

PROCEEDINGS
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SEVENTEEN NEW EAST INDIAN CRINOIDS BELONG-
ING TO THE FAMILIES COMASTERIDÆ
AND ZYGOMETRIDÆ.

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Professor Max Weber has done me the honor of entrusting to me for study the very extensive collection of unstalked crinoids brought together by the *Siboga* during the course of her investigations in the Dutch East Indies. The great importance of this collection may be appreciated when it is stated that it consists of some 1320 specimens, representing approximately 170 species.

The large number of new forms discovered naturally throws an entirely new light upon the systematic interrelationships of many species and genera, while the new geographic data presented will be of the greatest interest in its bearing on the study of the geographical distribution of these and other animals.

As it will take considerable time to digest all the new facts and to complete a satisfactory report it has seemed advisable to publish preliminary diagnoses of the new genera and species in advance of the final memoir, in which they will be described in greater detail and figured, and in which their relationships with other forms will be discussed.

Among the new forms there are comparatively few which show any great departure from types already known. A large number of the new species are from the Lesser Sunda Islands and represent in that region related species previously known from Japan or from Hawaii. Many of the others are from the Java Sea, and are essentially sudden local departures from well known and widely ranging East Indian types.

The small species of the Antedonidæ, of which this collection contains a large number, are most instructive in showing the very intimate connection between many genera and several subfamilies which heretofore have been considered as quite distinct. In the final report a revision of this difficult group will be included.

Palæocomatella gen. nov.

Genotype.—*Actinometra difficilis* P. H. Carpenter, 1888.

Diagnosis.—Post-radial structure as in the twenty armed species of *Comatula* (*C. rotalaria*); proximal cirrus segments (except the basal) elongated; outer cirrus segments short and bearing dorsal tubercles as in *Comatella*; centrodorsal large, discoidal, the cirrus sockets in one and a partial second marginal row, but the second row, instead of alternating irregularly with the first as in all the other genera of comasterids, is exactly beneath the first so that the cirrus sockets are arranged in columns, five to each radial area.

Capillaster gracilicirra sp. nov.

This new form is closely related to *C. sentosa*, from which it differs in its longer and much more slender cirri which have proportionately much longer segments. The cirri are XVII, 27-35 (usually nearer the latter), 33 mm. long; the longer proximal segments are twice as long as broad, slightly constricted centrally with swollen ends; the shorter distal segments are about as long as broad; the tenth or eleventh is a transition segment.

The arms are from fifty-one to one hundred ten in number, 100 mm. to 140 mm. long.

Type locality.—"Siboga" Station No. 320.

Capillaster tenuicirra sp. nov.

This new species is closely related to *C. multiradiata*, but is comparatively slender and delicate, with much longer and much more slender cirri. The cirri are XII-XVI, 24-30, 25 mm. to 28 mm. long; the fifth and sixth segments are the longest, twice as long as broad; the tenth or eleventh and following are very slightly longer than broad, and sometimes bear two, a proximal and a distal, dorsal spines. The cirri taper slightly to the middle of the sixth (transition) segment, being more slender and highly polished from that point onward. The arms are from ten to thirty (usually between fifteen and twenty-five) in number, 110 mm. to 130 mm. long.

Type locality.—"Siboga" Station No. 320.

Comissia littoralis sp. nov.

The centrodorsal is discoidal, the dorsal pole flat, 2.5 mm. to 3 mm. in diameter.

The cirri are XXI-XXII, 16, 10 mm. to 11 mm. long; the first segment

is short, the second about twice as broad as long, the third about half again as long as the proximal diameter, the fourth about twice as long as the proximal diameter or slightly longer, the fifth about as long as the fourth or slightly shorter; the following rapidly decrease in length, becoming after the eighth or ninth slightly broader than long; the fifth and following have a slight subterminal dorsal tubercle which gradually moves anteriorly, becoming median after the ninth; the opposing spine is very small, subterminal. The earlier longer segments are slightly constricted centrally with prominent ends; the distal shorter segments are laterally compressed and therefore appear broad. In general appearance the cirri resemble those of *Comanthus pinguis* or of *C. japonicus*.

