; lower end free, extending below level of second tergite.

On ordinary segments, the segmental sulcus distinct throughout; contiguous with pore about the caudal edge of which it curves but the part embraced much less than half the circumference of the pore. Longitudinal striae beneath and part way up sides to pore. Surface otherwise appearing smooth but under magnification showing a very fine network of impressed lines.

Anal tergite with caudal portion obtusely angular in general outline but the median caudal angle well rounded.

Claws of anterior legs enlarged as usual.

Number of segments, 46–48.

Diameter, 6 mm.

Locality.—California: Mountain Spring. January 8, 1941. Three females taken by S. and D. Mulaik.

Hiltonius pius, new species

Pl. 1, fig. 6.

Posterior portion of metazonites of segments when wet and in strong light, bright chestnut, the anterior portion becoming dusky brown, especially over dorsum. Anal tergite and valves abrutly paler than preceding segments. Collum with borders chestnut, elsewhere dusky. Head bright chestnut or cherry colored over labrum, elsewhere dusky. Legs chestnut. When dry, the chestnut or reddish color disappears and the general color becomes dark brown or in part fuscous with the legs light brown.

Ocelli in seven longitudinal series: 3, 5, 6, 6, 7, 7, 6; ocelli of top series very small, those of bottom series largest.

Collum of usual general form and with the usual anterior margining sulcus, otherwise smooth. Second tergite extending well below collum as shown in figure 6.

Segmental sulcus fine, contiguous with pore at upper edge of which it is slightly angled. Surface of somites above showing under magnification the usual short mostly longitudinal weakly impressed lines.

Last tergite widely rounded behind, not at all angular; surface smooth and shining, not punctate.

First two pairs of legs with claws longest and stoutest, those of third long but more slender, others of normal length or nearly so; none of claws as long as last article of legs.

Number of segments, 46.

Length, about 70 mm.; diameter, 8 mm.

Locality.—California: Mountain Spring, January 8, 1941. One female taken by the Mulaiks.

Distinguished from *E. minus* in notably larger size, form of second tergite, coloration, etc.

Hiltonius thebanus, new species

Pl. I, fig. 7.

The general color is a very pale olive or olive yellow with a brown stripe on each somite between segmental suture and anterior margin of succeeding somite, this dark band narrowing down each side and ending about midway between level of pore and bases of legs. A series of black dots along sides at level of pores. Head brown, with pale dots, across vertex, yellowish below. Caudal border of last tergite and the anal valves pale. Legs and antennae yellow.

Ocelli in 8 series: e. g., 3, 5, 5, 6, 6, 4, 4, 3.

Collum and second tergite of form shown in the figure. (Fig. 7.)

First 5 pairs of legs thickened, with claws larger than on succeeding pairs.

Segments striate only beneath, elsewhere smooth and shining. Segmental suture fine, distinct only below and up to pore or to a little above it, obscure or absent across dorsum; pore behind suture, contiguous with it, the suture or sulcus not excurved at level of pore.

Anal valves smooth, with mesal borders reentrant at median line, exceeding the last tergite.

Number of segments in female holotype, 45.

Diameter, 4 mm.

Locality.—Arizona: Theba. January 5, 1941. One female taken by S. and D. Mulaik.

Set apart by coloration, the form of the collum and the general sculpturing of the tergites.

Hiltonius mimus, new species

Pl. I, fig. 8, 9.

Segments chestnut colored, the color brighter behind suture, dusky in front of it, with areolation in light spots in front of suture below and just above level of pore. Collum and anal valves light and the head light except across vertex. Antennae brown, the legs lighter and of reddish or chestnut color.

Ocelli in 6 transverse series: 5, 6, 6, 5, 4, 3.

Collum with narrowed ends well rounded; surface smooth except for the sharply defined anterior margining sulcus. Second tergite extending much below level of lower end of collum, with anterior corner acutely produced below level of posterior.

On ordinary segments the pore is contiguous with the fine segmental sulcus which is weakly obtusely angled just above it. Surface of segments in general seen under magnification to be finely punctate, with longitudinal sulci only below.

Gonopods of male as drawn. (Figs. 8, 9.)

First two pairs of legs and their claws enlarged as usual. Coxal processes of third legs in male small, their ventral face cuneate in outline with apical portion curving caudo-dorsad and lying in front of coxae of fourth legs. Processes of fourth and fifth legs merely rounded bulgings, those of six and seventh scarcely evident.

Number of segments in male holotype, 49.

Diameter, the largest specimen, 6 mm.

Locality.—California: Mountain Spring. Six specimens taken January 8, 1941, by S. and D. Mualik.

Hiltonius congregans, new species

Pl. I, fig. 10.

Adults commonly a bright chestnut to almost cherry red when in alcohol, the region in front of segmental suture more brownish, especially on anterior segments, and below level of pores, the band more or less mottled with lighter spots. Head above and collum light colored from numerous light spots or areas, the head below vertex clearer in coolr. Anal valves and last tergite also typically light brown. Ancolor. Anal valves and last tergite also typically light brown. An-

Ocelli in 6 or 7 transverse series; e.g., 3, 5, 5, 5, 5, 4, 2.

Collum of usual general form. Anterior margining sulcus distinct. A less sharply defined longitudinal sulcus at level of eye on each side. Second tergite extending well below level of collum with its anterior corner strongly, acutely produced below level of corner.

Pore on each typical somite contiguous with sulcus which is somewhat angled just above it. Segments longitudinally striate only beneath, elsewhere smooth and shining.

Distinct in details of the posterior gonopods. (See fig. 10.)

First two pairs of legs and their claws enlarged in both sexes. Processes of coxae of third legs in male comparatively small, not produced caudad; coxae of following legs to the seventh compressed anteroposteriorly and a little extended ventrad, the produced portion convex.

Number of segments, 46-59.

Diameter, up to 4.4 mm.

Locality.—California: Mt. Spring. Many specimens of both sexes and in different stages of growth taken January 8, 1941, by S. and D. Mulaik.

Hiltonius balboanus, new species

Pl. II, fig. 11.

As nearly as can be judged from specimens long preserved, the general color was a brown with a darker sharply defined annulus about the caudal border of each segment. Legs brown or dusky brown.

Collum narrowed to a moderately acute angle on each side; smooth and shining, without sulci excepting the sharply impressed anterior margining arc on each side.

On ordinary somites, the pore is contiguous with the segmental suture; the latter slightly angled at the pore, represented across dorsum by a shallow sulcus. Striate below. Under lens the surface elsewhere is seen to be minutely punctate and with numerous fine short weakly impressed lines.

