
*A Supplement to the American Land and Fresh-Water
Isopod Crustacea*

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Article II.—A SUPPLEMENT TO THE AMERICAN LAND AND FRESH-WATER ISOPOD CRUSTACEA

BY WILLARD G. VAN NAME

Figures 1 to 32

During the period that has elapsed since the publication of "The American Land and Fresh-Water Isopod Crustacea" in May, 1936,¹ a number of additional species have been added to the American list and new information published regarding many others. It therefore seemed desirable to prepare a supplement to that work to cover the additional species, correct errors and omissions and record changes in nomenclature and notes and references of importance on other American forms.

This article is to be regarded as purely supplementary to my work of 1936 named above, and is designed for use only in connection with it. No attempt is made to repeat matter that was given in that work.

The present article consists of the following three parts:

I.—Descriptions of new species and other species added to the American list.

II.—Additional notes and references, changes of names, corrections, etc., applying to species dealt with in my 1936 work.

III.—Additions to the bibliography (including works omitted in 1936).

The following four species are described as new to science:

Trichoniscus (Miktoniscus) medcofi, new species
Philoscia floridana, new species
Philoscia avridensis, new species
Exosphaeroma insulare, new species

The following species and subspecies described by other writers are added to the list of known American land and fresh-

water forms. There are a number of additions in the family Asellidae, which has lately been the subject of an increased amount of study.

Trichoniscus (Androniscus) dentiger Verhoeff, 1908

Philoscia bonariensis Giambiagi de Calabrese, 1935

Neotroponiscus carolii Arcangeli, 1936

Platyarthrus hoffmannseggii Brandt, 1833

Porcellio spinicornis occidentalis Miller, 1936

Porcellio dilatatus Brandt, 1833

?*Porcellio ragusae* Dollfus, 1896

Porcellio littorina Miller, 1936

Circoniscus pallidus Arcangeli, 1936

Nerocila armata Dana, 1853

Asotana splendida (Leigh-Sharpe), 1937

Exosphaeroma platense Giambiagi, 1922

Asellus montanus Mackin and Hubricht, 1938

Asellus dentadactylus Mackin and Hubricht, 1938

Caecidotea macropopoda Chase and Blair, 1937

Caecidotea ozarkana Chase and Blair, 1937

Mancasellus ouachitaensis Mackin and Hubricht, 1938

Mancasellus louisianae Mackin and Hubricht, 1938

Through the kindness of Dr. E. C. Williams, Jr., of Northwestern University, I have had the opportunity of examining a large collection of isopods recently made at Barro Colorado Island, Panama Canal Zone, but failed to find any undescribed species. I am also under special obligations to Dr. J. C. Medcof, of the Canadian Fisheries Research Board, Mr. Stanley Mulaik of Edinburg, Texas, and Prof. T. D. A. Cockerell of Boulder, Colorado, for interesting material sent me.

PART I.—DESCRIPTIONS OF NEW SPECIES AND OTHER SPECIES ADDED TO THE AMERICAN LIST

SUBORDER ONISCOIDEA, LAND ISOPODS

Trichoniscidae

GENUS OR SUBGENUS *ANDRONISCUS* VERHOEFF, 1908

A division of *Trichoniscus* in the comprehensive sense composed of a number of

European species and races, the females of which are practically alike, though the males are distinguishable by characters of the pleopoda and legs. They are remarkable for their coloration, usually a striking pink or orange-pink, in life. (See Verhoeff, 1908c.)

¹ Bull. American Museum of Natural History, LXXI, pp. i-vii, 1-535, Figs. 1-323, by Willard G. Van Name.

Most of them have been included under the name *Trichoniscus roseus* (Koch). The true *roseus* was described by Koch (as *Itea rosea*) from Bavaria.

Among the most distinctive characteristics of the males of this group are the peculiar modification of the merus of the seventh legs and the spoonlike termination of endopodite of the first pleopoda, both of which are well exemplified in the illustrations of the species that follows.

Trichoniscus (Androniscus) dentiger
Verhoeff, 1908

Figure 1

Androniscus dentiger VERHOEFF, 1908c, p. 139, Fig. 10.—VANDEL, 1933, p. 131.—WAECHT-

numerous densely crowded tubercles arranged in transversal rows. Cephalon transversely oval, with the lateral lobes well-marked, denticulate, front nearly straight. Lateral parts of mesosome more expanded than in the other species, 1st pair rather broad and partly flanking the cephalon, the 3 posterior pairs recurved and acuminate. Metasome (in male) exceeding half the length of the mesosome, and but little more than half as broad; terminal expansion of last segment transversely truncate, with 4 small apical spinules. Antennulae with the last joint much longer than the 2nd, and carrying 6 sensory filaments, 5 apical and 1 lateral. Antennae comparatively slender, attaining

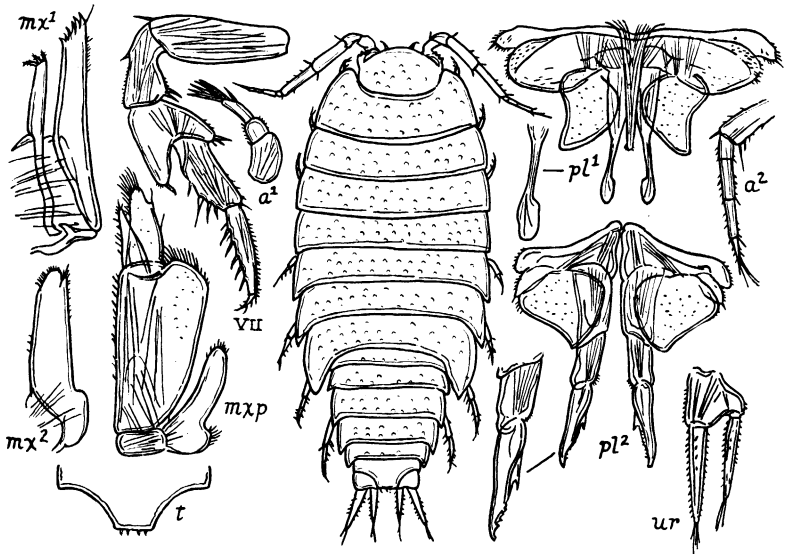


Fig. 1. *Trichoniscus (Androniscus) dentiger* Verhoeff, 1908. After Sars, 1899 (*T. "roseus"*).

LER, 1937, p. 258, Fig. 50.—MEDCOF, 1939, p. 115.

Philougría rosea KINAHAN, 1857, Nat. Hist. Rev., V, p. 197, Pl. XXIII, fig. 3.—BATE AND WESTWOOD, 1868, Hist. Brit. sessile-eyed Crust., II, p. 460, Fig.

Trichoniscus (Androniscus) dentiger ARCAN- GELI, 1931a, p. 12.

Trichoniscus roseus BUDE LUND (in part only), 1879, p. 9; 1885, p. 247.—SARS (in part only), 1899, p. 163, Pl. LXXIII, fig. 1.

"Body oblong oval, greatest width almost attaining half the length, dorsal face but slightly convex, and rough, owing to

1/3 of the length of the body, flagellum composed of 4 articulations. Last pair of legs in male peculiarly modified, having the meral joint strongly dilated, and produced inside to a large conical prominence, in against which the succeeding joint admits of being bent. Inner ramus of 1st pair of pleopoda in male, with the terminal joint dilated at the end in the form of a little bowl of a spoon; that of 2nd pair rather strong and distinctly 3-articulate, terminal joint knife-shaped and denticu-

late inside. Uropoda with the outer ramus about twice the length of the basal part, inner ramus somewhat narrower, but scarcely shorter. Color of dorsal face in life of a clear minium-rose. Length of adult male 5 mm.

"This species, first described by Koch,

in the belief that it would be found in Norway also.

The first American record of this species is due to Dr. J. C. Medcof. He reports it (Medcof, 1939) as occurring in many greenhouses in the region of London, Ontario, and Toronto.

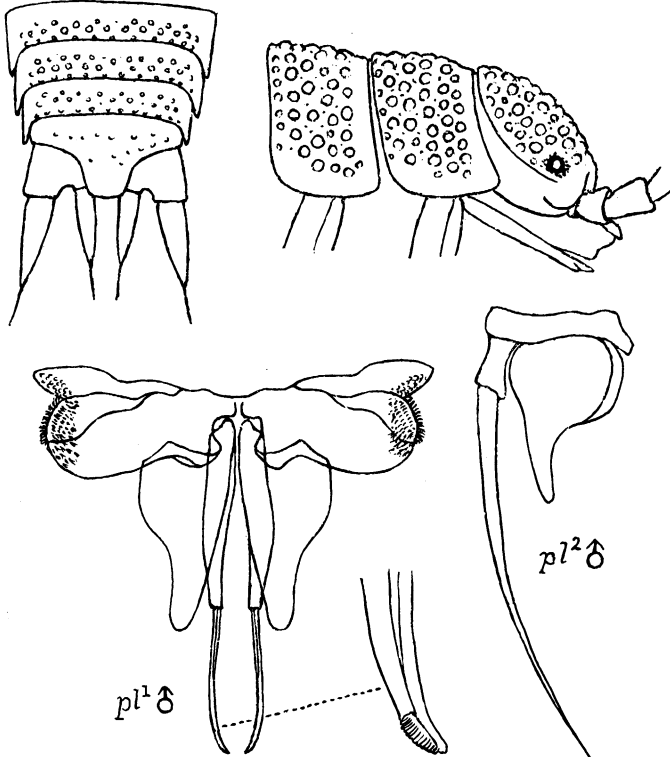


Fig. 2. *Trichoniscus (Miktoniscus) medcofi*, new species.

is easily distinguished by its comparatively broad and flattened body, the dorsal face of which is densely granular, and by its beautiful colour, which, however, is only seen in fresh specimens." (Sars, 1899, pp. 163-164.)

This is the common, if not the only, representative of the *roseus* group in northwestern Europe (British Islands, Belgium, Luxemburg and parts of France), including, at least in greenhouses, localities in northern Germany and Denmark. Sars, 1899, included and illustrated it (under the name *roseus*) in his *Crustacea of Norway*

***Trichoniscus (Miktoniscus) medcofi*,**
new species

Figure 2

Body proportionately narrower than usual in the *Trichoniscidae* (ratio at least 4 to 1 if the intersegmental muscles are relaxed), the back considerably arched transversely, its surface with scattered short hairs and many small scabrous tubercles which form at least four more or less definite transverse rows on most of the thoracic segments. The tubercles are very conspicuous on the head and anterior segments becoming less prominent toward the rear but do not disappear entirely even on the abdomen. The frontal outline seen from above is convex, with fairly large lateral lobes extending obliquely down and

forward and having a rounded anterior margin. Eyes composed of a single large ocellus surrounded by a somewhat larger area of black pigment. Antennae with a flagellum of four distinct articles and a terminal group of bristles.

Thoracic segments I to IV inclusive, with the rear corners rounded (IV only slightly), V to VII have the rear corners quite acute and increasingly extended backward. The legs are all quite long with well-developed spines. Leg VII of the male has the merus widened posteriorly and compressed from side to side.

The abdomen is abruptly somewhat narrower than segment VII of the thorax, and tapers considerably. The rear corners of segments 3 to 5 are extended back into sharp points rather closely appressed to the following segment.

The pleopoda of the first two pairs of the male conform quite closely to Kesselyak's (1930) description of the type species *Miktoniscus linearis*.

basal joints of the uropoda are short and have the insertion of the inner branch removed by a small lateral interval from, and somewhat farther forward than, that of the outer branch, which is considerably the longer and stouter.

The largest example is a male measuring somewhat over 5 mm. long when the inter-segmental muscles are well relaxed.

The specimens, except very young ones, are strongly pigmented, having the upper surface handsomely variegated with brown or purplish-brown pigment on a light background which is whitish or yellowish in the preserved material. There is usually a narrow dark streak across the forehead extending through and behind the eye on each side.

LOCALITIES.—Native habitat unknown. Dr. J. C. Medcof, for whom the species is named, kindly sent me about 40 specimens,

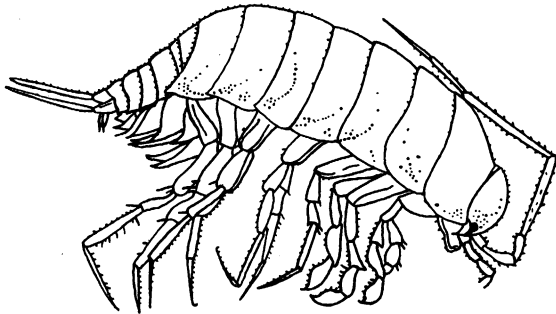


Fig. 3. *Philoscia bonariensis* Giambiagi de Calabrese, 1935. After that author.

The outline of the median sexual appendage may be described as Kesselyak does, by calling it cigar-shaped. It has a slightly acuminate tip on which a few fine cross striations are visible on high magnification. This appendage is quite long and is not normally carried between, but extending ventral to, and independent of the first pair of pleopoda. That pair has the exopodites plate-like, narrowed in the distal half and rounded at the tip; the endopodites are styliform and composed of two narrow elongate segments. The distal segment may be described as a very narrow, slightly twisted tapering lamella stiffened by an axial midrib, which is itself slightly curved dorsally and medially. The extreme, slightly curved tip, when highly magnified, is seen to bear a small file-like area of sharply defined furrows on its convex aspect.

In the second pleopoda the exopodite is plate-like, short and wide, with a narrow posterior extension; the endopodite has a short basal segment and a long styliform distal segment which tapers into a very slender seta that reaches far back toward the end of the abdomen.

The telson has the median extension rather narrow. The rear end is without spines and is truncated in a distinctly convex curve. The

including a large proportion of males, from Urbana, Illinois, collected October 27, 1936, on the moist floor of the Botanical Greenhouse of the University of Illinois where it is said to be abundant and a few additional ones from another greenhouse in that city, also a single specimen from the Garfield Park Conservatory, Chicago, Illinois, collected February 9, 1939. The type is in The American Museum of Natural History (Cat. No. A.M.N.H. 9069).

Oniscidae

Philoscia bonariensis Giambiagi de Calabrese, 1935

Figure 3

Philoscia bonariensis GIAMBIAGI DE CALABRESE, 1935, pp. 495, 496, 1 Fig. (misspelled *Phyloscia* in legend of figure).

Only briefly described, and the figure here reproduced given in the above paper.

A more detailed description in a future number of Anal. Mus. Argentino Cien. Nat. is promised.

The species is said to resemble *P. longicornis* Budde-Lund of Mediterranean countries but to have longer and differently proportioned antennae. The integument is of soft consistency, minutely punctate and covered with a short, scattered pubescence. The uropoda are as long as the abdomen. Color dusky ("pardusco").

