

It is worthy of notice that *M. plumosa* and this variety *V. Palmeri*, differ from all other known fresh-water sponges by the presence in them of a compound or substellate dermal spicule. The spiculae of the dermis throughout the group are generally minute, spined acerates; in *M. Everetti*, Mills, we find them as minute birotulates. In *this* species the two forms seem to be combined; the spines have become central and prolonged, while their capitate extremities suggest the rotules of the last-named species.

Of the six sponge masses from the above locality, sent by the Smithsonian Institution for examination, the smallest was somewhat fusiform in shape and proved to belong to a different species—*Meyenia crateriforma*, Potts—heretofore found along the eastern border of the United States. In it alone the mass was not darkened by the presence of some pervasive vegetable parasite.

DESCRIPTIONS OF NEW FISHES OBTAINED BY THE UNITED STATES FISH COMMISSION MAINLY FROM DEEP WATER OFF THE ATLANTIC AND GULF COASTS.

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A preliminary study of the collections of deep-sea fishes made under Government auspices has brought to light many new forms, some of which are here described in advance of their consideration in a final report now in preparation upon the extensive materials brought together by the combined efforts of the U. S. Fish Commission and the Museum of Comparative Zoology. Only the species secured by Fish Commission vessels are at present referred to, the rest being reserved for future discussion.

*Aphoristia diomedea*, n. s.

The species is described from a specimen (No. 37347) from Albatross station 2414 (latitude 25° 04' 30" N., longitude 83° 21' 15" W.; depth, 24 fathoms). Its length is 140 millimeters to base of caudal. The body is somewhat slender, its greatest height (43<sup>mm</sup>) contained 3½ times in its length without caudal.

Scales moderate, somewhat loosely fixed, pectinated; about 85 in a longitudinal, 35 in a transverse, series. Jaws and snout covered with small thin scales.

Length of head contained 5⅔ times in the standard length. Length of snout 5 times in that of head. Eyes moderate, equal, very close together, without intervening scales; the upper eye is *directly above the lower one*, and is distant from the dorsal outline an interval equal to its own least diameter; diameter of eye in length of head 6 times.

Mouth oblique, curved, its angle in the vertical through the front margin of the eyes; length of gape equal to that of snout, and con-

tained 5 times in that of head. Teeth very feeble. Nostrils tubular, nearer to eye than to tip of snout.

Dorsal origin in the vertical through middle of eyes; the fin contains 96 rays, including half of caudal, the length of the longest  $3\frac{1}{2}$  times in greatest height of body.

Distance of anal origin from snout  $4\frac{1}{4}$  times in total length; the anal contains 79 rays, and its greatest height is equal to that of the dorsal.

Length of median caudal rays contained 10 times in total length.

Distance of ventral origin from snout 6 times in total length; the ventral is separated from the anal by a distance equal to one-third the length of head; its length is contained  $2\frac{2}{3}$  times in that of head; it consists of four rays.

Color uniform gray, lighter below, the scales above somewhat metallic in luster. The last fourth of the dorsal has three oblong black blotches somewhat larger than the eye; the anal with four similarly placed. In the young there is a slight brownish marginal line upon each scale, and an appearance of indistinct cloudings of brown upon the colored side.

Radial formula: D. 96; A. 79; V. 4; scales 85-35.

*Aphoristia pusilla*, n. s.

The species is described from the following specimens collected by the steamer Fish Hawk:

No. 28730, latitude  $40^{\circ} 07' 48''$  N., longitude  $70^{\circ} 45' 54''$  W., 55 millimeters long, with specimen 28778, latitude  $40^{\circ} 01'$ , longitude  $69^{\circ} 56'$ .

The body is slender, lanceolate, its greatest height contained  $3\frac{1}{2}$  times in its total length. The scales are small, strongly and sharply denticulated, 85 to 90 in a longitudinal and 38 in a transverse series. Jaws and snout entirely covered with scales.

The length of the head is contained 5 times in total length; the length of the snout in that of the head  $5\frac{1}{2}$  times, and equals the diameter of the eye.

Eyes small, very closely approximated, in the same vertical line. The nostril is tubular, placed midway between the lower eye and the tip of the snout.

Mouth small, oblique, curved, its posterior angle under the anterior margin of the pupil of the lower eye, the length of its gape in that of the head  $4\frac{2}{5}$  times, in greatest height of body  $6\frac{2}{5}$  times. Dentition feeble.

The dorsal fin begins in the vertical through the pupils and is composed of 78 rays; its greatest height is contained  $2\frac{2}{3}$  times in that of body.

The anal is separated from the snout by a distance about equal to the height of the body, and  $7\frac{1}{2}$  times the length of the snout. It has 70 rays; its greatest height equals one-third that of body.

The median caudal rays are short, their length contained eleven times in total.

The distance of the ventral from the snout is contained about  $4\frac{1}{2}$  times in total length of body; its length equals twice the diameter of the eye. Its distance from the anal equals twice the diameter of the eye.

Color, light-brown, with six or seven cross-bars of slightly darker hue. Blind side light.

*Hemirhombus fimbriatus*, n. s.

The length of the individual described, to origin of middle caudal rays, is 213 millimeters.

Body elliptical; its height ( $102^{\text{mm}}$ ) nearly half the body length.

Scales cycloid, about 70 in the longitudinal series, 25 or 26 in the vertical series above the lateral line, 31 below. The lateral line is slightly curved over the pectoral, the length of the arc of the curve contained  $3\frac{1}{3}$  times in its straight portion. Vertical fins not scaly.

Length of head ( $61^{\text{mm}}$ ) about  $3\frac{1}{2}$  times in standard length. Length of snout ( $11\frac{1}{2}^{\text{mm}}$ ),  $5\frac{1}{4}$  times in that of head.