Anal tergite with median caudal margin convexly rounded; with some transverse rugae in front of caudal portion. Valves compressed and protruding, exceeding the tergite.

Anterior gonopods of usual general type. Posterior gonopods distinctive. (See fig. 11.)

In the male the processes of the third coxae are well developed, erect. Processes of succeeding legs small, especially on those of the sixth and seventh pairs.

Number of segments, mostly 43 to 46, the latter number common.

Length, 58 to 72 mm.; diameter, 8-10 mm.

Locality.—*California*; San Diego, Balboa Park. 16 specimens of both sexes taken by G. Grant on March 5, 1922.

Arinolus apachellus, new species

Pl. II, figs. 12, 13, 14.

Segments light brown behind segmental suture, with a darker, nearly black band between suture and margin of preceding segment, this band continuing of full width down each side to the ventral surface. A series of areolate light spots along each side. Collum with a fine network of black lines leaving light dots in the meshes, a solid black band just behind a narrow light marginal stripe. Last tergite and anal valves black or nearly so. Antennae brown, legs paler.

Ocelli well defined, typically in 8 series.

Collum strongly narrowed down each side as usual, with the anterior margining sulcus sharply impressed but with no other sulci evident. Second tergite evenly bent in mesad but not at all angularly produced below level of collum.

Segmental sulcus closely embracing the caudal half of pore. Anal tergite and valves of usual form and relations. Segments striate beneath and part way to pore up on the sides.

Readily distinguished from *A. torynophor* in the form of the processes of coxae of anterior gonopods in male which are subclavate, distally rounded, instead of acute. See figures for other details and for form of posterior pair.

First two pairs of legs in male enlarged, with claws longer. Third to seventh legs with coxae bearing low, distally rounded processes which are somewhat compressed in the antero-posterior direction.

Number of segments, 40.

Diameter of maximum male, 2.2 mm.; of maximum female, 2.8 mm.

Locality.—Arizona: Covered Wells; about a dozen specimens, of both sexes, taken January 3, 1941, by S. and D. Mulaik; also 20 mi. South of Ajo, 2 males, Jan. 4, and Congress Sta., December 25, 1940, several males and females.

Readily distinguished from *A. torynophor*, the genotype, in its much smaller size.

Arinolus nogalanus, new species

Pl. II, fig. 15.

Black except for a narrow light band at caudal margin and some light areolations anteriorly and in a spot above each pore. Legs brownish, the antennae nearly black. Last tergite and anal valves solid black. Collum areolate in black, the color solid below and just behind the light anterior border.

Antennae slender, only very gradually increasing in thickness distad. Ocelli in 7 transverse series: 2, 4, 4, 4, 3, 2.

Collum with the usual anterior margining sulcus but otherwise without obvious sulci or striation. Second tergite not extending below level of collum, its anterior margin below but little raised.

Somites weakly constricted, with the pore behind the furrow. A fine furrow between pore and caudal margin. Surface marked with a network of fine coriarious lines or impressions, striate only beneath.

Anal tergite rounded behind, its surface punctate and crossed with a transverse sulcus near middle of length. First two pairs of legs thickened, their claws as long as ultimate joint. Claws of third legs eually long but more slender, those of following 2 pairs intermediate, those of 6th and 7th of normal length. Coxae of third to seventh legs

compressed in antero-posterior directed, moderately produced ventrad, the processes distally evenly rounded.

Gonopods as figured.

Number of segments in male holotype, 37.

Diameter, 22 mm.

Locality.—Arizona: Nogales. One male taken December 30, 1940, by S. and D. Mulaik.

Very similar in size and structure to *A. apachellus*, but readily distinguishable in color, e. g., in having black band embracing nearly the entire somite, and in the posterior gonopod which on the anterior face of the terminal lobe bears a rounded prominence in place of a spine-like process as shown in the figures.

Arinolus hopinus, new species

Pl. II, fig. 16.

Color and color pattern nearly as in *A. pimus* but lighter beneath and with the light bands across dorsum more conspicuous.

Antennae short and relatively thicker than in *nogalanus*.

Lower end of collum not as narrow as in *pimus*.

Segments notably higher behind constriction than in front of it.

Anal tergite not obtusely angled as in *pimus*, but rounded.

Gonopods of male as drawn. (Fig. 16.)

Anterior legs with claws and processes as usual.

Number of segments, 42.

Diameter of male holotype, 3.4 mm.

Locality.—16 miles east of Tucson. A male and not fully grown female taken December 28, 1940, by the Mulaiks.

Sternum of anterior gonopods longer, more produced at apex than in *A. apachellus* with processes of coxal pieces more slender, not at all clavate distad as in that form but not acute as in *torynophor*. The form of the posterior gonopod is distinctive.

Arinolus pimus, new species

In color and color pattern as well as in the general sculpturing of the segments very similar to *A. nogalanus*. It seems quite distinct from that species in the thicker and relatively shorter joints of the antennae; in the more acute ends of the collum; and in the anal tergite, the caudal margin of which is very obtusely but distinctly angled instead of evenly rounded, and which lacks the distinct transverse sulcus present in *nogalanus*.

Number of segments, 42.

Diameter of female holotype, 3 mm.

Locality.—Arizona: Litchfield Park. One female taken December 26, 1940, by Mulaiks.

Onychelus medolus, new species

Pl. II, fig. 17.

Typically grey with a black stripe across the dorsum and narrowing to a point down each side of each segment, this band just in front of segmental sulcus but also commonly extending a short distance behind it. Caudal portion of last tergite and the anal valves light. Head dark above, light below level of antennae. Collum with a light band over anterior border behind which it is covered with a network of black, the black solid on web side above the lower angle. Legs yellow, antennae dusky. In some specimens the black much more extensive on the body rings than the light colors.

Collum with lower angle on each side narrowly rounded. Anterior margining sulcus curving out caudad above before ending at level of eye so that marginal thickening is broader above than below. A well-marked longitudinal sulcus some distance above lower angle with a second less deep and somewhat oblique sulcus ordinarily below it.

Second tergite but slightly extending below lower angle of collum, its anterior border but moderately raised or bent ventrad.

Segments moderately constricted about middle, with no distinct sulcus or suture showing in the furrow. Segments with longitudinal striae only beneath, the surface elsewhere smooth and shining, not rugose or punctate.

Caudal margin of last tergite straight at middle, convexly curving at ends into lateral margins.

Gonopods of male as drawn. (Figs. 17, 18.)

Number of segments, mostly 43-45.

Diameter, 4 mm., being the same in male holotype and female allotype.

Locality.—Arizona: Olberg. Thirteen specimens taken December 27, 1940, by S. and D. Mulaik.

