STUDIES ON THE FAUNA OF CURAÇAO AND OTHER CARIBBEAN ISLANDS: No. 85.

CYATHURA SPECUS, A NEW CAVE ISOPOD FROM CUBA

(Anthuroidea: Anthuridae)

by

THOMAS E. BOWMAN
(Smithsonian Institution, Washington)

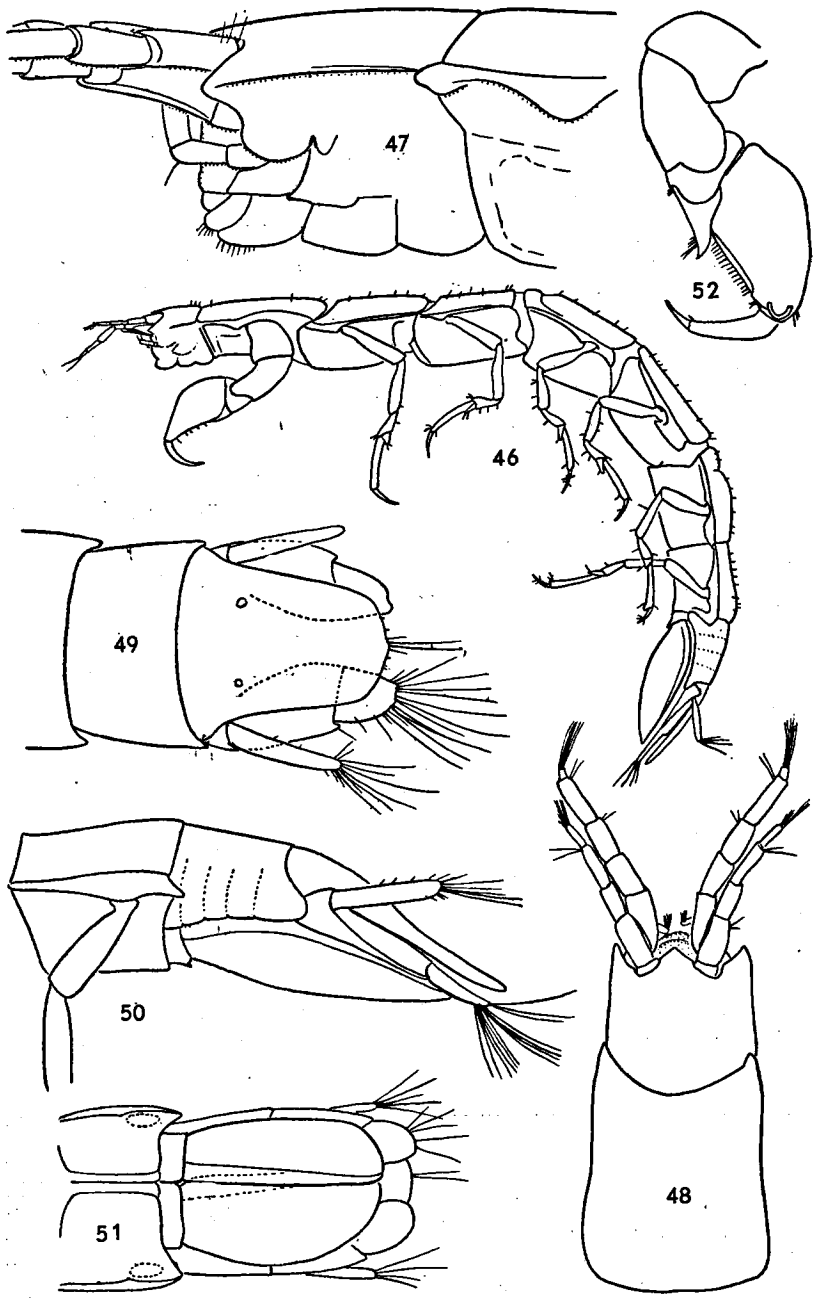
During the years 1958–1960, several shipments of specimens collected in the Caguanes Caves of Cuba were sent to the United States National Museum by GILBERTO SILVA TABOADA. Mr. SILVA's collections included 3 specimens of a blind anthurid isopod, which I determined to be a species of *Cyathura*, similar to but apparently specifically distinct from *C. curassavica* Stork (1940) from Curaçao, Netherlands Antilles. I wish to express my thanks to Mr. SILVA for the gift of these unusual troglobitic crustaceans and to Dr. P. WAGENAAR HUMMELINCK for the loan of specimens of *C. curassavica* for comparison. Having these specimens at my disposal has enabled me to supplement herein STORK's description and illustrations.