Length 8.5 mm., width 3.5 mm.

parts of the outline of the head. Eyes unusually large, almond-shaped, wide in front and very bulging but composed of rather few large conspicuously developed ocelli, 13 in the larger specimen, 11 in the smaller, in addition to one or more poorly developed ones in each case. No tubercle between the first antennae.

Second antennae moderately long, quite slender and very slightly pubescent. In the male specimen their length if straightened out would exceed half the body length. The first article of the flagellum, which exceeds the fifth joint of the peduncle, is slightly the longest; the last one, exclusive of the terminal bristle, is almost as long as the first.

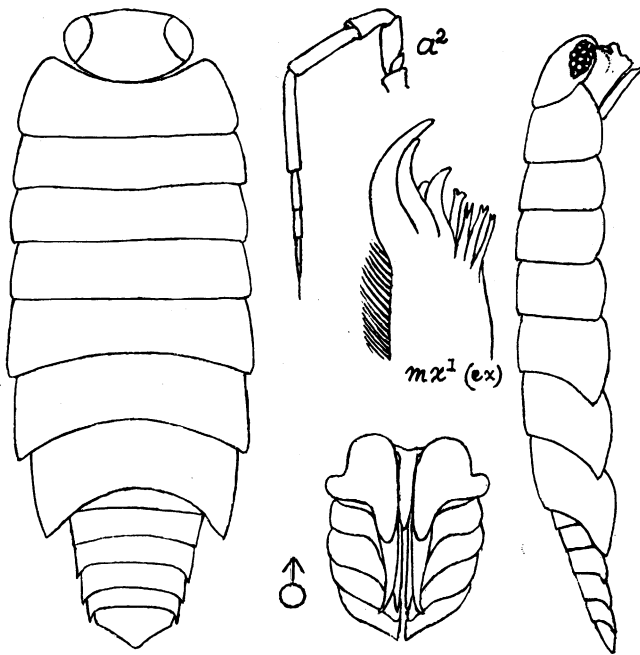


Fig. 4. *Philoscia floridana*, new species.

LOCALITY.—Quequén, Province of Buenos Aires, Argentina. Types in Mus. Argentino, Cien. Nat., No. 13051.

Philoscia floridana, new species

Figure 4

Closely allied to *Philoscia inquilina* from British Guiana and *P. richmondi* from Puerto Rico, especially to the former.

Body seen from above elliptical, the surface unusually even and glossy, the head abruptly narrower below the eyes, rather large, with the front border convex (slightly sinuous when the head is tilted up); with scarcely a vestige of lateral lobes, the eyes forming the antero-lateral

Thoracic segments I to III have the rear corners rounded, in IV they form about a right angle; the last three segments are increasingly extended back with the rear corners angular (differing conspicuously from the rounded corners in *P. inquilina*). All the thoracic segments have the lateral ends cut off in a convex curve, especially the more anterior ones. Legs moderately long, rather weakly spinous. Sexual differences in them were not observed.

The abdomen is fairly long and not greatly tapered. Segments 3 to 5 have the extended rear corners small, appressed and acute. Telson with the sides slightly converging in the anterior part; the main part is widely triangular with a slight suggestion of sinuosity in the sides; the apex slightly prominent but not acute.

Uropoda mutilated or missing in the available specimens.

The extended endopodites of the first pleopoda of the male are stout and noticeably bent outward at the abruptly narrowed tips. Their exopodites have a rather long backward extension rounded at the tip. In the two specimens at hand the coloration of the upper parts is quite striking and probably somewhat characteristic. On the main part (tergum) of each thoracic segment the anterior part is light colored, the pigment being confined to the posterior part, while on each of the epimera there are two rather narrow dark antero-posterior stripes on a light (unpigmented) background. This pro-

larger eyes, the acute instead of rounded rear corners of segments V, VI and VII, differently shaped pleopoda in the male as well as by the coloration. There appear to be other minor differences in the present species, such as the wider head, less definite frontal line, the tip of the telson less acute, etc., but if so it is difficult to be sure without more material.

Two specimens, male and female, both more or less mutilated and incomplete, were obtained by Dr. F. E. Lutz at Winter

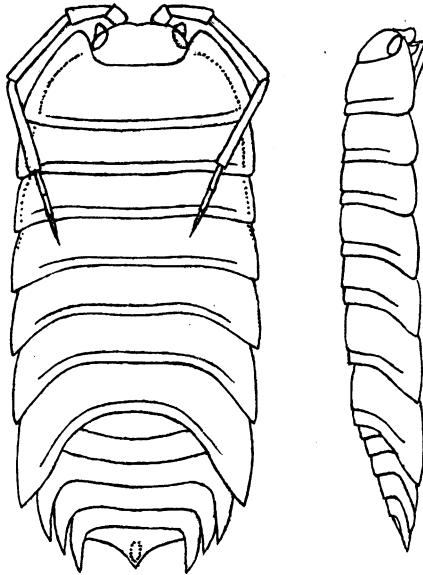


Fig. 5. *Philoscia avrilensis*, new species.

duces the effect of seven light and seven wide dark stripes across the back between the epimera, with a longitudinally striped border on each side comprising three light and two dark stripes on each epimeron. The coloration of the head and abdomen presents nothing striking except the presence of a conspicuous dark band between the eyes. There is some dark pigment on the legs and lower parts.

The species appears to be a small one. The male, though fully adult and with firm integument is only 5 mm. long and not quite 2 mm. wide, the female is immature and smaller and proportionately narrower-bodied.

This species is distinguished from *P. inquilina*, apparently its closest ally, by

Park, Florida, in February, 1939. The male specimen is the type (Cat. No. A.M.N.H. 9023).

Philoscia avrilensis, new species

Figures 5, 6

The body, seen from above, is rather broadly oblong, with lateral ends of the first thoracic segment and to a decreasing extent also of the second and third, turned horizontally outward so as to form a projecting border.

The head is narrow and deeply set back in the thorax. The lateral lobes are unusually prominent for a member of the *Philoscia* group. They are of rounded outline, but are turned

into an obliquely vertical position so that as seen from above they appear quite narrow. The upper border of the epistome is quite closely appressed to the front of the head and dips downward in a deep V at the median line as seen from in front. Above this border the median part of the forehead is slightly concave or impressed.

The eyes are large, with at least 22 well-developed ocelli. The antennae are long and slender, reaching along the fourth thoracic segment when drawn back. Their flagellum is likewise long and slender; its proximal article is the longest and the terminal one a little the shortest, if its short terminal spine is not included.

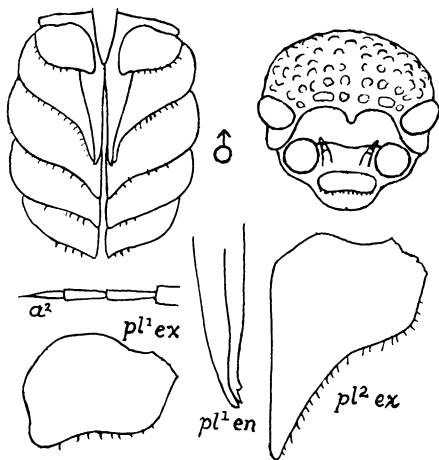


Fig. 6. *Philoscia avrilensis*, new species, details.

The entire dorsal surface as well as that of the antennae is noticeably rough and scabrous as seen with a hand lens; in addition there are, on the head and thoracic segments, especially the forward ones, scattered small tubercles which for the most part are not arranged with any regularity. On the thoracic segments there is a very slightly impressed transverse furrow a little way in front of the rear margin.

Even the first thoracic segment shows, by the sinuous curve of its rear margin, a slight tendency to a backward extension of the rear lateral corners. Their extension increases progressively and becomes very great in the three posterior segments. In these last three segments the rear corner is acute; in segments I, II and III it is rounded; in segment IV the apex of the angle is slightly rounded off. The legs are rather weak and slender though fairly long. There does not appear to be very much sexual differentiation in the legs, though the more numerous spines present on the merus and carpus of the three anterior pairs of legs of the male may be a sexual character.

The abdominal epimera are long, narrow and

turned directly backward. The endopodite of pleopod 1 of the male has three teeth at its tip. The telson is wide and has only a very short backward extension, which is triangular with concave sides and an acute apex which does not reach as far back as the tips of the fifth epimera. The telson has a shallow median depression or cavity on the surface. Both uropoda are missing in the only specimen. The color is the usual brown with light (unpigmented) markings characteristic of the *Philoscia* group.

Length of the type and only specimen (a male): 11.2 mm. It is Catalogue No. 8101 in the A.M.N.H. collection.

LOCALITY.—Bois d'Avril, Haiti, altitude 6000 feet, collected by Bird and Winkhans, March 7, 1935.

This is quite different from any other American species of *Philoscia* that I have seen. The broad body with small tubercles on the surface, the head deeply set back in the thorax, the long posteriorly directed abdominal epimera and the prominent lateral lobes of the front of the head give it some superficial likeness to an *Oniscus*. There are, however, no traces of the fluting of the external plates of the first and second plopoda nor any tracheae in them that I could discover after removal of the appendages and clearing in glycerine. It agrees quite closely in many characters with the southern European subgenus *Tiroloscia* Verhoeff, 1926 (Mitt. Bulg. Ent. Gesell., III, p. 155, and 1929, Zool. Jahrb. Syst., LVI, p. 136, Figs. 30, 39).

NEOTROPONISCUS ARCANGELI, 1936

This genus was established for the following peculiar species:

Neotroponiscus carolii Arcangeli, 1936

Figure 7

Neotroponiscus carolii ARCANGELI, 1936, p. 201, Pl. IV, figs. 1-4.

General form of the body that of a *Porcellio*; the relatively small convexity of the dorsal surface is limited to the tergites; the epimera extending out horizontally, especially those of the first segment.

Under high magnification integument of the dorsal surface appears finely scaly, but the chief characteristic is the presence of high conical tubercles regularly arranged in transverse rows on the head and body

segments. They do not extend on to the epimera. There are also small scattered scale-like setae, some of which form a series along the rear margin of the segments.

The head is completely immersed in the concavity of the front thoracic segment; it is remarkable for the very long lateral and median lobes as may be seen from the illustration. The eyes have 17 to 18 ocelli, the antennae are stout and reach beyond the rear margin of the second segment of the thorax when drawn back.

LOCALITY.—Two female specimens were obtained at Pirajù, State of São Paulo, Brazil by Prof. E. Caroli.

Arcangeli considers this genus related to *Porcellio* although no tracheae are present in the external plates of any of the pleopoda.

PLATYARTHURUS BRANDT, 1833

The broad, depressed body of oval outline with rather large expanded epimera, the short but wide flattened antennae which present the unusual feature of having

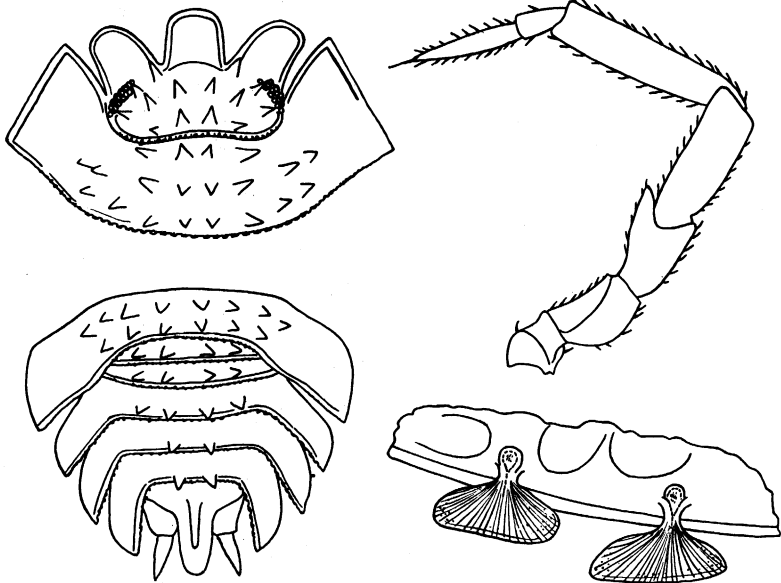


Fig. 7. *Neotroponiscus carolii* Arcangeli, 1936. After Arcangeli. Lower right-hand figure shows the posterior margin of segment I greatly enlarged.

The flagellum has the proximal article almost half the length of the second.

The epimera of segments 3 to 5 are long and curved backward, the telson has a long, narrow, oblong median extension rounded at the end and provided with a prominent median keel for two-thirds of its length. The uropoda are very small but of the form usual in *Porcellio* and its allies.

COLORATION.—Variegated with brownish and pallid areas, becoming whitish on the epimera, uropoda and antennae. Length: 4.4 mm.; width (at the 4th thoracic segment): 2.11 mm.

the flagellum reduced to a single article; the short thick legs, absence of eyes and the white or whitish coloration due to absence of pigment, distinguish this genus, which is of subterranean habits, living especially in ants' nests. Of the few species constituting the genus, only the following is widely distributed.

Platyarthus hoffmannseggii Brandt, 1833

Figure 8

Platyarthus hoffmannseggii BRANDT, 1833, p. 12, Pl. IV, fig. 10.—BUDE-LUND, 1879, p. 2;

1885, p. 199.—SARS, 1899, p. 175 (-*seggii*), Pl. LXXVI, fig. 2.—ARCANGELI, 1921, p. 190 (-*seggii*), Pl. VII, fig. 1.—WÄECHTLER, 1937, p. 274, Fig. 75.

Sars, 1899, p. 175, gives the following description:

"Body broadly oval, and much depressed, with the dorsal face smooth, though slightly granulose all over. Cephalon partly flanked by the side-plates of 1st segment of mesosome, frontal edge arcuate and minutely crenulated, lateral lobes narrowly rounded at the tip, and obliquely produced in front, edges crenulated. Side-plates of mesosome rather large, lamellar, subcontiguous, 1st pair the largest, edges finely denticulate.

part rather large, oblong, outer ramus about same length and lanceolate in form, inner ramus much narrower, and scarcely extending to the middle of the outer. Colour pure white. Length of adult female 3 mm."

