

ON A SMALL COLLECTION OF CRUSTACEANS FROM THE ISLAND OF CUBA.

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In the early spring of 1902, Dr. C. H. Eigenmann, of the State University of Indiana, visited the island of Cuba for the purpose of collecting specimens of blind fish and other forms of life known to inhabit certain limestone caverns of that region. The successful result of the exploration, so far as the fish were concerned, has already been reported at the Pittsburg meeting of the American Association for the Advancement of Science, which organization had by a grant of money helped to defray Dr. Eigenmann's expenses, but so far as I know no report has hitherto been made on the miscellaneous collections.

The collection of crustaceans, which is contained in 25 jars and vials, includes 14 species. They were collected at various points along the seashore, in fresh-water streams, and in the caverns. Most of the species are well known and have been reported from the island; all are mentioned here, however, for the sake of completeness. Of the three new species, two belong to the subterranean fauna and are of especial interest in that they are the first spelæan crustaceans to be recorded from Cuba and belong to genera which until very recently have not been suspected of adapting themselves to a subterranean life.

In the identification of the shrimps and the Brachyura I have enjoyed the benefit of the extensive knowledge of these groups of Miss Mary J. Rathbun, without whose assistance this paper would have been considerably delayed.

In the case of all new species Dr. Eigenmann has allowed me to deposit the types in the collection of the U. S. National Museum while the cotypes are in the collection of the University of Indiana.

LIST OF SPECIES.

ORDER ISOPODA.

1. *Cirolana cubensis*, new species.
2. *Oniscus asellus* Linnæus.

ORDER DECAPODA.

MACRURA.

3. *Palæmonetes eigenmanni*, new species.
4. *Palæmonetes cubensis*, new species.
5. *Bithynis jamaicensis* (Herbst).
6. *Bithynis olfersii* (Wiegmann).
7. *Bithynis acanthurus* (Wiegmann).
8. *Xiphocaris elongata* (Guérin).
9. *Penæus brasiliensis* Latreille.
10. *Cambarus cubensis* Saussure.

BRACHYURA.

11. *Callinectes sapidus acutidens* Rathbun.
12. *Epilobocera cubensis* Stimpson.
13. *Goniopsis cruentata* (Latreille).
14. *Ucides cordatus* (Linnæus).

1. CIROLANA CUBENSIS, new species.

Types.—Cat. No. 26348, U.S.N.M. Cavern at San Isidro, Cuba. C. H. Eigenmann, Col., 1902.

Body oval, a little more than twice as long as broad, widest a little behind the middle, rather strongly convex, and perfectly smooth.

Head a little broader than long, slightly produced in front. Mesosome broader, with its greatest width at the fifth segment; coxal plates of the second, third, fourth, fifth, and sixth segments successively more enlarged and more strongly produced backward as an acute angle. The plate of the seventh segment is about the same size as the one preceding it. Metasome narrower than mesosome, of five segments, each of which, except the last, has the lateral angles strongly produced posteriorly; telson as long as the metasome, its margins gently curved and convergent for about two-thirds of its length, and then rather abruptly strongly convergent to form a short, obtuse tip. The

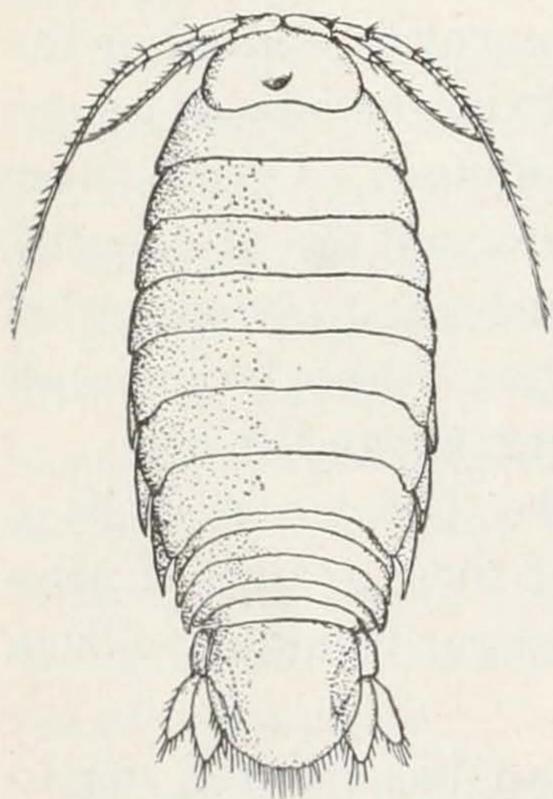


FIG. 1.—CIROLANA CUBENSIS.