Messicobolus raui, new species

Body of preserved type in general brown with the part of each ordinary segment behind the suture more of a dull chestnut, this color brighter on anterior segment. In life the color "a brilliant salmon pink" (Rau). Collum with anterior and posterior borders reddish. Head brown above, reddish in frontal and clypeal region. Legs light brown with distal articles distinctly reddish. Antennae also reddish.

Clypeal foveolae. 4 + 4. Eyes widely separated, small composed of about 15 ocelli in 4 series.

Collum large, overlapping considerably the caudal portion of head; strongly narrowed down the sides, margined from lower end up to level of eye anteriorly and a short distance up caudal border.

On ordinary somites the segmental sulcus is distinct across dorsum but becomes less sharply marked below; in front of it there is a secondary sulcus across dorsum between the pores equally pronounced. Surface above a little uneven but in general smooth and shining and not punctate.

Anal scutum with caudal angle narrowly rounded, its posterior portion crossed longitudinally by a number of irregular sulci or furrows. Anal valves exceeding the scutum. Anal sternite obtusely angled behind.

Gonopods of male with sternite of anterior pair short and relatively very broad, with anterior margin very obtusely angular. Coxal plates of anterior pair meeting in a suture at middle line distad to their apices; telopodite furcate as usual, the mesal branch more slender and curving caudoected, the broad outer lobe also bent caudad distally.

Number of segments in male holotype, 47.

Length of male holotype about 140 mm.; diameter, 15 mm.

Locality.—Mexico: San Louis Potosi. Tamozunchale. Elevation 350 feet.

One male received from Mr. Phil Rau by whom it was taken "under a partly rotted board in a banana field" in February, 1939. "The odor was awful."

Aside from characteristic features in the gonopods, differing from previously known species of the genus in its much greater size, the diameter of 15 mm. contrasting, e. g. with 11 mm. in the male of *M. hoogstraali* Chamberlin of Nuevo Leon and 8 mm. in the male of *M. godmani* (Pocock) of Guerrero.

Family RHINOCRICIDAE

Genus NEOCRICUS, new

Differing from *Rhinocricus* primarily in the gonopods of the male. In these the posterior pair is similarly distally furcate, but both branches are acuminate; the sternite of the anterior pair is proportionately narrow and produced into a slender median process; coxal plate and telopodite of anterior gonopods relatively long and slender. Sensory cones of antennae numerous. Scobina present. Last dorsal plate typically caudate and produced conspicuously beyond the anal valves, at least in the males.

Genotype.—*Neocricus foederatus*, new species.

In addition to the genotype and the two other species described below, *Rhinocricus caudatus* (Newport), *R. montanus* Brolemann, etc., belong in this genus.

Neocricus foederatus, new species

This species differs from *N. caudatus* in the gonopods as described for this species by Brolemann. In *N. foederatus* the coxal pieces of the first gonopods are produced ventrad much beyond the distal end of the sternite instead of being on a level with it or shorter, and exceeding it more than in *N. montanus*. In comparison with those of the latter species, the posterior gonopods differ in being much more deeply furcate, with the branches curving widely apart.

Color brown to deep brown and fuscous except the caudal border of each tergite which is typically chestnut to nearly cherry red. In one specimen the border is more brown and the other portion of segments fuscous. Legs brown.

Head smooth; the median sulcus weak; clypeal foveolae 2+2. Eyes more than twice their diameter apart.

Collum smooth, without sulci except the margining one below and in front up to level of eyes.

Segments of the trunk with the usual striation on metazonite below on the sides, but with finer, more oblique striae above pore level, these in middorsal region becoming transverse, wavy. Pores beginning on sixth segment, located in front of the sulcus and in contact with it.

Anal valves with mesal borders thick, compressed and salient. Caudo of last tergite long, much exceeding the valves, curving moderately upward toward the acute tip, the cauda not set off by a transverse sulcus.

Number of segments, 41-43.

Length of male holotype, 67 mm.; diameter, 8 mm. Length of female allotype, 77 mm.; diameter, 11 mm.

Locality.—Venezuela: Distrito Federal, El Valle, near Caracas. Three males and one female taken June 28-29, 1939, by G. Vivas-Berthier.

Neocricus encantus, new species

This is a notably smaller species than *N. foederatus*, the diameter of the female allotype being 7.5 mm. as against 11 mm. The cauda is obviously shorter than in *foederatus* with the tip more abruptly upturned. The lunate impression of the scobina is relatively broader and much narrower in the antero-posterior direction.

The exposed portion of the ordinary body segments black except for the caudal border which is reddish. The reddish portion embracing more of the segment in anterior region and anal valves and last tergite entirely reddish except for some black on cauda. Collum with median portion black, a broad border all around reddish. Lower part of head reddish, the vertex duller in color. Legs and antennae light brown.

Number of segments, 43.

Locality.—Venezuela: El Encantado, near Petare, Edo. Miranda. August 6, 1939. One female taken by G. Vivas-Berthier and E. Mondolfi.

Neocricus chacaitus, new species

This species is readily distinguishable from the others so far known in the structure of the posterior gonopods of the male. In these the distal end is furcate as usual, with the branches very slender and one much shorter than the other to which it is closely appressed, not at all divergent. The sternite of the anterior gonopods narrowly triangular with distal portion slender. Coxal pieces of anterior gonopods distally slender and much exceeding the sternite.

The color much like that of *N. encantus*, being black over the exposed part of the prozonites, with the metazonites reddish. Collum black over middle region, elsewhere reddish. Head dusky chestnut, not clear reddish below as in *encantus*. Anal valves and last tergite reddish except for tip of cauda which is black. Legs pale brown or yellowish.

Differing from the other known species in having the metazonites wholly smooth above, without the sculpturing of numerous fine transverse striae.

Lunate impressions of the scobina about their own transverse length apart.

The cauda more gently curved upward than in either of the other species here described.

Number of segments, 43.

Length of male holotype, about 86 mm.; diameter, 9 mm.

Locality.—Venezuela: Rio Chacaito, Edo. Miranda, July 16, 1939. One male taken by E. Mondolfi.

Family PAEROMOPIDAE

Klansolus socius, new species

Pl. II, figs. 19, 20; Pl. III, figs. 21-23.

Body and legs black throughout.

The antennae long and slender. Ocelli in 4 transverse series; 6, 7, 6, 3. Sulcus across vertex of head distinct.

Collum narrowed down each side to an angle above which it is conspicuously longitudinally striate, the ends bent under the segment as in related forms.

Ordinary segments striate throughout as in known species of *Paeromopus*.