Mouth very large, with upper jaw strongly curved, lower jaw included. The length of the maxillary ( $30^{\text{mm}}$ ) equals half the length of the head. The lower jaw extends behind the vertical through the posterior margin of the eyes; its length ( $36^{\text{mm}}$ ) equal to that of postorbital part of the head, and contained 6 times in the total length. Edge of mandible and margin of suboperculum provided with a pointed flap of thin integumentary tissue. Gill-rakers very short, tubercular; about 9 on the anterior arch below the angle. The upper eye is placed at a distance from the dorsal profile equal to half its own diameter, which is a little more than one-fifth the length of the head, and is equal to that of its mate. Eyes in the same vertical and separated by an interspace equal to one-fourth the orbital diameter. Interorbital ridge low.

Nostrils on the line of the interorbital ridge; the anterior is equidistant from the tip of the snout and the margin of the upper eye; it is in a very inconspicuous tube, provided with a slender filament about one-third the length of the snout. The posterior nostril is separated from the anterior one by a space equal to one-fifth the length of the snout.

Teeth uniserial in both jaws, some of the anterior ones in the upper jaw being much larger than those following, while those in the lower jaw are still larger than these. Some of the teeth in each jaw are depressible.

The dorsal fin begins on the snout, in advance of the nostrils; the first ray longer than the second. The longest rays are behind the middle of the fin, their length ( $26^{\text{mm}}$ ) one-fourth the height of the body. Eighty rays compose the fin.

The anal fin begins under the axil of the pectoral. Its longest rays behind its middle, their length ( $30^{\text{mm}}$ ) greater than that of longest dorsal rays. It contains 60-61 rays.

Caudal with middle rays produced, the length of the median rays ( $45^{\text{mm}}$ ) contained  $4\frac{1}{5}$  in total length.

The greatest length of the pectorals (39<sup>mm</sup>) is contained 5½ times in total length.

The ventral of the colored side is on the ridge of the abdomen, on a line with its mate, which is slightly removed from the median line. Its distance from snout (56<sup>mm</sup>) a little more than one-quarter the length of the body. Its length (23<sup>mm</sup>) equal to half the length of median caudal rays. The ventral of the blind side is continued by a thin membrane to the vent, which is slightly distant from the edge of the abdomen, and behind the origin of the anal.

Color, grayish-brown; the dorsal and anal fins each with two roundish dark blotches upon their posterior halves, which are slightly larger than the eye. A similar dark blotch upon the middle of the caudal, sometimes with smaller blotches irregularly placed near its outer margin.

Pectoral, with a very narrow dark band near its base; the whole of its outer half is marked by a dark blotch, reticulated and mottled with lighter; the intervening portion is pearly-white, with dark specks upon the rays. Blind side cream colored.

D. 80; A. 60-61; P. 10; V. 6; C. 16.

*List of specimens.*

Catalogue number.	Station.	North latitude.	West longitude.	Fathoms.	Collector.	Remarks.
37330	2403	° / "	° / "	88	Albatross...	Type.
37331	2407	28 42 30	85 29	24	.....do .....	2 specimens.
		28 47 30	84 37			

The examples obtained are all from the Gulf of Mexico, between the delta of the Mississippi and Cedar Keys, Florida.

*Citharichthys ventralis*, n. s.

Extreme length of specimen described (117<sup>mm</sup>). It is from Albatross station 2386, north latitude 29° 15', west longitude 88° 06', depth 60 fathoms. The catalogue number is 37343.

The height of the body (50<sup>mm</sup>) is contained about 2½ times in total length without caudal, and is equal to about 4½ times the length of the tail (11<sup>mm</sup>), and about 9 times its thickness (5½<sup>mm</sup>).

The scales are ovate, strongly ctenoid, the longest about 3 millimeters in diameter, the diameter less than half that of the eye. The scales are firmly fixed. There are 66 scales in the lateral line (on the colored side), 19-21 of these in the curved portion, which is bold and sharply defined, and 19 above and 23 below the lateral line at the broadest part of the body. The length of the head (29<sup>mm</sup>) is one-fourth that of the body, and 3⅔ times the diameter of the eye. The interorbital space is very narrow, scaleless, its width equal to one eighth diameter of eye. The length of the mandible (16<sup>mm</sup>) is twice the diameter of the eye. The length of the maxillary (13<sup>mm</sup>) less than half that of head.

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**Vol. VIII, No. 38. Washington, D. C. Oct. 30, 1885.**

The dorsal fin begins on the snout upon the blind side and in advance of the eyes. Its greatest height (15<sup>mm</sup>) about equal to length of mandible. It is composed of 93 simple rays.

The anal begins under the axil of the pectoral, its longest ray equal to or slightly exceeding half the distance of its anterior ray from the snout. It is composed of 73 simple rays.

Color light-brownish gray; a dark blotch, as long as the eye, on the anterior rays of the anal; another of lighter hue at the junction of the curved and straight portion of the lateral line. A few obscure blotches on different parts of the body. The caudal is subsessile, composed of 17 rays; its length (24<sup>mm</sup>) a little less than half the height of the body, and equal to length of head without snout.

The pectorals are inserted considerably below the origin of the lateral line, and close to the gill-opening. That on the colored side is composed of 11 rays, its length (19<sup>mm</sup>) nearly one-sixth of the total length; that of the blind side composed of 7 or 8 rays, the longest (28<sup>mm</sup>) almost as long as the head.

The ventral consists of 6 rays. The length of the ventral of the eyed side (11<sup>mm</sup>) is about one-third that of the blind side (34<sup>mm</sup>). Females have the ventral of the blind side not enlarged.

