

SMITHSONIAN MISCELLANEOUS COLLECTIONS
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Johnson Fund

REPORTS ON THE COLLECTIONS OBTAINED BY THE FIRST
JOHNSON-SMITHSONIAN DEEP-SEA EXPEDITION
TO THE PUERTO RICAN DEEP

TWO NEW CRINOIDS

(WITH TWO PLATES)

BY

AUSTIN H. CLARK

Curator, Division of Echinoderms, U.S. National Museum



(PUBLICATION 3231)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
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TWO NEW CRINOIDS

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The collection of crinoids brought back by the Johnson-Smithsonian Deep-Sea Expedition from the cruise of 1933 was a notable one, including 143 specimens representing 19 species, of which 2 are undescribed, one of these representing a genus which heretofore was known only from the Indian and Pacific Oceans. These two new species are herein described.

PSATHYROMETRA ACUTA, n. sp.

Plate 1, figs. 1, 2; plate 2, fig. 4

Locality.—Caroline station 102; northeast of Puerto Rico (lat. $18^{\circ}51' N.$, long. $64^{\circ}32' W.$); 90 to 500 fathoms; March 4, 1933. Three specimens (U.S.N.M. nos. E.3121 [type], E.3122, and E.3123).

Description.—The centrodorsal (pl. 1, figs. 1, 2) is sharply conical, the sides in profile straight in the proximal two thirds, thence very gradually and slightly turning outward and running to the pointed tip, longer than broad, 2.7 mm wide at the base and 3.5 mm long, measured along the sides interradially. The cirrus sockets are closely crowded all around the centrodorsal, which shows no trace of division into radial areas. There are proximally three columns of cirrus sockets in each radial area; the two outer columns of cirrus sockets consist of usually nine sockets, which diminish gradually in size from the base to the tip. The median column is incomplete, consisting of three or four sockets only and ending slightly beyond the middle of the centrodorsal.

The cirri are lacking.

The ends of the basal rays are indicated by low, broad, and inconspicuous tubercles in the interradiial angles of the calyx.

The radials are visible as curved bands with parallel sides from six to eight times as broad as long just above the centrodorsal. The anterolateral angles of adjacent radials are separated by a slight notch, the sides of which make an angle of about 90° with each other. There are no subradial clefts, but the line of junction between the centrodorsal and the radials is slightly and narrowly incised.

The IBr_1 are about three times as broad as their lateral length, with the lateral edges, as viewed dorsally, approximately straight and parallel and separated from those of their neighbors by a narrow interval. The proximal border is straight, but the distal is deeply incised in the median portion by the backward projection of the axillary, which reaches a point between one third and one half the distance from the distal to the proximal edge. The IBr_2 (axillaries) are longer than broad, and are more or less rhombic in shape. The proximal sides are rather strongly concave, and the distal sides are broadly **S**-shaped, curving inward from the lateral angles and thence gradually outward, becoming almost parallel on the sides of the unusually produced anterior angle, which is broadly truncated.

The first brachials are at least four times as long exteriorly as interiorly. The proximal border is broadly **S**-shaped, following the curve of the adjoining border of the axillary. The distal border runs inward from the outer anterolateral angle approximately at right angles to the longitudinal axis of the arm to a point somewhat beyond the midradial line, then curves outward and runs at a very slight angle to the proximal border to the inner anterolateral angle.

The second brachials are larger than the first, and are irregularly quadrate with their lower angle rather deeply incising the first brachial.

The third brachials (the hypozygals of the first syzygial pair) are low triangular, the inner border being about twice as long as the median length and the outer border being reduced almost or quite to a point.

The arms are not preserved beyond this point.

The width of the animal at the level of the third brachials is about 6.5 mm.

A second specimen from the same locality resembles the first, but is very slightly smaller.

In a third specimen from the same locality (pl. 2, fig. 4) the cirri are 10.0 mm long with 27 segments, of which the first is from twice as broad as long to about as long as broad, the second is about as long as broad or slightly longer than broad, the third is about three times as long as the median width, the fourth is still longer, and the fifth

and sixth are five or six times as long as the median width; those following decrease in length so that the last 12 are only about one third again as long as broad. The elongate earlier segments have expanded ends, the distal end being somewhat produced, especially dorsally, and slightly overlapping the base of the segments following. On the short and more compressed distal segments the production of the distal edge dorsally becomes narrowed and accentuated so that the dorsal profile of the outer portion of the cirri is strongly serrate, whereas the ventral profile is smooth. The opposing spine is triangular, erect, arising from the entire dorsal surface of the penultimate segment, equal to half the width of the segment in height, and much higher than the production of the distal edge of the segments preceding. The terminal claw is small, conical, and scarcely curved.

