

contrasting with the rest of the abdomen, in the male these tergites black dorsally and sometimes laterally but usually more or less reddish at least on the extreme sides of tergites, male hypopygium reddish. *Legs* black; claws brown with black tips; pulvilli yellow. *Wing* lightly infuscated throughout, slightly darker on anterior (costal) two-fifths; squama white; halter light yellow.

Width of front at vertex 0.31–0.35 times the width of head; width of frontalia just above antennal bases 2–2.2 times the width of a parafrenal at the same level; third antennal segment slightly longer than the second, as 5:4; sternopleural bristles two, with a weak third in some specimens; marginal bristles on abdominal segments slightly developed, with a pair of widely separated median marginals that are weakly distinct, more so in males than in females; apical cell of wing closed at margin or very narrowly open.

Genitalia: Characteristic *Acaulona* type, the female approximately as figured for *A. brasiliiana* (Fig. 6); anal forceps of male with straight, slightly tapered median process.

Length, 5–6 mm.

Holotype, male, Guayanilla, Puerto Rico (W. Gaud; reared from *Dysdercus andreae* (L.), P.R. No. 2578). Allotype, and 12 paratypes (7 ♂♂,

5 ♀♀), same data. "Emerged November 26 to January 25 in R.[earing] Cage 78, which contained numerous host adults and nymphs from fruits and twigs of *Thespesia populnea* along Road 36 at Km. 4.2, near where *Acaulona peruviana* Tns. and *Hyalomya chilensis* Macq. had been liberated in 1941."

Other paratypes (all Puerto Rico): 2 (♂, ♀), Guayanilla, September 21, 1945 (H. K. Plank); 1 ♂, Guayanilla (Gaud), emerged August 11, 1949, from *D. andreae*; 2 (♂, ♀), Guanajibo, near Mayagüez, August 5, 1947, reared from *Dysdercus sanguinarius* Stål; (3 ♂♂, 3 ♀♀)*, Guayanilla (Gaud), emerged September 26–30, 1949 from *D. andreae*; 1 ♀*, Guayanilla (Gaud), emerged September 26, 1949 from *D. andreae*; 2 ♂♂*, Guayanilla (Gaud), emerged November 9 and 28, 1949 from *D. andreae*; 4 (2 ♂♂, 2 ♀♀)*, Guayanilla (Plank), emerged December 22, 1949–January 16, 1950 from *D. andreae*.²

Type, U. S. N. M. No. 60134. Paratypes will also be deposited in the British Museum (Nat. Hist.), American Museum of Natural History, and H. J. Reinhard collection.

² Specimens marked with asterisk were reared from hosts collected as noted for the topotypic series.

ENTOMOLOGY.—*Sigmactenus*, a new genus of flea from the Philippines.¹ ROBERT TRAUB, Major, MSC.² (Communicated by C. W. Sabrosky.)

The Chicago Natural History Museum Expedition to the Philippines, 1946–1947, which operated under the direction of Harry Hoogstraal, collected a most interesting flea, which is here described as a new genus.

Family LEPTOSYLLIDAE

Subfamily PECTINOCTENINAE

Sigmactenus, n. gen.

Near *Pectinoctenus* Wagner, but with upper end of comb of head distant from antennal groove and curved backwards; labial palpi extending much below apex of maxillary palpi; frontal tubercle absent; first segment of female antenna shorter than club.

¹ Published under the auspices of the Surgeon General, U. S. Army, who does not necessarily assume responsibility for the professional opinions expressed by the author. Received September 12, 1950.