Anal tergite short, convexly rounded behind, with a series of long setae from the caudal margin. Tergite exceeded by the anal valves.

Gonopods of male as illustrated. (Figs. 21, 22 and 23.)

First legs of male reduced, the telopodite strong sclerotized, of form shown in figs. 19 and 20.

Length, about 60 mm.; diameter, 3 mm.

Number of segments in the male holotype, 69.

Locality.—Oregon: 8 miles west of Wallowa. April 4, 1937. One male taken by J. C. Chamberlin.

Similar in general appearance and structure to *K. euphanus*, but readily distinguishable in details of both anterior and posterior gonopods. It is also a smaller species.

Californiulus yosemitensis, new species

Pl. III, figs. 24-26.

Black over the sides; a broad orange-colored stripe along dorsum as in *C. dorsovittatus* Verhoeff and *C. chamberlini* (Brolemann), but this stripe geminate by a median dorsal black line. Legs brownish.

Antennae of the usual long, and slender form. Ocelli in four transverse series; e.g., 6, 8, 7, 4.

Collum with striae across caudal border below; a series of longitudinal rugae back of anterior border.

Differing in details of gonopods, especially the posterior pair, from other known species. See figs. 24 and 25.

First legs of male as drawn. (Fig. 26.)

Number of segments on male holotype, 69.

Diameter of male holotype, 5 mm.

Locality.—California: Yosemite Park, Aspen Valley. August 12, 1931. The types consist of five specimens.

Family BLANIULIDAE

Genus TIVIULUS, new

Distinguished from related blaniulid genera in the structure of the posterior gonopods. Each of these presents the usual two distal lobes of which one, the sheathing lobe, is smooth and undivided; the other lobe is characterized by being not at all fringed or laciniate but in the form of a slender, distally curved or somewhat geniculate process. Sternite of anterior pair of gonopods produced between the latter into a characteristic long, slender process which exceeds them in length. The first pair of legs in the male 5-jointed, terminating in a straight spine or claw, moderately reduced in size and typically straight. Vulva of female extended as a long process much exceeding the legs in length and furcate into two branches. Sternites free. On each segment anterior sternite broader that the posterior.

Genotype.—*Tiviulus expressus*, new species.

Tiviulus expressus, new species

Pl. III, figs. 27 and 28.

A small form of light brown color with a series of conspicuous dark spots along the sides and on each segment a narrow dark brown band across dorsum between the lateral spots and often continued some ways beneath these spots, the dorsum elsewhere in some specimens in part with a network of brown lines. A network of brown in upper part of head which elsewhere is pale. Legs yellow and antennae dusky.

Eyes subtriangular. Ocelli numerous, arranged in five or six transverse series; e.g., 4, 5, 5, 4, 3, 1.

Antennae clavate.

Collum typical. Anal tergite convex caudally, exceeded by the valves.

Gonopods as drawn. (Figs. 27 and 28.)

First legs of male slender and straight; the claw long, straight, and slender; joints without processes.

Number of segments, 38-41.

Length, about 7mm.; diameter. 4 mm.

Locality.—Washington: Arlington. September 11, 1935. One male (holotype) and six females collected by R. V. Chamberlin.

Family PARAIULIDAE

Genus TUNIULUS, new

Differing from *Codiulus*, to which otherwise close, in having the posterior gonopods essentially straight and of moderate length, not reflected dorsad along its base; also in having the spine without the characteristic basal twist present in *Codiulus*.

Genotype.—*Tuniulus milpetanus* (Chamberlin)

Includes also *T. oregonensis* (Wood), and *T. hewitti* (Chamberlin) which were previously placed under *Codiulus*.

Codiulus etirus, new species

Pl. III, fig. 29

Metazonites blackish above with a transverse line of confluent light spots on each side below the outer end of which is a larger light spot, below this spot a series of partly confluent light spots and then on ventral surface a larger light spot. Prozonites more brown, an encircling pale line or narrow stripe on dividing line between prozonite and metazonite. Anal tergite and valves black. Antennae brown, the legs a lighter brown.

Collum moderately long in the male with the margins at each lateral end widely and rather evenly rounded; a second sulcus above the lateral margining sulcus. Anal tergite angular behind but narrowly rounded at caudal tip which is free from valves for a short distance.

In the male, the outer end of the stripes concave or excavated behind, the caudoventral corner more produced than the proximal.

First legs of male strongly thickened as usual, the mesal surfaces of articles flattened; last article strongly sclerotized, subelliptic in outline.

The gonopods in general form closely similar to those of *oulogon* but differing throughout in details, as in those of the expanded distal end of posterior gonopod. In the latter the mesodistal angle is much more strongly produced and more robust while the distal and distoectal margin lacks the fringe so conspicuous in *oulogon*.

Number of segments, mostly 53-55.

Diameter of male holotype, 3 mm.; of largest female, 4 mm.

Locality.—California: Cardiff, January 9, 1941. Eight specimens taken by S. and D. Mulaik.

Aniulus hopius, new species

Pl. IV, figs. 30, 31.

Closely related to *A. oreines*, described from Colorado, but a smaller form exhibiting characteristic differences in both pairs of the male gonopods although these are obviously of the same general patterns as those of that species. The principal blade of the posterior gonopod is similarly broad and evenly curved; but the accessory branch is not so evenly curved, showing a weakly sigmoidal flexure, and lies adjacent to the principal blade, as shown in the figure, instead of standing well apart except at tip. The coxal division of the anterior gonopods is relatively smaller and more strongly bent mesad of the telopodite, not descending below free end of the latter. (See figs. 30, 31.) Outer end of stipes in outline similar to that of *adelphus* and *oreines*.

Collum on each side with a second sulcus just above the margining sulcus.

Number of segments in male holotype, 51.

Diameter, up to 2 mm.

Locality.—Arizona. Greaterville, December 20, 1940. Numerous specimens taken by S. and D. Mulaik.

Caliulus signifer, new species

Pl. IV, figs. 32.

A nearly uniform black form without the usual light mottlings. Legs reddish brown or light chestnut.

This species is most readily distinguished by the posterior gonopods in which the outer branch has at distal end a membranous expansion in place of the usual hairs present, e.g., in *C. rhodogeus* in which this branch is similarly geniculate. (See fig. 32.)

The anal tergite a little exceeding the anal valves.

Number of segments, mostly near 58.

A large robust form in which the length may be 90 mm. and the diameter 6 mm.

Locality.—Oregon: Pinehurst, September 9, 1935. Several males and females taken by the author and W. Ivie.

Sophiulus lomondus, new species

Pl. IV, figs. 33, 34.