Cyathura specus, new species

Figures 46–79

Material. — 3 specimens from the freshwater lake, Lago Martí, in Cueva Grande, the largest of the 5 CAGUANES CAVES located on Punta Caguanes, north coast of Las Villas Province, CUBA, east of the city of Caibarién. – Holotype, male, 18.0 mm total length (excluding antennae), USNM 111020; allotype, female, 19.8 mm, USNM 111021; paratype, male, 15.4 mm, USNM 111022.

FIGS. 46–52. *Cyathura specus*, n. sp., allotype female. — 46. lateral view; 47. head, lateral; 48. head and 1st pereonite, dorsal; 49. pleon and telson, dorsal; 50. pleon and telson, lateral; 51. pleon and telson, ventral; 52. pereopod 1, lateral.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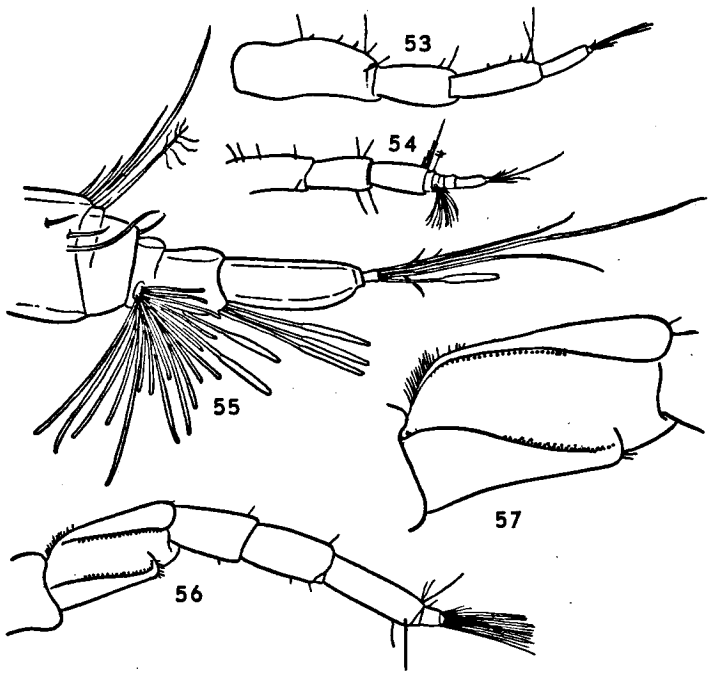
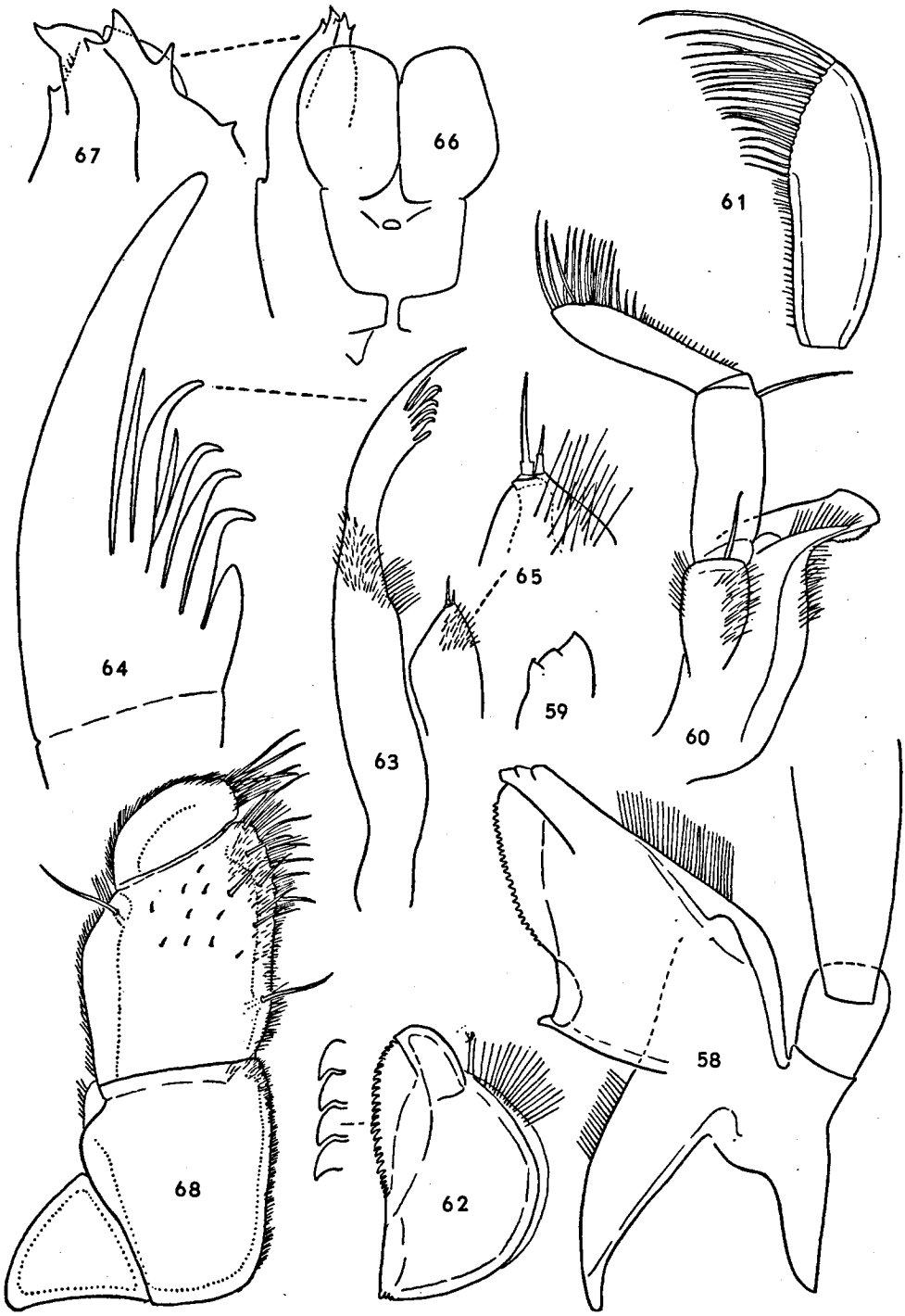