eyes are altogether wanting. First antenna with three basal segments and a short flagellum which, when extended backward, reaches slightly beyond the posterior margin of the first thoracic segment. Second antenna with five basal segments, and a long, slender flagel-

lum which may extend slightly beyond the middle of the body, and is composed of about twenty-nine segments. The mandible, maxillæ, and maxillipeds do not present specific characters of importance, being of the type usual in the genus. The appendages of the mesosome are of moderate strength, and are armed with a few rather stout spines and stiff setæ. The branchial appendages of the metasome are membranaceous and small; the uropoda are well developed, the outer branch lanceolate in outline, the inner much broader and very slightly longer, and with the tip somewhat acuminate; both branches and the margins of the telson as well bear a rather dense fringe of hairs. Color in alcohol, white, with no markings of any kind. Length, 5 mm.

This Isopod, which is reported by Dr. Eigenmann to be abundant, is represented in the collection by about twenty-five specimens, all from the one locality. Of the species of *Cirolana* known to inhabit American waters, *C. mayana*, which occurs on the coast of Yucatan and Colombia, is the nearest relative of the present species. Between the two, however, there are several important structural differences. The physiological differences between this species and all the others of the genus must be very great to admit of its living in the subterranean streams of fresh water. It may be added that *Cirolana cubensis* is very distinct from *Cirolanides texensis* Benedict,^a which occurs in the waters which flow from the large artesian well at San Marcos, Texas.

2. ONISCUS ASELLUS Linnæus.

Five specimens, for which no locality is given, appear to belong here. They answer perfectly the description given by Sars^b from specimens collected in Norway. They are doubtless importations from Europe, and probably came from Spain, where the species is common.

3. PALÆMONETES EIGENMANNI, new species.

Types.—Cat. No. 26349, U.S.N.M. Cavern at Ashton, Cuba. C. H. Eigenmann.

Carapace thin, very delicate and transparent, in form slightly compressed near the middle of the body but rather broad anteriorly; the anterior border, below the eye, is produced as a broad, obtuse angle, which bears, near its lower margin, an acute, forwardly directed spine; this spine is the anterior end of an obscurely marked ridge, which extends obliquely downward and backward along the sides of the carapace. The rostrum is long, slender, compressed, and rather markedly upcurved; on its superior margin it bears a row of six or eight slender, acute teeth, which begins well back on the carapace and extends forward to the rostrum; these teeth are directed

^a Benedict, Proc. U. S. Nat. Mus., XVIII, 1896, p. 616.

^b Crust. Norway, II, Pts. 9, 10, 1897, pp. 171, 172.

obliquely forward; the inferior margin is unarmed; the tip of the rostrum is acute and reaches forward to a point opposite the distal extremities of the antennal scales. The eyes are much reduced in size, are without pigment, and the corneal surface comes to an obtuse point in front. The first antenna has the basal segment well excavated above and provided with a small, acute spine at the outer distal angle; there are two long and one short flagella, the short one slightly exceeding the rostrum, the long ones somewhat longer than the body. The second antenna has the basal segment provided with a small spine near the distal end; the antennal scale is broad and with subparallel margins; the tip is slightly rounded, and there is a small, obtuse spine at the outer distal angle; the flagellum is slender, and about twice as long as the body. The mandible has an incisor portion with three or four sharp teeth, a small molar surface with several obtuse teeth, but is without a palpus. The third maxilliped is not strongly developed and presents no characters of importance. The