In general size and appearance much like *S. tivius*, the type of the genus, but distinct especially in the posterior gonopods. In these the principal blade lacks the two slender processes at its extreme apex and the tooth at the submesal corner is larger. (See fig. 33.) The anterior gonopods are shown in fig. 34.

The cauda clearly exceeds the anal valves.

Number of segments, 45-47.

Diameter, 1.4 mm. in male, to 1.8 mm. in the female.

Locality.—California: Ben Lomond. Elevation, 2,000 feet, Redwood transition zone. April, 1934. Six specimens taken by L. W. Saylor.

Thriniulus schachti, new species

Pl. IV, figs. 35, 36.

Metazonites blackish, with a short transverse yellow mark each side of the mid-dorsal line; prozonites light, somewhat yellowish; legs somewhat brownish, the proximal joints paler; antennae a darker brown; collum solid in color, lacking pale areolations.

Collum with anterior corner on each side widely rounded, the posterior more narrowly rounded. In addition to the margining sulcus several fine close-set sulci above it, the uppermost of which extend only part way forward from the caudal margin.

Anal tergite with a free, acute, slightly curved mucro which much surpasses the anal valves.

Outer face of stipes in male with distal end deeply excavated, the corners about equally produced but the antero-ventral one stouter.

Gonopods as drawn.

Number of segments, 55.

Diameter of male holotype, 2.7 mm.

Locality.—Mexico: State of Michoacan, Tancitaro. Elevation, 6,500 feet. One adult male and several partly grown specimens taken in stump of Agave by Frederick Schacht in July, 1940.

Characterized among Mexican species especially by the form of the male gonopods. It is a larger species than the Central American *T. leucoclius*, the genotype, and consists of more numerous segments.

Family LYSIOPETALIDAE

Genus ETIRON, new

Agreeing in general bodily features with *Diactis* but differing, according to published accounts, in having in the male conspicuous fungiform processes from the coxae of legs 3 to 6 and from those of legs on segments 8 to 12 or 13. First and second legs reduced.

Coxae of anterior legs of some segments near middle of body with backwardly directed acute processes as in *Diactis*. Gonopods of male in general structure much as described for *Diactis*, but simpler; main process distally falcate with a minor spur, and near middle of length with an encircling rim or process as figured for the holotype.

Genotype.—*Etiron paroicum*, new species.

Etiron paroicum, new species

Pl. IV, figs. 37-41.

Collum with 16 crests of which all are primary excepting the second from mesal line which is secondary and does not reach the caudal margin. The third crest oblique, but the first nearly parallel with median line. Median crests from a third to a fourth the median length of plate.

Mesal pair of crests on segments 2 to 4 only moderatly oblique, their posterior ends not more than 3 times as far apart as the anterior ends.

Increased number of crests beginning on segment 8.

On ordinary segments two primary crests below the poriferous carina on each side, these equal in height and other primary crests but shorter.

Gonopods of the male as drawn. Ovipositor of female also figured.

Fungiform processes from coxae of legs 3 to 6 and on those of legs of segments 8 to 12 of form shown in fig. 39. Eminences on coxae of 7th legs in the type without such fungiform processes.

Process from coxae of legs of middle body segments in male short and acute, present on about segments 18 to 32, more indistinct at each end of series. Last joint on many legs appears superficially to be subdivided, but no true suture is present.

Number of segments, 48-53.

Length, up to about 19 mm.

Locality.—California: Mt. Spring. Male holotype, female allotype, and four younger females not showing ovipositors extruded. Taken by S. and D. Mulaik on January 18, 1941.

Etiron pearcei, new species

Very close in general color, structure and appearance to *E. paroicum* but readily separable by means of differences in ovipositor of female and gonopod of male. The ovipositor is proportionately somewhat shorter and thicker toward the distal end with the apical lobe not erect but curved mesad and somewhat stouter. In the male gonopod the outer distal spur is larger and in ectal view characteristically subspatulate; the principal distal falcate blade is proximally much broader, narrowing distally where showing a slight but obvious geniculation.

Number of segments, 47-51.

Length of male holotype, about 15 mm.; of female allotype and paratype, about 19 or 20 mm.

Locality.—California: Alameda Co., Castro Valley. March 9, 1941.

Two males and two females secured by W. M. Pearce in sifting material from wood-rat nests.

Heptium canum, new species

Pl. V, figs. 42-44.

A comparatively slender loose-jointed form apparently most closely related to *H. carinellum.*

Eye patch subtrapeziform, with the base in dorsal position, the narrower opposite side toward the base of antennae.

Collum with the usual 10 crests of which those at middle extend between one-third and one-half the distance from caudal margin to the anterior; anterior area smooth.

Crests of second segment not higher than those of following segments. Full number of crests first appearing on the 19th segment.

Seventh pair of legs much reduced as usual, the coxal spine long, of the form shown in figure.

Ovipositor of female of form shown in figure.

Number of segments, 59-69, the male holotype having the latter number.

Length, up to about 35 mm.; maximum width, 1.75 mm.

Locality.—California: Coyote Wells. Two males and three females taken by the Mulaiks on January 8, 1941.

Family CASEYIDAE

Caseya fasciata, new species

Readily distinguished from *C. heteropus*, the genotype, occurring in California, in being conspicuously longitudinally striped, there being a light median dorsal stripe limited by a dark stripe each side of it,

with the lower portion of sides again light, the part adjacent to dark stripes marbled. Legs and antennae dusky. It is more robust than *heteropus*.

Distal joint of ninth legs in male relatively larger than in *heteropus* and in side view nearly wholly concealing the gonopods which are prominently exposed in *heteropus*.

Diameter, 2 mm.

Locality.—Washington: Arlington, September 11, 1935.

Two males taken by Chamberlin and Ivie.

Family UROCHORDEUMIDAE

Urochordeuma porona, new species

Pl. V, figs. 45, 46.

Dorsum brown, without markings. Legs yellow. Antennae brown or dusky brown. Antennae slender, third article longest, the others according to length in the order, 5, 4, 2, 6, 7, 1.

Ocelli in 4 transverse series: e.g., 5, 5, 4, 2; head in front view somewhat trapeziform, an eye located at each angle and thus widely separated from each other and well removed from bases of antennae. Antennae also widely separated.

Collum long, only about one sixth wider than long, the median portion strongly convex anteriorly and distinctly emarginate at the middle; the narrowed lateral ends in line with posterior border of plate and thus well behind middle of length. Surface longitudinally deeply sulcate across posterior border having appearance of broad rugae between the sulci, elsewhere essentially smooth.