A species widely distributed in southern and central Europe. It was not included in my work of 1936 as I could then find no record of its occurrence in America. Since that time Dr. G. E. Hutchinson obtained it near Lindsley Pond, North Branford, Connecticut, in the nest of an ant "apparently *Lasius flavus nearcticus*

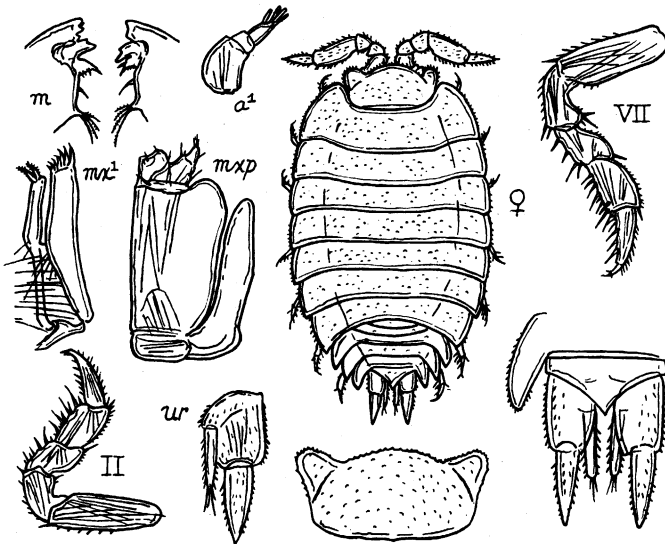


Fig. 8. *Platyarthrus hoffmannseggii* Brandt, 1833. After Sars, 1899.

Metasome scarcely exceeding 1/3 of the length of the mesosome, the 2 anterior segments very small, epimeral plates of the 3 succeeding segments narrow, recurved; last segment comparatively short, triangular, resembling that in *Philoscia muscorum*. Antennulae with the basal joint fully as long as the other 2 combined. Antennae scarcely exceeding 1/3 of the length of the body, and hirsute all over with short hairs; last peduncular joint very large and dilated, flagellum shorter than that joint, and lanceolate in form. Legs densely spinous inside, propodal joint conical in form. Uropoda with the basal

Wheeler," and also found one in a nest of *Formica fusca* var. *subseracea* Say. He sent me two fine specimens from the North Branford locality, and says it is apparently well established in the vicinity of New Haven, Connecticut.

Porcellio spinicornis occidentalis

Miller, 1936

Figures 9A, B

Porcellio spinicornis occidentalis MILLER, 1936, p. 170, Figs. 8, 12, 20, 25, 26.

Differs from the typical *spinicornis* according to Miller in the following respects:

1.—Articles of flagellum subequal; the first not longer than the second. 2.—Median lobe of the head not so expanded. 3.—Ischiopodite of seventh legs of male more bowed. 4.—Telson spatulate rather than triangular.

LOCALITIES.—Common in the San Francisco Bay region and along the coast of California, also found at Davis near Sacramento (Miller). "*P. spinicornis*" has been reported as occurring in California "with *P. laevis*" by Essig, 1926, p. 3, but to what extent this record may apply to the present subspecies I do not know.

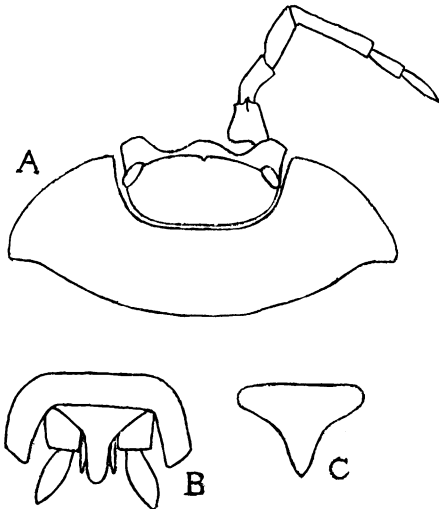


Fig. 9. A, B. *Porcellio spinicornis occidentalis* Miller, 1936. After Miller. C. *Porcellio spinicornis*, typical form, outline of telson. After Sars, 1899.

Miller's figures indicate that the telson and the frontal outline of his new subspecies are very different from those of the typical *spinicornis* as illustrated by Sars and Waechtler, and as I find them in eastern American examples. The pleopoda are similar to those of the typical form of *spinicornis* according to Miller. Were it not that the closely related species *P. dilatatus* Brandt, 1933 (see below), is considerably wider-bodied than *spinicornis* and therefore not likely to be confused with it, I were inclined to suspect that *P. s. occidentalis* might be that species, which is now known to occur in America.

Porcellio dilatatus

Brandt and Ratzeburg, 1833

Figure 10

Porcellio dilatatus BRANDT AND RATZEBURG, 1829-1833, II, p. 78, Pl. XII, fig. 6.—BRANDT, 1833, p. 14, Pl. IV, figs. 7, 13.—BUDE-LUND, 1879, p. 2; 1885, p. 106.—MEINERTZ, 1934, p. 237, Figs. 11, 12, etc.—WAECHTLER, 1937, p. 283, Fig. 88.

Allied to *P. spinicornis* and similar to it in most respects, but conspicuously wider-bodied, and having the extended part of the telson rounded at the end instead of pointed. Head and anterior part of the body tuberculated, becoming smoother toward the posterior end. Color of upper parts more or less marbled or variegated, but the middle and often the lateral lobes of the head dark colored. Median lobe of head somewhat triangular and rather prominent when seen from above.

DISTRIBUTION.—A native of the western Mediterranean region, now widely dispersed about human habitations in various parts of the world. As noted under *P. s. occidentalis*, it may occur in California, but the only American specimen to come into my hands is one from Indian Gardens, Grand Canyon, Arizona, collected by Dr. P. C. Geiser, June 23, 1938.

?*Porcellio ragusae* Dollfus, 1896

Figures 11, 12

Porcellio ragusae DOLLFUS, 1896f, p. 2, Fig. 2.—VERHOEFF, 1933a, pp. 3, 19, 25, 28; 1938, pp. 102, 119.

I assign to this species provisionally, and with some hesitation because of certain points of uncertainty mentioned below, four specimens from Texas, that apparently represent an Old World form that has been accidentally introduced. No European specimens have been available for comparison.

In the Texas specimens the body, seen from above, is oblong, rather parallel sided, with the head deeply set back into the thorax, and the abdomen short though not abruptly narrower than the last segment of the thorax. It is considerably arched transversely.

The dorsal surface of the head and thorax are quite thickly covered with small rounded tubercles which are most numer-

ous on the head and anterior thoracic segments, becoming fewer and less conspicuous posteriorly, and disappearing on the abdomen. They show a tendency to arrangement in transverse rows, about five rows on the first thoracic segment decreasing to three and finally to two on the posterior ones. Besides these there is a row of very much smaller tubercles along or close to the rear border of the segments. The general surface of the back between the tubercles bears scattered, very minute scabrous setae or stiff and very short hairs, visible only with some magnification.

The head is rather narrow and well set back in the thorax. The eyes are large with many well-developed ocelli not all of which are well pigmented. Below them

segment V when well drawn back. The females have the antennae considerably shorter and weaker. The flagellum of the antennae is long and has the basal article much exceeding (but not twice as long as) the terminal one. The antennae have the segments more or less grooved or longitudinally carinated, but with poorly developed dentiform processes.

Only the last three thoracic segments (nos. V, VI and VII) have the rear angles actually sharp. Segment IV has only the extreme apex of the angle rounded a little; those in front have it more so. Even the first thoracic segment shows a slight sinuous curvature of the rear margin of the segment. This curvature becomes progressively greater toward the rear; in

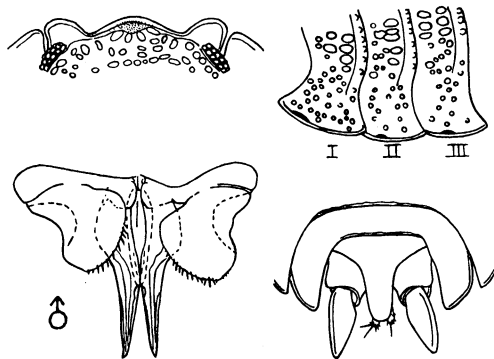


Fig. 10. *Porcellio dilatatus* Brandt, 1933. After Waechter, 1937, and Meinertz, 1934.

the frontal margin forms two large lateral lobes extending obliquely forward; they are of somewhat square outline with the corners much rounded. Between them the frontal margin is continuous but upturned and much less prominent, except that in the middle it is extended forward into a small lobe (widely triangular with straight sides as seen from above) whose slightly upturned surface is somewhat concave. This median lobe extends even farther forward than the lateral ones when the head is held level. Above its median projecting point the front outline of the forehead as seen from above is slightly re-entrant.

The antennae are long and fairly stout in the male, reaching the anterior part of

segments III and IV it has already become well marked.

The legs of segments I-III, inclusive, and VII show sexual modifications in the male, those of I, II and to a less extent III, having brush-like areas of short spines as usual in the genus. The legs of segment VII have the basipodite considerably inflated or swollen, and the ischium of somewhat concave outline below and with a large rather shallow depression on the external aspect of the distal half of that segment, as if it had been pinched or pressed in.

The outlines of the male pleopoda approximate to those of *Porcellio spinicornis*. The telson has its posterior extension unusually large and wide, triangular and

acute at the tip with rather straight sides. It has an oval but only very slightly concave median depression on the upper surface. The uropoda have flattened tapering external branches which are quite short in the female as shown in the figure, but which are at least one and one-half times as long in the only one of the males in which they are not missing.

The coloration of the upper surface is

verging toward the telson, which is pigmented, as are also parts of the large basal segments of the uropoda, the antennae and the upper surface of the lateral and median lobes of the head.

Body length of the largest specimen, which is a female, about 11 mm. One of the male specimens is not very much smaller.

LOCALITIES.—Two females and a male

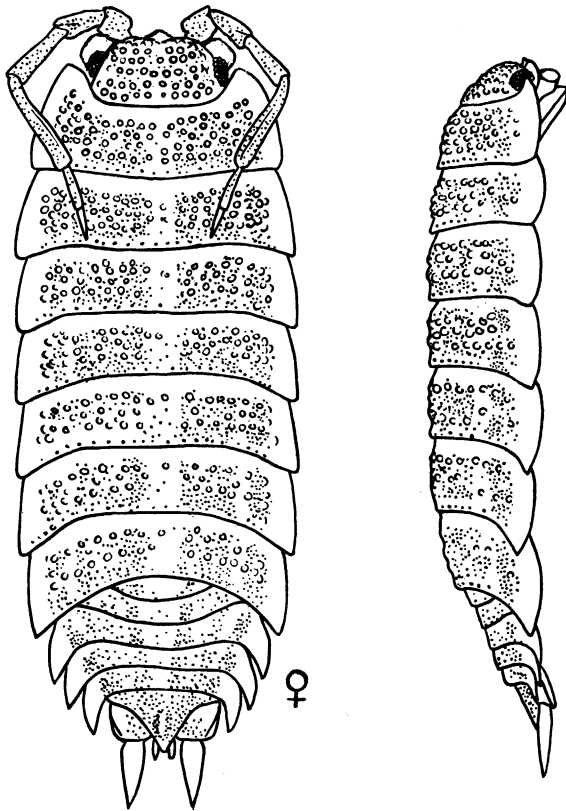


Fig. 11. Specimen supposed to be *Porcellio ragusae* Dollfus, 1896.

rather pale, and consists of a light marbling of gray or blackish on the light yellow background formed by the unpigmented parts. The pigmented areas are so placed as to give the back a somewhat indistinctly yet noticeably longitudinally striped effect as shown in the figures, leaving a rather wide lateral border unpigmented. On the abdomen the stripes are continued, con-

were received from Mr. Stanley Mulaik who collected them at Corpus Christi, Texas, March 21, 1936, with specimens of *Porcellionides mulaiki*, *Porcellionides pruinosus* and *Armadillidium vulgare*. A smaller male was received from L. I. Davis from La Joya, Texas. The type locality of *P. ragusae* Dollfus is Ficuzza, near Palermo, Sicily.

P. ragusae Dollfus is intermediate between the typical subgenus of *Porcellio* (represented by *P. scaber*) and the subgenus *Mesoporcellio* Verhoeff (represented by *P. laevis*) exhibiting an unusual combination of characters of both, such as the

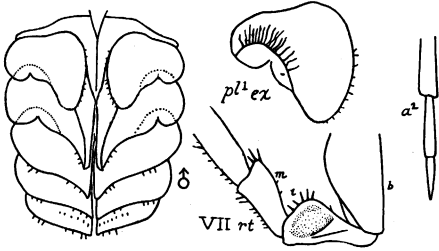


Fig. 12. Specimen supposed to be *Porcellio ragusae* Dollfus, 1896. Details of male.

granulated body surface and triangular median lobe of the head resembling that of *P. scaber*, with the only slightly sinuous rear border of the first body segment characteristic of *Mesoporcellio*.

Dollfus' description is brief and his figures show few details. As compared with the Texas specimens the European form is much larger, females reaching 20 mm. in length, with a wider body, and plain coloration (gray with three light spots at the base of the telson), and if the figures are accurate the external angles of the lateral frontal lobes appear to be less rounded. It is, however, quite possible that the Texas specimens available are not full grown, which may account for some discrepancies, and with the present material I do not feel justified in describing the Texas form as new.

Porcellio littorina Miller, 1936

Figure 13

Porcellio littorina MILLER, 1936, p. 168, Figs. 3, 7, 14, 15, 19.—HATCH, 1939, p. 257.

"Body smooth, nearly two and a half times as long as wide, 6.0 mm. : 2.5 mm. Color brown, with a band of irregular light spots on either side of median dorsal line. Lateral margins of thorax somewhat lighter.

"Head but slightly immersed in first thoracic segment. Front produced in three lobes, anterolateral lobes not promi-

nent, almost vertical; median lobe large and rounded. Eyes small, composed of about six to eight ocelli, situated at base of anterolateral lobes. First pair of antennae rudimentary. Second pair of antennae extend to posterior margin of second thoracic segment. First article of flagellum short, one-third the length of second.

"Segments of thorax subequal. First segment with anterolateral angles only slightly produced around head. Posterior margins of first three thoracic segments straight, rounded at lateral angles. Posterolateral angles of remaining thoracic segments become progressively more and more produced posteriorly, but not extremely so. Legs slightly spiny. Ischiopodite of seventh walking legs in male with a pronounced humplike process.

"Abdomen as usual in the genus, with lateral parts of first and second segments covered by last thoracic segment. Posterolateral parts of third, fourth and fifth segments acuminately produced almost at right angles to transverse axis. Telson triangular, only slightly produced. Exopodite of first pleopods in male bears a dis-

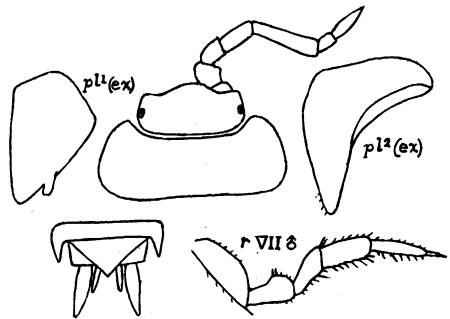


Fig. 13. *Porcellio littorina* Miller, 1936. Adapted from Miller, 1936.

tinutive knob-like process on its outer distal margin.