FIGS. 53–57. *Cyathura specus*, n. sp. — 53. antenna 1, lateral, allotype female; 54. antenna 1, lateral, holotype male; 55. antenna 1, holotype male, distal segments; 56. antenna 2, lateral, allotype female; 57. same, 2nd segment enlarged.

All specimens were collected by GILBERTO SILVA TABOADA, the holotype in August 1958, the allotype and paratype in February 1960. – The specific name, from the Latin *specus*, a cave, proposed as a noun, refers to the troglobitic habit of the new species.

Diagnosis. — A large (about 20 mm) blind *Cyathura* inhabiting fresh water in caves of north central Cuba. First pereonite

FIGS. 58–68. *Cyathura specus*, n. sp. — 58. right mandible, inner surface, distal part of palp omitted; 59. incisor of right mandible from a different angle; 60. right mandible, outer surface; 61. distal segment of palp of right mandible, flattened; 62. right mandible, viewed more anteriorly; 63. maxilla 1; 64. maxilla 1, outer lobe; 65. maxilla 1, inner lobe; 66. maxilla 2 – hypopharynx complex; 67. apex of maxilla 2; 68. right maxilliped, outer surface.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longer than second. Telson linguiform. Exopod of uropod narrow, not folding over telson. Palm of gnathopod without tooth. Pereopods with row of sensory setae at proximal end of unguis. Appendix masculina with spatulate apex.

Description. — Body elongate, of typical anthurid form. Pleon segments fused, their boundaries indistinctly indicated by shallow grooves. Telson linguiform; sides converging gradually; apex slightly pointed, bearing 2 long medial setae and several shorter setae.

