No. 5. — *Reports on the Results of Dredging, under the Supervision of* ALEXANDER AGASSIZ, *in the Gulf of Mexico* (1877–78) *and in the Caribbean Sea* (1879–80), *by the U. S. Coast Survey Steamer "Blake,"* LIEUT.-COMMANDER C. D. SIGSBEE, U. S. N., *and* COMMANDER J. R. BARTLETT, U. S. N., *commanding.*

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XXVIII.

Description of Thirteen Species and Two Genera of Fishes from the Blake Collection. By G. BROWN GOODE and TARLETON H. BEAN.

THE following descriptions relate to species first brought to light by Mr. Agassiz during his earlier "Blake" explorations in the Gulf of Mexico and the Caribbean Sea, in 1877, 1878, and 1879. Several other species have been diagnosed, and their characters will soon be published.

Aphoristia marginata, n. sp.

The species is described from a specimen collected by the steamer "Blake" at Station CLXXI. with a specimen from Albatross Station 2376 as a collateral type.

The extreme length of the type is 102 millimeters.

The body is slender lanceolate in form, its greatest height contained $4\frac{1}{2}$ times in the extreme length. The scales are moderate, strongly and sharply denticulate, the surface ornamented with many lines and striations, which are so arranged as to form a semblance of median furrows; 88 to 90 scales in a longitudinal series, 34 in a transverse series.

Jaws and snout covered with scales.

The length of the head is contained $5\frac{1}{2}$ times in total length. The length of the snout in that of the head $4\frac{1}{2}$ times, and equal to the diameter of the upper eye.

The eyes are moderate, close together, the upper very slightly in advance. The nostril, in a long, slender tube, nearly midway between lower eye and tip of snout.

Mouth moderate, oblique, curved, its posterior angle beneath the anterior margin of the pupil of the upper eye; its length of gape in that of head $4\frac{1}{4}$ times, and 5 times in greatest height of body. Dentition feeble.

The dorsal fin begins at a point over the posterior margin of the upper pupil. It is composed of 96 to 100 rays, those about the middle of the body the longest, and contained about $2\frac{1}{4}$ times in the height of the body.

The anal origin is separated from the snout by a distance equal to four times the length of the snout. It has 86–87 rays, and its height is slightly less than that of the dorsal.

The median caudal rays are short, included $8\frac{2}{3}$ times in total length.

The distance of the ventral from the snout is contained $5\frac{1}{3}$ times in the total length; its distance from the anal, $1\frac{1}{3}$ times the diameter of the eye; its rays, four in number, the longest contained $2\frac{2}{3}$ times in head.

Color in life, reddish gray much speckled with brown. Belly bluish gray. Bases and membrane covering fin-rays dark brown. Dorsal and anal fins very dark on their last tenth. Caudal pale, in marked contrast with the dark area of dorsal and anal. Tips of dorsal and anal rays, and some of the membrane covering caudal rays, vermilion.

Color in alcohol, uniform grayish brown, lighter below, with a dark brown line marking margin between the body and the base of the vertical fins, with a lighter line or stripe, as wide as eye, inside.

Radial formula: D. 96–100; A. 86–87; V. 4; P. none. Scales, 88 to 90–34.

SPECIMENS.

Sta.	Lat.	Long.	Fms.	No. Spec.
CLXXXI.	28° 42′	88° 40′	321	1
2376	29° 3′	88° 16′	324	1
XXVII.	Off St. Vincent.		94	13
1154				1

Aphoristia pigra, n. sp.

This species is described from a specimen obtained by the steamer "Blake" from dredging off St. Kitts, at a depth of 250 fathoms, with the Fish Commission specimens from Stations 2318 (4) and 2405 (2) as collateral types.

It is distinguished by its abbreviated form, and its large, rough, strongly pectinate scales. The extreme length of the type is 98 millimeters.

The body is shorter than in the congeneric Atlantic species; its greatest height is contained $3\frac{1}{7}$ times in its total length, or three times in total without snout.

The scales are large, very rough, with strong horizontal striæ and stoutly denticulated margins, and rather loosely fixed to the skin; about 65 in a horizontal series, 34 in a transverse series. The jaws and snout are covered with small scales. The length of the head is contained $4\frac{1}{3}$ times in the total length. The length of the snout is contained $4\frac{1}{2}$ times in that of the head. The eyes are moderate in size, very close together, with no scales between; the upper is very slightly in advance, and is distant from the dorsal outline a

space equal to its own short diameter. The greatest diameter of the eye is contained six times in the length of the head. The mouth is oblique, curved, its posterior angle directly beneath the middle of the lower eye. Length of gape in that of head four times. The teeth are feeble, closely placed, a little stronger on the colored side.

The nostril tubular, a little nearer to the lower eye than to the tip of the snout.

The dorsal fin begins at a point over the middle of the upper eye, and contains about 90 rays to the middle of the base of the caudal. The rays about the middle of the fin are the longest, their height being a little more than $\frac{1}{3}$ that of the body. The distance of the anal fin from the snout is contained $3\frac{3}{4}$ times in total length. The longest anal rays are about the middle of the body ; their length is equal to that of the longest in the dorsal. The anal is connate with the caudal, and consists of 69–75 rays.

The length of the median caudal rays is contained nearly seven times in the total length. The distance of the ventral from the snout is contained $4\frac{2}{3}$ times in the total length. It is separated from the anal by a distance equal to the long diameter of the eye. The number of ventral rays is four ; the longest ray is $3\frac{1}{2}$ times as long as head.

