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TWO AMPHIPODA OF LUZON

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THREE PLATES

The great, shallow, fresh-water lake of central Luzon, Bay Lake, connected with the sea by Pasig River, possesses a fauna of unusual interest. For example, the curious water snake (*Chersydrus granulatus* Schneider) is common, and the fishermen sometimes use its blood to dye their nets. A shark is said to occur in the lake. Its waters possess a marvelously rich plankton and swarm with crustaceans. The bottom is occupied by vast colonies of univalve and bivalve mollusks. Fresh-water sponges are abundant. Finally, under débris along its shores are to be found amphipods and isopods.

The amphipods found here are of very peculiar interest, for the reason that a few miles distant, at an altitude of 1,060 meters on Mount Maquiling, in the mossy forest, occurs a closely related but very distinct species of the same genus, *Parorchestia*. Search in streams between these two stations has so far failed to produce amphipods. The beach form lives at water margin, the mountain form under stones in the dripping mossy forest. The beach form has short antennæ and fully developed pleopods, while the mountain form has long antennæ and reduced pleopods. The heavier armature of the uropods in the mountain form may be an adaptation to the terrestrial life. In form of perion, pleon, and pereopods, the two species are very much alike.

These two species are clearly Talitridæ by the palpless mandible and the third uropod of one ramus. Likewise they belong to the genus *Parorchestia* of Stebbing by the distinct and non-unguiform fourth joint of the palp of the maxillipeds and by the simple two-jointed third uropod. In both species the pleopods decrease very rapidly in size from first to third, though otherwise they are normal. *Talitroides* of Bonnier, found in a conservatory at Ghent, probably came from some tropical forest, and must be very close to *Parorchestia*, if not synonymous with it, since in one of our species the pleopods are reduced, though still normal.

Parorchestia tenuis (Dana) was found in New Zealand "among roots of grass and in small stream." *Parorchestia hawaiiensis* (Dana) is from the Hawaiian Islands. *Parorchestia sylvicola* (Dana), also from New Zealand, was found in "moist soil in the bottom of the extinct volcano of Taiamai, far from the sea." Curiously enough our mountain form comes from the bottom of an extinct crater, and both of our forms are most nearly related to *P. sylvicola*.

Other talitrids have been reported from tropical forests, usually from high altitudes. *Chiltonia mihiwaka* (Chilton) comes from high mountain streams in New Zealand, but *Chiltonia* has antennæ I and II of equal length and uropod III 1-jointed. *Orchestia rectimana* (Dana) is from high altitudes in Tahiti; *O. montana* Weber, from high altitudes in Celebes; *O. parvispinosa* Weber from high altitudes in Java; *O. humicola* Marts. is a terrestrial species from Japan; and *O. bottae* M. E. has been found in Holland, remote from the sea. Likewise *Talitrus* furnishes several terrestrial species, as, *T. sylvaticus* Hasw. from New South Wales and Tasmania, *T. allaudi* Chevr. from Seychelles, and *T. gulliveri* Miers from Rodriguez Island. But *Orchestia* and *Talitrus* are both characterized by a wanting or rudimentary fourth joint of palp of maxilliped. It seems, from the specific descriptions, as if a number of the terrestrial talitrids, especially those from high altitudes, should be reexamined as to their generic relationships to *Parorchestia*.¹

Following Stebbing, in the "Amphipoda Gammaridea" of Das Tierreich, the species, including our two new Luzon forms, may be arranged as follows:

Genus PARORCHESTIA Stebbing

Synopsis of species.

- α^1 . Antennæ I with third joint of peduncle shorter than second, flagellum 5- to 6-jointed; uropod I, outer ramus without marginal spines; telson apically with groups of spinules..... *P. tenuis* (Dana).
- α^2 . Antennæ I with third joint longer than second; telson apically without² groups of spinules.
- b^1 . Antennæ I with joints (7-jointed) of flagellum unusually elongate, third joint of peduncle longer than first and second together; uropod I, outer ramus without marginal spines..... *P. hawaiiensis* (Dana).
- b^2 . Antennæ I with joints of flagellum not very elongate, third joint of peduncle shorter than first and second together.