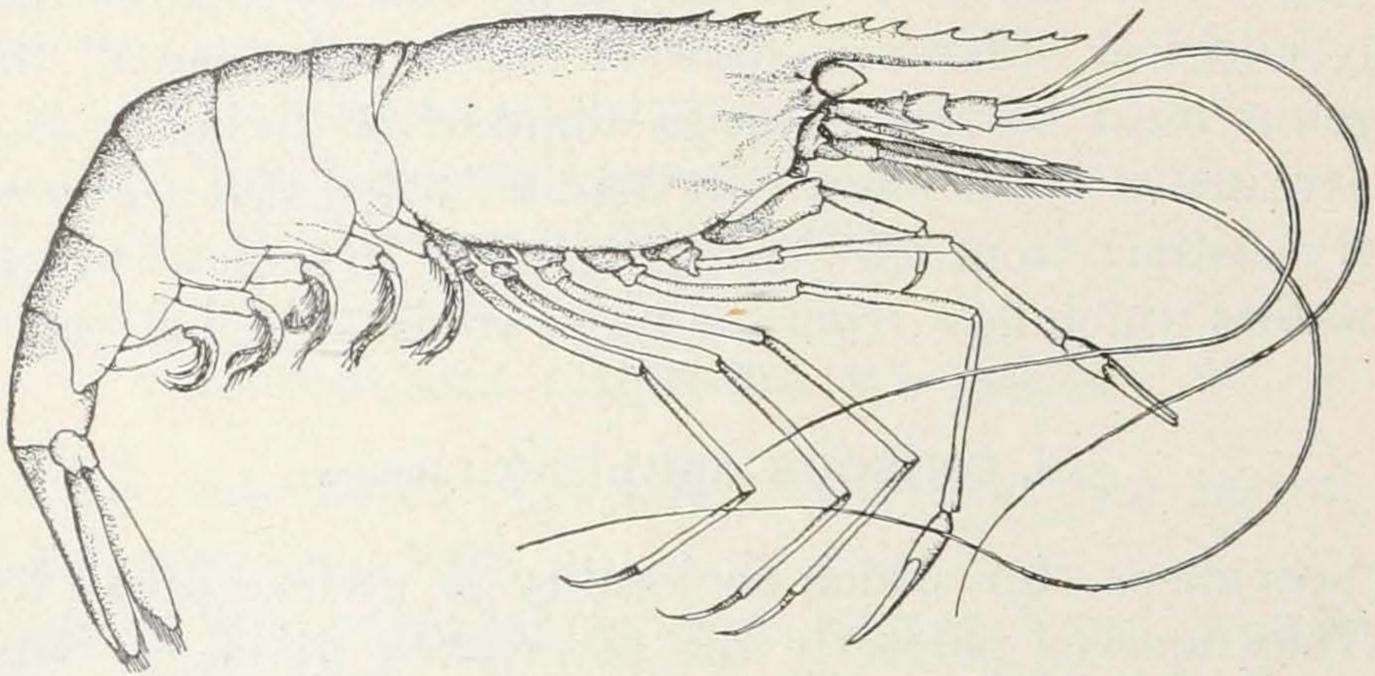


FIG. 2.—PALEMONETES EIGENMANNI.

first pair of pereopods is chelate, and except for its much smaller size is exactly like the second; the chela is slender and weak; the carpal segment is long and slender; the meros is of about the same length, but stouter; the remaining segments short and rather thick. The remaining pereopods are very long and slender. The abdomen is of the form usual in this genus, but the sixth segment is neither elongate nor compressed; the telson narrows gradually from the base to the obtusely angulate tip; on the upper surface there is on each side at about the middle and again about one-fourth the distance from the tip a small, appressed spine, at the tip there is on each side one minute and one long, slender spine, and in the middle a fringe of setæ. Color in alcohol, white. Length, 23 mm.

Nine specimens of this interesting shrimp were sent to me, three from Ashton, two from Modesta, one from the cave of Jaiguan, and three from the cave at San Isidro. Dr. Eigenmann reports that they were common.

They differ very markedly from *Palæmonetes antrorum* Benedict, hitherto our only known blind *Palæmonetes*, in the shape of the rostrum and the character of the chelæ. The shape of the eye is rather remarkable, even in a group, where through atrophy the eye tends toward the conical form. I know of no other in which it is produced into a blunt point. So far as I have been able to ascertain, this is the first record for this genus in Cuba. In the material from San Isidro there is one specimen which agrees in every way with the types, but the other two differ in such a manner as to lead me to believe that a second species may be found to inhabit the subterranean waters of Cuba. The two specimens just mentioned have the sixth segment of the abdomen two and one-half times as long as deep, and the antennal scale is more slender and acute. Unfortunately, the rostrum of one is entirely gone, while of the other only the abdomen remains.