***Etropus rimosus*, n. s.**

Length of type (to base of caudal) 100 millimeters. Body pear-shaped, its height (54<sup>mm</sup>) slightly exceeding half its length.

Scales large, strongly pectinated on both sides, about 41 in the longitudinal series, 12 above and 14 below the lateral line. Lateral line equally developed on both sides, very slightly curved above the pectoral. Head entirely covered with scales. Numerous small supernumerary scales between the normal scales covering their surface.

Length of head (24<sup>mm</sup>) slightly less than one-fourth of the total length. Snout very short, its length (3<sup>mm</sup>) 8 times in that of head. Mouth very small, its cleft less than diameter of orbit, its angle reaching about to vertical through anterior margin of lower eye.

The length of the maxilla (5<sup>mm</sup>) somewhat less than one-fourth that of head. Length of mandible considerably more than one-third of the same length.

Teeth well developed on blind side in both jaws, also on the colored side of lower jaw in front.

Eyes moderate (7<sup>mm</sup>), their diameter contained nearly 3½ times in length of head, placed in the same vertical, the upper eye close to the dorsal profile, and separated from its mate by a space less than one-third of its own diameter. Interorbital ridge low.

Nostrils in line with the interorbital ridge, each in a short tube, the posterior being the larger. The anterior nostril is equidistant from the

tip of the snout and the lower orbit. Dorsal fin commencing at a point upon the blind side of the snout in the vertical through the anterior margin of the eye, containing 77-78 rays, the longest somewhat behind the middle of the fin, its length about 7 times in total length.

Anal fin commencing under the base of the pectoral, composed of 61 rays, the longest post-medial, as long as the longest in the dorsal. Anal papilla prominent.

Caudal fin rounded, the middle rays about as long as the head.

Pectorals normally placed, that upon the colored side longest, equal in length to that of the head without the snout.

Ventral of eyed side on ridge of abdomen, its base rather long but not reaching anal origin; that of blind side farther forward, its length equal to that of its mate, and a little more than one-tenth of the total. Vent at the anal origin slightly lateral.

Color, gray, hoary above with a few irregularly placed indistinct brownish blotches, none of which are larger than the eye. White below.

Radial formula: D. 77-78; A. 61; V. 6; P. 9-11; C. 17; scales, 41.

The types are numbered 37332; they are from station 2408, Albatross, north latitude  $28^{\circ} 28'$ , west longitude  $84^{\circ} 25'$ , depth 21 fathoms.

**Macrurus caribbæus**, n. s.

Many specimens of this new species were obtained by the Albatross. The type, number 37333, is selected from a number obtained at Station 2377, in the northern part of the Gulf of Mexico, at a depth of 210 fathoms. Its length is 290 millimeters.

In general appearance it resembles *M. atlanticus*, from which it may be quickly distinguished by its sharper and longer snout, smaller scales, more advanced second dorsal, and many other less prominent characters.

The body is normal in shape, its greatest height ( $44^{\text{mm}}$ )  $6\frac{1}{2}$  times in total length.

Scales moderate, strongly denticulated, about 124 in the lateral line, 6 series between origin of dorsal and lateral line, and 15 or 16 series from vent forward to lateral line.

Length of head ( $65^{\text{mm}}$ ) nearly  $4\frac{1}{2}$  in total.

Interorbital area flat, its greatest width ( $13^{\text{mm}}$ ) about 5 times in the length of the head. Postorbital portion of head ( $21^{\text{mm}}$ ) about 3 times in length of head, as long as eye, which is oval, its horizontal diameter ( $21^{\text{mm}}$ ), and  $1\frac{2}{3}$  times as long as its vertical diameter ( $15^{\text{mm}}$ ).

Snout long, thin, diaphanous, with acuminate point, its general form resembling that of *M. atlanticus*. Nostrils close to the orbit, the posterior one much the larger.

Teeth in both jaws in viliform bands, minute.

Barbel slender and short, its length ( $7^{\text{mm}}$ )  $\frac{1}{3}$  that of the eye

The maxilla extends to the vertical through middle of pupil. Length of upper jaw ( $19^{\text{mm}}$ ) slightly more than 3 times in length of head. Length of mandible ( $26^{\text{mm}}$ )  $2\frac{1}{2}$  times in length of head.

First dorsal with two spines, the first minute, the second smooth,

elongate, and 8 rays, the last double, inserted at a distance from snout (72<sup>mm</sup>) equal to one-fourth of the total length. The second spine (39<sup>mm</sup>) reaches the fifth ray of the second dorsal. The length of dorsal base (15<sup>mm</sup>) equals three-fourths of the space between the two dorsals.

The second dorsal begins in the perpendicular from the seventh ray of the anal and at a distance from the first dorsal (20<sup>mm</sup>) about equal to the diameter of the eye. The longest rays are not so long as the barbel. It contains at least 110 rays.

Anal inserted under the interspace between the two dorsals, its height equal to  $\frac{1}{4}$  the length of the head. It contains at least 110 rays.

Pectoral inserted in advance of the origin of the first dorsal, its length (33<sup>mm</sup>) half that of the head. Its tip extends to the vertical from the fifth anal ray and to about the seventeenth scale of the lateral line.

The ventral originates under the second spine of the dorsal, its outer ray is somewhat produced, extending slightly beyond the origin of the anal. The naked space on the breast is longer than broad, half as long as the eye. The distance of the vent from the origin of the ventral, equals the length of the eye.

Color, silvery gray, with yellowish or brownish tints.