"LOCALITIES.—Twelve specimens, including one female with embryos in marsupium, collected under rocks above high tide at Bay Farm Island, Alameda, California (type locality), along with two species of *Actoniscus*." (Miller, 1936, p. 168.) *Actoniscus* is a syn. of *Armadilloniscus*. One specimen recorded by Hatch,

1939, from Bay Center, Washington, just above high tide line.

Porcellionides saussurei (Dollfus),
1896

Figure 14

Metoponorthus saussurei DOLLFUS 1896d, p. 48, Fig. 2.—RICHARDSON, 1905, p. 626, Fig. 673 (after Dollfus).

Porcellionides saussurei VAN NAME, 1936, p. 245, Fig. 137 (after Dollfus).

The American Museum of Natural History has two small specimens which seem very probably referable to this species described in 1896 by Dollfus from an incomplete (headless) specimen, and which does not appear to have been found since then. Dollfus' description and figures are, how-

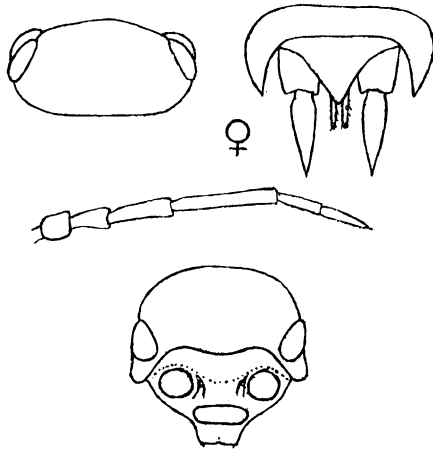


Fig. 14. Specimen believed to be *Porcellionides saussurei* (Dollfus), 1896.

ever, too inadequate to thus identify them with a great degree of assurance, although their locality and the correspondence with his description and figures seem too close to justify treating these specimens as new. I do not understand what a "posterior depression" on each abdominal segment mentioned by Dollfus means. I find a depression (noticeable but very shallow) only on the telson. The telson is somewhat more acute and it, as well as the uropoda, is not proportionately as long as in Dollfus' figure, possibly because of a sex difference, as both the present specimens are females.

The head is rather wide; its anterior border forms an even curve as seen from above except beneath each eye, where it is produced into small rounded lobes extending obliquely downward, so that they show but little in a dorsal view of the head unless the latter is tilted up. The lobes are concave on their outer (antero-lateral) surface.

The upper margin of the epistome forms a narrow upturned border which extends across the face between the lateral lobes at about the level of the lower third of the eyes, dipping down in the middle a little in a gradual sinuous curve. The eyes are rather long oval, large and prominent, well pigmented and have about 17 well-developed ocelli. The antennae are moderately long with a comparatively stout flagellum of two articles, the terminal one very slightly longer than the other. The flagellum fully if not more than equals the last segment of the peduncle in one specimen, but not in the other, owing to the greater length of that segment. The terminal spine is short.

The body surface on magnification, especially when dry, is seen to be covered with a rather coarse scabrous granulation. There is a slightly impressed transverse furrow on the thoracic segments, near the rear margin in their median part, but curving more forward on the lateral parts of the segments.

The thoracic segments have the rear lateral angles rounded off in the first and second but little in the third, and successively more angular in succeeding ones, though only those of VI and VII can be called actually acute. Beginning very slightly with the fourth, the rear angles are successively more produced backward.

The thoracic epimera are directed downward in the anterior part of the body. Toward the rear, the epimera including those of the abdominal segments 3, 4 and 5, which are long, acute and curved backward, spread out more in a lateral or horizontal direction.

The telson is almost triangular and is large and long, reaching beyond the ends of the epimera of segment 5, the uropoda and their branches are also rather elongated.

The coloration is quite conspicuous, the upper parts being brown variegated with light (unpigmented) spots so distributed as to leave four quite noticeably darker stripes, two of these located each side the median line, separated by a confluent row of light spots, the other two are on each side along the basal part of the epimera. The upper part of the epistome and the median part of the forehead just above it are conspicuously dark. The antennae are dark, ringed with whitish at the joints. The "three little light spots at the base of the terminal segment" (telson), mentioned by Dollfus, are quite noticeable in both of the specimens.

The smaller of these specimens is 6 mm. long, the other if straightened out might measure nearly 8 mm.

LOCALITY.—The locality of the specimens (Cat. No. A.M.N.H. 8104) here described is Vera Cruz, Mexico, which is on the coast. The type locality of Dollfus' species is at Cordova, not far distant from Vera Cruz, but at an altitude of over 2800 feet.

Cubaridae

Circoniscus pallidus Arcangeli, 1936

Figure 15

Circoniscus pallidus ARCANGELI, 1936, p. 204, Pl. IV, figs. 5-9.

This appears to have been described by Arcangeli from a single small specimen which, from its color, entirely a somewhat translucent white, against which the black color of the eyes and the brown of the teeth of the mandible stand out, may perhaps have been quite immature.

C. pallidus is a typical *Circoniscus* allied

to *C. bezzii* and *C. gaigei* and has a smooth body surface and very short but stout antennae. Among the specific characters given by Arcangeli are the outline of the epimera of the first thoracic segment and the frontal line; as seen from above the latter forms a slightly re-entrant angle at its median point; the epistome below it projects forward slightly as a very obtuse triangle.

The best distinguishing characters of the species are, however, the telson which,

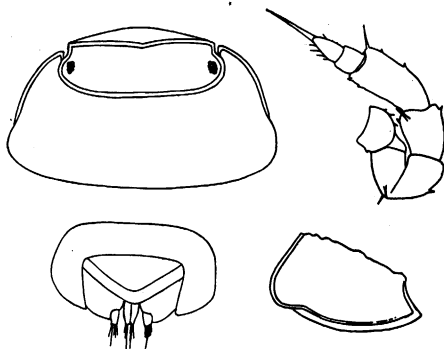


Fig. 15. *Circoniscus pallidus* Arcangeli, 1936. Lower right hand figure, lateral view of segment I (lateral portion). After Arcangeli.

though rounded at the tip as in the other species named above, is triangular with practically straight converging sides, and the uropoda, the large basal joint of which has the external border much more curved than in the other species and both endopodite and exopodite extending directly backward and tipped with a group of setae.

SIZE.—2.84 mm. long and 1.3 mm. wide.

LOCALITY.—Pirajù, State of São Paulo, Brazil. Collected by Prof. E. Caroli.

SUBORDER FLABELLIFERA

Cymothoidae

Nerocila armata Dana, 1853

Nerocila fluviatilis SCHIOEDETE AND MEINERT, 1881, p. 66, Pl. v, figs. 6-9; 1884, p. 414.—VAN NAME, 1936, p. 431, Fig. 267.—CORDERO, 1937, p. 4, Figs. 1-8.

Nerocila armata DANA, 1853, p. 761, Pl. L, figs. 10a-10d.—MONOD, 1931a, p. 6, Figs. 2-4; 1937, p. 465.

(For other synonyms and discussion see Monod, 1931a.)

Monod's article (1931a) in which he treats *N. fluviatilis* as synonymous with Dana's *armata* was unfortunately overlooked in my work of 1936. Dana's specimen was from Rio Janeiro, and was evidently marine. Monod states, however, that he had examined a number of specimens from Guiana in the British Museum from the fishes *Leporinus fasciatus*, *Crenicichla saxatilis*, *Chichla ocellaris* and *Pseud-*

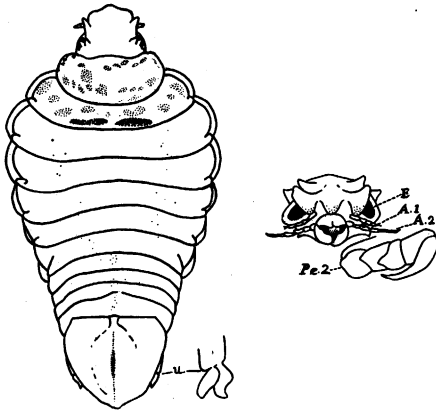


Fig. 16. *Asotana splendida* (Leigh-Sharpe), 1937. After Leigh-Sharpe.

auchenipterus nodosus and that it occurs both in salt and fresh water. He has given much attention to the study of this genus of isopods, and his view should carry much weight.

"*N. fluviatilis*" was also redescribed and figured by Cordero, 1937, from salt water in the vicinity of Montevideo, where it is a common parasite of various fishes.

Asotana splendida (Leigh-Sharpe), 1937

Figure 16

?*Asotana formosa* SCHIOEDTE and MEINERT, 1881, p. 155, Pl. x, figs. 10-12.—MONOD, 1937, p. 465.

Badroulboudour splendida LEIGH-SHARPE, 1937, Parasitology, XXIX, p. 391, Figs. 1-4.

Monod, 1937, points out that Leigh-Sharpe's new genus is a synonym of *Asotana* and that his species *splendida*, described from fresh water (Rio Napo) in Ecuador is very possibly identical with *A. formosa* Sch. and M., 1881, a conclusion that can hardly be questioned as far as the genus is concerned, and which I am much inclined to accept for the species also.

But Leigh-Sharpe's figures show that his specimen is much smoother above than the highly ornamented one depicted (possibly rather too fantastically) in Schioedte and Meinert's work, and as the localities are widely separated, *splendida* from a tributary of the Amazon in northern Ecuador, and *formosa* from a Pacific slope river of southern Peru, a decision on that question may be postponed.

Two of Leigh-Sharpe's figures are reproduced here. His type and only specimen is a female 21 mm. long and is preserved in the British Museum. The first antennae have but four articles while *formosa* has eight, but such a character would have to be demonstrated in several cases at least in order to have much weight.

"Colour (in alcohol); a pale straw tint: on the first and second free thoracic segments dorsally there are roughened patches of dark brown denticles, and on the second segment two larger areas of black denticles." (Leigh-Sharpe, *loc. cit.*)

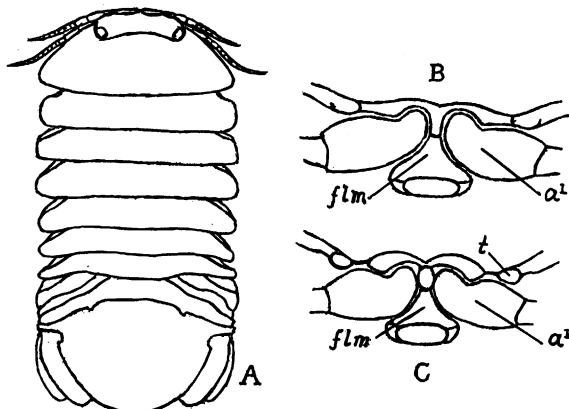


Fig. 17. A, *Exosphaeroma insulare*, new species, dorsal view (length of specimen 8 mm.). B, Same, frontal margin, bases of first antennae (a^1) and frontal lamina (flm). C, *Exosphaeroma oregonense* (Dana), 1853, same details as in B.

Sphaeromidae

Exosphaeroma insulare, new species

Figures 17A, B

Very closely related to the well-known marine species *E. oregonense* (Fig. 17C) of the Pacific coast, and resembling it in most of its characters though it may not reach as large a size as that species.

The largest of the specimens available for description, is almost 8 mm. in body length when well straightened out, and a little over 4 mm. wide. The other specimens are considerably smaller and more or less closely rolled up.

most easily observed character distinguishing it from *E. oregonense*. The slightly prominent frontal line, which forms the margin, dips down in *oregonense* to form three very obtuse yet distinct V-shaped angles, one median just above the minute oval downwardly projecting oval rostrum, and one on each side above the distal end of the wide flattened basal segments of the first antennae, and the edge is raised into a distinct tubercle on the outer or lateral side of the lateral V. Beyond (lateral to) this tubercle is a small notch.

In the present species the angles are less well defined and the tubercle is hardly noticeable, so that the margin approaches more nearly to

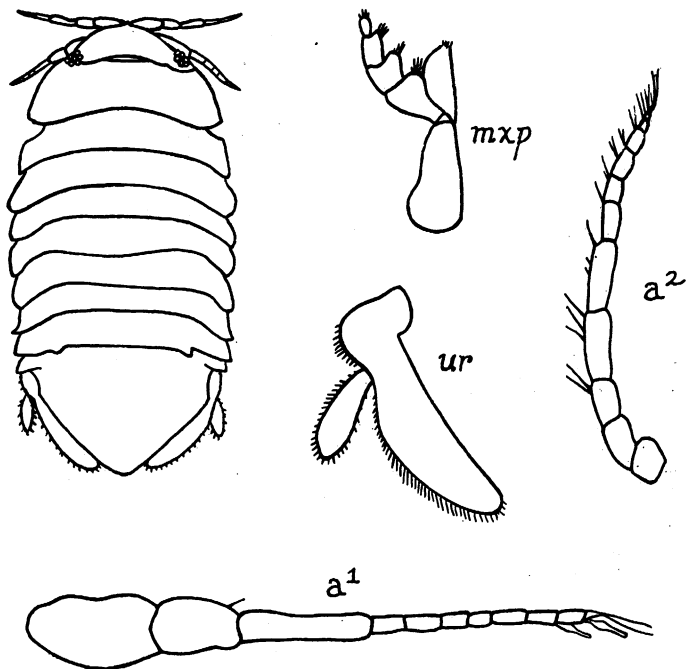


Fig. 18. *Exosphaeroma platense* Giambiagi, 1922. Adapted from Giambiagi.

The general form of the head, body, thoracic and abdominal segments including the broad and considerably arched telson, is as in *E. oregonense*, though the lateral ends of the thoracic segments are more obtuse in their termination. Seen from above the body is oblong, nearly straight sided, and broadly rounded before and behind; the upper surface is only slightly rough and granular (less so than in *oregonense*). The head is less than half the width of the first thoracic segment. The eyes are large, well developed and very convex, with numerous ocelli; the flagella of the antennae have in the type specimen 8 articles in the first pair and 11 in the second pair.

The anterior margin of the head furnishes the

forming a gently curved sinuous line. The rostrum, which does not project forward, is of oblong outline rather than oval. There appears also to be a slight difference in the uropoda of the two species. In both they are of rather wide blade-like flattened form, with the exterior margin considerably curved and the end rounded truncate and not provided with hairs. The outer branches are the longest and largest, reaching when extended directly back at least as far as the broadly rounded end of the telson.