P_1 is 4.4 mm long with 17 segments and is slender and evenly tapering. The first three segments are about as long as broad, and those following slowly increase in length so that the seventh is about twice as long as broad, the tenth is about three times as long as the median width, and the outermost are about four times as long as the median width. From the tenth onward the segments are constricted centrally, and the slightly projecting distal edge is finely spinous dorsally.

P_2 is 4.3 mm long with 12 segments, of which the first is about as long as broad, the second is about one third again as long as broad, the third is somewhat more than twice as long as broad, and those following are greatly elongated with slightly produced and very finely spinous distal ends. The pinnule is about as stout basally as P_1 but tapers rather more rapidly, the distal half being very slender, though not flagellate.

P_3 resembles P_2 and is about the same length or slightly shorter, with about 10 segments. It is about as stout basally as P_2 but tapers more gradually and evenly, so that it appears stouter in the proximal half. It bears a gonad which extends from the middle of the fourth to the end of the proximal third of the sixth segment.

The next three pinnules are similar to P_3 .

The distal pinnules are 6.0 mm long with 17 segments, which, except for the first two, are much elongated and very slender.

Remarks.—No species of the genus *Psathyrometra* has heretofore been known from the Atlantic. It is represented in the Indian and Pacific Oceans by 14 species, which range from the eastern coast of India to the Lesser Sunda, Philippine, and Hawaiian Islands, thence northward to the northern part of the Sea of Japan and the Aleutian

Islands, and southward along the coast of North America to Panama and the Galápagos Islands, in from 184 to 1,617 fathoms of water.

The new species, *P. acuta*, appears to be most closely related to *P. major* and *P. mira*, which are found on the western coast of the Malay Peninsula and southward to the Lesser Sunda Islands in 185 to 434 fathoms of water. These agree with *P. acuta* in having two and a partial third column of cirrus sockets in each radial area on the centrodorsal, but in both of them the radial areas on the centrodorsal are conspicuously delimited by broad grooves or bare lines.

DIPLOCRINUS CAROLINAE, n. sp.

Plate 1, fig. 3; plate 2, fig. 5

Locality.—*Caroline* station 47; west of Puerto Rico (lat. $18^{\circ}17'05''$ N., long. $67^{\circ}24'45''$ W.); 280 to 340 fathoms; February 13, 1933. One specimen (U.S.N.M. no. E.3124 [type]).

Description.—The stem as preserved is 47 mm long and, in section, is pentagonal with broadly rounded angles. There are seven complete internodes, six of five and one of six columnals. The columnals alternate thick and thin, the thick ones being twice as high as the thin ones or even higher, and some of the thin ones being incomplete.

The cirri are about 25 mm in length and consist of 26 to 29 segments, of which the first 6 have a single dorsal tubercle and those following have two dorsal tubercles, a proximal and a distal, with often a small tubercle between them. The penultimate segment is entirely smooth dorsally. The terminal claw is short, stout, and strongly curved.

There are exactly 30 arms, which are about 75 mm long from the radials. Each post-radial series bears two IIBr series, and each of these bears externally a IIIBr series, so that the arms on each post-radial series are six, arranged in 2,1,1,2 order. The division series are only slightly rounded dorsally and have broadly and sharply flattened sides so that the basal portion of the crown is very compact.

Remarks.—This new species is closely related to *D. maclearanus* (Wyville Thomson), which was dredged by the *Challenger* off Barra Grande, south of Pernambuco, Brazil (lat. $9^{\circ}05'$ S., long. $34^{\circ}50'$ W.), in 350 fathoms on September 10, 1873, from which it differs in having a larger number of internodals, in having more segments in the cirri, and in having the cirri provided with prominent dorsal tubercles.

EXPLANATION OF PLATES

PLATE 1

- FIG. 1. *Psathyrometra acuta*, n. sp., the type specimen (U.S.N.M. no. E.3121) from Caroline station 102, lateral view. $\times 3$.
- FIG. 2. *Psathyrometra acuta*, n. sp., the type specimen (U.S.N.M. no. E.3121) from Caroline station 102, dorsal view. $\times 3$.
- FIG. 3. *Diplocrinus carolinac*, n. sp., the type specimen (U.S.N.M. no. E.3124) from Caroline station 47, lateral view. Natural size.

PLATE 2

- FIG. 4. *Psathyrometra acuta*, n. sp., another specimen (U.S.N.M. no. E.3123) from Caroline station 102, dorsal view. $\times 3$.
- FIG. 5. *Diplocrinus carolinac*, n. sp., the type specimen (U.S.N.M. no. E.3124) from Caroline station 47, lateral view. Natural size.





PSATHYROMETRA ACUTA AND DIPLOCRINUS CAROLINAE
(For explanation, see page 5.)



PSATHYROMETRA ACUTA AND *DIPLOCRINUS CAROLINAE*
(For explanation, see page 5.)