Number.	Station.	North latitude.	West longitude.	Fathoms.	Specimens.
		° ' "	° ' "		
37333	2377	29 07 30	88 08 00	210	1 (type).
	2377	29 07 30	88 08 00	210	7
	2143	9 30 45	76 25 30	155	1
	2400	28 41 00	86 07 00	169	3
	2401	28 38 30	85 52 30	142	5

#### *Macrurus occa*, n. s.

The typical specimen, number 37334, is 450 millimeters long; its tail is injured.

A species with an exceedingly elongate snout, nearly twice as long as the eye, with a black flap between the nostrils; with the angle of the mouth nearly reaching to the vertical from the posterior margin of the orbit; the head contained  $3\frac{1}{2}$  times in total length and equaling twice the greatest height of body. The ridge of the head is very strong and continuous from the snout to the angle of the preopercle; strong supraocular and occipital ridges also present.

Eye nearly round, its horizontal diameter  $\frac{1}{4}$  length of the head and equal to interorbital space.

The ventral originates under the middle of the first dorsal, and extends to the 4th ray of the anal. The distance from ventral origin to vent is contained  $3\frac{1}{2}$  times in length of head.

The second spine of the dorsal is weak and smooth, its length equal to postorbital part of head, its base slightly less than distance between first and second dorsals.

Squamation excessively rough, each scale bearing about 5 large spines besides many smaller ones, the median spine of the large series being much the largest. Five rows of scales between origin of dorsal and lateral line, 19 from vent forward to lateral line and 12 backward.

Barbel  $\frac{1}{4}$  as long as snout.

*M. atronasus* appears to be a near relation of *M. trachyrhynchus*, which has not yet been adequately described.

The single example known is from station 2396, north latitude  $28^{\circ} 34'$ , west longitude  $86^{\circ} 48'$ , 335 fathoms.

*Coryphænoides sulcatus*, n. s.

The type of this species, 37335, is an individual 238 millimeters long, taken at Albatross station 2394, with a large specimen (about 350<sup>mm</sup>) badly mutilated, from Blake station LXXIII, off Martinique, 472 fathoms, as a collateral type.

The body is elongate, rapidly contracted behind the abdomen, the tail long and whip-like; greatest height of body (25<sup>mm</sup>)  $9\frac{1}{2}$  times in total length.

Scales moderate, strongly armed, each with 8-10 spinelets irregularly placed, the spinelets less numerous in the young, which feel bristly to the touch, separated by wide deep furrows (hence the specific name). More than 175 in the lateral line. Between origin of dorsal fin and lateral line 7; counting from the origin of the lateral line the number of scales in a distance equal to length of head is 33. Between the anal and vent 21-22 (counting forward from vent, 16 counting backward).

Armature of head similar to that of body, but the scales upon the snout, cheeks, and chin have very feeble spines.

Length of head (32<sup>mm</sup>)  $7\frac{1}{2}$  times in total length.

Interorbital area nearly flat, its length (10<sup>mm</sup>) equal to diameter of eye, and a little less than one-third length of head. Postorbital portion of head (15<sup>mm</sup>)  $1\frac{1}{2}$  times as long as diameter of eye. Eye circular, in larger individual its diameter less than width of interorbital space,  $3\frac{2}{3}$  times in length of head. Snout short, obtuse, scarcely overhanging the mouth, its length (7<sup>mm</sup>)  $4\frac{1}{2}$  times in that of head; in the larger individual it is  $4\frac{1}{3}$  times in length of head.

Nostrils somewhat above level of middle of eye, the anterior one nearly upon the dorsal outline.

Teeth in upper jaw in two series, the outer series somewhat enlarged; in lower jaw in a single series.

The end of the maxilla reaches to the vertical through the hind margin of pupil in the large specimen, to that through the front margin of the same in the type. Length of upper jaw, including maxilla (11<sup>mm</sup>), about 3 times in length of head. Length of mandible (13<sup>mm</sup>) equal to one-half the height of the body. Barbel (4<sup>mm</sup>)  $2\frac{1}{2}$  times in diameter of eye; in the large specimen it is half as long as the eye.

Gill-rakers rudimentary; the attachment of the membrane to the first arch is very extensive. Pseudobranchiæ absent.



First dorsal comparatively low, composed of 2 spines, the first rudimentary, the second elongate, smooth, and 8-9 rays. Its insertion is immediately over that of the pectoral; its distance from the snout ( $36^{\text{mm}}$ ) equals  $1\frac{1}{2}$  times the length of the head; its length of base ( $7^{\text{mm}}$ ) equal to length of snout. Its longest spine, when laid backward, reaches beyond origin of second dorsal, its length ( $15^{\text{mm}}$ ) one-half to two thirds that of the head.

Second dorsal very low; its distance from first dorsal equal to one-third length of head; in the type about one-fourth.

Anal much higher than second dorsal, yet very low, its longest ray equal in length to diameter of eye; its distance from snout ( $51^{\text{mm}}$ )  $4\frac{2}{3}$  times in total length, its origin being nearly under that of the second dorsal.

Pectoral inserted under origin of first dorsal, its length about  $\frac{1}{2}$  that of head.

Ventral inserted behind the vertical from the end of the base of the first dorsal in the type. In the mutilated larger specimen it appears to be under the posterior ray of the first dorsal. The ventral extends to the origin of the anal, its length ( $10^{\text{mm}}$ ) equaling diameter of eye; in large specimen  $1\frac{1}{4}$  diameter of eye. Vent about midway between origin of ventrals and anal.

Radial formula: D. II, 8-9; A. 120; V. 7; P. 13.

In a distance equal to length of head 32 rays were counted in the dorsal fin; in the anal fin 22.

Color brown, abdomen and lower part of head in young blackish.