Color grayish or brownish, with a sub-metallic lustre upon the scales when examined separately. The denticulations of the scales are dark and prominent, giving a clouded general aspect. Some of the smaller specimens (from Station 2318) have a few large irregular brownish blotches above and a dark subcircular blotch near the root of the tail, its diameter twice that of the eye. Colorless below.

Radial formula : D. 90 ; A. 69–75 ; V. 4 ; P. none. L. lat. 65.

Specimens : "Blake" Station XXIII. ; 250 fms., off St. Kitts, W. I. "Albatross" Stations 2318, 2425, 2405, 2374. Off Key West, Fla., and between Delta of Mississippi and Cedar Keys, Fla.

Monolene atrimana, n. sp.

The length of the specimen described to base of caudal is 114 millimeters (XVI. "Blake," off Barbadoes, 288 fathoms).

The height of the body (37 mm.) is one third of the total length without the snout, and equals four times the long diameter of the eye ; it also equals $1\frac{2}{3}$ times the distance of the ventral origin from the snout. The height at the origin of the ventrals (29 mm.) equals about three times the length of the lower eye (9 mm.). The least height at the base of the tail (8 mm.) equals $\frac{4}{5}$ of the length of the mandible (10 mm.). The body is thin, its greatest width ($4\frac{1}{2}$ mm.) equalling half the length of the eye.

Scales ovate, or oblong, smaller than in *M. sessilicauda*, and without evident pectinations. The head is everywhere scaly, except on the lips and the anterior half of the snout. The scaling of the fins is essentially the same as in

M. sessilicauda. There are 30 rows of scales above and 32 below the lateral line on the colored side.

The lateral line of the colored side is strongly arched in its anterior part over the base and anterior third of the pectoral fin. The arc of the curved portion of the lateral line (10 mm.) equals $2\frac{1}{2}$ times the height of the curve (4 mm.). The curve is entirely similar to that of *M. sessilicauda.* The lateral line of the blind side is nearly straight, very slightly ascending anteriorly. There are 105 scales in the lateral line to caudal base, 18 of these in the curved portion.

The length of the head (24 mm.) equals $\frac{2}{9}$ of the standard length and $2\frac{2}{3}$ times the diameter of the eye. The distance from the snout to the front of the upper eye (6 mm.) is much greater than the distance to the lower eye (3 mm.). The inter-orbital area is a mere narrow ridge, whose width (1 mm.) equals only $\frac{1}{9}$ of the length of the eye. The length of the maxilla (8 mm.) equals $\frac{1}{3}$ the length of the head, and on account of its oblique position its hind margin does not extend much beyond the vertical through the front margin of the lower eye.

The length of the mandible (10 mm.) equals $\frac{5}{12}$ of the head's length. The teeth are uniserial, and well developed on both sides. The nostrils are in very short tubes, in the same line with the interorbital ridge, the posterior one being slightly less distant from the lower eye than the anterior is from the tip of the snout. A concavity above the snout.

The dorsal fin begins upon the snout on the blind side in the perpendicular through the front of the lower eye. It contains 124 simple rays, the longest rays being in the posterior fourth of the fin, and half as long as the head. The anal fin begins between the tips of the ventrals and under the origin of the pectoral. The vent is not on the ventral outline, but on the blind side and close to the beginning of the anal fin. The anal is composed of 100 simple rays, the longest (14 mm.) being behind the middle of the fin and slightly longer than the longest of the dorsal (13 mm.). The caudal is sessile, rounded, the middle rays (20 mm.) about $\frac{1}{6}$ of standard length of body. The pectoral is present only on the colored side, is inserted close to the edge of the operculum, its length (27 mm.) exceeding that of the head, and contained $4\frac{1}{4}$ times in the standard length. The ventral of the colored side is nearly on the ridge of the abdomen, while that on the blind side is mostly lateral and slightly larger than its fellow. The length of the left ventral (7 mm.) is contained about $3\frac{1}{2}$ times in length of head.

The color on the left side is light brownish gray ; the fins are mostly dusky, except the right ventral, which is pale ; the pectoral and the eyelids are black.

D. 124 ; A. 100 ; V. 6 ; P. 12. Scales, 30–105–32 (18 in curved portion of lateral line).

A single specimen (XVI.) was taken by the "Blake" off Barbadoes, in 288 fathoms, and another one (XVII.) in the same locality, at a depth of 218 fathoms.

Citharichthys dinoceros, n. sp.

The type is a specimen 92 mm. long to base of caudal, obtained by the steamer "Blake" at Station XXI., off Guadaloupe, 175 fathoms.

The greatest height of the body (40 mm.) is contained 2.3 times in the total length, and equals about four times the least height of the tail.

Scales thin, deciduous, cycloid, large, 48 in the lateral line, which is slightly curved over the pectoral; 14 above and 16 below the lateral line.

The length of the head (27 mm.) is contained $3\frac{1}{3}$ times in the total length, and equals about $3\frac{1}{3}$ times the diameter of the eye (8 mm.). The interorbital space is very narrow, its width less than $\frac{1}{3}$ diameter of eye; ridge rather prominent, narrow, sharp.

The upper eye distant from profile by a space (2 mm.) about $\frac{1}{4}$ of the orbital diameter.

The length of the maxillary (12 mm.) is less than half the length of the head; that of the mandible (16 mm.) more than half, and twice the diameter of the eye.

The teeth uniserial in both jaws, those in the front much the largest. A strong spine upon the snout overhanging the upper lip (much lower than in *C. unicornis*). Above this there is a second, shorter spine.