The ends of the basal rays are visible as small tubercles in the angles of the calyx; very narrow subradial clefts are present; the radials are concealed; the rBr_1 are concealed except in the angles of the calyx, where their lateral edges diverge at an angle of 90° ; the axillaries are almost triangular, twice as broad as long; the lateral edges are very short, making an obtuse angle with those of the rBr_1 .

The ten arms are about 60 mm. long, and resemble those of *C. lütkeni*, but the basal swelling is only very slightly marked.

P_1 is considerably longer and stouter than the succeeding pinnules.

Type locality.—“Siboga” Station No. 129, reef.

Comissia parvula sp. nov.

This new species is closely related to *C. hispida*, but it is a smaller, more delicate and more slender form; the cirri while resembling in structure those of *C. hispida*, are arranged in two rows instead of in a single row on the centrodorsal, and are more slender and more numerous. From *C. chadwicki*, which also possesses the same type of centrodorsal and of cirrus structure, it differs in having fewer cirrus segments and a smaller centrodorsal on which the cirri are arranged in two rows instead of in a single irregular row.

The centrodorsal is large, discoidal, the dorsal pole flat, 2 mm. to 2.5 mm. in diameter.

The cirri are xx–xxiii, 9–13 (usually 11), 7 mm. to 9 mm. long.

The arms are 45 mm. long, and slender.

Type locality.—East Indies; collected by the “Siboga.”

Comissia gracilipes sp. nov.

The centrodorsal is large, discoidal, with a broad flat dorsal pole 2 mm. in diameter. The cirrus sockets are arranged in a single very closely crowded marginal row.

In the type the cirri are xv, all lacking; in a smaller specimen the cirri are xx, in one and a partial second row, the latter apparently undergoing suppression; there are also traces of the sockets of a third row. In this latter the cirri have 9 segments and are from 4 mm. to 4.5 mm. long; the first segment is nearly or quite twice as broad as long, the second is slightly longer than broad, the third is about three times as

long as the diameter of the proximal end, the fourth is slightly longer, and the fifth is about as long as the third; the sixth is about twice as long as the diameter of the distal end; the seventh is slightly shorter; the antepenultimate is half again as long as broad, and the penultimate is about as long as broad. The longer earlier segments are slightly constricted centrally with expanded ends as is usual in the genus. The dorsal processes on the outer segments are almost obsolete.

The ten arms resemble those of *C. parrula*.

Type locality.—"Siboga" Station No. 267.

Comissia spinosissima sp. nov.

The centrodorsal is large, thin discoidal, the dorsal pole flat, regularly pentagonal, 2 mm. in diameter.

The cirri are xxx, 10-11, 8 mm. long, small and slender, with rather strongly produced distal edges on the shorter outer segments; the first segment is very short, the second twice as long as the expanded ends, the third the longest, about four times as long as the median diameter; the fourth is nearly as long as the third, but the distal end is more expanded; the fifth is twice as long as the expanded distal end; the following gradually decrease in length so that the antepenultimate is about as long as broad; the second and third segments have both the proximal and distal ends considerably enlarged, and are slender and broadly oval in cross section; the fourth has the proximal end only very slightly enlarged, but gradually expands from the middle to the distal edge, which is produced and overlaps the base of the succeeding segment; the following segments gradually increase in lateral diameter, the enlargement of the distal ends gradually decreasing in extent; the fifth and following segments have slight subterminal tubercles; the opposing spine is terminal, minute, but larger than the tubercle on the preceding segment; the terminal claw is nearly twice as long as the penultimate segment, and is strongly curved.

The radials are concealed in the median line, but are slightly visible in the angles of the calyx; the 1 Br₁ is very short, oblong, five or six times as broad as long, very closely united with the succeeding axillary which is triangular, twice as broad as long.

The ten arms are 45 mm. long; the brachials resemble those of *C. hispida*. The ossicles of the division series and the brachials have their distal borders armed with very long fine spines; the pinnulars are exceedingly spinous, and the third has a slight, very spinous, carination.

Type locality.—"Siboga" Station No. 305.