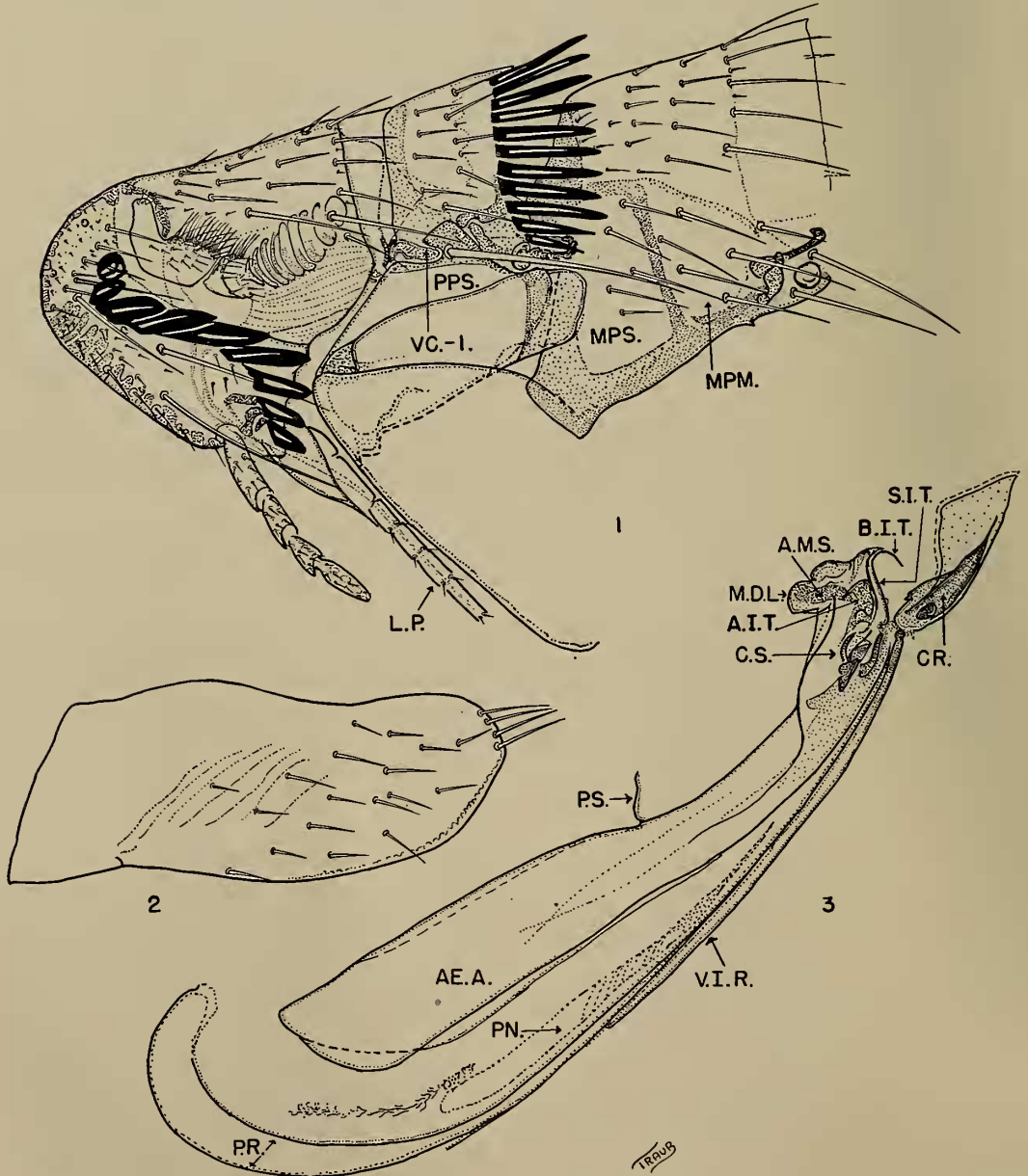
² From the Army Medical Service Research and Graduate School, Washington, D. C.

Caput fractum. Upper end of head comb relatively near the anterior margin of head; with an interspace between apices of upper spines and antennal groove, in female this space is as broad as these spines are long, shorter in male. Vestigial eye moved far towards top of head, along with comb; nearer to antennal groove than is the tip of the upper spine. In female, upper spine farther from anterior margin of head than second or third by virtue of translucent base; less so in male; the comb somewhat resembling the letter S (hence the generic name). The area above the comb (frons) different in structure from the area anterior to the comb (clypeus). Frons with a horizontal row of six bristles; below the row two larger ones between the anterior three bristles or between second and fourth bristles; the row continued downwards as a submarginal clypeal row of thin bristles. Immediately in front of the comb a downward row of two bristles, one at level of midpoint of comb. Internal in-

crassations of upper part of clypeal area extending nearly to comb or somewhat beyond comb. Postantennal area with three rows of bristles. Pedicel with bristles short, at most with only one bristle reaching beyond apex of club. Antennal groove not extending into propleuron. Labial palpi reaching to three-fourths or four-fifths of forecoxae. First vinculum received in sinus of prosternosome. Pronotal comb not extending below the spiracle; separated from

the prosternosome by a marginal lobe of the notum. Dorsolateral tibial bristles forming a comb as in *Leptopsylla*. Typical abdominal segments with apical teeth and with two rows of bristles. Male with three antepygidial bristles; female with four. Male eighth tergum large; eighth sternum well-developed. Aedeagal crochets large, apical, articulated, recalling *Leptopsylla*. Third apodemal rod arising from ninth sternum.

Genotype: *Sigmactenus wernerii*, n. sp.