Ordinary segments deeply constricted, the constricting furrow wide. On a number of the more anterior segments the prozonite rises in front of this furrow in a prominent bulging region essentially on a level with the adjacent metazonite; but beginning, in the genotype, on the ninth segment this region of the prozonite is lower and is wholly covered by the preceding metazonite.

Keels conspicuously notched near middle of lateral margin, and with a horizontal seta arising from the notch and a vertical one a little mesad of it. Surface of metazonites finly granular and with a posterior series of larger granules, four in number in the genotype. Surface of the wide constricting furrows morge finely and more densely granular. Surface of the wide constricting furrow more finely and more densely granular, that of the elevated portion of prozonites smooth.

Second tergite sulcate and ridged across caudal border as with the collum and the swollen anterior portion of prozonite likewise rugose across its median anterior border; keel represented by a moderate

thickening but this very narrow. A seta each side of middle line at anterior border of metazonite in addition to the two marginal setae at the notch on each side.

Third segment very similar to the second. On the fourth segment granules over the surface are distinct and the posterior ridges are shorter. On succeeding tergites the granules become denser and the ridges on posterior border quite disappear. The keels increase in width from the second segment caudad to seventh or eighth where full width is attained and they appear as wide, nearly horizontal and distally thin plates. Posterior angle of keels becoming very gradually more produced cauded back of middle of body. Sides below keels with longitudinal ridges.

Anal tergite with the acute median caudal lobe or process surpassing the setigerous lobes or cone each side of it and considerably surpassing the anal valves.

In the male, as in the genotype, each leg of the third pair has arising from its base a very long sclerotized, curved process which is a little clavate distally. Each first leg has a very long, sclerotized moderately curved blade arising from the third segment and narrowing distad. Coxae of seventh legs produced into short laminate lobes.

Gonopods as illustrated. (Figs. 45 and 46.)

Width, 2.7 mm.

Locality.—Washington: Snoqualmie Pass, Penny Creek, Sept. 16, 1935. One male taken by R. V. Chamberlin and Wilton Ivie.

Apparently a smaller species than *U. bumpusi*, the genotype, the width being 2.7 mm. as against 3 mm. The collum is relatively much longer being only about one-sixth wider than the length. In the lack of figures for the gonopods of *bumpusi*, these cannot be profitably compared.

Family STIODESMIDAE

Genus ILYMA, new

Agreeing with *Heteropente* in having pores restricted to segments 5, 7, 10, 13, and 16 and in other general structural features and proportions. Characterized by having the last median dorsal tubercles flattened and laminate, separated by a median incision, the plate formed by them extending caudad widely over the reduced anal tergite which is thus wholly concealed in dorsal view.

Genotype.—*Ilyma orizaba*, new species.

Ilyma orizaba, new species

Yellow in color, with a tendency for the tubercles to gather dirt and thus presenting a dusky appearance.

Collum with border horizontal, divided into ten lobes or crenations of which the one at each end of series is larger than the others. The

strongly, abruptly, convexly elevated region back of border with a median transverse series of 4 large tubercles and a similar series across caudal border; on each side below end tubercles of these series and midway between the latter a considerably larger tubercle.

On each ordinary tergite 4 longitudinal dorsal series of large tubercles, 3 in each series, with 2 series of small tubercles between each 2 series of the larger ones.

Length, about 6.5 mm.; width, 1 mm.

Locality.—Mexico: Vera Cruz, Orizaba. One female in cargo of orchids from this locality was taken at quarantine at Laredo, Texas, July 29, 1940.

Family LEPTODESMIDAE

Kepolydesmus insulanus, new species

Pl. V, fig. 47.

This leptodesmid genus is obviously distinct from *K. anderisus* Chamberlin, the genotype, occurring in Idaho, in the details of the male gonopods. In these the outer branch is much more slender in proximal portion, and the mesal blade is decidedly longer. See further fig. 47.

The dorsum is brown except for the posterior corners of the keels which are yellow.

Length, about 25 mm.; width, 3.2 mm.

Locality.—British Columbia: Vancouver Island; Lake Cameron. September 15, 1935.

One male taken by Chamberlin and Ivie.

Genus ANKYLOPHALLUS, new

Close to *Cyclorhabdus*, the type of which is also a Venezuelan species. The legs are similar in having the third article much longer than the sixth, but differ in not having the penult article produced at distal end into a lobe extending beneath the base of the ultimate article. Legs notably long. The gonopods consist of a relatively simple blade without accessory branches, this lamina strongly curved into a hook-like or sigmoidally twisted terminal division with the lamina more or less abruptly narrowed into a slender terminal finger-like process. Tergites without tubercles but under liquid with indistinct polygonal areas sometimes showing. Anal tergite with cauda subconical but distally appearing furcate much as in *Zigwadesmus*, evenly decurved.

Genotype.—*Ankylophallus chacaitus*, new species.

Ankylophallus chacaitus, new species

The general color of the dorsum is from brown to chocolate colored, a median dorsal light spot across each prozonite and one of anterior border of metazonite narrowing caudad and usually not extending caudad beyond middle of susegment although it may extend nearly or quite to the caudal margin giving thus a nearly continuous median dorsal light stripe. Caudal processes of keels also light colored. Legs light brown, paler, yellowish, proximally. Antennae darker brown, especially distally.

Surface of antennae subsparsely granular on basal joints, more densely so on distal ones.

Surface of collum and succeeding tergites very finely and very densely granular, the granules much finer than those on antennae; large polygonal areas showing rather faintly on tergites when specimen is in liquid. Anterior keels broader than the others, with a distinct anterior shoulder near which there may show a minute anterior lateral denticle. The keels become narrower in going caudad and the shoulder disappears, the anterolateral margin curving obliquely from the anterior basal point to the tip of the caudal process. Caudolateral corner of keels slightly produced on third segment, the processes gradually becoming more pronounced and acute caudad; those of 19th keels much reduced, a little surpassed by those of the 18th.

The distal finger of the male gonopods bent abruptly at right angles near the tip and ending in a short, acute, laterally directed apex. Distal margin of lamina adjacent to base of terminal finger at right angles to axis of finger, a little incurved, with ectal corner rounded.

Length of male, about 30 mm.; width, 4.8 mm. Length of female, about 32 mm.; width, 5.2 mm.

Locality.—Venezuela: Edo. Miranda, Rio Chacaito. July 16, 1939. Two males and one female taken by G. Vivas-Berthier and E. Mondolfi.

Ankylophallus vallecolens, new species

Chocolate colored, the prozonites somewhat paler, without any median light spots, or these obscure on anterior prozonites. Processes of keels with caudolateral corners yellow, the yellow sometimes extending forward in a narrow stripe along lateral margin. Legs pale brown.