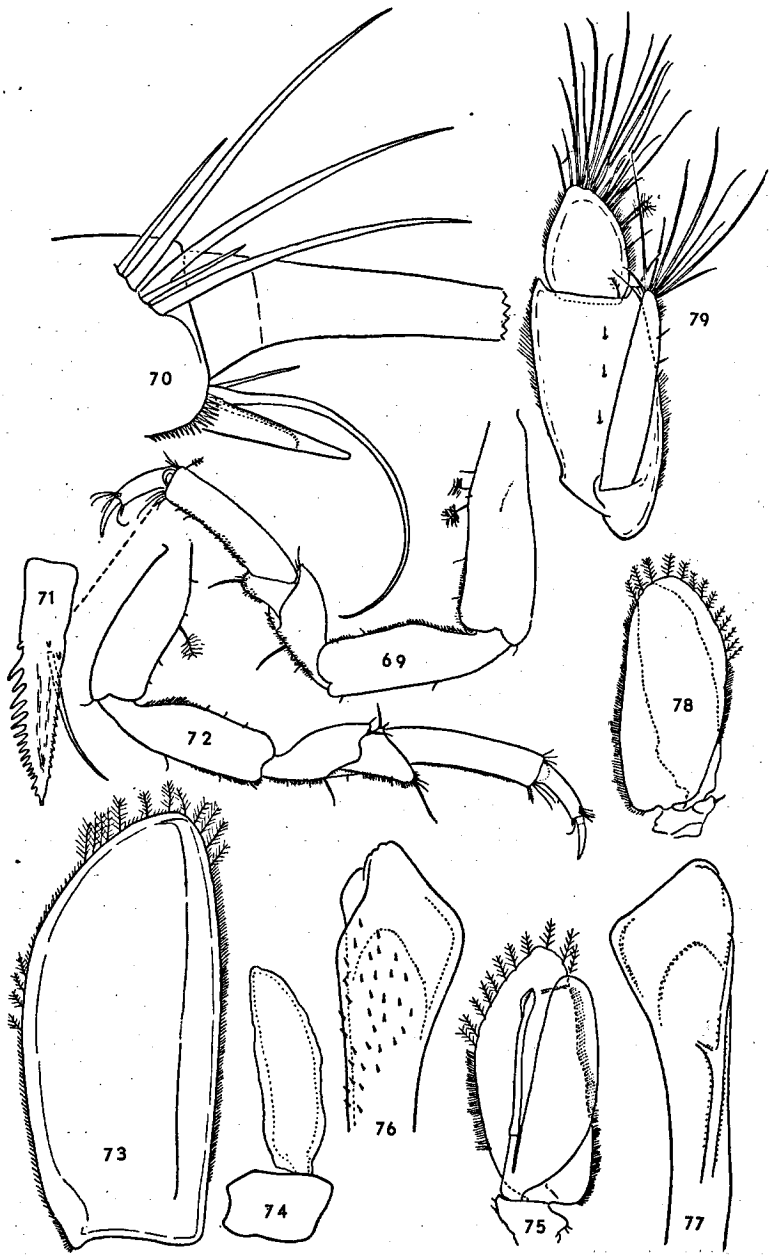
Antenna 1 flagellum of female formed of 1 long segment and apical knoblike segment bearing long apical setae. Flagellum of male composed of 4 segments, the terminal one knoblike; first segment with dense cluster of filiform esthetascs inserted in oval area on lower lateral surface; segments 1, 2 and 4 with 2, 3 and 1 clavate esthetascs respectively.

Antenna 2 similar in male and female. Second segment of peduncle with conspicuous lateral groove into which antenna 1 fits. Flagellum a single short segment bearing dense terminal cluster of filiform esthetascs.

Incisor of mandible divided into 3 shallow teeth. Cutting flange with about 28 recurved teeth. Molar represented by small pointed knob. Second and third segments of palp subequal, slightly less than twice the length of first segment; surface of first segment with fuzz of fine setae; first and second segments each with single distal seta; third segment with about 20 apical setae.

Outer lobe of maxilla 1 with 1 large and 7 small apical teeth, 4 of the small teeth curved inward at their tips, 2 of them straight and slender, and the medial tooth short and blunt. Middle of outer lobe encircled by collar of setae. Inner lobe with 2 apical setae, lateral seta about twice as long as medial.

FIGS. 69–79. *Cyathura specus* n. sp. — 69. pereopod 3; 70. pereopod 3, juncture of dactyl and unguis; 71. pereopod 3, serrate spine at lower distal margin of propodus; 72. pereopod 6; 73. pleopod 1, exopod; 74. pleopod 1, basipod and endopod; 75. pleopod 2, male paratype; 76. distal end of appendix masculina, medial view; 77. same, lateral view; 78. pleopod 3; 79. right uropod, dorsal.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Maxilla 2 fused with hypopharynx. Apex armed with pointed teeth as in fig. 67.