The dorsal fin begins upon the snout in advance of eye upon blind side. It is composed of 91 rays, the longest somewhat behind the middle of the fin (its height 13 mm.), about equal to half the length of the head.

The anal fin originates about under the origin of the pectoral; its distance from the snout (30 mm.) equals $\frac{1}{3}$ of the total length. It is composed of 73 rays, and is as high as the dorsal.

Caudal subsessile, pointed, its length (17 mm.) contained about $5\frac{1}{3}$ times in total length, and equalling twice the diameter of the orbit.

The pectorals originate immediately behind the branchial opening, far below the lateral line. The third and fourth rays of the fin upon the eyed side elongated. Its length (38 mm.) is contained $2\frac{1}{2}$ times in total length. This fin has 10 rays; that of the blind side contains 6 rays; its length (12 mm.) is less than $\frac{1}{3}$ that of its mate, and is less than half the length of the head.

The ventral on the eyed side originates upon the ventral ridge at a distance from the snout (27 mm.) equal to the length of the head; it contains 5 rays, the length of the first ($6\frac{1}{2}$ mm.) contained four times in length of the head. The ventral of the blind side has 6 rays; its length is contained $2\frac{2}{3}$ times in length of the head.

Radial formula: D. 91; A. 73; P. 10/6; V. 5. L. lat. 48, 14/16.

Color, grayish brown above, white below.

XXI.	Off Martinique.	XIX.	Off Barbadoes.
XXVI.	Off St. Lucie.	XXIX.	" "
XXVIII.	Off Barbadoes.		

BATHYGADUS Gthr.

A genus of Macruridæ with large terminal mouth, prominent nape, no teeth, lanceolate gill-rakers, free notched branchiostegal membrane, high vertical fins, first dorsal composed largely of branched rays, anal fin set far back. Head large, fleshy, without prominent ridges, spiny armatures, or external depressions. Nape elevated, hump-like.

Snout broad, obtuse, not produced. Mouth terminal, very large. Suborbital ridge very low, not joined to the angle of the preoperculum. The maxillary may be received entirely within a groove under the prefrontal and suborbital bones, its tip narrowed and blade-like. Intermaxillaries protractile downwards, separated anteriorly, rib-shaped, compressed vertically, very broad and without true teeth, and provided posteriorly with a short flange which is received underneath the maxilla. Mandible received within the intermaxillary bones, without true teeth, but with minute asperities, similar to those in the intermaxillaries. A barbel. Vomer and palatines toothless.

No pseudobranchiæ. Gill-rakers numerous, moderate, lanceolate, with minute denticulations along the inner edges. Branchiostegal membrane free from the isthmus, deeply cleft; branchiostegals 7, very stiff. Gill-opening very wide. Operculum with a blunt spine-like prominence at its angle. Ventrals below the pectorals, many rayed, the anterior rays produced.

Dorsal consisting for the most part of branched rays.

Scales cycloid, plain : lateral line strongly arched over the pectoral.

Bathygadus arcuatus, n. sp.

The type is a specimen, 325 mm., obtained by the steamer " Blake " at Station LXXXIX., off Martinique, at a depth of 334 fathoms. A much larger specimen, 580 mm., was taken by the Fish Commission at Station 2394. This specimen is referred to as a collateral type.

The body is shaped much as in *Chalinura simula*, but the nape is still more convex. Its greatest height (57 mm.) is $5\frac{2}{3}$ in its total length. The back is gibbous, the dorsal outline rising rapidly from the interorbital region to the origin of the first dorsal, whence it descends gradually to the end of the tail.

The scales are moderate, cycloid, subovate, without armature ; those of the abdominal region and those above the pectorals the largest. The lateral line is strongly arched over the pectorals, the length of the arched portion contained about $3\frac{1}{4}$ times in the straight portion ; the greatest height of the arch is about $\frac{1}{4}$ of the length of its chord. The number of scales in the lateral line is about 140, eight rows of scales between the origin of the dorsal and the arch of the lateral line, 13 or 14 rows of scales between the vent and the lateral line counting backwards, 22 counting forwards. Scales cover all parts of the head except the jaws and chin.

The length of the head is contained 5 times in total. Interorbital area flat,

its width (11 mm.) equal to $\frac{1}{6}$ length of head. Postorbital portion of head about $2\frac{1}{2}$ times diameter of eye. The operculum terminates in a flat obtuse spine, its length, including the flap, about equal to diameter of eye. Preoperculum entire, with a prominent ridge in advance of its posterior edge. The orbit is rounded, the least diameter of the eye equal to the length of the snout, and contained $4\frac{1}{2}$ times in length of head (slightly less in the larger specimen).

Snout very broad, obtuse, the intermaxillaries extending beyond it, its width at the nostrils equal to about twice the length of the eye. Posterior extremities of the intermaxillary processes elevated, producing a decided hump upon the top of the snout. The ridge formed by the prefrontal and suborbital bones terminates very slightly behind the posterior margin of the orbit, and is not connected with the angle of the preoperculum.

Nostrils immediately in front of the lower part of the eye, not tubular, the anterior one very small, pore-like, only about $\frac{1}{4}$ as large as the posterior one. Distance of anterior nostril from tip of snout about $\frac{3}{4}$ length of eye. Length of barbel (51 mm.) $6\frac{2}{3}$ in length of body, and equal to length of head without snout (in the larger specimen the barbel is as long as the mandible), more than 3 times as long as the eye.