Readily distinguishable from *A. chacaitus* in the form of the male gonopods. In these the blade is characteristically expanded immediately beyond its first curve and there is abruptly narrowed into a part of uniform width to an acuminate distal portion which is slightly wider at base and the apex of which is bent at right angles to the axis as in *chacaitus;* the portion beyond first bend or knee forming a loose subsigmoidal curve, not bent up evenly toward base as in the genotype.

Width of the male holotype, 4 mm. Width of female allotype, 5 mm.

Locality.—Venezuela: El Valle, D. F., near Caracas. June 20-29, 1939. An adult male and female taken by G. Vivas-Berthier.

Ankylophallus encantadus, new species

Colored nearly as *A. vallecolens.*

The cauda less deeply notched than in the other species, the cones comparatively slender and readily broken off.

Clearly distinct from the other two species in the gonopods of the male. In these the lamina has the straight portion bent into a U-shaped section, the curve of which is ectad; beyond the U the blade is narrower and abruptly narrows into a slender, acutely-tipped terminal piece which in a semicircle and does not have the apical part bent at a right angle as in the other two species.

Width of male holotype, 5 mm.; of female, 5.6 mm.

Locality.—Venezuela: Edo. Encantado, near Petare. August 6, 1939. Several males and females collected by G. Vivas-Berthier and E. Mondolfi.

Family POLYDESMIDAE

Brachydesmus hastingsus, new species

Pl. V, figs. 48, 49.

Color pale, a dull, slightly brownish white. Legs a brighter white.

Collum with anterior margin evenly convex to anterior lateral angle of keels, the lateral margin of latter running obliquely meso-caudad. Covered with contiguous, sharply defined small tubercles each of which bears a slightly clavate, distally truncate or bluntly rounded seta.

Head densely clothed with fine, short hair; sulcus across vertex fine, not strongly impressed.

Keels of ordinary tergites about on a level with dorsum. On anterior tergite the keels bent a little forward. Keels with three lateral setigerous teeth, the caudal margin also with projecting, similarly setigerous teeth. Surface with strongly elevated setigerous teeth. Surface with strongly elevated setigerous tubercles of which there are four transverse series, inclusive of the one on caudal margin.

Setae clavate as on the collum.

Characterized best by the male gonopods of which a drawing is given. (Figs. 48, 49.)

Length, about 7 mm.

Locality.—California: Hastings Reservation. One male taken by Dr. Linsdale on Feb. 20, 1941.

Figures and Explanations

Plate 1.

Fig. 1. *Nannolene cincta,* n. sp. Right anterior gonopod, with sternite, anterior view.

Fig. 2. *Tigolene clementinus,* n. sp. Right gonopod, anterior view.

Fig. 3. *Atopetholus carmelitus* Chamberlin. Left posterior gonopod, caudal view.

Fig. 4. The same. Mesal view.

Fig. 5. *Atopetholus paroicus,* n. sp. Lower right part of collum and second segment, lateral view.

Fig. 6. *Hiltonius pius,* n. sp. Lower part of right half of collum and second segment, lateral view.

Fig. 7. *Hiltonius thebanus,* n. sp. Lower part of right side of collum and second segment of female, lateral view.

Fig. 8. *Hiltonius mimus,* n. sp. Right anterior gonopod, anterior view.

Fig. 9. The same. Left posterior gonopod, caudal view.

Fig. 10. *Hiltonius congregans,* n. sp. Right posterior gonopod, caudal view.

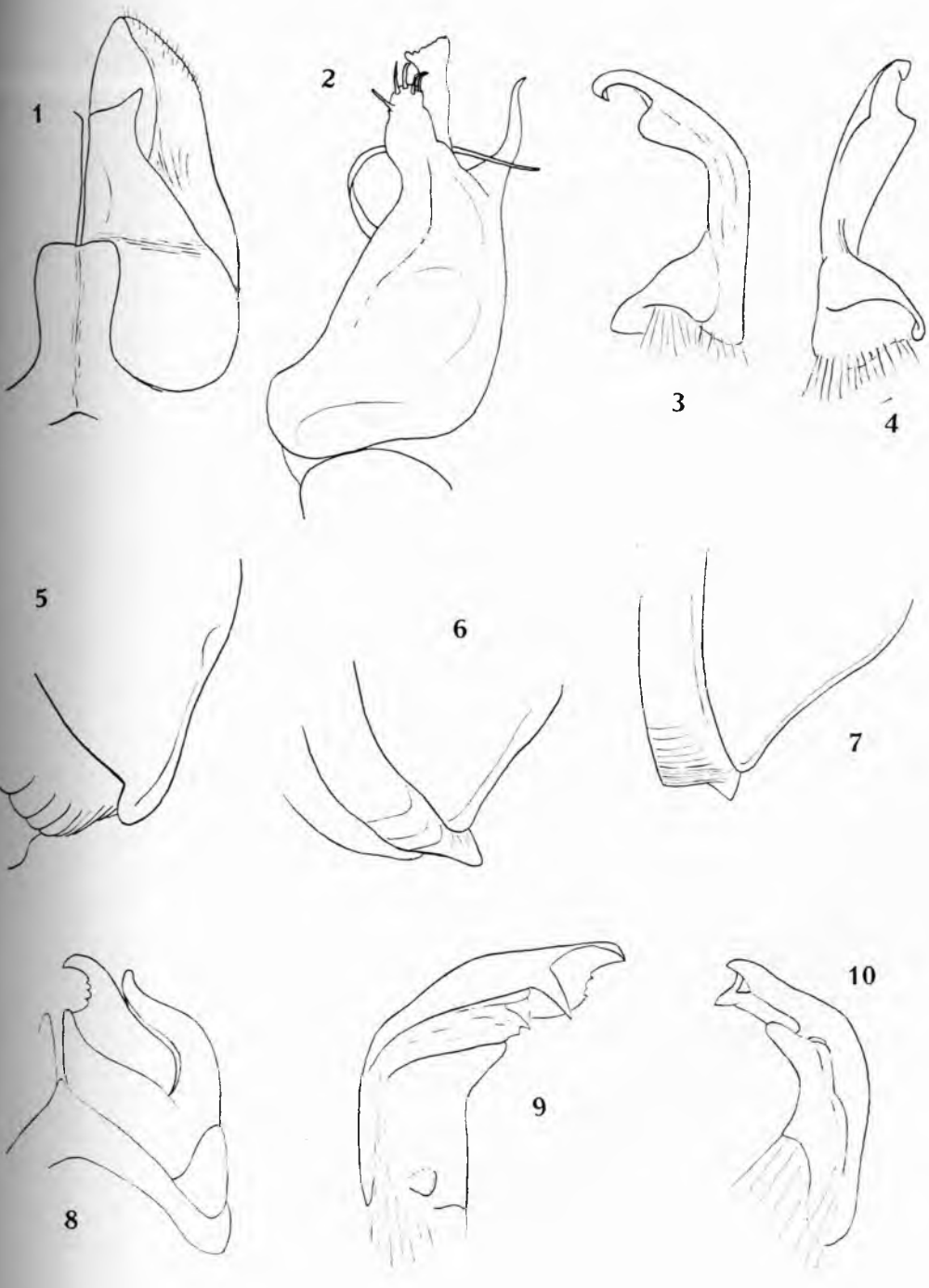
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Plate 2.