¹In this connection the student should carefully examine a paper on similar amphipoda recently published in Indian Museum Notes.

²Certainly without groups of spinules in *P. luzonensis* and *P. lagunæ*, and not mentioned for *P. hawaiiensis* or *P. sylvicola*.

- c¹. Antennæ I with flagellum (8-jointed) longer than peduncle; uropod I, outer ramus without marginal spine; telson slightly notched at tip *P. sylvicola* (Dana).
- c². Antennæ I with flagellum (3- to 4-jointed) distinctly shorter than peduncle; telson entire at tip.
- d¹. Antennæ I with flagellum 3-jointed; antennæ II not as long as head and first three segments of pereion together, joints (14) of flagellum thick; uropod I, outer ramus without marginal spines, the rami longer than peduncle; lower lip deeply simply lobed *P. lagunæ* sp. nov.
- d². Antennæ I with flagellum 4-jointed; antennæ II surpassing pereion, joints (18) of flagellum slender; uropod I, outer ramus with marginal spines, the rami shorter than peduncle; lower lip very shallowly lobed and with rudiments of inner lobes.
P. luzonensis sp. nov.

Parorchestia luzonensis sp. nov.

Color pale olive-green; eyes large, round, black. Side plates subuniform, with lower margins in line.

Antenna I (Plate I, fig. 7) with third joint of peduncle about same length as second; flagellum shorter than peduncular joints 2 and 3 together, 4-jointed, the third joint longest. Antenna II (Plate I, fig. 8) surpassing the pereion, third joint of peduncle longer than first two together; flagellum about once and a half the length of peduncle, about 18-jointed, the joints slender. Maxilla I (Plate I, fig. 11) with inner plate about three fourths the length of outer plate, narrowly rounded at tip, with an inner terminal fringe of soft hairs; outer plate with about six long, curved teeth, the surface of which is denticulated; palp with a tuft of spines at tip. Maxilla II (Plate I, fig. 5) with inner plate acute. Lower lip (Plate I, fig. 6) shallowly lobed and with rudimentary inner lobes. Gnathopod I in ♀ (Plate II, fig. 3) with joints 5 and 6 subequal in length, the sixth with an inner, terminal, rectangular laminate epiphysis, which the small finger does not nearly equal. Gnathopod II (Plate II, fig. 1) in ♀ with joint 5 very slightly shorter than 6, joint 6 nearly three times as long as wide and with three tufts of spinules on outer margin; the finger equals the oblique palm. Pereiopod 5 but little longer than 4, but both 4 and 5 much longer than 3. Pleopods not half the size of those of *P. lagunæ*, but otherwise normal. Uropods I and II (Plate II, fig. 4) with ramus joint small and with two terminal spines, the peduncle much longer than broad. Telson (Plate II, fig. 5) narrowly rounded at tip, entire, and with few weak spines.

Length, 8-9 mm.

LUZON, Laguna Province, summit of Mount Maquiling, in the extinct crater, under stones. This locality is in the dripping

mossy forest. Apparently not at all common, only a few females being encountered. Types in coll. Baker.

Parorchestia lagunæ sp. nov.

Color pale olive-green; eyes large, round, black. Side plates subuniform, their lower margins in line.

Antenna I (Plate III, fig. 2) with joint 3 of peduncle very slightly longer than 2; flagellum shorter than joints 2 and 3 together, 3-jointed, the second joint longest. Antenna II (Plate III, fig. 1) not as long as head and first three segments of pereion together; third joint of peduncle as long as joints 1 and 2 together; flagellum about once and a fourth as long as peduncle, about 14-jointed, the joints very thick. Lower lip deeply simply lobed. Gnathopod I in ♂ (Plate III, fig. 6) with sixth joint much shorter than fifth, greatly broadened apically, the palm concave, the finger not reaching apex of palm. Gnathopod II in ♂ (Plate III, fig. 7) with joint 6 very large, oval in outline, the palm oblique and fringed with a row of short, stout teeth, the finger very long and slender toward the tip, surpassing the palm. Pereiopod 5 but little longer than 4, but both 4 and 5 much longer than 3. Pleopods (Plate I, fig. 12) large and normal. Uropods I and II (Plate III, figs. 10 and 11) with rami longer than peduncle, the other ramus without lateral spines. Uropod III (Plate III, fig. 8) as in *P. luzonensis*, but somewhat stouter. Telson narrowly rounded at tip, entire, and with few inconspicuous hairs.