Comatula tenuicirra sp. nov.

This form is closely related to *C. purpurea* from which it differs in possessing longer and more slender cirri.

In the type the cirri are x (in interradial pairs), 14-15, 13 mm. to 15 mm. long; the first segment is short, the second nearly as long as

broad, the third one-third to one-half again as long as broad; the fourth and fifth are twice as long as the median diameter; the following segments become slightly shorter so that the third before the penultimate is about one-third longer than broad, the next slightly shorter, the antepenultimate half again as long as broad, and the penultimate very slightly longer than broad.

The ten arms resemble those of the slender armed variety of *C. purpurea* and measure 125 mm. in length.

The second and third segments of the lower pinnules are very strongly carinate.

Type locality.—"Siboga" Station No. 320.

Cominia australis sp. nov.

This species differs from *C. decameros* in having fewer cirri which have fewer segments and are very slightly stouter and less compressed laterally; the synarthrial and articular tubercles are not so prominent as in *C. decameros*, but the rugged character is indicated and might become prominent in larger specimens.

The centrodorsal is thin discoidal, the bare dorsal pole flat, 2 mm. in diameter; the cirrus sockets are arranged in three closely crowded roughly alternating marginal rows.

Cirri xxiv, 12-13, 13 mm. to 15 mm. long; the first segment is short, the second nearly or quite twice as broad as long, the third twice as long as the diameter of the ends; the fourth, fifth and sixth are about three times as long as their median diameter; the following gradually decrease in length so that the antepenultimate is about one-third longer than broad; the opposing spine is represented by a slight subterminal tubercle; the terminal claw is longer than the penultimate segment, rather stout, and moderately curved; the longer proximal cirrus segments have slightly swollen distal ends, this character gradually disappearing as the segments become shorter; the last four or five segments before the penultimate have the distal dorsal margin very slightly thickened; the cirri are moderately compressed laterally, this increasing slowly and evenly from the base to the short outer segments; the eighth or ninth segment becomes lighter in color distally and is a slightly marked transition segment, though the following segments are, like the preceding, without dorsal processes.

The post-radial series resemble those of *C. decameros*, but are not quite so rugged and tubercular. The ten arms were probably about 90 mm. long.

Type locality.—"Siboga" Station No. 297.

Comaster sibogæ sp. nov.

Comaster sibogæ is most nearly related to *C. fruticosus*, differing from that form chiefly in its proportionately longer and much more slender cirri which have proportionately longer proximal segments, and more prominent dorsal spines on the distal segments.

The cirri are xxii, 13, 13 mm. long; the first segment is short, the second is twice as long as its median diameter, the third about three times as long as its median diameter, the fourth and fifth the longest, three to three and one-half times as long as the median diameter; the following segments decrease rapidly in length, so that the antepenultimate is slightly longer than broad and the penultimate about as long as broad; the fifth is a transition segment; the following have small, but sharp and prominent, dorsal spines which are acutely triangular in end view; the opposing spine is subterminal, slender, and very sharp, in height equal to about one-third the lateral diameter of the penultimate segment; the terminal claw is nearly or quite twice as long as the penultimate segment, very slender and moderately curved basally, but becoming nearly straight in the outer two-thirds.

The arms are about sixty in number, 100 mm. long.

Type locality.—"Siboga" Station No. 318.

Comaster pulcher sp. nov.

The cirri are xxvii, 15-17, 12 mm. to 15 mm. long; the first segment is about twice as broad as long, the second about twice as long as the expanded distal ends, strongly constricted centrally, the third three or four times as long as the median diameter, constricted centrally, though not so much so as the preceding; the fourth segment is slightly over twice as long as the proximal diameter; the following rapidly decrease in length so that the seventh and following are about as long as broad; the fourth and following have small subterminal dorsal tubercles, and also have the distal edge everted and prominent so that in a lateral view they appear to bear dorsally a broad tubercle with a concave crest.

The thirty-seven arms are 85 mm. long; one of the ii Br series is 2, the remaining nine being 4 (3+4); the iii Br series are all 2; those which are absent are all external.

Type locality.—"Siboga" Station No. 257.