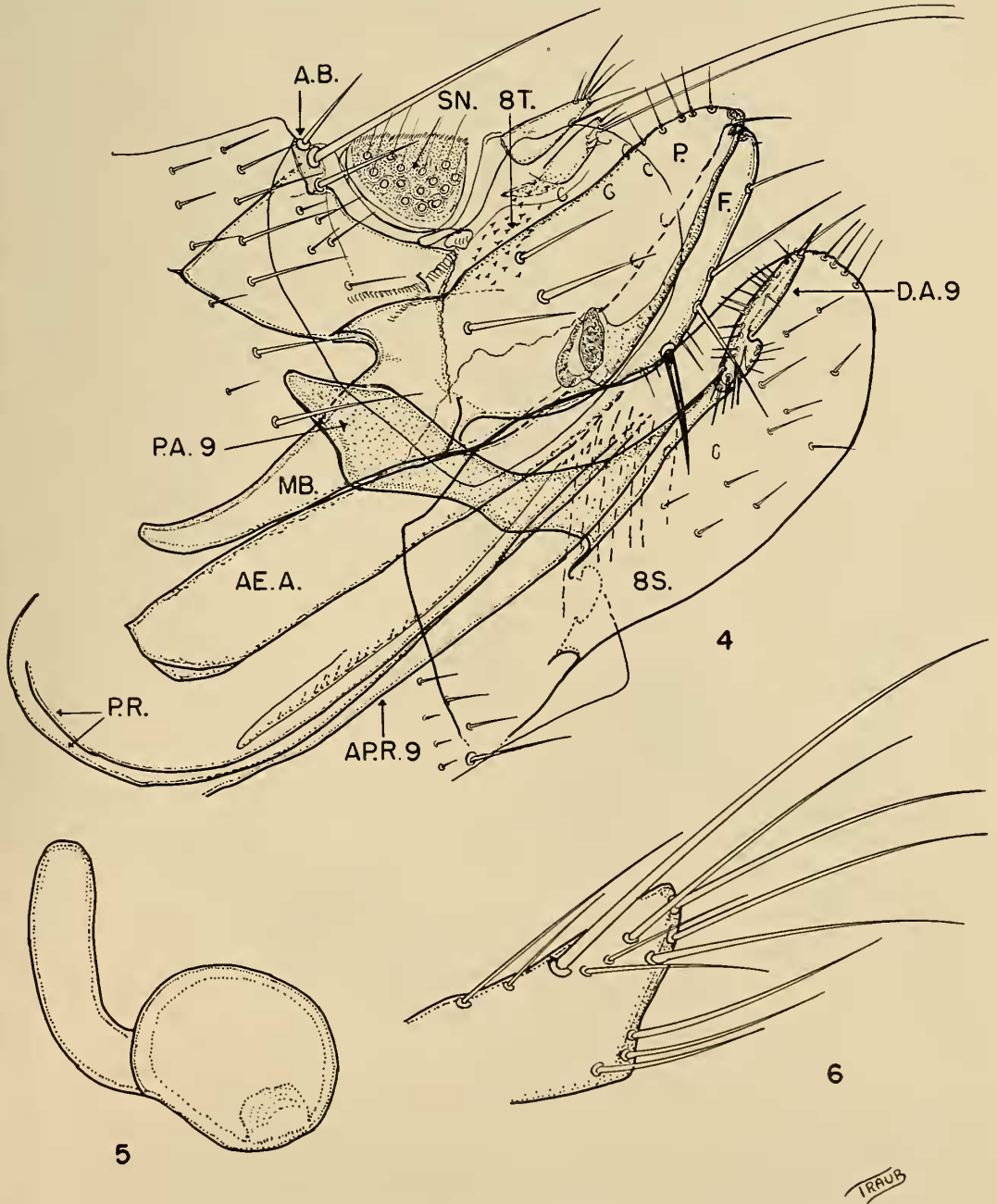
FIGS. 1-3.—*Sigmactenus wernerii* n. gen., n. sp.: 1, Head and part of thorax, male; 2, eighth sternum, male; 3, aedeagus.

Sigmactenus weneri, n. sp.