In the present species both branches appear to be proportionately a little narrower than in *oregonense*; the inner branch extends about four-fifths of the length of the outer branch.

The color of the specimens in alcohol is

blackish gray above with small oblong yellowish markings on the dorso-lateral regions of the back corresponding to the muscular insertions.

LOCALITY.—Eleven specimens were received from Prof. T. D. A. Cockerell, who collected them in fresh water in company with a mollusk of the genus *Physa* (identified as *P. virgata* Gould by Dr. W. J. Clench) on San Nicolas Island, off the coast of southern California. Type: Cat. No. A.M.N.H. 8092.

E. thermophilum (Richardson), 1897 from, a warm spring near Socorro, New Mexico, appears to be a near ally of this species, but not identical with it. It has the telson narrower behind and the outer branch of the uropoda is half as long and half as broad as the inner one, so there is evidently a considerable difference in that respect between the two species. In *E. thermophilum* the inner branch is much wider and the external one proportionately much smaller and narrower than in the present species.

Exosphaeroma platense Giambiagi, 1922

Figure 18

Exosphaeroma platense GIAMBIAGI, 1922, p. 234, Pl. II.

This is a species much resembling *E. thermophilum* Richardson, 1905, in form but at once distinguishable by the very short ovate external branches of the uropoda, which are much less than half the length of the internal branches. The first antennae have 6 to 8 articles in the flagellum, the second antennae 7 to 10 articles. The species attains a body length of about 4.5 mm.

It was omitted from my 1936 work in the belief that it was found only in salt or strongly brackish water, but a letter from Dr. Giambiagi de Calabrese of December 17, 1936, states that it occurs also in fresh water in the Rio Santiago, Province of Buenos Aires, Argentina.

SUBORDER ASELLOTA

Asellidae

Asellus montanus

Mackin and Hubricht, 1938

Figure 19

Asellus montanus MACKIN AND HUBRICHT, 1938, p. 629, Figs. 1, 2, 7, 9, 10.

Very closely resembling *A. intermedius*, but differing in that the latter has only one distal process on the palmar margin of the

gnathopoda. The most important character of the present species is, however, to be found in the tip of the endopodite of the second pleopoda of the male. The tip is curved inward (toward the median line) and has the appearance of being twisted into a small spiral. The exopodite has long setae (up to 10 in number) and many small ones along the inner margin. There

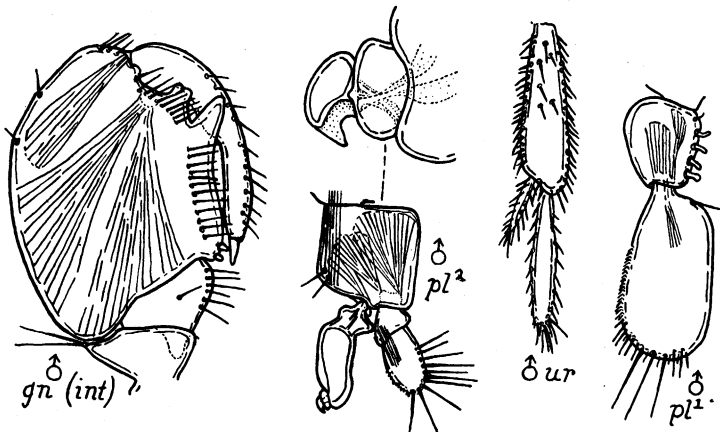


Fig. 19. *Asellus montanus* Mackin and Hubricht, 1938. After Mackin and Hubricht.

is much variation in the proportionate length of the telson and the uropoda, and their branches.

"This species attains about 12 mm. as maximum body length. The color pattern is a mottled, rich reddish-brown with lighter yellowish spots on the head and thoracic segments, and a uniform brown on the pleotelson. Sometimes with a triangular dark area on the head, but rather variable in detail.

"The first antennae vary in flagellar segments up to about 12. The second antennae are about as long as the body, but may exceed that length. The largest specimen (a male) had 97 segments in the flagellum."

Arkansas and Leflore and Latimer Counties, Oklahoma.

Asellus dentadactylus
Mackin and Hubricht, 1938

Figure 20

Asellus dentadactylus MACKIN AND HUBRICHT, 1938, p. 629, Figs. 3-6, 8.

"A small mottled species, greyish-brown in color, not exceeding 10 or 12 mm. in length. The head is without lateral flanges; flagellum of the antennules with about a maximum of 13 segments. Antennae not quite as long as the body, with about 70 segments in the flagellum of the largest specimen.

"The gnathopoda are very much like

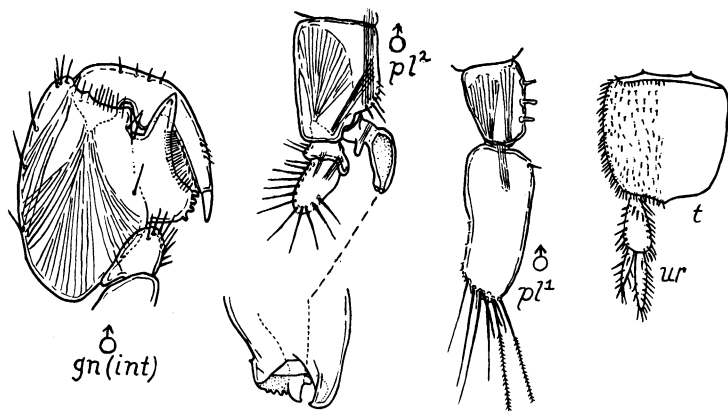


Fig. 20. *Asellus dentadactylus* Mackin and Hubricht, 1938. After Mackin and Hubricht.

The figure shows the armature of the male gnathopod (left inside view).

"Note the thickened basal portion of the dactyl, two distal processes of the palmar edge of the propodus, one blunt and the other acute and triangular. Usually 2 heavy spines at the base of the palm, but somewhat variable in this respect. Other characters of the gnathopod are not significant. The dactyl of the last peraeopoda with about 2 short ventral spines proximal to the claw, and usually 2 setae on the dorsal side." (Mackin and Hubricht, 1938, p. 630.)

LOCALITIES.—Type locality: creek in Scott County, Arkansas, 4 miles south of Boles. Also localities in Lawrence County,

those of *Asellus communis* (see Racovitza, 1919). The dactyl has a large triangular process near the base, which is the most distinctive characteristic. Note in the armature of the propodus the wide thin flange or cutting edge of the palmar margin; the larger of the two palmar processes is a continuation of this flange. Also the diminishing series of heavy spines at the heel of the palm." (Mackin and Hubricht, 1938, p. 629.)

The details figured by the describers are here reproduced. They state that the margins of all the segments are thickly spined, and that in some specimens the uropoda are proportionately longer than in the figure.

"This species is much like *Asellus intermedius* and probably will be confused with it. The male pleopoda furnish the best characters for separation. In the first pleopoda, the very long setae of the tip, so conspicuous in *A. dentadactylus*, are absent in *A. intermedius*. The tip of the endopodite of the second pleopoda in *A. intermedius* is equipped with 2 processes, absent in *A. dentadactylus*. *A. montanus* of this paper is also closely related, but that species is distinguished from any other by the spiral-like tip of the copulatory organ." (Mackin and Hubricht, 1938, p. 630.)

LOCALITIES.—Type locality: small creek, 5 miles south of Locust Cottage, Jefferson County, Arkansas (Cotype Cat. No. 74841, U. S. National Museum). This species was also obtained in a small creek 2 miles south of Saline, Natchitoches Parish, Louisiana.

Caecidotea macropropoda

Chase and Blair, 1937

Figure 21

Caecidotea macropropoda CHASE AND BLAIR
1937, p. 221, Pl. I.

The description and figures given by

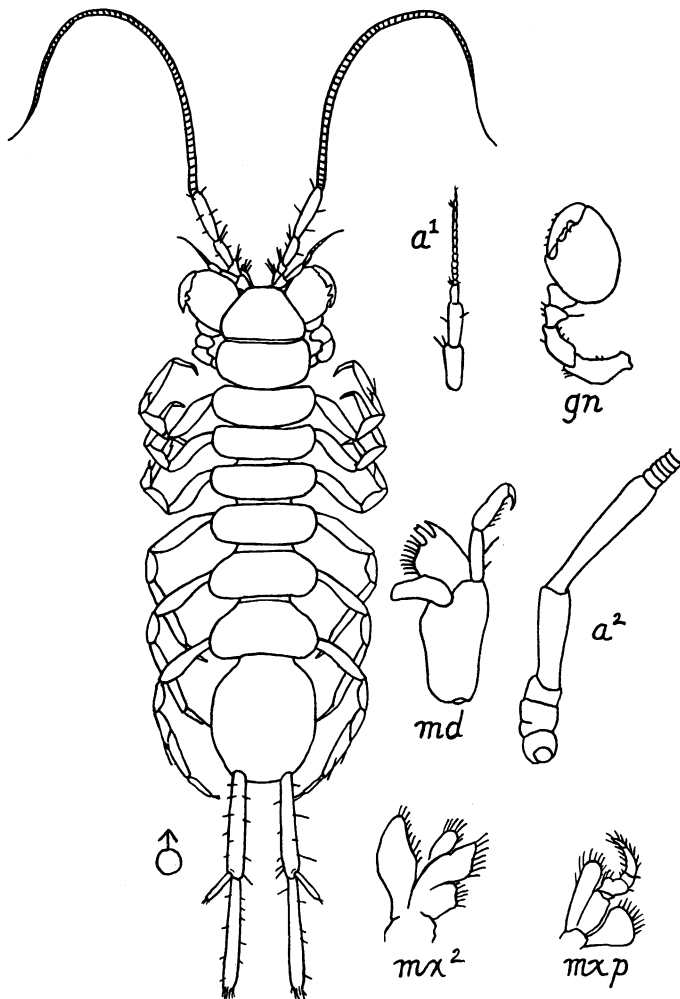


Fig. 21. *Caecidotea macropropoda* Chase and Blair, 1937. All figures based on male specimens. After Chase and Blair.

Chase and Blair are from male individuals.

Many of the characters given as specific are based on the relative lengths of the segments of the body, antennae and uropoda; characters very variable within a species in this family. They are sufficiently shown in the figures here reproduced in outline, so that it is not necessary to quote those parts of the description here.

Body 13-17 mm. long; 3 mm. wide. Head 2 mm. wide and about 1 mm. long.

Flagellum of first antenna with 13-18 articles; second antenna, 91-123 articles.

The propodus of the first pair of legs (gnathopod) is very large and has in its inferior margin two long triangular processes and two short ones.

No figures or descriptions of the male pleopoda are given.

LOCALITY.—A small stream in a cave and at the mouth of it, five miles south of Kansas, Oklahoma.

Caecidotea ozarkana
Chase and Blair, 1937

Figure 22

Caecidotea ozarkana CHASE AND BLAIR, 1937, p. 221, Pl. II.

According to the description and figures this is a smaller, slenderer form than *C. macropropoda*. Besides such differences as the figures, whose outlines are reproduced here, clearly show, the following distinc-

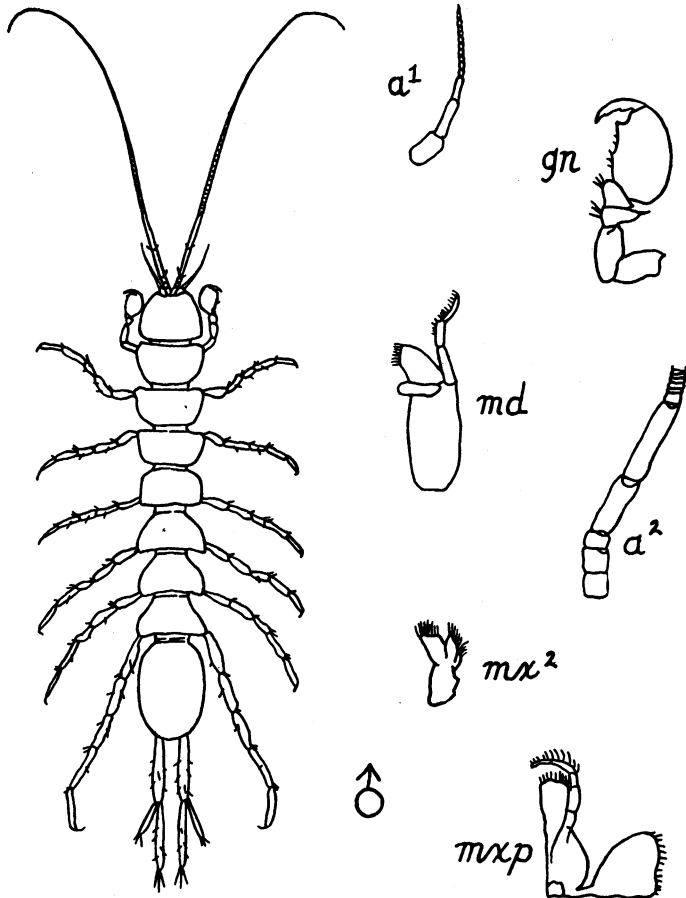


Fig. 22. *Caecidotea ozarkana* Chase and Blair, 1937. All figures based on male specimens. After Chase and Blair.

tions between the two forms are stated in the description.

Body 6–8 mm. long, 1–3 mm. wide. Head as wide as the body and about as long as wide.

Flagellum of first antennae of 11 articles; of the second antennae 60–70.

The terminal abdominal segment is "three halves as long as wide" instead of "four thirds" as in *C. macropoda*.

The uropoda are "a little longer than" the terminal abdominal segment instead of twice as long as in *C. macropoda*.

"The triangular processes of the propodus on the first pair of legs, vary from one large one on the distal portion of the inferior margin with spines along the edge, to one large triangular process located distally and two located proximally with spine along the margin."

There are 2 or 3 propodal processes, the one of the medial region being always well developed and the distal one small. . . . The basal portion of the dactyl is thickened sometimes to form a process and may be much more definite than shown in the figure. . . . In *M. macrourus* the basal or proximal processes, while in *M. ouachitaensis* this process is absent or at most represented by only a low spine-tipped elevation." (Mackin and Hubricht, 1938, p. 632.)

"The figure shows the form of the first male pleopoda. Note that the basal segment is nearly as long and wide as the distal one. There are 1 or 2 coupling hooks. The setae of the distal segment are small terminally and increase in size onto the sides. There is a more or less abrupt transition between the short and long setae.