***Malacocephalus occidentalis*, n. s.**

Small specimens, 37336, in imperfect condition were obtained from Albatross Station 2310, north latitude  $35^{\circ} 44'$ , west longitude  $74^{\circ} 51'$  (length  $154^{\text{mm}}$  and  $203^{\text{mm}}$ ), at a depth of 132 fathoms, and from Blake station LXXXIII, off Granada, at a depth of 164 fathoms (length  $141^{\text{mm}}$ ). They correspond in the main with Günther's full description of *Malacocephalus levis*, but differ in the position of the vent, the ventrals, and the anal fin; the latter commencing at a distance behind the vent equal to the length of the snout, its distance from the origin of the ventrals being less than the distance from the origin of the anal, which is distinctly behind the vertical through the posterior end of the first dorsal. The ventrals originate under the middle of the first dorsal, and the pectorals under its origin. The ventral extends to, or slightly beyond, the anal origin. The pectoral is as long as the head without its postorbital part. The diameter of the eye is contained  $2\frac{1}{4}$  times in the length of the head. The barbel is slightly longer than the eye. The snout is  $\frac{1}{4}$  as long as the head and equal to the interorbital space.

It differs also in the serrature of the second dorsal spine, and its length, which is nearly equal to, if not longer than, the head. In our mutilated specimens the first branched ray is nearly as long as the head.

The gill-rakers are rudimentary, there being 11 below the angle of the arch.

*Bathygadus cavernosus*, n. s.

The type, number 37337, is a young specimen, 162 millimeters long, obtained by the Albatross at station 2398, north latitude  $28^{\circ} 45'$ , west longitude  $86^{\circ} 26'$ , at a depth of 227 fathoms.

The body is stoutish, its greatest height ( $23^{\text{mm}}$ ) contained 7 times in total length.

The scales are moderate, deciduous, cycloid, with no visible armature, about 8 rows under the base of the first dorsal.

Length of head ( $28^{\text{mm}}$ ) about 6 in total length. The bones of the head are very soft and cavernous, in many places without muscular covering, spongy. Interorbital area doubly concave with a spinous medial ridge; its greatest width ( $10^{\text{mm}}$ ) about  $2\frac{4}{5}$  in the length of the head.

Postorbital portion of head ( $13^{\text{mm}}$ ) about half its length,  $1\frac{1}{3}$  as long as eye, which is circular, its diameter ( $10^{\text{mm}}$ ) contained  $2\frac{4}{5}$  times in the length of the head.

Snout broad, very obtuse, its width at nostril nearly equal to interorbital width, its length ( $6^{\text{mm}}$ )  $4\frac{2}{3}$  times in that of the head. Nostrils normal.

Teeth in both jaws in villiform bands, very small; a naked space at the symphysis of the intermaxillary; vomer and palatine toothless. Gill-rakers very short, minute and rather numerous; about 18 below the angle of the anterior arch. Pseudobranchiæ absent. Barbel two-fifths as long as the eye.

First dorsal composed of 2 spines, the first of which is minute, inserted at a distance from the snout ( $28^{\text{mm}}$ ) equal to the length of the head; the second as long as the head without the snout, and 10 branched rays; its base ( $10^{\text{mm}}$ ) equal to diameter of eye. Second dorsal almost rudimentary, its rays remarkably short, about 133 in number; its distance from the first dorsal half the length of head.

Anal much higher than second dorsal, its distance from the snout ( $46^{\text{mm}}$ ) contained about  $3\frac{1}{2}$  times in the total length. About 27 rays in a space equal to length of head. Anterior rays longest, in length about three-fourths of the diameter of the eye.

Pectoral inserted under the first branched ray of the first dorsal, its length ( $20^{\text{mm}}$ ) equal to twice that of the eye and about two-thirds length of head.

Ventral slightly behind the pectoral, its first ray filamentous, reaching to the base of the tenth anal ray; it consists of 11 rays.

Color gray, with silvery tints on sides; the abdomen and lips dark.

*Bathygadus macrops*, n. s.

The type, number 37339, was taken at station 2396, north latitude  $28^{\circ} 34'$ , west longitude  $86^{\circ} 48'$ , at a depth of 335 fathoms, by the steamer Albatross. Its length is 305 millimeters.

The body is somewhat compressed; its greatest height (46<sup>mm</sup>) is contained 6½ times in the total length.

Scales small, deciduous,\* as nearly as can be counted 25 rows in an oblique line from the vent to the dorsal fin, 24 from the upper angle of operculum to the vertical through the origin of the anal.

Length of head (55<sup>mm</sup>) contained 5¼ times in total length. Interorbital area nearly flat, its width contained 4 times in length of head. Postorbital part of head (26<sup>mm</sup>) somewhat longer than diameter of eye, which is nearly round, its length (20<sup>mm</sup>) contained 2¾ times in length of head. Snout broad, obtuse, its length (11<sup>mm</sup>) contained 5 times in that of the head. Nostrils close to the eye, the posterior nearly twice as large as the anterior one. The maxilla extends to the vertical through posterior margin of orbit, its length (30<sup>mm</sup>) equal to that of head without its postorbital portion. Length of mandible (34<sup>mm</sup>) equals 3 times that of the snout. Intermaxillaries and mandible provided with narrow bands of villiform teeth, those in the mandible much shorter.

A minute barbel, about one-third as long as snout. Vomer and palate toothless.

Gill-rakers lanceolate, elongate, 26 on first arch, 7 above the angle, the longest one-seventh as long as the head. Pseudobranchiæ absent. The first dorsal consists of 2 short spines and 8 branched rays, its distance from snout (62<sup>mm</sup>) contained nearly 5 times in the total length. The second or longest ray in the typical specimen twice the length of snout. The second dorsal, which contains about 125 rays, is almost continuous with the first, its anterior rays the longest, about 4 times in length of head.