Figs. 1-14

Types.—Holotype male and allotype female ex *Podogymnura truei* (a shrew). Philippine Islands, Mindanao, Davao Province, east slope of Mount McKinley, elev. 6,300 feet, coll. H. Hoogstraal, September 10, 1946, (R.T. #6524). Deposited in Chicago Natural History Museum. One paratype

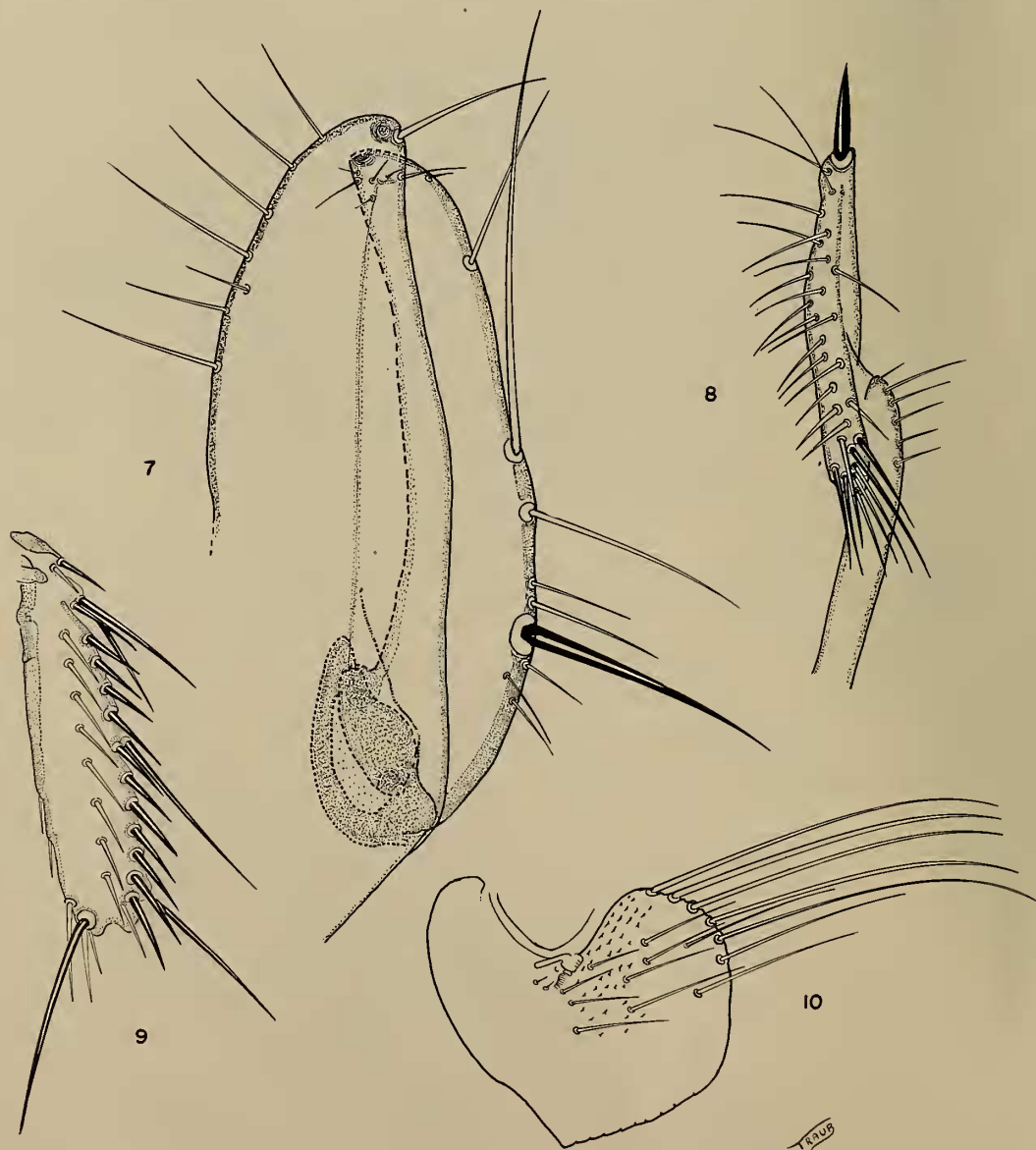
male with same data in author's collection. Two paratype females with same data but 12 September (R.T. #6525). Four females ex *Rattus*, loc. cit. but elev. 6,200 feet, September 28, 1946, coll. M. Celestino for the C.N.H.M. Philippines Expedition (R.T. #6528). Paratype females in U. S. National Museum and British Museum (Tring).