There are no true teeth, the intermaxillaries and mandible being broad plates, covered with minute asperities. A naked space at the symphysis of the intermaxillaries.

Distance of first dorsal from snout (77 mm.) nearly $3\frac{1}{3}$ times length of its base ; the fin contains 2 spinous and 10 or 11 branched rays ; the first spine is minute, the second (in the types) somewhat mutilated, its length nearly 3 in length of head.* It is not stouter than the branched rays, and is entirely smooth.

The second dorsal is separated from the first by a very short interspace, equal to about $\frac{1}{3}$ of the length of the eye. Its rays are long, subequal, the first slightly the longest, its length equal to that of the base of the first dorsal.

The anal is much lower than the dorsal, the longest rays being in front, its third ray about half as long as the first ray of the second dorsal ; this fin is inserted under the seventh ray of the second dorsal. About three of the terminal rays might be considered caudal rays.

Pectoral inserted slightly in advance of the ventral, which is in about the same vertical with the origin of the first dorsal. The second ray of the pectoral is slightly produced. The length of the fin equal to that of the head without the snout.

Ventral insertion distant from the tip of the snout a distance equal to that of first dorsal from snout. The first and second rays are filamentous, the latter slightly the longer, and extending to the fifteenth (or eighteenth in larger specimen) ray of the anal fin.

* Judging from the larger specimen, this spine in a usual state would be considerably longer.

Radial formula: D. II. 9–10 (135); A. (120); P. 25; V. 8.

Color, brown; vertical fins, bluish or black; peritoneum, black; inside of gill-covers and roof of mouth, bluish.

2394.				
2374.				2 juv.
LXXXVIII.	Off Martinique.		476 fathoms.	1 "
LXXXIX.	"	"	334 "	

Bathygadus favosus, n. sp.

The type is a specimen, 350 millimeters in length, obtained by the "Blake" at Station LXXX., off Martinique, at a depth of 472 fathoms, with the Fish Commission specimens catalogued below as collateral types.

The body is heavy, stout; its greatest height, at origin of first dorsal (57 mm.), is contained a little more than six times in the total length. The profile of the body descends gradually and in a slight curve from the first dorsal to the snout.

The scales are small, deciduous, cycloid, without armature, about 135 in the lateral line, about 10 above and 16 below the lateral line, the latter series counted from the vent.

The length of the head (65 mm.) is contained about $5\frac{1}{2}$ times in total length. The interorbital area is slightly convex; its greatest width (22 mm.) equals about $\frac{1}{3}$ of the length of the head. The postorbital part of the head is $2\frac{3}{3}$ times as long as the eye, which is nearly round, its diameter equal to $\frac{1}{5}$ the length of the head. The snout is broad, oblique, its width at the nostrils (23 mm.) a little more than the width of interorbital area; its length (17 mm.) slightly more than $\frac{1}{4}$ that of the head. The nostrils are close to and in front of the middle of the eye, the posterior one somewhat the larger. No barbel.

The teeth in both jaws in villiform bands; a naked space at the symphysis of the intermaxillaries. The intermaxillary bands are more than twice as wide as those on the mandible. Vomer and palatine toothless. The longest gill-raker on the anterior arch is slightly more than half as long as the eye. The number of gill-rakers on this arch is 25, 20 being below the angle.

Pseudobranchiæ present, very rudimentary in some individuals, in others wanting or present only upon one side.

The first dorsal is distant from snout (68 mm.), which is slightly more than length of the head; the length of its base (24 mm.) is about equal to width of the snout at the nostrils. The fin consists of 2 spines, the first of which is minute, and 9 branched rays. The length of the longest spine, which is armed, is contained twice in that of the head (specimens examined imperfect). The second dorsal begins immediately behind the first, the membrane being continuous. The anterior rays are longest (apparently about $\frac{1}{4}$ the length of the head).

The anal is lower than the second dorsal; its distance from the snout (112 mm.) is about equal to $\frac{1}{3}$ of the total length.

The pectoral is inserted under the anterior rays of the first dorsal, and very slightly in advance of the origin of the ventral. Its length is more than half that of the head.*

The distance of the ventral from the snout (69 mm.) is contained 5 times in the total. This fin is inserted nearly under the base of the pectoral ; the first ray is somewhat produced ; † its tip reaches to the fourth ray of the anal fin.

Radial formula: D. II. 9, 125 ; A. 110 ; V. 9 ; P. 14 ; B. 7.

Color, bluish brown, darkest upon head and abdomen, especially in Museum specimens.

LXXX.	Off Martinique. 472 fathoms.	"Blake."
34,911.	N. Lat. 15° 24′ 40″, W. Long. 63° 31′ 40″.	"Albatross."
34,909.		"
34,910.	N. Lat. 15° 24′ 40″, W. Long. 63° 31′ 40″.	"
34,920.	" "	"
34,918.	" "	"
(2392).		
?LXXXII.	1 juv.	
(2394).	1 "	

Neobythites robustus, n. sp.

The type is from "Blake" Station XCIV., off Moro Castle, Cuba. 250–400 fathoms. Length, 88 mm.

With specimen (No. 29,057) from "Fish-Hawk" Station 1043, Lat. 38° 39′, Long. 73° 11′, 130 fathoms, as a collateral type.