Comantheria weberi sp. nov.

This new species is most closely related to *C. imbricata*; but it is a more delicate and slender form with more numerous arms and much less robust and smaller cirri. It also lacks entirely on the division series, and almost entirely on the arms, the strong imbrication of the ossicles from which *imbricata* gets its name.

The centrodorsal is discoidal, moderately thick, the flat dorsal pole 4 mm. in diameter.

The cirri are xxxii, 19-20 (usually the latter), about 20 mm. long; the fifth and sixth or sixth and seventh segments are the longest, about half again as long as broad; the outer segments are nearly or quite twice as broad as long; the seventh or eighth (usually the latter) is a transition segment, strongly marked and encircled with a dark band; after the transition segment the distal dorsal edge of the segments begins to project, forming a serrate transverse ridge which on the outer segments

becomes subterminal, remaining as a narrow serrate ridge which may be more or less raised in the center; on the fifth after the transition segment a small low tubercle appears midway between this ridge and the proximal end of the segment which on the outer segments becomes pointed so that in lateral view the dorsal surface of the segment is bidentate as in *Oligometra aedeonae*; the longer proximal segments are slightly constricted centrally with prominent ends; proximal to the transition segment the cirri are brownish yellow, distal to it white and highly polished.

The arms are forty in number, 95 mm. long; all the II Br series are 4 (3+4) and all the III Br series are 2; there is no division beyond the III Br series. The division series are moderately broad and well rounded dorsally, moderately separated; the dorsal intraradial perisome contains small scattered inconspicuous plates; the brachials are moderately overlapping.

Type locality.—"Siboga" Station No. 49a.

Comantheria rotula sp. nov.

This form is intermediate between *C. briareus* and *C. weberi*; it exhibits the post-radial structure of the latter, but possesses the centrodorsal and cirri of the former.

The centrodorsal is greatly reduced, usually with a few weak cirri, though there may be none.

The arms are forty in number, in the type 150 mm. long; the II Br series are 4 (3+4) and the III Br series 2; there is no further division. The dorsal surface of the animal is smooth, with comparatively little overlap to the brachials, and the rugged appearance characteristic of *briareus* is entirely absent.

Type locality.—"Siboga" Station No. 273.

Comanthus crasscirra sp. nov.

This species is related to *C. japonica*, and is the first member of the small group to which *C. japonica* belongs to be brought to light south of Japan.

The centrodorsal is flattened hemispherical, the small dorsal pole flat, 2 mm. in diameter; the cirrus sockets are arranged in one and a partial second irregular marginal row.

The cirri are XVII, 22-24, 24 mm. long; the first segment is short, the following gradually increasing in length so that the fourth is nearly or quite as long as broad and the fifth and sixth or sixth and seventh, which are the longest, nearly or quite half again as long as broad; the following segments gradually decrease in length so that the terminal eight or ten are slightly broader than long; the twelfth or thirteenth and following have small subterminal dorsal tubercles; the shorter distal segments are slightly compressed laterally and have a highly polished surface, though this begins gradually so that there is no marked transition segment; the opposing spine is small, low and broad, median or subterminal. As a whole the cirri are large, long and stout, resembling those of *C. japonica*.

The radials are just visible in the median line beyond the centrodorsal, but extend well up in the angles of the calyx, their distal ends being slightly separated so that the bases of the 1 Br₁ are not in apposition; the 1 Br₁ are short with a convex proximal border and slightly converging lateral edges; they are about three times as broad as the median length; the axillaries are broadly pentagonal, twice as broad as long, the anterior angle sharp, and the distal edges concave; the lateral edges are about as long as those of the 1 Br₁ and make with them an obtuse angle.

There are three 11 Br and four 111 Br series present; three of the latter are internal, the fourth being developed by the side of an internal one. The division series are narrow so that a large amount of dorsal perisome is visible; this is protected with numerous small irregular plates.

The seventeen arms are 120 mm. long, and resemble those of *C. japonicus*.

Type locality.—"Siboga" Station No. 133.

FAMILY ZYGOMETRIDÆ.