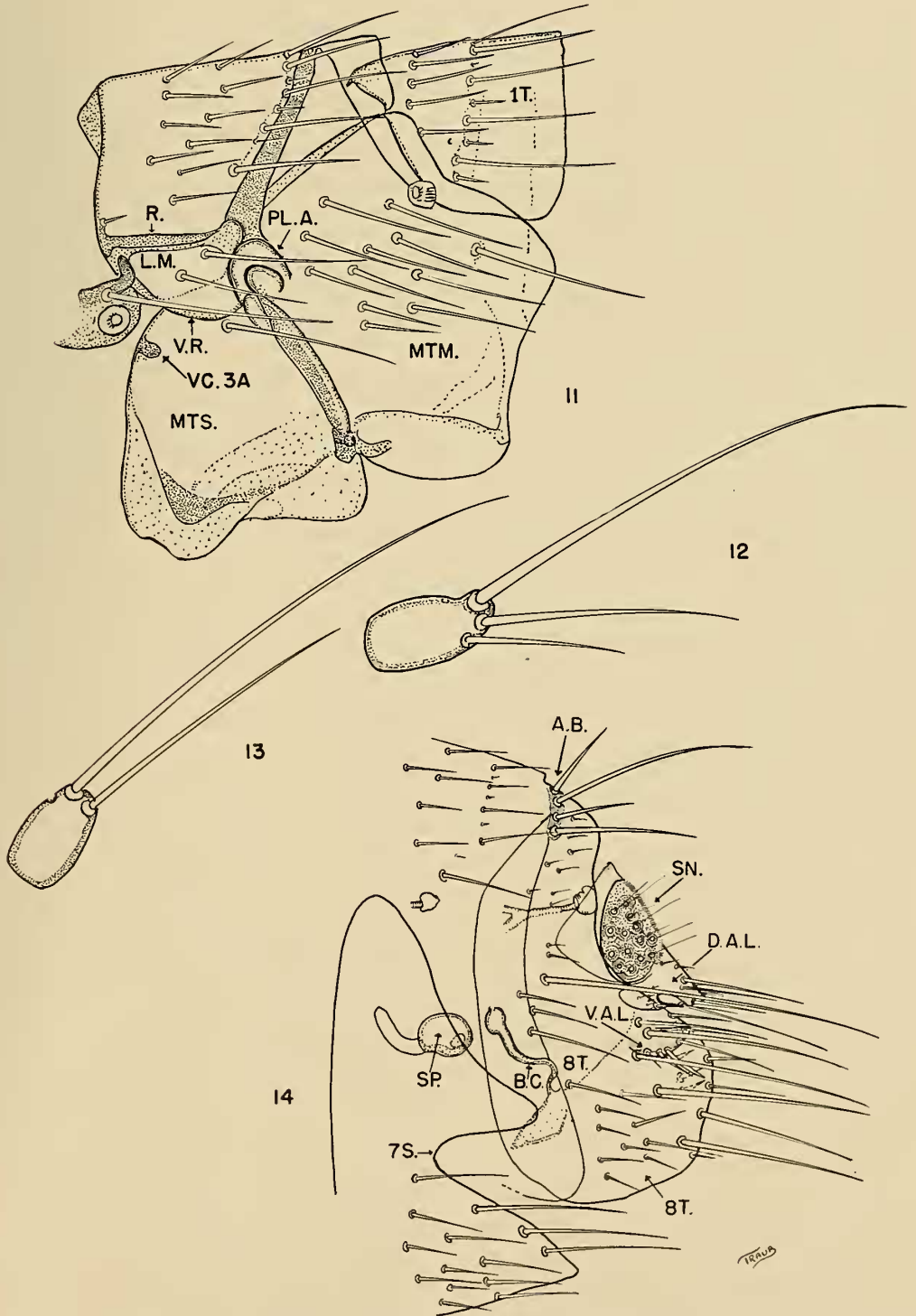
FIGS. 4-6.—*Sigmactenus weneri* n. gen., n. sp.: 4, Modified abdominal segments, male; 5, spermatheca; 6, ventral anal lobe, female.

Description.—MALE AND FEMALE, HEAD (Fig. 1): Submarginal clypeal row of six to eight small thin bristles, excluding the much smaller bristles at level of top of comb of head. Upper long bristle below frons row of six inserted at level of upper part of first ctenidial spine; lower bristle longer, inserted at level of ventral margin of this spine. A long bristle about halfway between uppermost and lowermost spines of comb, but inserted near comb; another large bristle

almost directly below this but near margin of head. What appears to be a setal pore inserted near base of second spine. This pore present in all specimens, but no bristle visible in any. Spines of comb variable in number, ranging from 7 to 10, 8 and 9 being the most frequent number. The holotype has eight on one side and nine on the other; two paratypes also have one more spine on one side than the other. Maxillary lobe extending to near apex of second segment of



FIGS. 7-10.—*Sigmactenus wernerii* n. gen., n. sp.: 7, Immovable process of clasper, and exopodite; 8, distal arm of ninth sternum; 9, protibia; 10, eighth tergum, male.