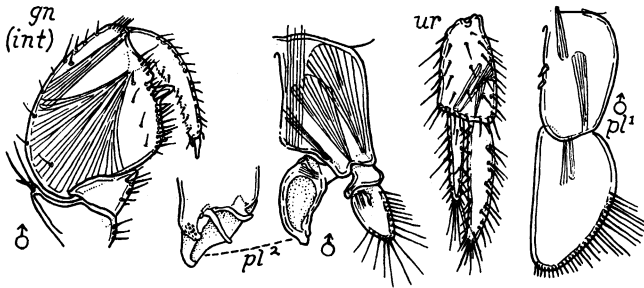


Fig. 23. *Mancasellus ouachitaensis* Mackin and Hubricht, 1938. After Mackin and Hubricht.

LOCALITY.—Spring five miles south of Kansas, Oklahoma, about one-half mile from the cave where *C. macropoda* was found.

Mancasellus ouachitaensis
Mackin and Hubricht, 1938

Figure 23

Mancasellus ouachitaensis MACKIN AND HUBRIGHT, 1938, p. 632, Figs. 13, 15, 17, 18, 20.

In general appearance similar to *M. macrourus* except that the uropoda are somewhat longer in proportion. The head may or may not be laterally incised. Length up to 11 mm. The antennae may attain a length equal to the body and have as many as 90 articles in the flagellum.

"The male gnathopoda are distinctive.

The maximum number of the long setae is about 15, and 18 for the short ones, but the total may be much less." (Mackin and Hubricht, 1938, p. 633.)

LOCALITIES.—Streams in Leflore, Latimer and Pushmataha Counties, Oklahoma. Type locality: tributary of Kiamichi River near Big Cedar, Leflore County. Cotype, No. 74844, U. S. National Museum.

Mancasellus louisianae
Mackin and Hubricht, 1938

Figure 24

Mancasellus louisianae MACKIN AND HUBRIGHT, 1938, p. 634, Figs. 11, 12, 14, 16, 19.

Closely similar to *Asellus hoppinae* but differing in lacking the mandibular palp,

in having relatively shorter uropods, and in the details of the armature of the gnathopods.

"The body length in this species does not exceed 7.5 mm. in any of our specimens. The color is brown with yellow mottlings. The head is deeply incised and the incision may be narrow or very broad. The antennules have up to 7 flagellar segments, and the antennae 56 in the largest specimen. The antennae are not as long as the body by a considerable margin.

"The dactyl of the male gnathopoda is slightly thickened at the base. The pro-

"In the first pleopoda of the male, the basal segment is much narrower than the distal one, and there are 2 pairs of coupling hooks. The setae of the distal segment number up to 30. The second pleopoda of the male have the following characteristics: (1) the internal distal angle of the basal segment not at all cut away, so that this segment is practically square, (2) the exopodite is straight on the outer margin, hardly curving to the tip at all, (3) the setae number up to about 14, (4) the endopodite is without even a suggestion of apophysis at the base, (5) the copulatory

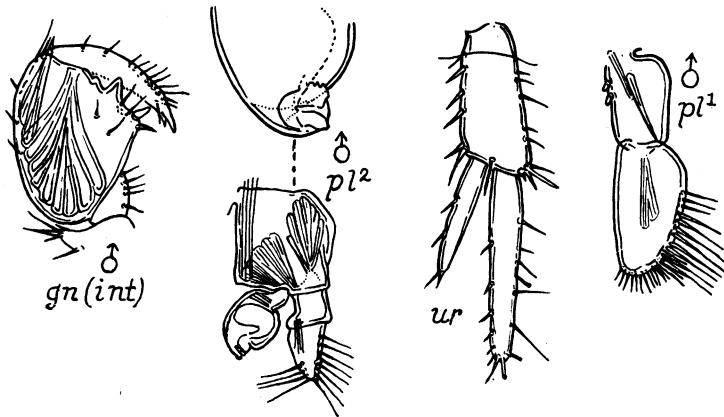


Fig. 24. *Mancasellus louisianae*, Mackin and Hubricht, 1938. After Mackin and Hubricht.

podus has a large central process on the palmar margin, a small distal one and a spine at the base, but no process. Other details of the armature are shown in the figure. The dactyl of the last peraeopoda possesses up to 5 spines below, the last (accessory claw) large and curved. There is a row of 4 or 5 setae above.

or bulbar portion of the exopodite is nearly spherical in outline. Note also the form of the tip of this appendage." (Mackin and Hubricht, 1938, p. 634.)

LOCALITY.—Reported only from among dead leaves in a small creek 2 miles south of Saline, Natchitoches Parish, Louisiana. Cotype, No. 74843, U. S. Nat. Museum.

PART II.—ADDITIONAL NOTES AND REFERENCES, CHANGES OF NAMES, CORRECTIONS, ETC.
(Arranged alphabetically)

Actoniscus, genus. See *Armadilloniscus*.
Alloniscus cornutus Budde-Lund, 1885

ADDITIONAL LOCALITY.—San Nicolas Island off southern California, obtained by Prof. T. D. A. Cockerell.

Alloniscus perconvexus Dana, 1856

ADDITIONAL LOCALITY.—San Nicolas Island, off southern California, obtained by Prof. T. D. A. Cockerell. Essig, 1926, gives it as common on ocean beaches in California, feeding on kelp and other sea weeds. Miller, 1938, p. 117, gives notes on habits.

Armadillidium nasatum Budde-Lund, 1885

Figure 25

Two specimens were collected by J. K. Karlovic under pieces of wood at Glenview, Illinois, northwest of Chicago, Oct. 3, 1936. In America this species is usually confined to hothouses and warmed buildings.

It was described by Budde-Lund in 1885, having been previously listed without description in his "Prospectus" published in 1879. In both cases the name is *nasatum*, not *nasutum*, a frequent error. It may be worth while to state here that Budde-Lund's Prospectus, which is a rare work, is merely a list of species, and contains no

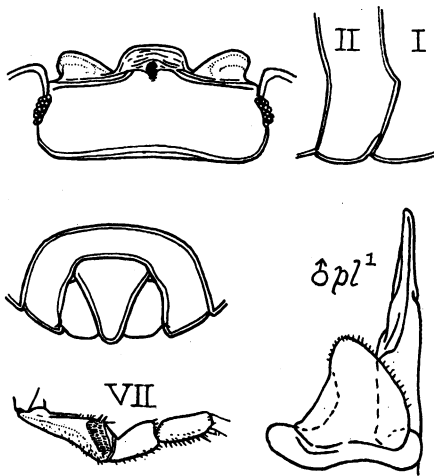


Fig. 25. *Armadillidium nasatum* Budde-Lund, 1885. After Waechtler, 1937, and Meindert, 1934.

descriptions or figures whatever. The new names in it were *nomina nuda*, and had no standing in nomenclature until republished with descriptions in 1885.

Armadillidium vulgare (Latreille), 1804

CORRECTION.—The name Latreille in the captions of Figs. 157–159 in Van Name, 1936, should be in parentheses.

Armadilloniscus holmesii Arcangeli, 1933

New name for *A. tuberculatus* (Holmes and Gay), 1909, proposed by Arcangeli, 1933, p. 59, on account of preoccupation by *A. tuberculatus* Dollfus from the Azores.

This species is recorded (as *Actoniscus tuberculatus*) by Miller, 1938, pp. 114, 117, under rocks on beaches at Alameda in the San Francisco Bay region.

Artystone trysibia Schioedte, 1866

Mentioned by Leigh-Sharpe, 1937, with the statements that it was recorded "from the body cavity" (!) of 2 fish, *Geophagus brasiliensis* from the Humboldt River, Brazil, and that it was "the only hitherto recorded parasitic isopod from fresh water." (!) He says that "there are six excellent specimens in the British Museum."

ASELLOTA, SUBORDER

CORRECTION.—In Van Name, 1936, p. 453, in the diagnosis of this group, the words "not cheliform" should be replaced by "sub-cheliform."

Asellus brevicauda Forbes, 1876

Asellus brevicaudus MACKIN AND HUBRICHT, 1938, p. 631.

Many localities in Illinois, Missouri and Arkansas reported. Specimens from the caves in St. Clair and Monroe Counties, Illinois, are reported as broader in proportion to their length than in the typical form, and having much reduced pigmentation.

The American Museum of Natural History has examples from Wet Cave near Anna, southern Illinois, collected by J. H. Karlovic, May 3, 1936, and many specimens from Missouri localities received from Dr. Hubricht.

Asellus communis Say, 1818

Mackin and Hubricht, 1938, p. 629, report this from various localities in the Middle West from Illinois to Oklahoma, inclusive.

CORRECTION.—In caption of Fig. 1 in Van Name, 1936, p. 7, representing *Asellus communis*, read "appendages" instead of "segments."

Asellus hoppinae Faxon, 1888

Reported by Mackin and Hubricht, 1938, p. 632, from localities in Arkansas. The American Museum of Natural History has

a number of examples kindly donated by Dr. Hubricht, from springs and creeks (not subterranean waters) in Johnson County, Arkansas, collected in the spring of 1936. Some of these specimens are of large size: males up to 19 mm., females to 16 mm. in length. Most of the specimens have the uropoda, both base and branches, quite long. Some of them have about 100 articles in the flagellum of the second antennae.

Asellus incisus Van Name, 1936

CORRECTION.—The description, Van Name, 1936, page 496, lines four and five of last paragraph, should state that the internal, not the external branch of the uropoda is the longer.

Additional localities reported by Mackin and Hubricht, 1938, p. 630: Stone County, Missouri, spring 300 yards from entrance to Marvel Cave; Barry County, Missouri, Roaring River State Park.

Asellus intermedius Forbes, 1876

Additional locality reported by Mackin and Hubricht, 1938, pp. 630, 631: Bayou Boeuf, Lafourche Parish, Louisiana.

In view of the insufficient descriptions and figures of this species that are available the statements of these authors regarding it that are made under *A. dentadactylus* and *A. montanus* in the above article are of importance.

Asellus tomalensis Harford, 1877

Reported by Carl, 1938, p. 451, as occurring in water of slight salinity at Vancouver, B. C.

Badroulboudour splendida Leigh-Sharpe, 1937

See under *Asotana splendida*, page 124 of this article.

Braga cichlae Schioedte and Meinertz, 1881

See remarks under *Braga fluviatilis*.

Braga fluviatilis Richardson, 1911

Giambiagi de Calabrese, 1933 (p. 512,

3 figures), describes and illustrates the female and young male of this species from specimens in the National Museum of Buenos Aires obtained on fishes in the Rio San Santiago at La Plata, Argentina, doubtless from quite salt water. Cordero, 1937 (p. 8, Figs. 9, 10), figures and records it from Montevideo and from a pond near the Rio San Francisco, Jatobá, State of Pernambuco, Brazil, from fishes of the family Loricariidae. The females are of broad rounded outline as in *Braga cichlae* Schioedte and Meinertz, 1883, and Cordero expresses the opinion that *B. fluviatilis* may be the same as that species. This seems to me quite probable.

Caecidotea alabamensis Stafford, 1911

A large male (16 mm. long) from Monte Sano, Madison County, Alabama, agrees in most respects with the description and figures, but the outer tooth on the pinching edge of the chela has a small acute process not described or figured by Stafford. This process extends parallel to the dactylus which closes against (beside) it. The first antenna of this specimen has 12 articles in the flagellum; the second antenna has the flagellum broken off, but with 86 articles in the part remaining.

Caecidotea antricola Creaser, 1931

ADDITIONAL LOCALITY.—Osage Hills Country Club, Kirkwood, St. Louis County, Missouri, in "outlet of drain near hole 17." Three specimens, one about 20 mm. long, received from Dr. Leslie Hubricht.

Caecidotea californica (Miller), 1933

Asellus californicus MILLER AND HOY, 1939, p. 347, etc., Fig. 1.

Calvigeroniscus

Typographical error for *Clavigeroniscus*, Van Name, 1936, p. 85.

Circoniscus gagei Pearse, 1917

I refer here with a little hesitation a few small specimens in The American Museum of Natural History collection received from Iquitos, Peru.

Cirolana anops Creaser, 1936

Figure 26

These figures are reproduced from Creaser's 1936 article to supplement the brief notice of this species in Van Name, 1936, p. 523.

Cirolana cubensis Hay, 1903

Compared with the new species *C. anops* in Creaser, 1936, p. 119.

Cubarhina, subgenus. See under *Trichorhina*.

Cubaris tuberosa (Budde-Lund), 1904

Verhoeff, 1937, pp. 410, 411, disagrees with Kesselyak (1930) who transferred this species from *Cubaris* (syn. *Armadillo*) to *Reductoniscus* Kesselyak.

Haplophthalmus danicus Budde-Lund, 1879

Found in Allen Gardens greenhouse at Toronto, Ontario, by Dr. J. C. Medcof.

Ligia baudiniana Milne Edwards, 1840 (syn. *Ligyda b.*)

A series of articles by T. C. Barnes, in the Biological Bulletin for 1932 and later years, deal with experimental work done at Bermuda upon this species. A figure in his article of 1935 (Biol. Bulletin, LXIX, pp. 259-268, Fig. 1) showing a young individual just emerged from the marsupium and not having the seventh pair of legs developed should, however, be mentioned. This species is recorded from Yucatan by Pearse, 1936, p. 22, and Creaser, 1936, p. 120.

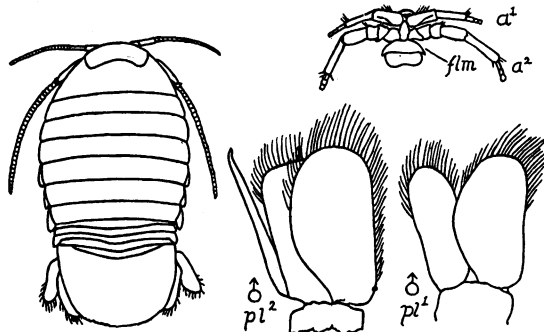


Fig. 26. *Cirolana anops* Creaser, 1936. Adapted from Creaser.

Cylisticus convexus (de Geer), 1778

Reported from vicinity of Buenos Aires, Argentina, by Giambiagi de Calabrese, 1936a, p. 509.

Exosphaeroma oregonense (Dana), 1853

See page 125, under *E. insulare*, new species.

Exosphaeroma papillae Bayliff, 1938

Exosphaeroma papillae BAYLIFF, 1938, p. 213, Figs. 1-11.

This should, I think, be excluded as properly a marine species, though it sometimes ascends streams into water "practically fresh" according to Bayliff.

LOCALITY.—Cold Spring Harbor, Long Island, New York.

Ligia exotica Roux, 1828

Reported (as *Ligyda e.*) from Quequen, Prov. of Buenos Aires, Argentina, by Giambiagi de Calabrese, 1935a, p. 509.

