

XIV. A NEW SPECIES OF THE GENUS CAMBARUS FROM THE ISLE OF PINES.

BY A. E. ORTMANN, PH.D.

Cambarus (Procambarus) atkinsoni sp. nov.

Diagnosis.—Rostrum concave above, with a marginal spine on each side. Sides of carapace with a lateral spine on each side behind the cervical groove. Areola wide, shorter than half of the anterior section of the carapace. First peræopods with long, subcylindrical, slightly compressed chelæ, covered with subequal, subsquamate granules. Fingers about as long as palm. Third peræopods hooked in the male. First pleopods of the male of the first form with the inner part pointed and setiform, but not horny, much longer than the broad and blunt inner part, with a small horny spine at the anterior margin. A strong shoulder on the anterior margin. Inner face flattened, slightly dilated. Annulus ventralis of the female transversely oval, slightly elevated.

Description of male of the first form.—Rostrum concave above, without median keel, margins elevated, slightly convergent, with a distinct marginal spine on each side. Acumen short, triangular. Postorbital ridges subparallel, terminating in a spine anteriorly. Carapace slightly compressed, punctate, but not granulated. Suborbital angle triangular, bluntly pointed. Branchiostegal spine present. A distinct, sharp, but not very large spine on each side behind the cervical groove. Areola broad and short, with four to five irregular rows of punctations, distinctly shorter than half of the anterior section of the carapace (including rostrum). Abdomen about as wide as the carapace, and slightly longer. Basal segment of telson with four or five spines on each side. Anterior end of epistoma broadly triangular. Antennæ with the flagella longer than the carapace, but shorter than the whole body. Antennal scale broadest in the middle. First peræopods elongated, subcylindrical. Hand elongated, slightly compressed, with subparallel margins. Surface of hand sharply granulated all around, granules subsquamate, closely set, and subequal. Fingers about as long as the palm, both of them

on outer and inner faces with a smooth, longitudinal ridge. Hand with short, inconspicuous and deciduous hairs, which are densest on the fingers, but nowhere beard-like. A few longer setæ on the cutting edges of the fingers. Carpopodite short, subcylindrical, with a very indistinct sulcus on the upper side, granulated like the hand, granules largest on inner side, where some of them are subspiniform. Mero-podite subtriangular in cross-section, granules on inner and outer surface obsolete, one or two granules near distal end of upper margin subspiniform, and the lower surface with two rows of small spinules. Ischiopodite of third peræopods with a strong hook. First pleopods of the *Procambarus*-type, rather short and straight. Anterior margin with a distinct and prominent shoulder near the tips. Outer and inner part in contact up to close to the tips. Tip of outer part rounded and blunt, with a minute soft spine posteriorly at the extremity. Tip of inner part straight, tapering to a setiform point, which is not horny, and is considerably longer than the tip of the outer part. This setiform part bears at its base, on the anterior side, and in front of the shoulder, a short, slightly procurved, horny spine, which has two tips, the larger blunt, the smaller pointed. On the inner side, the inner part of the copulatory organ is flattened, with hairs radiating from an indistinct oblique rib, and is slightly dilated, but only very little wider than the basal part of the organ.

Male of the second form.—Chelæ smaller, hooks of third peræopods small, and the copulatory organ having in place of the horny spine a small, soft, blunt tubercle, and the tip of the inner part less distinctly setiform.

Female.—Chelæ not so long, hand shorter, rather long-ovate and not subcylindrical, with finer granulations. Annulus ventralis transversely subovate, slightly elevated, with the usual curved fissure, which divides the annulus longitudinally into two unsymmetrical parts, the larger part more elevated than the smaller.

Measurements.—Largest male, first form: Total length, 52; carapace, 25; anterior section of carapace, 19; posterior section of carapace, 6; abdomen, 27; length of hand, 22; width of hand, 6.5 mm. Largest female: Total length, 44; carapace, 21; anterior section of carapace, 16; posterior section of carapace, 5; abdomen, 23; length of hand, 14; width of hand, 5 mm.

Locality.—Tributaries of Rio de los Indios, Los Indios, Isle of Pines. Carnegie Mus. Cat. Nos. 74.924 (Types), and 74.925 (Cotypes).

Altogether there are thirteen males of the first form, eight males of the second form, and nine females.

The specimens were collected on May 25, 1910, by Dr. D. A. Atkinson of Pittsburgh, and the specific name is given in honor of the discoverer.

Remarks.—This species is morphologically and geographically interesting. It stands closest to *C. cubensis* Erichson, but differs principally in the much less dilated inner face of the copulatory organ. In the latter respect it comes nearer to the continental forms, *C. williamsoni* Ortmann and *C. pilosimanus* Ortmann from Guatemala, and *C. mexicanus* Erichson from Mexico. But it has not the copulatory organs of these species, the chief difference being discovered in the long setiform tip of the inner part, which is also found in *C. cubensis*.

C. williamsoni, *pilosimanus*, and *mexicanus* resemble each other in the copulatory organs, but *C. mexicanus* is more remote from the others (and also from *C. atkinsoni* and *cubensis*) because of the absence of spines on the margins of the rostrum and the sides of the carapace. *C. williamsoni* and *pilosimanus* have two spines on each side of the carapace, and their areola is much narrower than in *C. atkinsoni*, and also narrower than in *C. cubensis*. In *C. atkinsoni* the areola is distinctly wider and shorter than in *C. cubensis*, and in this character, and in the more concave surface of the rostrum, and the slightly longer acumen of the latter, aside from the differences in the shape of the copulatory organs, *C. atkinsoni* differs from *C. cubensis*. *C. cubensis* also has the spines on the sides of the carapace often rudimentary or absent.¹

C. atkinsoni forms in the copulatory organs a connection between the Cuban forms and those of the mainland, which is interesting, because the geographical range is also intermediate. But the copulatory organs of *C. atkinsoni* distinctly indicate the *cubensis*-type in its beginning. In the shape of the rostrum, its marginal spines, and in the lateral spines of the carapace, *C. atkinsoni* is rather indifferent; in the shape of the areola it is distinctly more primitive than any of the species allied with it. The Guatemalan forms are in this respect even more advanced than *C. cubensis*, while both *C. atkinsoni* and *cubensis* are more highly specialized in the copulatory organs than the Guatemalan forms.

¹ See Faxon, in *Bull. Mus. Comp. Zool.*, LIV, 1912, pp. 458-459.

The fine point on the tip of the outer part of the copulatory organ in *C. atkinsoni* is a special feature of this species, which has not been observed in any of the other species of the subgenus *Procambarus*, but in specimens of *C. cubensis* before me I see in its place a slight and insignificant swelling.

C. digueti Bouvier, from western Mexico, which is also a *Procambarus*, is morphologically too remote from all these species, so that we do not need to compare it in detail.

Including this new species, the subgenus *Procambarus* consists now of the following six species: *C. digueti* Bouvier (western Mexico), *C. williamsoni* Ortmann (Guatemala), *C. pilosimanus* Ortmann (Guatemala and British Honduras), *C. mexicanus* Erichson (eastern Mexico), *C. atkinsoni* Ortmann (Isle of Pines), *C. cubensis* Erichson (Cuba). Of these, however, *C. williamsoni* and *pilosimanus* are very closely allied, and may possibly be only forms of the same species.