4. PALÆMONETES CUBENSIS, new species.

Types.—Cat. No. 26350, U.S.N.M. Palacio, Cuba. C. H. Eigenmann Col., 1902.

Carapace of the character usual in this genus, rounded above, slightly compressed, and prolonged in front into a large, upcurved, serrated rostrum; at the anterior margin, a short distance below the eye, there is a minute incurved spine, and below it, slightly back of the margin, a second larger spine. The rostrum is longer than the carapace, strongly compressed and serrate above and below; the tip is somewhat upcurved and the base is usually inclined slightly downward toward the middle, but often the basal half is in line with the top of the carapace; the teeth on the upper margin of the rostrum number seven or eight, five or six being disposed with some regularity from the base to a point anterior to the middle; there is then a toothless space which is followed by two small teeth close together at the tip; on the lower surface there are about five teeth, the most posterior one being the largest and placed just in advance of the eye.

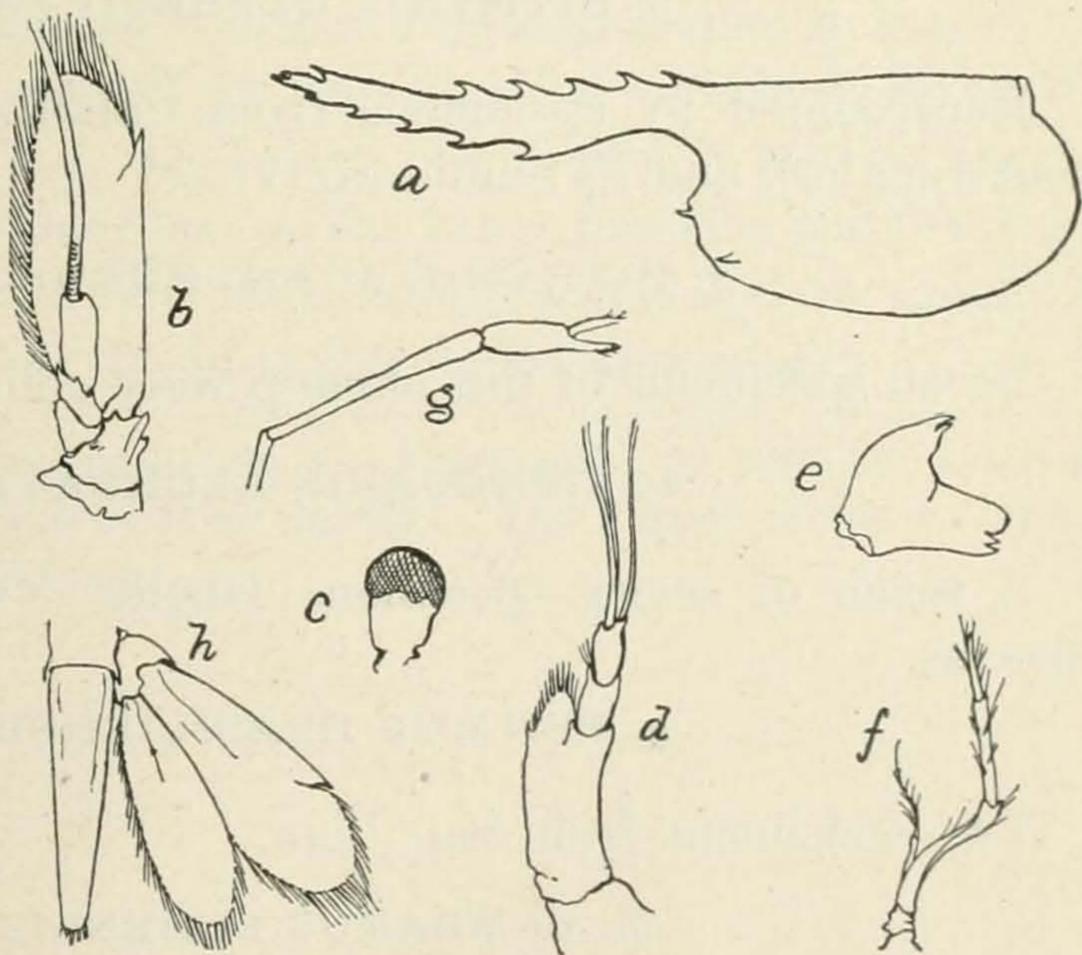


FIG. 3.—PALÆMONETES CUBENSIS. *a*, CARAPACE. *b*, SECOND ANTENNA. *c*, EYE. *d*, FIRST ANTENNA. *e*, MANDIBLE. *f*, THIRD MAXILLIPED. *g*, FIRST CHELATE APPENDAGE. *h*, TEESON AND SIXTH ABDOMINAL APPENDAGE.

The eyes are large and abundantly supplied with pigment. The first antennæ have the basal segment strongly excavated, while the outer margin is expanded into a plate-like process which bears just back of the rounded tip, a small spine; the three flagella are slender. The second antennæ are very slender and exceed the body in length; the scale is broad and long, but does not exceed the rostrum; there is a small spine on the outer face of the basal segment and another on the outer margin of the scale near its tip. The mandible does not bear a palpus, the incisor portion is provided with two or three sharp teeth, while the molar surface has three somewhat obtuse ridges. The third maxillipeds are pediform as usual, but are small. The second pair of pereopods are chelate like the first pair and exceed them slightly in size; the carpus is longer than the hand and the fingers are shorter than the palm. The telson narrows uniformly from the base to the small rounded tip, which bears five small spines. Color in alcohol yellowish; length, 30 mm. Eighteen specimens were collected from the following localities: Palacio, 8; Pinar del Rio, 7; San Cristobal, 3.

5. *BITHYNIS JAMAICENSIS* (Herbst).

Represented by one large specimen from Calabazar.