Maxilliped with 3 free segments. First segment with fuzz of fine setae on inner margin. Second segment with setal fuzz on margins, 1 long seta near distal end of outer margin and 1 on proximal part of inner margin; distal inner margin and adjacent outer surface with setae. Third segment with setal fuzz on outer margin and several apical setae.

Pereopod 1 (gnathopod) strongly developed. Carpal process acute, with a few setae on posterior margin near apex. Posterior margin (palm) of propodus straight, without tooth, armed with evenly spaced setae.

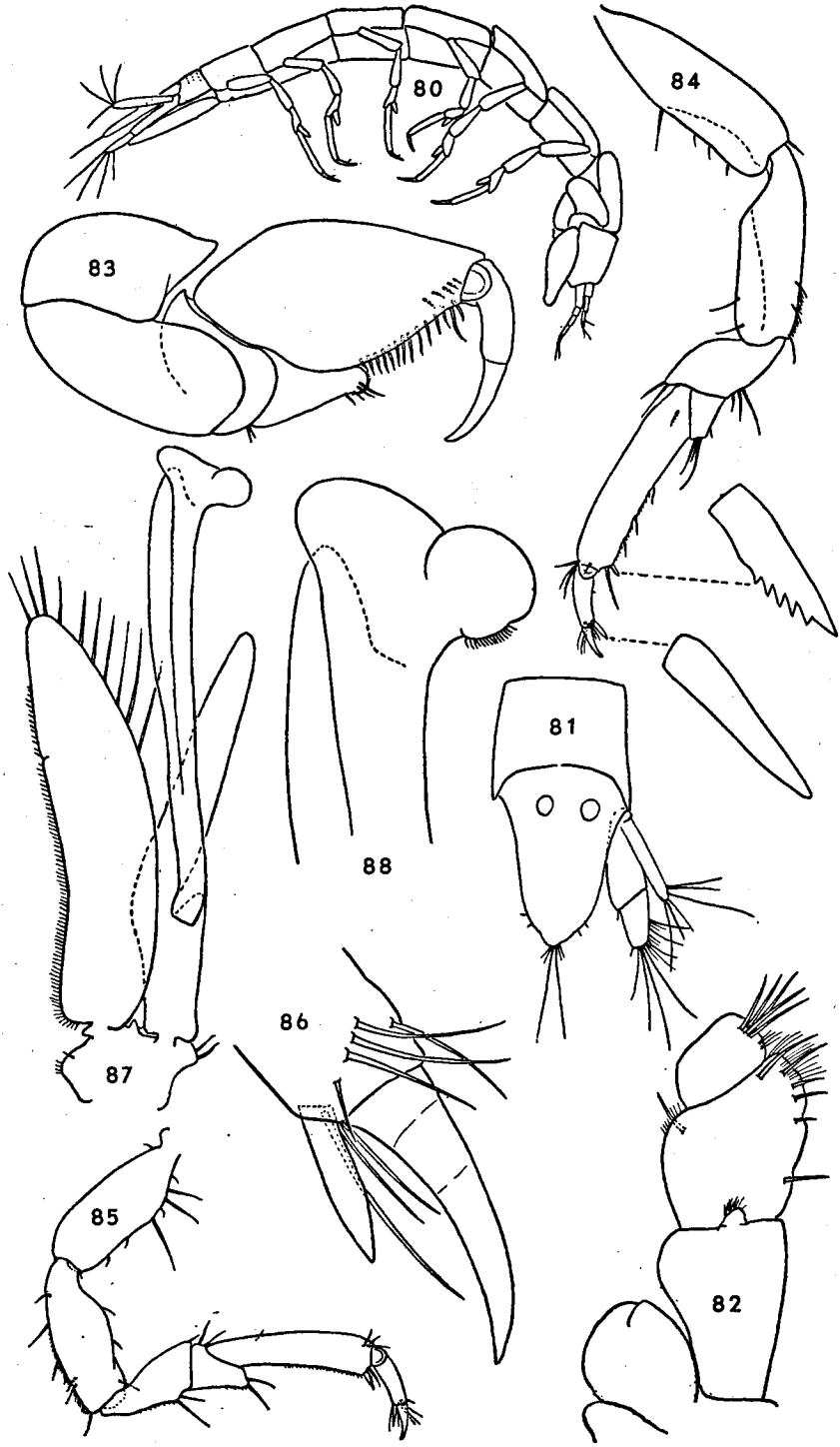
Pereopods 2–7 similar. Margins of segments with setal fuzz. Dactyl with row of 5 setae just proximal to juncture with unguis. Distal end of propodus bearing spine serrate on both margins.