Length, 9-10 mm.

LUZON, Laguna Province, shores of Bay Lake, under stones at water margin. Only encountered on rocky shores. Types in coll. Baker.

ILLUSTRATIONS

PLATE I

Parorchestia luzonensis sp. nov.

- FIG. 1. Upper lip.
2. Left mandible.
3. Right mandible, outer view.
4. Right mandible, inner view.
5. Second maxilla.
6. Lower lip.
7. First antenna.
8. Second antenna.
9. Maxilliped.
10. Apex of inner lobe of maxilliped.
11. First maxilla.

Parorchestia lagunæ sp. nov.

- FIG. 12. First pleopod.

PLATE II

Parorchestia luzonensis sp. nov.

- FIG. 1. Second gnathopod.
2. First pereopod.
3. First gnathopod.
4. First and second uropods.
5. Telson and third uropod.

PLATE III

Parorchestia lagunæ sp. nov.

- FIG. 1. Second antenna.
2. First antenna.
3. Right mandible.
4. Left mandible.
5. Upper lip.
6. First gnathopod ♂.
7. Second gnathopod ♂.
8. Third uropod and telson.
9. Lower lip.
10. First uropod.
11. Second uropod.

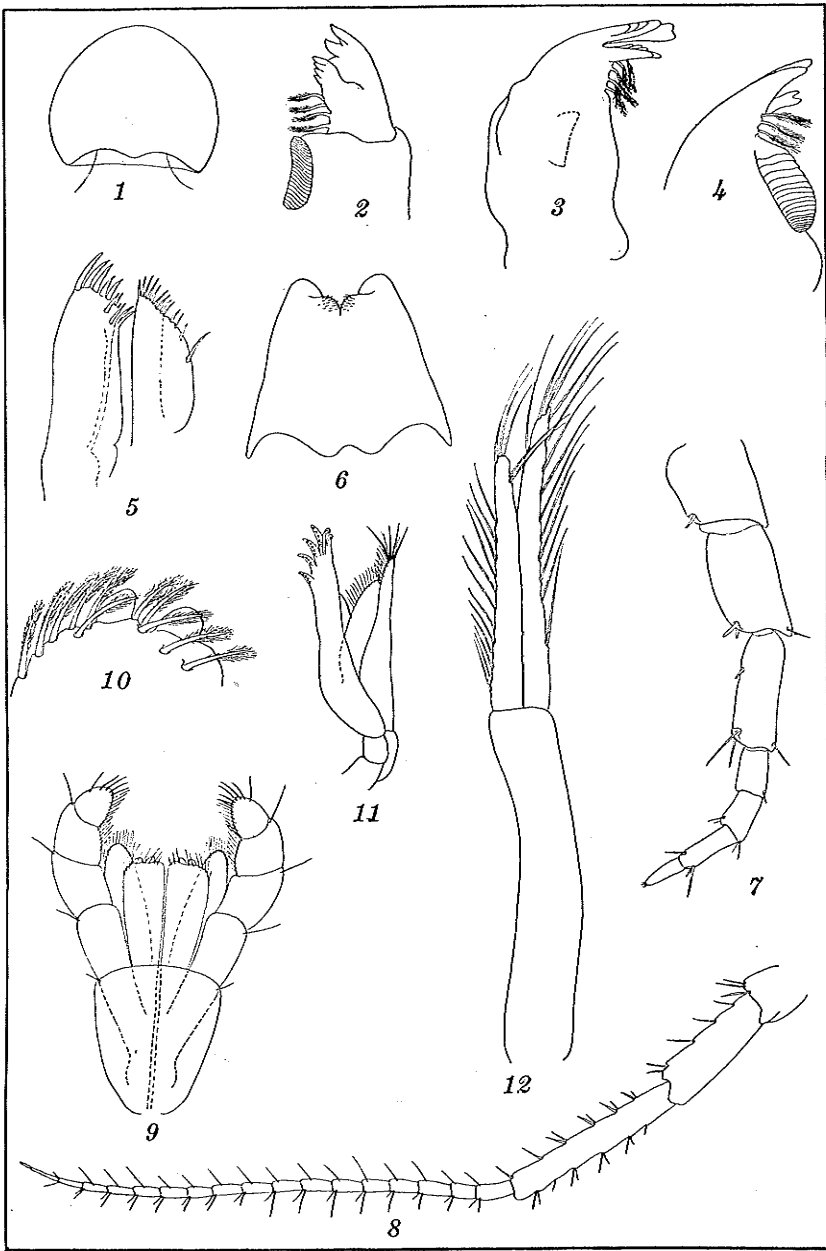


PLATE I. PARORCHESTIA LUZONENSIS.

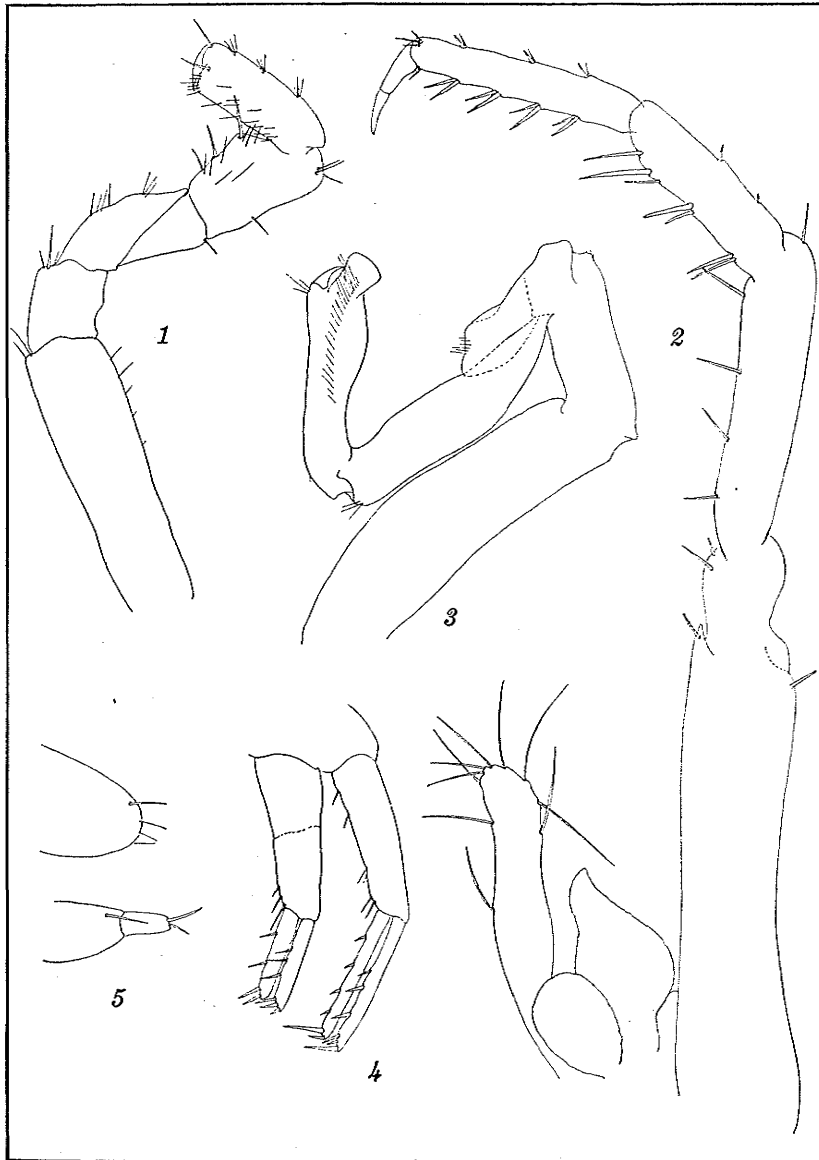


PLATE II. PARORCHESTIA LUZONENSIS.