Zygometra punctata sp. nov.

The centrodorsal is thin discoidal, the broad dorsal pole flat, circular, 2.7 mm. in diameter.

The cirri are xv, 18-19, 9 mm. long; the first segment is very short, the second and third about three times as broad as long, the fourth about twice as broad as long; the next two or three are similar to the fourth; the following decrease very gradually in length so that the distal ten or eleven are slightly broader than long; the sixth and following bear prominent sharp dorsal spines.

The radials are entirely concealed by the centrodorsal; the 1 Br₁ are very short and band-like, six or more times as broad as long, united to the axillary by pseudosyzygy; the axillaries are low triangular, the lateral angles slightly truncated, three times as broad as long.

The 11 Br series are 4 (3+4), broad like the 1 Br series, with straight lateral edges which are more or less flattened and are almost or quite in apposition; the lateral portions of the dorsal surface of the ossicles of the division series are roughened or very finely papillose as in the species of *Mariametra*.

The type has twenty-one comparatively short and rather stout arms 35 mm. long.

P₁ is about 5 mm. long, rather stout basally but tapering in the distal half to a slender flagellate tip, with twenty segments of which the first is about three times as broad as long and the following gradually increase in length becoming about as long as broad on the ninth and slightly longer than broad terminally; the proximal segments are rather strongly carinate, the carination having a straight profile parallel to their longitudinal axes; the outer segments have slightly prominent distal ends. P₂ is similar to P₁, but just perceptibly smaller and shorter. P₃ is 2.5 mm. long with twelve segments, resembling, except for its small size, the preceding. P₄ is 2 mm. long with twelve segments of which the first three are much

broader than long, the fourth is about as long as broad, and the distal twice as long as broad. P_5 is 2.5 mm. long with twelve segments and resembles P_4 , but is very slightly stouter basally and possesses longer segments distally; the following pinnules resemble P_5 . The distal pinnules are 4 mm. long with fifteen segments of which the distal are nearly or quite three times as long as broad.

The color is white or brownish white with numerous regular purple spots on the division series and arm bases, and in band-like areas on the outer part of the arms; the cirri are white, with each segment banded with purple.

Type locality.—“Siboga” Station No. 273.

Eudiocrinus junceus sp. nov.

The centrodorsal is discoidal, moderately thick, the sides sloping inward rather strongly; the flat dorsal pole is 1 mm. to 1.5 mm. in diameter; the cirrus sockets are arranged in two closely crowded and irregular rows.

The cirri are xxv, 22, 23 mm. long, greatly elongated with elongated segments, very slender, tapering from the base to the tip, rather more in the first three or four segments than subsequently. The first segment is short, the second not so long as broad, the third nearly or quite twice as long as the proximal diameter, the fourth about four times as long as the median diameter, the sixth, seventh and eighth very slightly longer; from this point the length almost imperceptibly decreases so that the seventeenth and following are slightly over twice as long as broad; the penultimate is half again as long as broad and tapers somewhat distally; the opposing spine is represented by a small, rounded subterminal tubercle; the terminal claw is slightly longer than the penultimate segment, very slender and very sharp, only slightly curved. The second and third segments are rather strongly constricted centrally, and the sixth and following have moderately expanded and slightly overlapping distal ends; both of these characters gradually die away distally. The cirri are rather strongly compressed laterally from the fifth segment onward.

The radials are just visible beyond the edge of the centrodorsal; their distal border is swollen and turned outward, smooth or evenly tuberculated. The ossicles of the 1 Br series (which are united in a pseudosyzygial pair) taken together are oblong, not quite twice as broad as long; both the proximal and the distal borders are turned outward, the former slightly, but the latter standing up at right angles to the general surface of the segment, with a smooth and somewhat thickened edge; the proximal edge may be more or less scalloped, and bears just within the border a prominent rounded tubercle; the produced distal edge is thickest and most prominent in the mid-dorsal half, this portion being distally evenly concave; the remainder of the distal edge may be broadly scalloped.