Ligia occidentalis Dana, 1853

Miller, 1938, p. 117, gives note on habits.

Ligia pallasii Brant, 1833

Miller, 1938, pp. 117, 118 (habits, etc., and illustration, showing both sexes, the males being much wider-bodied).

Ligidium elrodii (Packard), 1873

This is very probably not distinct from *L. longicaudatum* Stoller. If this could be

proved Packard's name would have priority.

Ligidium gracile (Dana), 1856

CORRECTION.—In caption of Fig. 22, Van Name, 1936, authority should be (Dana), not (Stimpson).

Hatch, 1939, p. 256, reports this species from moist situations in dense woods from sea level up to 4500 feet in Washington State. Miller, 1938, p. 119, gives notes on habits and distribution.

Ligidium latum Jackson, 1923

A number of specimens of this species were received from Mr. R. M. Bond who collected them in a small perennial stream on Mission Peak (elev. 1750 feet), southeast of Mission San José, Alameda County, California.

The process on the tip of the styloid process of the second pleopod of the male is movably articulated. The small scales of the body surface are easily rubbed off; between them the surface is smooth and shining.

Ligidium longicaudatum Stoller, 1902

Specimens of this species were received from Dr. Leslie Hubricht of the Missouri Botanical Garden, St. Louis, in the spring of 1936, from localities in St. Louis County, Missouri, and Natchitoches Parish in northwestern Louisiana. Among the latter are examples (females) of 9 to 10 mm. body length. The number of articles in the flagellum reaches 13 to 14. These specimens have large light spots on the basal part of the epimera, giving the effect of a light border to the thorax. Males from the Missouri localities have the styloid process of pleopod 2 with only a slight undulation, hardly to be called a notch, near the end.

Livoneca guianensis Van Name, 1925

See remarks under *Livoneca symmetrica*.

Livoneca symmetrica Van Name, 1925

Cordero (1937, p. 9) refers two specimens believed to be from fresh water of the Rio Tocatis, State of Pará, Brazil, to this

species, though with some doubt, as in certain respects they appear intermediate in character between *L. symmetrica* and *L. guianensis* Van Name, 1925. For this reason he raises the question whether these two species are not really the same, a conjecture that may prove to be correct in view of the great variability of species of this group with age, sex, etc., and considering the small amount of material (three specimens) on which the latter species was based.

Mancasellus brachyurus, Harger, 1876

Reported by Mackin and Hubricht, 1938, p. 632, from a stream on Blanket Mountain, Tennessee, in Smoky Mountain National Park.

Mancasellus macrourus Garman, 1890

Localities in Arkansas and Oklahoma reported by Mackin and Hubricht, 1938, p. 632. According to Marcus, 1930, it is fairly abundant in the vicinity of Urbana, Illinois.

Nerocila fluviatilis Schioedte and Meinert, 1881

See under *N. armata* Dana, page 123 of this article.

Phallonicus anomalus (Dollfus), 1890

This species is mentioned in the paper by Bowley, 1935, p. 46, which otherwise deals exclusively with the New Zealand and Australian species of the genus, no specimens or new information about the South American form (*anomalus*) being available. Its position in this genus seems open to question.

Philoscia incerta Arcangeli, 1932

One specimen about 3 mm. long which appeared to be this species, mounted entire in Canada balsam on a microscope slide, was sent me for examination by Prof. Monod of Paris. It was collected at Foret de Fumee, Guadeloupe, West Indies. The species has thus far been known only from the nearby island of Dominica.

Philoscia (Ischioscia) mineri Van Name, 1936

An immature specimen apparently of this or a very closely allied species from Foret de Fumée, Guadeloupe, West Indies, was sent me for examination by Prof. Monod. The species has been recorded only from Dominica Island.

Philoscia muscorum (Scopoli), 1783

Dailey and Hatch, 1940, report taking specimens that appear to be this species at two points in Seattle, Washington, several miles from salt water. They say that the manner of its occurrence indicates that it may have been introduced in nursery stock.

based on those of Sars) I am supplementing them here with some others from the recent works of Waechtler, 1937, and Meinertz, 1934.

Porcellio formosus Stuxberg, 1875

See under *P. virgatus*, page 138.

Porcellio laevis Latreille, 1804

Figure 27

Porcellio laevis MILLER, 1938, p. 171, Figs. 4, 9, 16, 22, 27.

Reported from various places in California from the San Francisco Bay region southward. See also under *Porcellionides virgatus*.

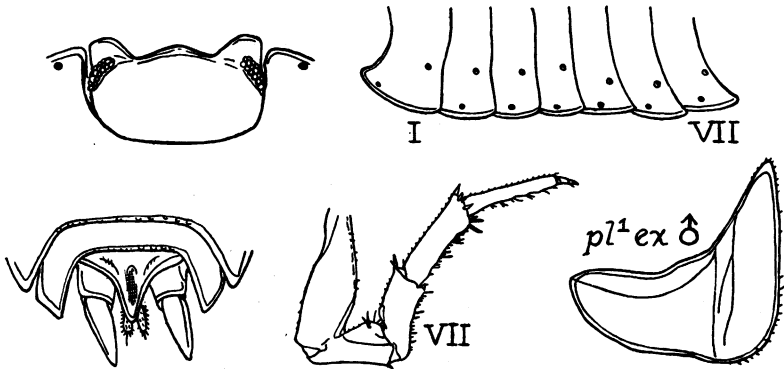


Fig. 27. *Porcellio laevis* Latreille, 1804. After Waechtler, 1937, and Meinertz, 1934.

Philoscia richardsonae Holmes and Gay, 1909

ADDITIONAL LOCALITIES.—Obtained by Miller (1938, p. 117) in grassy situations on the shores of San Francisco Bay, at Alameda, California, and by Prof. T. D. A. Cockerell on San Nicolas Island, off southern California.

Porcellio, genus

The intention in my work of 1936 was to provide means of distinguishing the few American representatives of this genus from each other, not necessarily from the many allied Old World forms not known to occur in America. But as Verhoeff, 1938, p. 121, has commented unfavorably on the illustrations I gave of this group (mostly

Porcellio scaber Latreille, 1804

Figure 28

Porcellio scaber, MILLER, 1936, p. 166, Figs. 2, 6, 10, 17, 24; GIAMBIAGI DE CALABRESE, 1936a, p. 509.

Reported from Moss Beach, San Mateo County, California, by Miller and from Quequén, Prov. of Buenos Aires, Argentina, by Giambiagi de Calabrese.

Porcellio scaber var. **americanus** Arcan-geli, 1932

Porcellio scaber americanus MILLER, 1932, p. 166, Figs. 1, 5, 11, 18.

Reported from around San Francisco Bay (commonly), and Carmel, California. See Van Name, 1936, p. 229.

Miller states the distinguishing charac-

ters of this subspecies as follows: "1. Surface granulations more pronounced. 2. Pigmentation greater, especially in males, and extends to ventral side of body, not even excluding the pleopods in females. 3. Frontal lobe of head more acute. 4. Lower margin of ischiodite of seventh leg in male more distinctly bowed. 5. Exopodites of first two pairs of pleopods in both male and female exhibit slight differences."

mens (both females) from Texas and Florida, respectively. The less prominent lateral lobes and more even curvature of the front of the head, also the slenderer antennae of *P. mulaiki* are noticeable. That species also has the first article of the flagellum the longest; in *virgatus* the reverse is the case. Moreover in *mulaiki* the abdomen is proportionately smaller and shorter than in *virgatus*.

A number of additional specimens of *P.*

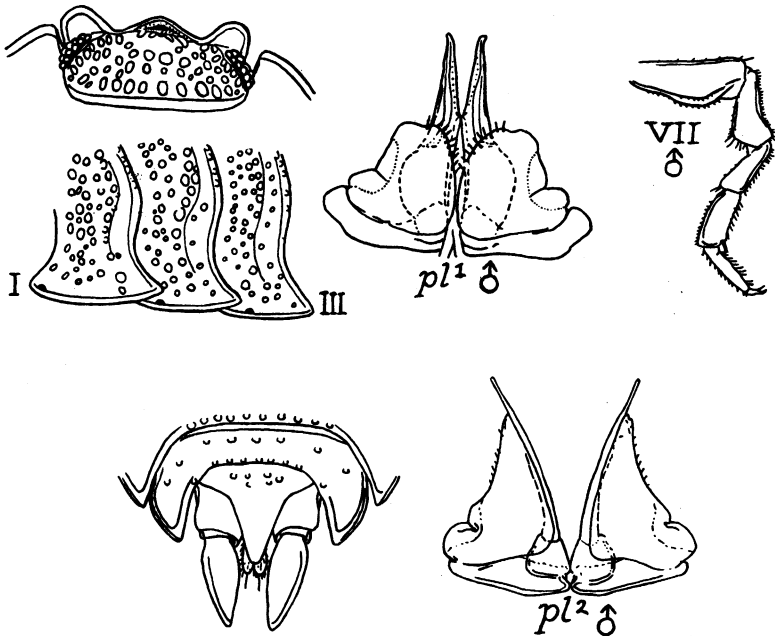


Fig. 28. *Porcellio scaber* Latreille, 1804. After Waechtler, 1937, and Meinertz, 1934.

Porcellio spinicornis Say, 1818

Figures 9C, 29

Porcellio spinicornis MILLER, 1938, p. 170, Fig. 21.

See remarks under *P. s. occidentalis* on page 117 of this article.

Porcellionides mulaiki Van Name, 1936

Figure 30B

In order to show the differences separating this species from *P. virgatus* (Budde-Lund), the outline of the head seen from above and the second antennae of both species are figured here drawn from speci-

mulaiki have been received from Mr. Mulaik, collected at Corpus Christi, Texas.

Porcellionides saussurei Dollfus, 1896

See page 122 of this article.

Porcellionides virgatus (Budde-Lund), 1885

Figure 30A

The figures and descriptive notes (originating from Arcangeli, 1932) given by Miller, 1936, p. 170, Fig. 21, apparently represent *P. virgatus* (Budde-Lund) which probably does not occur in California at

all, not *P. formosus* Stuxberg, which is probably a synonym of *P. laevis*. See Van Name, 1936, p. 244, and remarks and figures in this paper under *P. mulaiki*.

Probopyrus bithynis Richardson, 1904

Reported by Mackin and Hubricht, 1938, p. 634, from the Mississippi River,

mento de Treinta y Tres, Uruguay, is recorded by Cordero, 1937, p. 9 (spelling *henseli*).

Tracheoniscus rathkei (Brandt), 1833

Figure 31

Reported (as *Porcellio r.*) Fig. 27, from Quequén, Prov. of Buenos Aires, Argen-

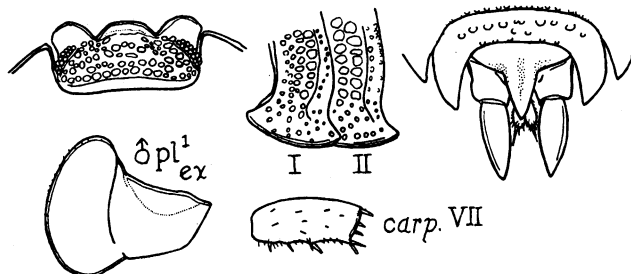


Fig. 29. *Porcellio spinicornis* Say, 1818 (syn. *P. pictus*). Details after Waechter, 1937, and Verhoeff.

Hillcrest, Missouri, parasitic on *Macrobrachium ohionis* (Smith).

Cordero, 1937, p. 10, records specimens from the branchial cavities of shrimps of the genus *Macrobrachium* bought in the market at Belem, State of Pará, Brazil, and also (footnote on p. 11) others possibly of this species from fresh water near Buenos Aires.

Probopyrus creaseri Pearse, 1936

Closely related to *P. floridanus* Richardson, 1904. It is parasitic on *Palaemonetes carolinus* Stimpson, which occurs in more or less brackish water, but cannot be considered as properly a fresh-water species. See Pearse, 1936a, p. 51, Figs. 16-21.

Rhyscotus texensis (Richardson), 1905

A mutilated and incomplete specimen, apparently of this species, was found in a lot of isopods collected by Mr. Stanley Mulaik at Corpus Christi, Texas, March 21, 1936, and is in The American Museum of Natural History collection.

Telotha henselii (von Martens), 1889

A specimen in the National Museum at Montevideo from the gills of the fish *Hoplias malabaricus* (Bloch) from Departamento de Treinta y Tres, Uruguay, is recorded by Cordero, 1937, p. 9 (spelling *henseli*).

tina, by Giambiagi de Calabrese, 1935a, p. 509.

Trichoniscus demivirgo Blake, 1931

Dailey and Hatch, 1940, assign tentatively to this species some specimens (females only) taken with examples of *Ligidium gracile*, a native species, in damp localities in Seattle, Washington.

Some small female specimens from the Public Garden greenhouse, Halifax, Nova Scotia, received from Dr. J. C. Medcof, may also belong here.

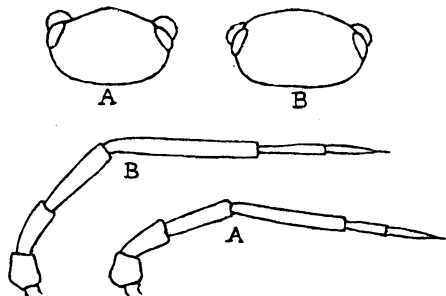


Fig. 30. Dorsal view of head and second antenna. A, *Porcellionides virgatus* (Budde-Lund), 1885. B, *Porcellionides mulaiki* Van Name, 1936.

Trichoniscus (Clavigeroniscus) riquieri
Arcangeli, 1930

NEW LOCALITY.—Barro Colorado Island, Canal Zone, Dr. C. E. Williams, Jr., many specimens collected. The body surface in this species is, in spite of the tubercles, quite glossy. The minute crenulation of the anterior margin of the frontal lobes mentioned by Arcangeli is conspicuous on magnification.

Trichoniscus pygmaeus Sars, 1899

I have received a number of specimens (including males) from Dr. J. C. Medcof, collected in the Garfield Park Conservatory, Chicago, Ill. The large lateral lobes of the head, somewhat square with the

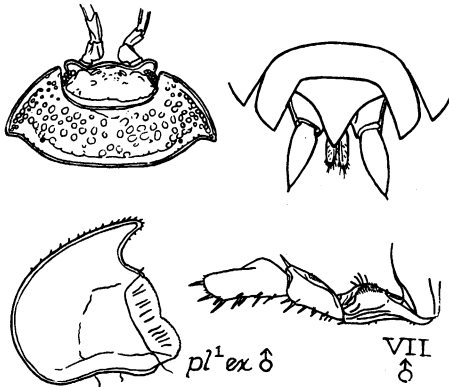


Fig. 31. *Tracheoniscus rathkei* Brandt, 1833. After Meinertz, 1934, and Waechtler, 1937.

anterior border slightly concave, are an aid in recognizing this species. The tubercles of the dorsal surface of the body are rather inconspicuous unless the specimen is dry.