Body rather short and deep, its greatest height (19 mm.) nearly $4\frac{2}{3}$ in total length and about equal to length of head. The interorbital area is convex ; its width (6 mm.) is greater than the diameter of the circular eye (5 mm.) and $1\frac{1}{2}$ times the length of snout (4 mm.). The length of the head (19 mm.) is about 4 times the diameter of the eye. The mouth is moderate, the maxilla extending to the vertical through the posterior margin of the eye, the mandible a little beyond, its length (10 mm.) equal to that of postorbital part of head. Teeth in villiform bands in the jaws, and on the palatines. Vomerine teeth bunched in a circular patch. Gill-rakers moderate, the longest a little more than twice in diameter of eye, four above angle of first arch, eleven below. Pseudobranchiæ rudimentary. Gill-opening wide, the membrane deeply cleft, behind free from the isthmus. A pair of short flat spines

* In one of the "Albatross" specimens the pectoral extends to the vertical from the eighth ray of the second dorsal.

† Its length in one of the "Albatross" specimens is equal to that of the head without snout.

upon the anterior portion of the operculum, extending backward nearly to its posterior edge.

The nostrils are small, the anterior as close to the snout as the posterior ones are to the eyes. No apparent cirri. The scales are minute ; the lateral line is obsolete on the last fourth of the length of the body.

The dorsal origin is behind that of the ventral and pectoral ; its distance from the snout (24 mm.) is contained $3\frac{2}{3}$ times in length of the body. The height of the fin is moderate; the longest ray is contained about 3 times in the length of the head.

The anal origin is under the eighteenth ray of the dorsal ; the height of the fin about equals that of the dorsal. The vertical fins are not connate with the caudal, which consists of 12 or 13 very slender rays, its length nearly equal to half that of head.

The pectoral with a broad base, close to gill-opening, its length nearly $\frac{2}{3}$ that of the head.

The ventral a single bifid ray, inserted slightly in advance of the vertical through the base of the pectorals, and not far from the humeral symphysis. It reaches nearly half-way to the vent, the distance of which from the origin of the ventral is equal to the length of the head.

Color yellowish brown.

Neobythites marginatus, n. sp.

The type is from "Blake" Station LXXIX., off Barbadoes, 209 fathoms.

Body compressed, somewhat elongate ; its height (18 mm.) contained $5\frac{7}{9}$ times in total length, and less than the length of the head. Interorbital area convex, its width ($5\frac{1}{2}$ mm.) greater than the diameter of the circular eye, which is $4\frac{1}{2}$ mm. The length of the head (22 mm.) is contained $4\frac{2}{3}$ times in that of the body. Mouth large, the maxilla extending considerably behind vertical through posterior margin of orbit ; its length equals half that of the head. The length of the mandible (13 mm.) is slightly more than $\frac{2}{3}$ of height of body.

The teeth as in *N. gillii.*

Gill-rakers slightly longer than half the diameter of the eye, 7 and 3 rudiments below the angle of the anterior arch. Pseudobranchiæ absent. Gill-openings as in *N. robustus.* A long flat spine upon the upper edge of the operculum, extending back nearly to its margin. Two short flat spines upon the angle of the preoperculum. Nostrils as in *N. gillii.*

The scales small, very closely imbricated, in about 123 rows, 7 above and 29 below the lateral line.

The lateral line obsolete in its posterior half.

The dorsal is composed of 101 rays ; its distance from the snout is contained 4 times in total length.

The anal originates under the fourteenth dorsal ray at a distance from the snout contained more than $2\frac{2}{3}$ times in total length.

The caudal consists of about 8 or 9 rays very closely placed; its length is contained about $10\frac{1}{2}$ times in the total length.

The pectoral is placed as in *N. robustus;* its length about equal to $2\frac{1}{3}$ times that of the head, extending to vertical through the vent.

The ventral, a bifid ray inserted in advance of base of pectoral, not reaching to the vent; its length (14 mm.) considerably less than the height of body. The distance from its origin to the vent (19 mm.) slightly more than the height of the body.

Color light yellowish brown, an obscure narrow band of darker brown commencing on the snout, interrupted by the eye, and extending backward $\frac{2}{3}$ of the distance to the tail, another beginning on the snout, extending over the eye and back as far as the first described, interrupted posteriorly. Dorsal fin milky white at base in its anterior third, above this a blackish band extending the whole length of the fin. A narrow white margin above.

Aphyonus mollis, n. sp.

The type is a specimen obtained at "Blake" Station CCXXI., Lat. 24° 36′ N., Long. 84° 5′ W., at a depth of 955 fathoms. $85 + x$ mm.

This species is closely allied to *Aphyonus gelatinosus*, Gthr., obtained by H. M. S. "Challenger."

The body is much compressed, its greatest height (14 mm.), 6 in its total length. Head thicker than body, its height (15 mm.) slightly greater. Length of head (20 mm.) about $4\frac{1}{4}$ in total; width (11 mm.) over half its length. Snout, $3\frac{1}{3}$ in length of head. Eye not externally visible. Diameter of orbit, as seen through the skin, about $\frac{1}{4}$ length of head. Maxilla extends to vertical through posterior margin of orbit, the mandible somewhat farther back, its length (13 mm.) nearly equal to height of body. A few weak teeth on vomer and palatines, mandible, and very rudimentary ones in maxillary; not visible to the eye, but appreciable to the touch. Gill-laminæ on the fourth and rudimentary gill-rakers, 8 rudiments and 4 developed below the angle. Dorsal origin almost over posterior edge of operculum, its distance from the snout $\frac{1}{4}$ of total length; fin-rays, more than 110 well developed, the longest 3 in head. Anal origin slightly nearer base of caudal than to tip of snout, its rays shorter than those in the dorsal. Pectoral with a fleshy base; its origin somewhat behind that of the dorsal, its length equal to width of head. Ventral origin in advance of that of pectoral, close to humeral symphysis; the fin is a single simple ray, whose length (11 mm.) equals that of the pectoral: its tip does not reach the vent, by a space equal to height of head.