Figs. 11-14—*Sigmactenus werneri* n. gen., n. sp.: 11, Metathorax and part of abdomen, male; 12, anal stylet (variation); 13, typical anal stylet; 14, modified abdominal segments, female.

five-segmented labial palpi. As seen when resting in antennal groove, apical half of male first antennal segment with scattered small thin lateral bristles and with a dense tuft of dorsal and marginal and submarginal bristles; this tuft absent in female. Male with bristles of second antennal segment all short, none even reaching halfway length of club; female with one bristle of this segment reaching beyond apex of club. Postantennal region with bristles on each side 4(5)-4-5-6, the first row irregular; the penultimate of last row the longest.

THORAX: Pronotum with two rows of bristles and a comb of about eleven long thin spines on a side. Lowest bristle of pronotal row overlapping proepisternum (*PPS.*) very long. Mesonotum with three or four rows of bristles, the first one or two incomplete. Mesepisternum (*MPS.*) with eight bristles arranged 3-3-2. Metanotum with three rows of bristles. Metanotal flange with two apical teeth on each side. Lateral metanotal area (fig. 11, *L.M.*) distinct; with dorsal ridge (*R.*) well sclerotized, ventral ridge (*V.R.*) less so; with two bristles. Pleural arch (*PL.A.*) at junction of metanotal ridge and pleural ridge, strongly convex, well-developed. Metepisternum (*MTS.*) with one bristle, near dorsocaudal angle. Metepimere (*MTM.*) with 11 or 12 (rarely 10) bristles on each side. Metanotal flange with a small apical tooth on each side.

LEGS: Metacoxa lacking a patch of mesal spinelets or thin bristles; with one lateral bristle above insertion of trochanter. All femora with one marginal subapical bristle. Protibia (Fig. 9) with nine dorsolateral bristles (including three from the paired bristles) short and subequal, forming a distinct comb. Mesotibia and metatibia with eleven such bristles in comb. In each case the comb preceded by a sparser row of thinner bristles. Measurements of tibiae and segments of tarsi (petiolate base deleted) shown in microns:

Leg	Tibia	Tarsal segments				
		1	2	3	4	5
Pro.....	179	69	72	61	47	100
Meso.....	288	173	126	85	58	100
Meta.....	357	321	178	118	63	100

Not only are the legs very long, particularly the hind legs, but they are narrow: ratio of metatibial length to breadth is more than 4 to 1; similar ratio in metatarsal segment I is 7 to 1.

None of tarsal bristles reaching beyond apex of following segment. Fifth tarsal segments of all legs with four lateral plantar bristles and a basal pair displaced ventrally to near midline.

ABDOMEN: Typical abdominal segments with second row of bristles extending below spiracles. With small subdorsal teeth on posterior margins of first few segments; in male these teeth arranged (on each side) 2-2-2-1(-1); in female 2-2-(1)-1. Basal sternum with one ventromarginal bristle. Typical sterna with three bristles on a side in male, four in female. Male with middle antepygial bristle about thrice the length of the others (Fig. 4, *A.B.*); in female, the second and fourth antepygial bristles two to three times as long as the other (Fig. 14, *A.B.*).

MODIFIED ABDOMINAL SEGMENTS, MALE (Fig. 4): Eighth tergum (*8T.* and Fig. 10) extending as far caudad as middle of process of clasper, as far ventrad as base of clasper; with six very long dorsocaudal bristles, the last somewhat shorter than the others; with about nine or ten median or submedian bristles, none ventral; spiculose caudad and dorsad of spiracle. Eighth sternum (*8S.* and Fig. 2) extending as far distad as apex of ninth sternum and as far dorsad as base of clasper; dorsal margin biconvex; caudal margin subrounded; ventral margin proximally shallowly concave, distally convex; apex with a marginal row of four bristles; with about seventeen or eighteen scattered lateral bristles, none truly marginal.

Immovable process of clasper (*P.* and Fig. 7) subconical; portion distad of an imaginary line immediately above insertion of exopodite twice as long as broad; anterior margin slightly sinuate; apex almost rounded; posterior margin almost straight and with a bristle at apex; with five or six bristles on apical third of anterior margin. Exopodite (*F.* and Fig. 7) long and narrow, suggesting *Foxella* Wagner, 1929, slightly more than four times as long as broad at base; anterior margin shallowly concave; posterior margin subparallel with anterior for most of its length. Posterior margin of exopodite with a long stout bristle or subspiniiform at proximal third; three small thin bristles below the subspiniiform and two just above it; with a very long bristle near midpoint; a shorter bristle below this, but distad of those near subspiniiform, and equal in size to another bristle at apical third. Exopodite with five to seven short thin apical or subapical bristles, some mesal.