Rami of pleopods unisegmental; margins of exopods with closely spaced setules and distal plumose setae; margins of endopods bare. Exopods of pleopod 1 indurated, overlapping in middle, forming operculum for other pleopods; endopod transparent, small, less than half as long as exopod. Appendix masculina of pleopod 2 arising at base of endopod, 2-segmented, slightly shorter than endopod in paratype, slightly longer in holotype, apex expanded as in figures 76 and 77, medial surface of apex covered with slender spinules.

Endopod of uropod pyriform, less than half as long as peduncle, with long setae at apex and setules on margins; exopod arising near base and reaching distal margin of peduncle, nearly 6 times as long as wide and less than $\frac{1}{3}$ as wide as peduncle, with a cluster of long apical setae.

Relationships. — Of the known species of *Cyathura*, listed recently by MILLER & BURBANCK (1961), only *C. curassavica* Stork (1940) and *C. milloti* Chappuis, Delamare Deboutteville & Paulian

FIGS. 80–88. *Cyathura curassavica* Stork — 80. female, lateral; 81. pleon and telson, dorsal; 82. maxilliped; 83. pereopod 1; 84. pereopod 2; 85. pereopod 5; 86. pereopod 5, juncture of dactyl and unguis; 87. pleopod 2, male; 88. apex of appendix masculina.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(1956) resemble *C. specus* in being blind, subterranean species lacking a tooth on the palm of the gnathopod and having narrow uropodal exopods that do not fold over the telson. Both are much smaller (*C. curassavica* 4–7 mm, *C. milloti* 2.8 mm) in keeping with their life in subterranean interstitial waters, but considerably larger than the interstitial anthurids of the genus *Microcerberus*, the only genus of the family Microcerberidae, which are only 0.8–1.6 mm in length. The larger (20 mm) *C. specus* must be limited to larger underground channels than its smaller relatives.

In addition to its small size, *C. milloti* differs in many respects from *C. specus*. The most obvious differences are the narrower telson and uropods, the irregularly curved shape and sparse setation of the palm of the gnathopod, and the coiled apex of the appendix masculina.

C. curassavica resembles *C. specus* more closely. The principal differences, other than size, are the following: *1*. Pereonites 1 and 2 are subequal in *C. curassavica*; pereonite 1 is longer in *C. specus*. *2*. In *C. curassavica* the telson is relatively narrower, and the sides are more convergent. *3*. The apex of the appendix masculina is different, being split into a lateral conical process and a medial bilobed process. The medial lobe of the latter is more spherical than the lateral lobe, and a proximal section of it bears a row of setules (fig. 88).

It is of interest to note that the narrow uropodal exopod and the presence of a row of setae proximal to the unguis are shared by the 3 subterranean species of *Cyathura*. These characters are probably adaptations for underground life, since they are found elsewhere in the Anthuridae only in the superficially similar *Cruregans fontanus* Chilton, an inhabitant of underground waters in New Zealand. Although the row of setae is not shown in CHILTON's (1894) illustrations, I have found it to be present in USNM specimens. A similar row of setae occurs in troglobitic cirolanid isopods and has been termed "organe dactylien" by RACOVITZA (1912). *Cruregans* is far removed systematically from *Cyathura*; it belongs in NORMAN & STEBBING's (1886) "Section B" genera with mouthparts modified for piercing and sucking. The exopod of the uropod is further reduced in *Microcerberus* to a minute oval segment.

Origin. — Like the troglobitic Cirolanidae, the cave-dwelling Anthuridae presumably have originated from marine ancestors, since there are no known freshwater epigean anthurids. The close similarity of *C. curassavica* and *C. specus* suggests a common ancestor, but no clues concerning the ancestor can be obtained from the 2 known western Atlantic species of *Cyathura*. Both *C. polita* Stimpson, living in estuaries along the Atlantic coast of the United States from Maine to Louisiana (MILLER & BURBANCK, 1961), and the briefly characterized *C. crucis* Barnard (1925) from St. Croix, Virgin Islands, are quite different from the 2 subterranean species.

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