6. *BITHYNIS OLFERSII* (Wiegmann).

Represented by specimens from Calabazar (3), Pinar del Rio (4), San Juan (4), and El Sumidero (7).

7. *BITHYNIS ACANTHURUS* (Wiegmann).

Seven specimens of this shrimp were collected near San Juan.

8. *XIPHOCARIS ELONGATA* (Guérin).

A series of seven specimens labeled "Calabazar" represent this species.

9. *PENÆUS BRASILIENSIS* Latreille.

Two specimens from San Juan.

10. *CAMBARUS CUBENSIS* Erichson.

Two specimens, male and female. No locality given.

These specimens differ considerably from individuals from other localities and may represent an undescribed form. The abdominal appendages of the male and the annulus ventralis of the female are those of *C. cubensis*, but there is a well-developed spine on the side of the carapace, the areola is much narrower than usual (seven times as long as wide), the margins of the rostrum are raised into high, sharp ridges, the lateral teeth of the rostrum are well developed, and the acumen is slender.

11. *CALLINECTES SAPIDUS ACUTIDENS* Rathbun.

Five specimens as follows: Mouth of Yumuri^a (2), Pinar del Rio (1 large male), San Juan (1 female), unknown locality (1 small male).

12. *EPILOBOCERA CUBENSIS* Stimpson.

A small series of two males, one female, and one young from Ashton and one young from Modesta represent this species.

13. *GONIOPSIS CRUENTATA* (Latreille.)

Two specimens from the mouth of the Yumuri River, a male and a female. The male is the larger and more brilliantly colored. The female carries a large mass of eggs.

14. *UCIDES CORDATUS* (Linnæus).

Two specimens (male and female) from the mouth of the Yumuri River. The male has recently suffered the loss of two of his legs and is beginning to reproduce them. They now consist of buds about one-half an inch long in which five segments can be distinguished, but the last three are bound down tightly against the other two and inclosed with them in a chitinous envelope. If the limb is removed from this capsule and extended it is about 25 millimeters in length.

To what extent this method of reproduction obtains among the crustacea I am unable to say, but I have observed it in several species of Brachyurans. In the *Macrura*, on the other hand, in the few cases which I have observed, the new limb appears as a bud in which the segments are extended as in the fully developed appendage.

^aThe following note has been supplied by Dr. Eigenmann: El Sumidero is a river running in part underground west of Pinar del Rio. The Yumuri River is a stream emptying into the ocean at Matanzas.