The five arms are 90 mm. long; the first brachial is oblong, two and one-half to three times as broad as long, the proximal and distal edges slightly thickened and everted; the second brachial is similar, but the

distal edge is prominently everted, especially in the central third where the eversion is thickened and distally concave, standing up vertically from the dorsal surface of the segment; the third and fourth brachials form a syzygial pair which is slightly longer on one side than on the other, and is about twice as broad as the lesser length; this syzygial pair resembles the primibrachial pseudosyzygial pair, but the tubercle just within the proximal border is only barely indicated; the following three brachials are slightly wedge-shaped, about twice as broad as the median length, with their distal borders everted as described for the second brachial, but progressively less and less so; the following brachials are triangular, about as long as broad, with slightly produced and overlapping distal edges. From the fourth to the ninth brachials there is a low median carination which after the ninth becomes the low rounded zigzag keel characteristic of the arms of all the species of this genus, which is traceable throughout the entire length of the arms.

P_C is 6.5 mm. long with fifteen segments, rather stout basally, but tapering rapidly to a very delicate tip, strongly prismatic; the first segment is much broader than long, the following gradually increase in length becoming about as long as broad on the fourth or fifth and terminally twice as long as broad; the second to the sixth segments have a narrow sharp carination, the crest of which is straight and parallel to the longitudinal axis of the pinnule; the outer edge of the prism formed by the pinnule is sharp; the outer surface of the pinnulars between the prismatic angles is flat or very slightly concave; P_1 is similar, 6.5 mm. long with thirteen or fourteen segments; P_a is 11 mm. long with fifteen segments, much larger and stouter than the preceding, tapering evenly from the base and becoming very delicate distally; the first segment is much broader than long, the following gradually increasing in length and becoming about as long as broad on the fourth, and three times as long as broad terminally; the second, third and fourth have a low even carination; the second and following have their distal edges all around produced and finely spinous; P_2 is 11 mm. long with fifteen segments, exactly resembling P_a ; P_b is from 8 mm. to 10 mm. long with nineteen segments, of which the basal are as small as the basal segments of P_2 ; the first segment is short, more or less crescentic, the second is about twice as broad as the median length, the third is not quite so long as the distal breadth, the fourth is from one-third to one-half again as long as broad, and the following gradually increase in length, after the eighth being three or four times as long as broad; the fifth and following have slightly produced and spinous distal edges; P_3 is 10 mm. or 11 mm. long, similar to P_b ; P_c is 8 mm. long with seventeen segments, very slender (more slender than P_b) with more elongated segments than P_b ; P_4 is similar to P_c ; P_d is 7 mm. long with eighteen segments, resembling P_c , but even more delicate, with longer segments; P_5 is similar to P_d ; P_e is 6.5 mm. long, with sixteen segments, and resembles P_d ; P_6 is similar to P_e ; the distal pinnules are 8.5 mm. long, with twenty segments, and are excessively slender.

Type locality.—"Siboga" Station No. 167.

Eudiocrinus pinnatus sp. nov.

The centrodorsal is discoidal, the flat dorsal pole 2 mm. in diameter; the cirrus sockets are arranged in two marginal rows.

The cirri are xvii, 17-22, 10 mm. to 11 mm. long; all the segments beyond the third are subequal, none being quite so long as broad; the fourth to the eighth or ninth have slightly prominent distal edges, especially dorsally. The cirri are rather stout and are of the same type as those of *E. variegatus*.

The five arms are about 75 mm. long; the brachials are unornamented, and their distal edges are not produced.

P_C is 4 mm. long, with eleven segments, moderately stout, strongly prismatic, evenly tapering to the tip, the distal border of the segments sharply, though narrowly, carinate; P_1 is 4.5 mm. long, with twelve segments, similar to P_C ; P_a is 11 mm. long, with seventeen segments, very slender like the succeeding pinnules, though very stiff; the first two segments are slightly broader than long, the third and fourth half again as long as broad, the following gradually increasing in length and becoming distally three or four times as long as broad; the distal edges of the third and following segments are produced and spinous; the pinnule resembles the lower pinnules in certain of the more slender species of *Colobometra*; P_1 is similar to P_a , 11 mm. long, with seventeen segments; P_b is similar to P_3 , 8 mm. long, with eighteen segments; P_3 is 8 mm. long, with eighteen segments, proportionately more slender than P_2 and with much shorter segments which become as long as broad on the third and twice as long as broad basally on the tenth or eleventh; P_c and P_4 are 7.5 mm. long, with eighteen segments, and resemble the preceding pinnules; the distal pinnules are 12 mm. long, with from twenty to twenty-four segments which, beyond the fifth, are twice, and distally are three times as long as broad, with very finely spinous distal ends.