Skin not loose. Texture of body rather firm, not transparent, whitish.

BARATHRONUS, n. gen.

Head stout, body and tail compressed, covered closely by skin, scaleless. Vent far behind pectoral, included in a cleft. Mouth wide, oblique, the lower jaw projecting. Intermaxillary teeth rudimentary; several fang-like teeth on the head of the vomer, none on palatines. A few rather large recurved, separated teeth in the mandible. Nostrils close together and small. Eye visible through the skin, partly upon the top of the head, with or without dark pigment in the iris. Barbel none. Gill-rakers very numerous and slender, and rather long. Gill-laminæ well developed on all the arches. No pseudobranchiæ. Head full of muciferous channels. Gill-membranes not united, but covered by a fold of skin. Ventrals reduced to single simple rays, placed in advance of the pectorals and close to the humeral symphysis. Dorsal and anal placed far back.

Caudal scarcely differentiated, composed of rather numerous very slender rays upon a somewhat narrow base.

Barathronus bicolor, n. sp.

The type is an individual, 120 mm. long, from "Blake" Station LXXI., off Guadaloupe, at a depth of 769 fathoms.

Body much compressed, its greatest height (19 mm.) contained $6\frac{1}{3}$ times in the total length. Head much thicker than body, its greatest width equal to $\frac{2}{3}$ of its length (23 mm.), which is contained $5\frac{1}{5}$ times in the total length. Eye concealed by the skin; diameter of orbit about equal to width of interorbital area, and contained $4\frac{3}{5}$ times in length of the head. Maxilla extends slightly beyond the perpendicular through posterior margin of orbit; it is almost entirely concealed under the preorbital, and is much expanded at the tip, where its width is rather greater than that of the eye. Intermaxilla very thin, broad, and slightly protractile.

Vomer very close to intermaxillary symphysis, its head somewhat raised and bearing three fang-like teeth (two of which are on one side and one on the other, in the type separated by a moderately wide interspace). The mandible has five enlarged, separate, recurved teeth upon each side, which increase in size posteriorly; its upper edge, posteriorly, is produced above the level of the tooth-bearing surface, and is received under the expanded maxilla. The longest gill-raker is about as long as the eye. The dorsal origin is distant from the snout (54 mm.), which is contained slightly less than twice in the total length. Its rays are well developed, numerous, long and slender, about 70 in number; the longest contained about 3 times in the length of head.

The anal originates in vertical from fourteenth dorsal ray, equidistant between eye and base of caudal. It contains 57 rays, about as long as those in the dorsal.

The pectoral with a fleshy base, its length (18 mm.) a little less than height of body.

The ventral well in advance of pectoral, close to humeral symphysis, the rays being placed very close together at their origin, the length of the fin (13 mm.) contained about 9 times in the total length, about 3 times in distance from its origin to the vent.

The caudal has about 10 rays; its length is contained about 8 times in the total length.

Color, yellowish white, with a broad vertical band of black from the origin of ventral nearly to the vent, another similar and narrower band above it upon each side.

Bregmaceros atlanticus, n. sp.

Specimens were obtained by the "Blake" at the following stations: —

XCIX.	Off Granada.	90 fathoms.	3 spec.
CV.	?	?	1 "
CXIII.	Off Neris.	305 fathoms.	1 "
CLXXXV.	Lat. 25° 33′ N. Long. 84° 21′ W.	101 fathoms.	1 "

The species agrees very closely with the only other known species of the genus, *B. macclellandii*, Thompson (= *Calloptilum mirum*, Richards.), from the Western Pacific, from which, however, it differs in the lesser number of rays in the first anal, and in the greater height of the vertical fins (judging from figures.

The type (CV.) is 46 mm. long to base of caudal. Form compressed, moderately elongate. Body height (6 mm.) $7\frac{2}{3}$ in its length. Interorbital area convex, its width ($2\frac{1}{2}$ mm.) greater than diameter of eye (2 mm.), which is four in length of head (8 mm.). Length of head $5\frac{3}{4}$ in total. Jaws even in front.

Maxilla reaches to vertical through middle of eye; the mandible to vertical through its posterior margin.

Teeth on intermaxillary minute, apparently in a single series, mandibulary teeth biserial, the inner teeth enlarged.

Scales large, about 10 in a transverse series, about 65 in a longitudinal series.

Cephalic appendage reaches nearly to base of first dorsal, its length (10 mm.) $4\frac{1}{2}$ in total.

Distance of dorsal from snout (17 mm.) $2\frac{1}{2}$ in total; that of anal the same.

The dorsal and anal fins received in a groove formed by the scales along their bases.

Anterior portion of second dorsal and second anal less elevated than in *B. macclellandii*. The differentiations between the developed and undeveloped rays of the anal are so slight that the limits of the so-called anterior and posterior sections of the fin cannot be determined.

Length of the longest anal ray (22 mm.) about 2 in body length.

D. 1 + 15–16. A. 15–16 + x (7 or 8) + 21–22.

Peristedium longispatha, n. sp.