Fig. 11. *Hiltonius balboanus,* n. sp. Right posterior gonopod.

Fig. 12. *Arinolus apachellus,* n. sp. Right anterior gonopod, anterior view.

Fig. 13. The same. Right posterior gonopod, apical portion, anterior view.

Fig. 14. The same. Right posterior gonopod, caudal view.

Fig. 15. *Arinolus nogalanus,* n. sp. Left posterior gonopod, anterior view.

Fig. 16. *Arinolus hopinus,* n. sp. Left posterior ponopod, anterior view.

Fig. 17. *Onychelus medolus,* n, sp. Gonopods, the left posterior one removed, anterior view.

Fig. 18. The same. Left posterior gonopod, caudal view.

Fig. 19. *Klansolus socius,* n. sp. Left first leg of male, caudal view.

Fig. 20. The same. Same leg, mesal view.

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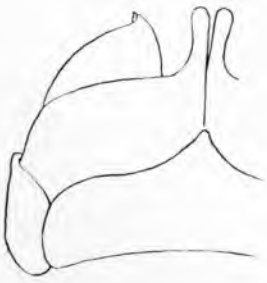

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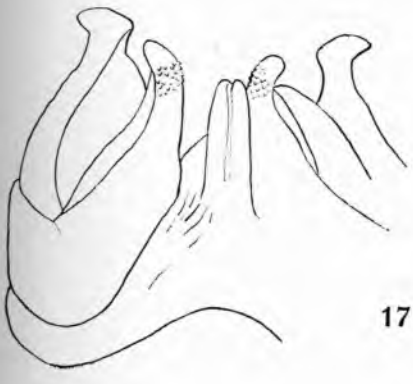

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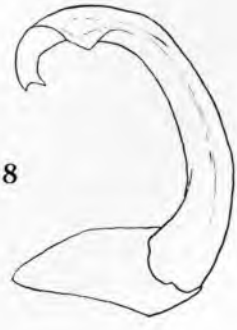

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Plate 3.

Fig. 21. *Klansolus socius,* n. sp. Left posterior gonopod, ectal view.

Fig. 22. The same. Right posterior gonopod, anterior view.

Fig. 23. The same. Left anterior gonopod, anterior view.

Fig. 24. *Californiulus yosemitensis,* n. sp. Right anterior gonopod, anterior view.

Fig. 25. The same. Left posterior gonopod, anterior view.

Fig. 26. The same. Left first leg of male, caudal view.

Fig. 27. *Tiviulus expressus,* n. sp. Right anterior gonopod, basal part omitted, ectal view.

Fig. 28. The same. Left posterior gonopod, mesal view.

Fig. 29. *Codiulus etirus,* n. sp. Left gonopods, anterior view.

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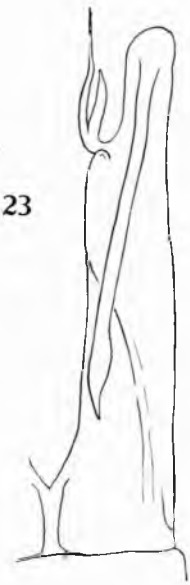

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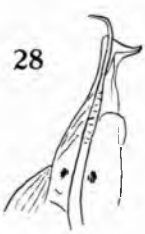

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Plate 4.

Fig. 30. *Iniulus hopius,* n. sp. Right anterior gonopod of male, ectal view.

Fig. 31. The same. Right posterior gonopod, ectal view.

Fig. 32. *Caliulus signifer,* n. sp. Left posterior gonopod of male.

Fig. 33. *Sophiulus lomondus,* n. sp. Right posterior gonopod, subcaudal view.

Fig. 34. The same. Right anterior gonopod, caudal view.

Fig. 35. *Thriniulus schachti,* n. sp. Right anterior gonopod, anterior view.

Fig. 36. The same. Left posterior gonopod, caudal view.

Fig. 37. *Etiron paroicum,* n. sp. Left gonopod of male.

Fig. 38. The same. Right gonopod, sub-mesal view, somewhat more enlarged.

Fig. 39. The same. Right anterior leg of eighth segment, male.

Fig. 40. The same. Left ovipositor, ectal view.

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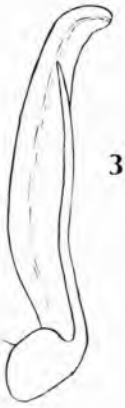

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Plate 5.

Fig. 41. The same, apical portion, anterior view.

Fig. 42. *Heptium canum,* n. sp. Gonopod of male paratype, lateral view.

Fig. 43. The same. Left ovipositor of female, ectal view.

Fig. 44. The same. Left leg of seventh pair of male holotype, caudal view.

Fig. 45. *Urochordeuma porona,* n. sp. Right anterior gonopod, ectal view.

Fig. 46. The same Right posterior gonopod, ectal view

Fig. 47. *Kepolydesmus insulanus,* n. sp. Right gonopod in situ, anterior view.

Fig. 48. *Brachydesmus hastingsus,* n. sp. Right gonopod, ectal view.

Fig. 49. The same. Right gonopod, cephalomesal view.

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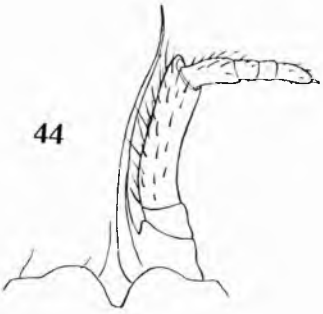

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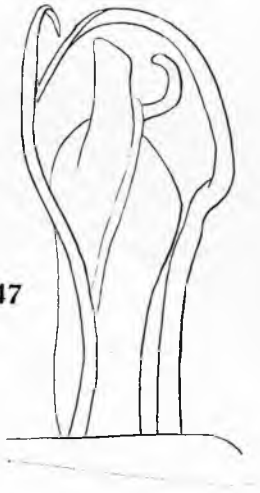

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