The anal is inserted under the fourteenth ray of second dorsal. Its rays are all very short. In a distance equal to length of head, counting back from insertion, there are 33 rays.

The pectoral is inserted under the first branched ray of the first dorsal; its length in the most nearly perfect specimens equals the length of the head without the snout.

The ventral origin very slightly behind origin of pectoral under the third branched ray of the dorsal, reaching nearly to the vent when laid back. Its length (35<sup>mm</sup>) equaling three times that of snout. Rays 8. Branchiostegals 7.

Color yellowish gray, lighter below.

*Bathygadus longifilis*, n. s.

The types, No. 37338, are 2 specimens taken by the Albatross at station 2392, north latitude 28° 47' 30", west longitude 87° 27' 00", depth 724 fathoms, 225 and 233 millimeters in length, the measurements taken from the largest.

The body is more compressed than in *B. macrops*. Its greatest height (31<sup>mm</sup>) contained 7½ times in total length.

\* Not one of our specimens has scales, so their character cannot be made out, nor can the lateral line be described.

Scales small, cycloid, deciduous, about 142 in the lateral line, about 25 rows from the vent upward and forward to the dorsal fin.

Length of head ( $40^{\text{mm}}$ ) contained about  $5\frac{3}{4}$  times in total length. Interorbital area flattened, its greatest width contained about  $3\frac{2}{3}$  times in the total length of the head. Postorbital portion of head ( $20^{\text{mm}}$ ) twice as long as the eye, which is oval, its long diameter ( $10^{\text{mm}}$ ) contained four times in the length of the head, and equal to length of snout.

Snout and nostrils normal.

The maxilla reaches somewhat beyond the posterior margin of orbit, its length ( $21^{\text{mm}}$ ) twice in distance from snout to origin of first dorsal. Length of mandible ( $26^{\text{mm}}$ ) is contained  $2\frac{1}{2}$  times in length of the snout. Barbel slender, long, its length ( $15^{\text{mm}}$ ) equal to  $1\frac{1}{2}$  times orbital diameter.

Teeth in narrow villiform bands in both jaws, none on vomer or palatine bones. Gill-rakers very long and slender, numerous, 35 on first arch (7 above angle), the largest ( $7^{\text{mm}}$ ) contained nearly six times in the length of the head.

Pseudobranchiæ absent.

First dorsal of 2 stout spines, the first minute, the second elongate, and 8-9 branched rays. Its distance from snout ( $42^{\text{mm}}$ )  $5\frac{1}{2}$  in total. The second or longest simple ray ( $77^{\text{mm}}$ ) is nearly eight times the length of the snout, and reaches to or beyond the thirtieth ray of the second dorsal. The second dorsal contains about 140 rays; it is almost continuous with the first, its anterior rays longest and not diminishing rapidly in size toward the tail.

The anal is inserted under the ninth ray of the second dorsal, its rays much shorter than those in the dorsal, and situated about the same distance apart.

The pectorals are inserted under the anterior portion of the first dorsal, the first ray much produced, extending more than half-way from its insertion to the tip of the tail. Rays 13.

The ventral origin is slightly behind the origin of the pectoral, under the third branched ray of the dorsal, its first ray much enlarged, extending more than half-way from its insertion to tip of caudal. Its length ( $100^{\text{mm}}$ ) is contained  $2\frac{1}{3}$  times in the total length. Rays 8. Branchiostegals 7.

Color yellowish-gray, abdomen bluish.

*Neobythites*, new genus, *Brotulidæ*.

Body brotuliform, much compressed, resembling *Bythites* in general appearance. The head is well covered with scales. Two weak spines at angle of preoperculum and a stronger spine at angle of operculum. The mouth large. The snout is moderate, rounded, projecting very slightly beyond the mouth. The jaws are nearly equal in front, the lower jaw slightly included.

The teeth villiform, in narrow bands in both jaws and on the palatines. Vomerine patch subcircular. Barbel none.

The gill-openings are wide, the membranes deeply cleft and not

attached to the isthmus. Gills 4. Gill-laminae well developed. Gill-rakers slender, rather short, moderately numerous. Pseudobranchiae absent. Branchiostegals 8.

The caudal fin is few rayed, pointed, not well differentiated from the vertical fins.

The dorsal and anal fins are well developed, the anterior rays the longest; the outline is continuous to the tip of the caudal. Pectorals broad, of moderate length, normal in form, sessile.

Each ventral a single ray, placed close to the humeral symphysis.

The scales are small. Lateral line incomplete, being obsolete posteriorly.

**Neobythites Gilli, n. s.**

The type, No. 37340, is from Albatross station 2402, north latitude  $28^{\circ} 36'$ , west longitude  $85^{\circ} 33'$ , depth 111 fathoms.

Description: Body compressed, its height ( $17^{\text{mm}}$ ) contained  $4\frac{2}{3}$  times in total length and less than length of head. Interorbital area convex, its width ( $5^{\text{mm}}$ ) equal to diameter of circular eye,  $3\frac{2}{3}$  in length of head, and  $1\frac{1}{2}$  in length of snout.

The length of the head ( $18^{\text{mm}}$ ) is contained  $4\frac{1}{2}$  times in that of body. Mouth large, the maxilla extending considerably behind the vertical through posterior margin of eye, expanded posteriorly; the mandible still longer, its length ( $11^{\text{mm}}$ ) about  $2\frac{1}{3}$  times in the height of the body. Teeth in villiform bands in the jaws and on the palatines. Vomerine patch broadly V-shaped, with a circular bunch at the angle.

Gill-rakers moderately long and slender, somewhat numerous, the longest about two-thirds diameter of eye; eleven developed and 3 rudiments below the angle. Pseudobranchiae absent. Gill-opening wide, the membrane deeply cleft, free from the isthmus behind. A single long flat spine attached to the posterior portion of the operculum, high up, extending back along to its edge.