Trichorhina, genus

Verhoeff, 1937, pp. 422-428, gives a key to the known species, adding one new one (*T. vannamei*) of unknown origin, found in the building of the Berlin (Germany) Aquarium (misspelling *T. barbourii* for *barbouri*, on p. 425). He divides *Trichorhina* into the following subgenera:

1. *Trichorhinella* (*T. simoni* only)
2. *Cubarhina* (*T. bequaerti* only)
3. *Trichorhina, sens. str.* (the remaining species)

Trichorhina pittieri (Pearse), 1921

The type of this species is in the University of Michigan Museum, Catalogue No. 52002. A comparison of the British Guiana specimens identified with *T. pittieri* Pearse by Van Name, 1925, 1926 and 1936, with this type would be desirable, in view of the brevity of Pearse's description.

Trichorhina barbouri (Van Name), 1926

CORRECTION.—Parentheses inadvertently omitted in Van Name, 1936, p. 190, line 29.

Trichorhinella, subgenus.

See under *Trichorhina*.

Tylos latreillii Audouin and Savigny
1826

CORRECTIONS.—The original spelling is *latreillii* and the authority Audouin, not Adouin as given in Van Name, 1936, pp. 409-416.

Arcangeli, 1938, has attempted to deal with the perplexing forms of the genus *Tylos* by including most of them in *latreillii*, but dividing it into a number of subspecies. As far as the American forms are concerned the value of his proposed revision is greatly diminished by being based only on the literature available which is very inadequate, not on new American material, which will be absolutely needed before the subject can be satisfactorily dealt with.

In the species *latreillii* Arcangeli includes not only the European and North African forms, but also those of eastern America, inclusive of the West Indies and Bermuda. He reduces *Tylos niveus* Budde-Lund to a subspecies of *latreillii*, having (perhaps correctly) no confidence in the constancy and importance of the differences reputed to exist between the two. He does not make it entirely clear whether or not he would include all the eastern American records of *Tylos* under the subspecies *niveus*.

Whether the Pacific species *punctatus* Holmes and Gay and *insularis* Van Name should also be reduced to subspecies Arcangeli is doubtful, apparently on geographical grounds rather than on any known differences in their characters. *T.*

spinulosus Dana (see below) he regards as a distinct species.

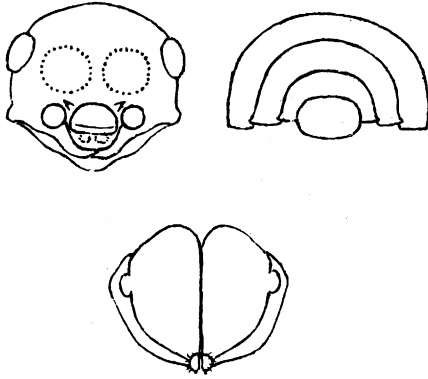


Fig. 32. *Tylos* sp. from Chile (perhaps *Tylos spinulosus* Dana, 1853).

***Tylos punctatus* Holmes and Gay, 1909**

NEW LOCALITY.—Guaymas, Mexico, on the Gulf of California. Specimens in The American Museum of Natural History.

?***Tylos spinulosus* Dana, 1853**

Figure 32

If the very large specimens from Chile mentioned in Van Name, 1936, p. 416, are correctly referred to Dana's species, there is no question that Arcangeli is correct in considering it distinct. The figures here given, drawn from these specimens, in addition to the statements in my work referred to, will make this clear. It should be added to the statements made regarding them that the lateral ends of abdominal segments 4 and 5 (especially 5), also the end of the telson, are somewhat bent outward, but this is scarcely at all the case in segment 3.

PART III.—ADDITIONS TO THE BIBLIOGRAPHY

(Experimental and physiological articles usually not included)

- ARCANGELI, A.
1933. Per una migliore conoscenza di alcune specie di isopodi terrestri . . . Boll. Mus. Zool. Anat. Comp. Torino, XLIII, pp. 47-62.
1936. Un genere e due specie nuove di isopodi terrestri del Brasile. Arch. Zool. Ital., XXIII, pp. 201-208, Pl. iv.
1938. *Tylos latreillii* Aud. e Sav. Suoi biotipi, sua area di diffusione. Boll. Mus. Zool. Anat. Comp. Torino, XLVI, pp. 139-151, Pls. i-vi.
- BARNES, T. C.
1935. Salt requirements and orientation of *Ligia* in Bermuda. III. Biol. Bull., LXIX, pp. 259-268, Fig. 1. (See remarks under *Ligia baudiniana*, above.)
- BAYLIFF, W. H.
1938. A new isopod crustacean (Sphaeromidae) from Cold Spring Harbor, Long Island. Trans. Amer. Micr. Soc., LVII, pp. 213-217, Figs. 1-11.
- BLAIR, A. P. See Chase and Blair.
- BOWLEY, E. A.
1935. A survey of the oniscoid genus *Phaltoniscus* Budde-Lund, with a description of a new species. Journ. Roy. Soc. West. Austral., XXI, pp. 45-73, 4 Pls.
BRANDT, J. F., AND RATZBURG, J. T. C.
1829-1833. Medicinische Zoologie, pp. i-iv, 1-361, Pls. i-XXXVI.
- CARL, G. C.
1937. Flora and fauna of brackish water. Ecology, XVIII, pp. 447-453, Figs. 1-3.
- CARL, J.
1908. Monographie der schweizerischen Isopoden. Denk. Schweiz. Nat. Gesell. Zürich, XLII, pp. 113-242, Pls. i-vi. (Important monograph.)
- CHASE, H. D., AND BLAIR, A. P.
1937. Two new blind isopods from north-eastern Oklahoma. Amer. Midland Nat., XVIII, pp. 220-224, Pls. i, ii.
- CORDERO, E. H.
1937. *Nerocila fluviatilis* y otros parásitos de las familias Cymothoidae y Bopyridae del Uruguay y del Brazil. Anal. Mus. Hist. Nat. Montevideo, (2) IV, No. 12, pp. 1-11, Figs. 1-12, 1 Pl.
- CREASER, E. P.
1936. Crustaceans from Yucatan. Cenotes of Yucatan, Carnegie Inst. of Washington, Pub. No. 457, Part XI, pp. 117-132, Figs. 1-43. (Included in Supp. to Bibliography, Van Name, 1936, p. 508.)
- DAILEY, E. F., AND HATCH, M. H.
1940. Records of two species of terrestrial Isopoda from Washington. Amer. Midland Nat., XXIII, p. 252.
- DE CALABRESE, D. See Giambiagi de Calabrese.

- DOLLFUS, A.
1896f. Crustacés Isopodes de la Sicile, pp. 1-6, Figs. 1-3. Paris, 1896.
- ESSIG, E. O.
1926. Insects of western North America, pp. vii-xi, 1-1035, Figs. 1-766.
- GEISER, S. W.
1934. Further observations on the sex-ratios of terrestrial isopods. Field and Lab., III, No. 1, pp. 5-10.
- GIAMBIAGI DE CALABRESE, D.
1933. Descripción complementaria de un isópodo de agua dulce, *Braga fluviatilis* Richardson. Anal. Mus. Nac. Hist. Nat. Buenos Aires, XXXVII, pp. 511-516, 3 Figs.
1935. Un isópodo nuevo "*Philoscia bonariensis*." Physis, XI, pp. 495-496, 1 Fig.
1935a. Isópodos nuevos para la fauna argentina. Physis, XI, p. 509.
- GIBBES, R. W.
1848. Catalogue of the fauna of South Carolina. In Report on the geology of South Carolina by M. Toumey, pp. i-xxiv. (Crustacea on p. xvii.)
- HATCH, M. H.
1939. Records of terrestrial Isopoda or sow bugs from North America. Amer. Midland Nat., XXI, pp. 256-258.
1940. See also Dailey and Hatch.
- HOFFMAN, C. H.
1933. The biology of *Caecidotea tridentata* Hungerford (Isopoda - Crustacea). Journ. Kansas Ent. Soc., VI, pp. 26-33, 1 Fig.
- HOWARD, L. O.
1883. A list of the invertebrate fauna of South Carolina. In: Resources of South Carolina, pp. 265-359. Charleston. (Isopoda on p. 295.)
- HOY, E. A. See Miller and Hoy.
- HUBRICHT, L., AND MACKIN, J. G. See Mackin and Hubricht.
- KATO, K.
1936. Secondary sexual character in some legs of the male *Ligia exotica*. Zool. Mag. Tokyo, XLVIII, pp. 333, 334, 3 Figs.
- LEIGH-SHARPE, W. H.
1937. *Badroulboudour splendida* n. g. et sp., a new parasitic isopod from Ecuador. Parasitology, XXIX, pp. 391-394, Figs. 1-4.
- MACKIN, J. G., AND HUBRICHT, L.
1938. Records of distribution of species of isopods in Central and Southern United States, with descriptions of four new species of *Mancasellus* and *Asellus* (Asellota, Asellidae). Amer. Midland Nat. XIX, pp. 628-637, Figs. 1-20. (The names of the authors appear as above at the beginning of the article. On the covers and in the table of contents they appear as Hubricht and Mackin.)
- MEDCOF, J. C.
1939. On the occurrence of the terrestrial isopod *Androniscus dentiger* in Canada. Canad. Field-Nat., LIII, p. 115.
- MEINERTZ, I.
1932. Die Landisopoden Dänemarks. Part I: Ligiiden u. Trichonisciden. Zool. Jahrb. Syst., LXIII, pp. 352-406, Figs. 1-18.
1934. Die Landisopoden Dänemarks. Part II: Die Onisciden. *Op. cit.*, LXV, pp. 211-284, Figs. 1-31. (Many illustrations of details of species common to Europe and America.)
1938. Isopoda Terrestria. In: Zoology of Iceland, III, No. 28, pp. 1-11.
- MILLER, M. A.
1936. California isopods of the genus *Porcellio* with descriptions of a new species and a new subspecies. Univ. of California Pub. Zool., XLI, pp. 165-172, Figs. 1-29.
1938. Comparative ecological studies on the terrestrial isopod Crustacea of the San Francisco Bay region. Univ. of California Pub. Zool., XLIII, pp. 113-142, Figs. 1-3. (Includes check list of California species.)
- MILLER, M. A., AND HOY, E. A.
1939. Differential growth and evolution in a subterranean isopod. Amer. Naturalist, LXXXIII, pp. 347-364, Figs. 1-4.
- MONOD, T.
1931a. Sur quelque Crustacés aquatiques d'Afrique (Cameroun et Congo). Rev. Zool. Bot. Afric. XXI, pp. 1-36, Figs. 1-24.
1937. Sur une isopode parasite du genre *Asotana* Sch. et M., 1881 (= *Badroulboudour* W. H. Leigh-Sharpe, 1937). Ann. Parasitol., XV, pp. 465, 466.
- NIERSTRASZ, H. F.
1931. Die Isopoden der Siboga-Expedition. III, Part 2 (Flabellifera). Siboga-Exp., XXXIIIc, pp. 1-111, Figs. 1-129, Pls. x, xi.
- NIERSTRASZ, H. F., AND MAREES VAN SWINDEREN, J. W.
1931. Süßwasser-Isopoden der deutschen Limnologischen Sunda-Expedition. Suppl. Bd. 9, Trop. Binnengewässer, II, pp. 394-402, Figs. 1-5.
- PEARSE, A. S.
1936. Results of survey of the cenotes in Yucatan. Cenotes of Yucatan, Carnegie Inst. of Washington, Pub. No. 457, Part II, pp. 17-28, Pls. i, ii.
1936a. Parasites from Yucatan. Cenotes of Yucatan, Carnegie Inst. of Washington, Pub. No. 457, Part VII, pp. 45-59, Figs. 1-21.
1938. Fauna of the caves of Yucatan. Carnegie Inst. of Washington, Pub. No. 491, pp. 1-17, Figs. 1-8.
- RATZBURG, J. T. C. See Brant and Ratzeburg.

STEPHENSEN, K.

1913. (This should be the date of the *Conceptus Crustaceorum et Pycnogonidorum Groenlandiae*, not 1917 as given in Van Name, 1936, p. 506.)

1936. A tanaid (*Tanais stanfordi* Richardson) found in fresh water in the Kurile Islands, with taxonomic remarks on the genus *Tanais*. *Annot. Zool. Japon.*, XV, pp. 361-373, Figs. 1-5.

TOUMEY, M. See under Gibbes, R. W.

VAN NAME, W. G.

1936. The American land and fresh-water isopod Crustacea. *Bull. American Mus. Nat. Hist.*, LXXI, pp. i-vii, 1-535, Figs. 1-323.

VERHOEFF, K. W.

1908c. *Androniscus*, n. gen. (13. Isopoden-Aufsatz.). *Zool. Anz.* XXXIII, pp. 129-148, Figs. 1-12.

1933b. Zur Systematik, Geographie u. Oekologie der Isopoda terrestria Italiens u. ueber einige Balkan-Isopoden. (49. Isopoden-Aufsatz.). *Zool. Jahrb., Syst.*, LXV, pp. 1-64, Pls. I, II.

1937. Ueber einige neue und bekannte Isopoda terrestria (61. Isopoden-Aufsatz.). *Sitzungsab. Naturf. Freunde Berlin*, ann., 1936, pp. 411-430, Figs. 1-22.

1938. Zur Kenntniss der Gattung *Porcellio* und ueber Isopoda-Oniscoidea der Insel Cherso. *Arch. f. Naturg.*, (n.f.) VII, pp. 97-136, Figs. 1-21.

1938a. Weltstellung der Isopoda terrestria, neue Familien derselben und neues System. *Zool. Jahrb. Syst.*, LXXI, pp. 253-264. (New classification proposed.)

WAECHTLER, W.

1937. Isopoda (Asseln) in: *Die Tierwelt Mitteleuropas*. II, part 2, pp. 227-317, Figs. 1-121, 1 Pl. (This important German work deals with and illustrates details of a number of species common to Europe and America, and has an extensive bibliography.)

WEBB, W. M., AND SILLEM, C.

1906. The British woodlice. *Essex Naturalist* (Stratford, England), XIV, pp. 38-56, 81-111, Pls. I-XXV, Figs. 1-59.