LVIII. Off Santa Cruz. 314 fathoms.

Body high anteriorly, its greatest height (39 mm.) contained $4\frac{1}{2}$ times in total length. The length of the head, without prolongations, is contained $2\frac{1}{2}$ times in the total length ; with prolongations, 2 times. The crown of the head is flat, separated from the nuchal plate by a deep furrow, which is convex forward. The interorbital space is deeply concave, the supraorbital margins being swollen ; its width (16 mm.) equal to the long diameter of the orbit. No protuberance on the forehead, which is much depressed, its outline descending abruptly and rapidly in front of the eyes. A ridge, but no spine, beneath the eye. The length of the snout (49 mm.), including the preorbital extension, is more than half the length of the head; the preorbital extension equals about half the length of the snout. The processes are flat, rounded anteriorly, and covered with minute granulations ; they diverge considerably, the distance of the tips apart (36 mm.) being nearly twice that at their bases (19 mm.). A ridge arises at the base of the preorbital process and extends to the angle of the preoperculum, and its width at the angle (8 mm.) is contained twice in the diameter of the orbit. A narrow inconspicuous and interrupted ridge below. A ridge on the operculum, ending in a sharp spine at the angle ; its length is equal to the diameter of the eye.

The jaws are feeble, toothless ; the lower jaw with 2 long, much fringed barbels, and 14 shorter ones. The length of the long barbels (32 mm.) twice the diameter of the eye.

The maxilla does not quite reach the vertical through the anterior margin of the eye. The diameter of the eye (16 mm.) is contained four times in the length of the head without its prolongations. The greatest width of the head over the preopercular ridge (61 mm.) is contained three times in the total length.

The dorsal origin is directly in a line with the upper angle of the gill-opening. The longest spine (18 mm.) slightly longer than the width of interorbital space. The fin has 8 + 19 rays.

The anal origin is under that of the second dorsal. The fin has 19 rays. Caudal small, slightly emarginate, the length of its middle rays (23 mm.) equals $1\frac{1}{2}$ times the diameter of the eye.

Ventrals slightly in advance of the pectorals and extending farther back, reaching slightly beyond vent, and to vertical through seventh row of scales.

Pectoral short, extending to vertical from fifth scale of the lateral line, the longest detached ray to the sixth. Twenty-nine rows of scales.

Color in life, bright roseate ; a black blotch near the tip of the pectoral. Dorsal with narrow dark margin ; tip of caudal black.

The elongation of the preorbital extension is noticeable in the smallest examples.

LVIII.	Off Santa Cruz.	(Type.)	"Blake."
LXII.	Off Barbadoes.	209 fathoms.	"
LXIII.	" "	"	"
2397.			"Albatross."
2376.			"
2407.			"
2358.			"

Peristedium platycephalum, n. sp.

The length of the type to tip of snout, without prolongations, is 145 mm.

Type LX.	Off Barbadoes.	123 fathoms.
LIX.	" "	288 "
2299 yg. ?		

Body much depressed, its greatest height (23 mm.) $6\frac{1}{3}$ in body length, $6\frac{3}{4}$ in total.

Length of head without prolongations (47 mm.), twice the height of body, $3\frac{1}{2}$ in its length, with prolongations $2\frac{1}{2}$ in body length. Interorbital space deeply concave, the supraorbital margin being swollen, its width (14 mm.) equal to the long diameter of the eye. No protuberance on the forehead, which is much depressed, its outline descending abruptly and rapidly in front of the eyes. A ridge below the eye, not armed; a small vertical spine behind each nostril. Stout spines upon operculum and several upon the vertex. The length of the snout with its extensions (29 mm.) is half the length of the head, its processes (10 mm.) about 3 in its own length. The processes are flat, triangular, diverging slightly, the distance apart of their tips 2–$2\frac{1}{2}$ that at their bases. A ridge extends backwards from the base of each process along the lower edge of the preoperculum, ending behind in a sharp flat spine, the greatest width of the expanded portion, on the preoperculum, only $\frac{1}{4}$ as wide as the eye. Beneath this is another less conspicuous ridge with minutely serrated edge, which is double in front and single behind, the two portions separated by a slight notch.

Jaws normal, the two tentacles much fringed, their length (16 mm.) not much exceeding the diameter of the eye; between them, and placed about equidistant from each other, are two bunches of short tentacles, about four in each. Chin with numerous short tentacles, some of them as long as the eye, arranged for the most part in bunches of four.

Maxilla does not reach to the anterior margin of orbit.

Diameter of eye (13 mm.) nearly four in greatest length of head, and exactly half total length of snout. Greatest width of head, over the preopercular ridges (43 mm.), nearly equal to its own length without the processes. Dorsal origin over the upper angle of gill-opening. The fin has 8 + 17 rays. The length of the longest spine (18 mm.) is equal to that of postorbital portion of head.

Anal origin about under origin of second dorsal, a trifle farther back, and in the vertical through the space between the seventh and eighth lateral scutes. The fin has 17 rays. It is about as high as the dorsal.

Caudal small, slightly emarginate, with tips slightly produced, the length of the middle rays (18 mm.) equal to that of the dorsal.

Ventral origin in advance of the axil of the pectorals; the fin extends slightly beyond the vent, but not quite to the origin of the anal ; its length (35 mm.) about twice the length of the dorsal.

Pectoral rather long, extending to the ninth scute of the lateral line, and past the vertical through the origin of the anal. Twenty-nine rows of scutes.

Color red. Body and fins mottled and blotched with darker.

BENTHOSAURUS, n. gen., Synodontid.