Nostrils small, the anterior one in a very short tube, almost upon the tip of the snout; posterior nostril slightly larger, not tubular, immediately in front of middle of eye.

No apparent cirri.

Scales moderate, in 88 vertical rows, 7 rows between dorsal origin and lateral line, which becomes obsolete in its posterior half; 16 to 17 from vent forward to lateral line.

Dorsal origin behind ventral and pectoral. Its distance from snout ( $21^{\text{mm}}$ ) contained 4 times in total length. Its rays moderately long.

Anal origin under the eighteenth dorsal ray. Its distance from snout ( $34^{\text{mm}}$ ) contained  $2\frac{1}{3}$  times in body length. Rays rather slenderer than those in the dorsal.

The caudal consists of 6 or 7 rays; its length ( $9^{\text{mm}}$ ) contained 9 times in total length.

Pectoral origin well forward; its base somewhat concealed by the

flap of the operculum; its length (13<sup>mm</sup>) about equal to two-thirds that of head.

Ventral, a bifid ray, inserted slightly in advance of the base of the pectoral and not far from humeral symphysis. It reaches nearly to the vent. Its length (15<sup>mm</sup>) nearly equal to height of body.

Distance from origin of ventral to vent slightly greater than height of body.

Color light yellow, with silvery reflections, with clouding of brown above lateral line and numerous black chromatophores.

A series of irregular brown blotches above the lateral line, with two much darker, extending up on the dorsal fin, the largest about midway from the head to the tail.

**Porogadus**, new genus, *Brotulidæ*.

Body brotuliform, much compressed. Head with numerous spines on interorbital space, two pairs on the shoulders, one at angle of operculum, and a double series on angle of preoperculum. Head with numerous mucous pores, as in *Bathyonus*. Mouth large. Snout moderate, not projecting much beyond upper jaw.

Jaws nearly equal in front. Teeth in villiform bands in jaws and on vomer and palatines. Barbel none.

Gill-openings wide, membranes narrowly united, not attached to the isthmus. Gills 4. Gill-laminæ short. Gill-rakers moderate, numerous. Pseudobranchiæ absent. Caudal fin of few rays, on a very narrow base, not prolonged, scarcely differentiated from the vertical fins. Dorsal and anal fins well developed. Pectorals simple, moderate. Each ventral a single bifid ray, close to the humeral symphysis. Branchiostegals 8. Scales small. Lateral line apparently developed only on anterior part of body, close to dorsal fin. Three series of pores, one close to ventral outline, one median, and another along base of dorsal.

**Porogadus miles**, n. s.

The type (No. 35625, U. S. N. M.) is 153 millimeters in length; it is from Albatross station 2230, north latitude 38° 27', west longitude 73° 02', at a depth of 1,168 fathoms.

Description: Body much compressed, elongate, tapering to a very slender tail, its height (15<sup>mm</sup>) nearly 10 times in total length.

Head long, moderately compressed, subconical; the profile gradually ascending in nearly a straight line from the tip of the snout to the origin of the dorsal. Its length (23<sup>mm</sup>) 6½ times in that of body. Interorbital space slightly convex, spiny, its width (5<sup>mm</sup>) 4⅔ times in length of head, and slightly greater than diameter of eye.

Eye oval, its greatest diameter (4<sup>mm</sup>) 5¼ times in length of head. Opercles and head generally covered with numerous and strong spines, as described in the generic diagnosis.

Mouth very large and wide. The maxilla extending far behind the eye and much expanded at its tip; its length (13<sup>mm</sup>) more than half

that of head. Length of mandible (15<sup>mm</sup>) equal to greatest height of body. Jaws, vomer, and palatines with narrow bands of villiform teeth, none of which are enlarged. Gill-rakers, 15 on anterior arch below the angle, 3 rudimentary ones above.

The anterior pair of nostrils are nearly on top of the snout, and somewhat nearer to its tip than to the eye, separated by a very narrow space, and placed immediately in front of the middle of the eye. Behind each posterior nostril is a strong spine projecting outward and backward. Pores of the head arranged much as in *Bathyonus*.

Scales minute. Lateral line not clearly to be made out. Three rows of minute pores on each side—dorsal, median, and ventral, beginning near the head and extending well toward the extremity of the tail.

Dorsal origin slightly behind vertical through pectoral base; its distance from the snout (25<sup>mm</sup>) nearly 6 times in length of body. Its rays are moderately long, the longest about as long as the snout (one-fourth of head), and very numerous.

Anal origin in vertical from twenty-second or twenty-third dorsal ray; its distance from the snout (44<sup>mm</sup>) 3½ times in length of body. Its rays about as long as those of the dorsal.

Pectoral imperfect, its length in the type equals one-half that of the head.

Ventral a bifid filament, placed close to the humeral symphysis, well in advance of the pectoral; its length (15<sup>mm</sup>) equal to height of body. Distance from origin of ventrals to vent (22<sup>mm</sup>) nearly equal to length of head. The ventral does not reach to the vent by a distance equal to length of snout.

Color, blackish brown.

*Bathyonus*, new generic name.

=*Bathynectes*, Gthr., preoccupied in crustacea.

*Bathyonus* is closely related to *Dierolene*, which, however, has a form much less elongate, the lower pectoral rays differentiated from the rest of the fin, the ventral always bifid, and strong spines upon both operculum and preoperculum.

*Bathyonus catena*, n. s.

The types (No. 37341) are from Albatross station 2379, north latitude 28° 00' 15", west longitude 87° 42', 1,467 fathoms. The length of the longest is 237 millimeters, of the other 227 millimeters.