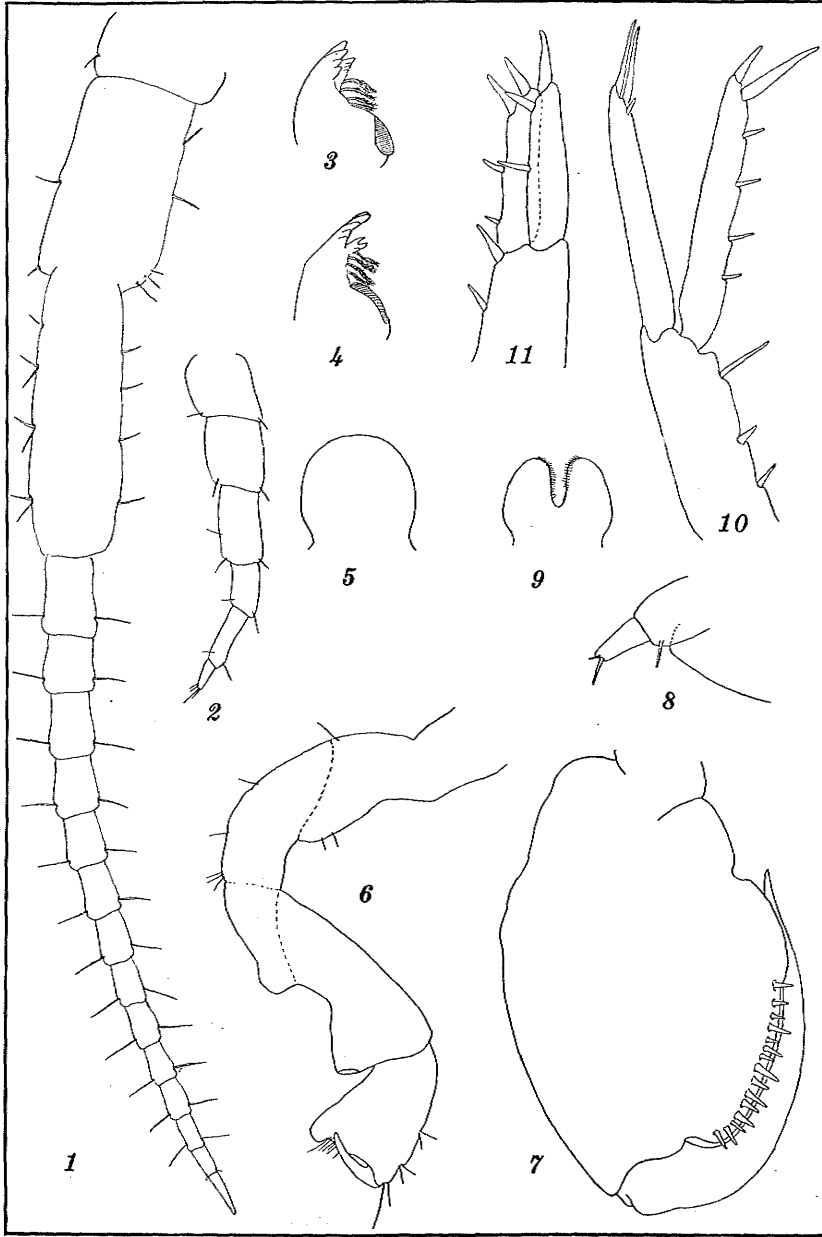


PLATE III. PARORCHESTIA LAGUNÆ.