Manubrium (*MB.*) about $3\frac{1}{2}$ times as long as broad at base; dorsal and ventral margins fairly straight; dorsal margin, in the main, making an angle of about 40° with ventral margin; apex slightly upturned, not pointed.

Proximal arm of ninth sternum (*P.A. 9*) markedly expanded at apical fourth, the ventral margin particularly convex here; narrowing rapidly towards apex, which is narrowed; remainder of ventral margin shallowly biconcave, the proximal concavity the smaller; remainder of dorsal margin evenly convex. Distal arm of ninth sternum (*D.A. 9* and Fig. 8) much narrower than proximal arm, only about one-third as broad as narrower portions of proximal arm; more than seven or eight times as long as broad; divided into a basal and apical half, the latter bearing a conspicuous apical spiniform, a fringe of 7 or 8 basal stout heavy bristles and about 17 bristles on anterior (morphologically dorsal) margin or on dorsal portion, the most apical two the longest; basal half with about six small bristles near apex of posterior margin.

Aedeagal apodeme (*AE.A.* and fig. 3) slightly longer than aedeagus proper, but the characteristic apical sclerites crowded in the small end chamber. Proximal spur (*P.S.*) present. Crescent sclerite (*C.S.*) convex, identifying position of obscured sclerites of apodemal strut. Median dorsal lobe (*M.D.L.*) short, convoluted, associated with a lateral sinuate sclerite (*A.M.S.*) on each side. Sclerotized inner tube (*S.I.T.*) nearly vertical, slightly sinuate. With a sclerotized narrow band of the inner tube (*B.I.T.*) extending distad of apex of sclerotized sheath of inner tube. Armature of inner tube (*A.I.T.*) represented as an irregular somewhat bilobed sclerotized structure along dorsal border of *S.I.T.* Crochets (*CR.*) very large, consisting of a ventral subfusiform, apically acuminate, well sclerotized portion and a larger cleaver-shaped, lateral, lightly sclerotized portion; lateral lobes inapparent, but no specimen available for dissection. Ventral intramural rod (*V.I.R.*) present.

Sensillum (Fig. 4, *SN.*) flat, longer than broad, with about 17 pits visible on a side. Dorsal lobe of proctiger with about four subapical bristles. Ventral lobe of proctiger with about four apical and one or two subapical longish bristles and three or four small subapical bristles.

FEMALE (Fig. 14): Seventh sternum (*7S.*) caudally biconcave, the sinus between the lobes deep; the lobes slightly longer than broad at base, somewhat narrowed or even pointed apically;

the dorsal lobe in some specimens almost as long as ventral lobe, at times the two sides of one specimen differ in this respect. Ventral lobe of seventh sternum with three or four long dorso-marginal bristles, the lowest near the apex, and ten to twelve smaller, more proximal bristles, one of these bristles near base of sinus sometimes as long as marginal ones. Eighth tergum (*8T.*) with many bristles, commencing with two dorsal rows (one incomplete) of small bristles above spiracle; with four well-developed submedian bristles, that below tenth segment large; with a row of four large bristles ranging from ventral anal lobe to ventral margin of segment; with 9 to 13 smaller bristles in irregular rows preceding these large bristles; ventral half of caudal margin with four or five bristles, the longest one at shallow sinus of segment; with three or four mesal curved bristles near ventral anal lobe. Dorsal anal lobe of proctiger (*D.A.L.*) with two or three subapical longish bristles and about four small ones forming an apical fringe, with five or six tiny hairs at anteroventral angle. Anal stylet (Fig. 13) not quite twice as long as broad; dorsal and ventral margins somewhat convex; with two long apical bristles, one very long; with an indication or vestige of base of a subapical dorsal bristle; one specimen with an additional well-developed subapical bristle (Fig. 12). Ventral anal lobe (*V.A.L.* and Fig. 6) with dorsal margin shallowly concave; caudal margin sinuate; with three dorsomarginal bristles, the last very long; caudal margin with three bristles near dorsal angle and three near ventral; with three median bristles in dorsocaudal angle. Spermatheca (*SP.* and Fig. 5) with head longer than broad; dorsal margin strongly convex, ventral margin shallowly concave, anterior and posterior margins rounded; tail narrow, longer than head. In allotype (drawn) the spermatheca may be somewhat distorted in mounting; in other specimens, particularly in series R.T. #652S (cf. below), the tail is slightly recurved over the head. Bursa copulatrix (*B.C.*) well-developed, vermiform except for dilated head.