Type locality.—"Siboga" Station No. 310.

Eudiocrinus venustus sp. nov.

The centrodorsal is thin discoidal, the bare dorsal pole flat, finely papillose, 1 mm. in diameter; the cirrus sockets are arranged in a single marginal row.

The cirri are xii, 15-16, 6.5 mm. long, rather slender; the first segment is short, the second longer, the third about as long as the median diameter; the fifth and sixth are the longest, about as long as their distal diameter or slightly longer; the segments after the eighth are subequal, slightly longer than broad; the third to the seventh segments are constricted centrally with strongly expanded distal ends which overlap the bases of the succeeding segments, especially dorsally; beyond the seventh this character gradually dies away.

The distal edge of the radials is just visible beyond the edge of the centrodorsal, and is ornamented with a row of small regular tubercles; the pseudoszygial pair (the ossicles of the 1 Br series) is oblong, not quite twice as broad as long, with the proximal, distal and lateral edges

everted; the lateral edges are beaded like the distal edge of the radials; the proximal edge is faintly scalloped and bears a prominent median tubercle; the distal edge has the median third of the eversion thickened and standing up vertically as a high transverse ridge; the pseudo-syzygial line is finely beaded; the first brachial is oblong, about three times as broad as long; the proximal edge is slightly everted, with a prominent, though small, median tubercle; the distal edge is strongly everted and thickened, this thickened and everted border being more or less divided in the middle; the second brachial is very slightly larger than the first, about twice as broad as long; the distal edge is everted, the central third of this eversion being thickened and produced; the first syzygial pair (composed of the third and fourth brachials) is about as long as broad or slightly longer than broad; the proximal edge is slightly everted with a minute median tubercle; the distal edge is slightly everted with a slightly larger, more or less transversely elongate, median tubercle; the following brachials have finely spinous distal ends which are not produced nor everted; a slight median tubercle is visible on the proximal border of the brachials up to the first or second beyond the second syzygy; there is a very low and faint median carination on the syzygial pair and on the following brachials which is accentuated by being light in color bordered with dark on either side; on the triangular brachials this becomes zigzag as in the other species of the genus.

The five arms are 60 mm. long.

PC is 3 mm. long with ten segments: the first bears a very large fan-shaped, rounded or distally truncated carinate process which is about as high as the lateral diameter of the segment; the second bears a high carinate process half as high as the lateral diameter of the segment, of which the crest is parallel to the longitudinal axis of the pinnule; the following segments are similarly, but diminishingly, carinate; P_1 is similar; P_a is 5 mm. long with eleven or twelve segments, of which the first is short, the second is nearly as long as broad, the third is about as long as broad, and the distal are twice as long as broad; the pinnule is rather slender and not greatly enlarged, rather strongly prismatic; the distal edges of the third and following segments are slightly produced and finely spinous, with prominent spines at the angles of the prism; the ventral borders of the segments bear very numerous fine spines; the first segment has a strongly rounded carinate process, and the second and third are narrowly though sharply carinate; P_2 is similar to P_a ; P_b is 4 mm. long with thirteen segments, slightly more slender than P_a ; the first segment is short, the second slightly longer, the third about as long as broad; the distal segments are much elongated with a few long spines on the distal edges which are turned outward; the proximal segments are not carinate; the following pinnules are similar, though weaker and more slender with slightly longer segments distally which bear a few conspicuous spines on their overlapping distal ends; the distal pinnules are exceedingly slender, 7 mm. long with seventeen segments, of which the third and following are greatly elongated; the third bears a narrow carination.

Type locality.—“Siboga” Station No. 289.