Description: Body very elongate, much compressed, and tapering into a slender, whip-like tail. Its height (19<sup>mm</sup>) is contained 1½ times in length of head and 12½ times in that of the body.

Head stoutish, not much compressed, higher than body, its length (27<sup>mm</sup>) contained 8⅔ times in that of body. Interorbital area somewhat convex, its width (measured upon the bone) equal to the diameter of the eye and about equal to that of the snout, and contained 5 times in the length of head.

The maxilla extends beyond the vertical through the posterior margin of orbit, its length equal to that of postorbital part of head. Mandible two-thirds as long as head and equal in length to height of body. Jaws, vomer, and palate with bands of villiform teeth; the vomerine band V-shaped.

Branchiostegals 8. Pseudobranchiæ absent.

Gill-rakers long and numerous, the longest slightly exceeding in length the diameter of eye; 15 developed below the angle of the first arch, besides several rudiments.

Nostrils in front of the middle of the eye, separated by a slight interspace, the anterior nearer to its mate than to the tip of the snout.

The muciferous channel upon the infraorbital ring shows in its course several wide subcircular sinuses, closely approximated; a similar row upon the posterior edge of the preoperculum and continued forward upon the under surface of the mandible; the vertex also has a semi-circle of similar sinuses. To the chain-like appearance of these rows of ducts the specific name has reference.

The dorsal origin is slightly behind that of the pectoral, its distance from the tip of the snout (32<sup>mm</sup>) about  $7\frac{1}{3}$  in total; rays well developed; in the anterior third of the fin, in a space equal to the length of the head, were counted 20 rays, the longest of which is two-fifths as long as the head.

The anal origin is under the twenty-first dorsal ray; its rays are shorter than those of the dorsal. The pectoral extends to the vertical from the eighteenth ray of the dorsal. It is four-fifths as long as the head.

The ventral is composed of a simple filament, its origin slightly in advance of the vertical through the pectoral origin, its length two-thirds that of the head. It does not reach near to the vent, the distance of which from the origin of the ventrals (30<sup>mm</sup>) is slightly greater than the length of the head.

Color, brownish yellow. Head and abdomen blackish.

*Bathyonus laticeps* (Gthr.), from 2,500 fathoms in the mid-Atlantic, has smaller eyes, broader head (if the measurements of the interorbital space as given by Günther afford a correct criterion), and a more filamentous caudal prolongation.

*B. compressus* (Gthr.), from mid-Atlantic, 1,075–2,500 fathoms, and from stations southeast of New Guinea, is, as its name indicates, much more compressed, with swollen snout, and has the arms of the vomerine V curved.

*B. gracilis* (Gthr.), to which *B. catena* is probably most closely allied, is from south of New Guinea, 1,400 fathoms, and, from the description, would appear to be a long-bodied form.

*Bathyonus pectoralis*, n. s.

The type (37342, U. S. N. M.) was taken at Albatross station 2380, north latitude 28° 02' 30'', west longitude 87° 43' 45'', 1,430 fathoms. It



is 183 millimeters long to caudal base, 215 with caudal. Another specimen is numbered Blake, XCV, off Dominica, 330 fathoms (juv.); this is 70 millimeters long.

Description: Body moderately elongate, much compressed, the tail much shorter and more robust than in *B. catena*. Its height (26<sup>mm</sup>) equals  $1\frac{1}{3}$  times the length of the head and one-seventh that of the body.

Head stoutish, not much compressed, lower than body, its length (34<sup>mm</sup>) contained  $5\frac{1}{3}$  times in the body length. Snout compressed, broad at its tip, its length (6<sup>mm</sup>) exceeding the diameter of the circular eye (5<sup>mm</sup>). Interorbital area slightly convex, its width (11<sup>mm</sup>) slightly exceeding twice the diameter of the eye, 3 times in length of head.

Maxilla extending far behind the eye, its length (19<sup>mm</sup>) less than that of preorbital portion of head. Mandible as long as postorbital portion of head (22<sup>mm</sup>). Jaws, vomer and palatine, with narrow bands of villiform teeth, normally arranged. Branchiostegals 8. Gill-lamellæ very short. Gill-rakers long and numerous, 18 on first arch below the angle, 5 above, 4 of which are rudimentary. Pseudobranchiæ present, but very rudimentary.

Anterior nostrils on the top of the snout and near the median line of the head, near its tip, separated by a space about equal to the diameter of the eye. Posterior nostrils in front of the eye.

Muciferous pores large, arranged much as in *B. catena*.

Dorsal origin in the same vertical with that of the pectorals, its distance from the tip of the snout (38<sup>mm</sup>) contained 5 times in total and equaling twice the length of the maxilla. Rays well developed in the anterior third, the longest two-thirds of head's length.

The anal origin is under the twentieth dorsal ray; its rays are nearly as long as those of the dorsal. The pectoral has its penultimate ray produced, extending to the thirteenth ray of the anal; it is nearly twice as long as the head. Ventrals bifid, originating in advance of the vertical through the pectorals. Distance of the ventral origin from tip of snout (26<sup>mm</sup>) equaling length of ventral and about three-fourths as long as the head. Distance of origin of ventral from vent (42<sup>mm</sup>) considerably greater than length of head. Distance from tip of ventral to vent equal to half the length of the head.

Numbers of scales in transverse series from vent to dorsal about 23; from the upper angle of the gill-opening to the vertical through origin of anal, 32.

Color, brownish yellow. Head and abdomen blackish.

D. 93; A. 73; P. 17; V. 2.

This species seems closely related to *Bathyonus laticeps* (Gthr.), but differs in several important particulars, notably the prolongation of the pectoral ray and the form of the tail.