Remarks.—This is a highly variable species; as can be seen from the description, even the two sides of an individual may vary in such usually established characters as number of genal spines and shape of female seventh sternum. The series from *Rattus* show slight differences in chaetotaxy and in the seventh sternum, but these differences cannot properly be evaluated without additional specimens.

The species is named for Floyd Werner, entomologist, who served under Harry Hoogstraal on the Chicago Natural History Museum Philippines Expedition and who has collected some very interesting ectoparasites.

I wish to thank Dr. Karl Jordan, J. H. E. Hopkins, and F. G. A. M. Smit, of the British Museum, for reviewing the manuscript.

LIST OF ABBREVIATIONS

A.B.	Antepygidial bristle.	L.M.	Lateral metanotal area.
A.E.A.	Aedeagal apodeme.	L.P.	Labial palpi.
A.I.T.	Armature of inner tube of aedeagus.	MB.	Manubrium.
A.M.S.	Apical or apicomedian sclerites of aedeagus.	M.D.L.	Median dorsal lobe.
AP.R.9	Apodemal rod of ninth sternum.	MPM.	Mesepimere.
B.I.T.	Narrow band of inner tube extending distad of apex of sclerotized inner tube.	MPS.	Mesepisternum.
B.C.	Bursa copulatrix	MTM.	Metepimere.
CR.	Crochet of aedeagus.	MTS.	Metepisternum.
C.S.	Crescent sclerite.	P.	Immovable process of clasper.
D.A.L.	Dorsal anal lobe.	P.A.9	Proximal arm of ninth sternum.
D.A.9	Distal arm of ninth sternum.	PL.A.	Pleural arch of metathorax.
F.	Exopodite or movable finger.	PN.	Penis.
		PPS.	Proepisternum.
		P.R.	Penis rods.
		P.S.	Proximal spur of aedeagus.
		R.	Dorsal ridge of lateral metanotal area.
		S.I.T.	Sclerotized inner tube.
		SN.	Sensillum.
		SP.	Spermatheca.
		V.A.L.	Ventral anal lobe of proctiger.
		VC.1	First vinculum.
		VC.3A.	Accessory link below third vinculum.
		V.I.R.	Ventral intramural rod.
		V.R.	Ventral ridge.
		7S.	Seventh sternum.
		8S.	Eighth sternum.
		1T.	First tergum.
		8T.	Eighth tergum.

ZOOLOGY.—*A new species of Terebripora from the Pacific (Bryozoa Ctenostomata).*¹

JOHN D. SOULE, Allan Hancock Foundation, University of Southern California. (Communicated by Waldo L. Schmitt.)

As early as 1920 Canu and Bassler lamented the lack of information available concerning the anatomical details of burrowing bryozoans, but until the publication by Marcus in 1938 of "Bryozoarios Perfuradores de Conchas" the anatomy and ctenostomatous affinities of the burrowing Bryozoa remained completely unknown. In this work Marcus discussed and figured the anatomy of *Terebripora ramosa* d'Orbigny, 1847, and *Spathipora sertum* Fischer, 1866. No further work pertaining to the anatomy of this type of burrowing Bryozoa appeared until 1946, when Silen published the results of his research on two new families of burrowing Bryozoa, the Penetrantiidae and the Immergentiidae. The following year, 1947, Silen adequately pointed out the futility of basing the specific classification of burrowing Bryozoa entirely upon their zoarial tracings made in the shells of mollusks. With regard to this, Silen pointed out how some of the species previously assigned to

the genus *Terebripora* merely on the basis of shell tracings could as easily be assigned to *Immergentia* and that some of the *Spathipora* may well be *Penetrantia*. In so far as superficial external appearances are concerned, determination of the genera and the species is hopeless. On the basis of shell markings confirmed by anatomical studies, the burrowing Bryozoa until now fell into two groups: the *Terebripora-Immergentia* type and the *Spathipora-Penetrantia* type. *Terebripora ramosa* d'Orbigny readily fits into this pattern.

With the publication of Silen's work it therefore becomes necessary to amend the description of the genus *Terebripora* d'Orbigny, 1847, to include basic anatomical details which will serve to distinguish this genus from the genera *Spathipora*, *Immergentia*, and *Penetrantia*, respectively.

Genus *Terebripora* d'Orbigny, 1847

Zoaria stolonate, consisting of primary stolons joined to the zooids by secondary stolons, the point of union with the zooids being nearly midway between the distal and proximal extremities, but

¹ Contribution from the Allan Hancock Foundation. Received August 16, 1950.