Body long, somewhat compressed, tapering into a slender elongate caudal peduncle. Scales cycloid, of moderate size. Head slightly depressed ; cleft of mouth wide, horizontal, the lower jaw projecting at its extremity and anteriorly at the sides. The maxilla is long, not stout, dilated posteriorly ; the intermaxillary very long, styliform, tapering, immovable. The intermaxillary and mandible with bands of small teeth, of uniform size, interrupted at the symphysis. A short oblong band of similar teeth on each side of the vomer, separated by a rather wide interspace. Palate and tongue smooth. Eye very small, inconspicuous. Gill-opening extremely wide, the branchiostegal membrane free from the isthmus. Gill-rakers long and slender, numerous, about twice as many below the angle as above. Pseudobranchiæ absent. Branchiostegals eleven. All the fins well developed ; no adipose dorsal. Dorsal fin median, anal post-median. Caudal forked, with lower lobe produced. Ventral seven-rayed, inserted opposite the interspace between pectoral and dorsal, the outer ray produced.

Benthosaurus is closely allied to *Bathysaurus* and *Bathypterois*, resembling the latter in nearly every particular save in the structure of the pectoral fins.

Benthosaurus grallator, n. sp.

Body elongate, somewhat compressed, depressed slightly forward, tapering behind into a long slender tail; its greatest height contained $7\frac{1}{2}$ times in its standard length, and equalling half the length of the head, its greatest width $\frac{1}{3}$ the length of the head ; its height at the origin of the anal, $\frac{5}{6}$ of its greatest height. Least height of tail half the height of the body at the ventrals. Length of caudal peduncle $6\frac{1}{2}$ times its least height.

Scales very thin, cycloid, leathery, deciduous ; oval in form, except at the base of the dorsal and anal fins, where they become more elongate ; the horizontal diameter of a scale in the lateral line equals twice the diameter of the eye. The lateral line is straight, above the median line anteriorly, becoming

median on the caudal peduncle, the tube-bearing scales being prominent, and about 55 in number. Between the dorsal fin and the lateral line are about nine rows of scales ; between the latter and the anal fin, eight or nine rows.

Head twice as long as the greatest height of the body, its length contained a little less than four times in the standard body length, considerably depressed, scaleless except on the vertex and the preoperculum. Operculum, perhaps accidentally, denuded.

The snout is much produced, almost equal to the width of the interorbital space, which is convex. The maxilla extends far behind the posterior margin of the eye, its length equalling that of the postorbital part of the head. The mandible projects beyond the upper jaw to a distance slightly more than the diameter of the orbit, and receives the snout within its extremity when the jaws are closed. The teeth have been fully described in the generic diagnosis. The mandible has a series of seven large pores on its lower surface. There are several similar pores under the eye. The nostrils are situated about midway between the eye and the extremity of the snout, small, slit-like, the posterior about twice as large as the anterior one in each pair.

The dorsal fin contains eleven rays, and is inserted midway between the tip of the snout and the base of the middle caudal rays. The fin is highest in front, the length of the rays diminishing rapidly posteriorly. There is apparently no adipose dorsal.

The anal fin contains twelve rays and is similar in shape to the dorsal, the anterior rays being the longest, and about equal in length to the mandible ; its distance from the snout is about three times the length of its longest ray.

The caudal is forked, its middle rays $\frac{2}{5}$ as long as those in the upper caudal lobe ; the lower lobe is much prolonged, the lower ray being more than 4 times as long as the middle rays. Its extremity is broken off in our specimen, but apparently it must have been nearly twice as long as the stump which now remains.

The pectoral fin is normal, composed of 9 rays, and is inserted close to the opercular flap ; its length is slightly greater than that of the head (though mutilated), extending beyond the origin of the dorsal.

The ventral is composed of 7 rays, and its base is entirely in advance of the perpendicular from the origin of the dorsal ; the inner rays reach to the vent, while its outer ray is enormously prolonged, extending far beyond the extremity of the upper caudal lobe ; the length of the prolonged ray is fully 4 times that of the head. The two ventrals are close together.

Radial formula : D. 11 ; A. 12 ; P. 9 ; V. 7 ; B. 11. Scales, 9–55–8 or 9.

Color brown, the roof of the mouth and inside of the branchiostegal flap black, as well as the operculum and branchiostegal membrane.

A single specimen, 392 mm. ($15\frac{1}{2}$ inches) long to the tips of the prolonged ventral rays, was taken at a depth of 1850 fathoms, at Station CLXXIV., in Lat 24° 33′ N., Long. 84° 23′ W.

A second example of the same fish, and of nearly the same size, was taken

by the steamer "Albatross," September 6, 1884, in Lat. 39° 3′ 15″ N. and Long. 70° 50′ 45″ W., at a depth of 1537 fathoms. This is well preserved, and throws additional light on the external characters of the species; the fins, especially, are more nearly perfect. Measurements are given alongside of those taken from the "Blake" specimen.

Benthosaurus grallator.

Current number of specimen	CLXXIV. Blake.	35,651.
Length to base of middle caudal rays	275 mm.	267 mm.
Body. — Greatest height	37 "	35 "
Greatest width	24 "	20 "
Height at ventrals	32 "	33 "
Least height of tail	16 "	16 "
Length of caudal peduncle	105 "	95 "
Head. — Greatest length	73 "	70 "
Greatest width	28 "	26 "
Width of interorbital area	20 "	18 "
Length of snout	19 "	18 "
Length of upper jaw	48 "	48 "
Length of mandible	56 "	53 "
Distance from snout to orbit	21 "	—
Diameter of orbit	2.5 "	2.5 "
Dorsal. — Distance from snout	137 "	123 "
Length of base	35 "	46 "
Length of longest ray (first)	49+ "	— "
Length of last ray	11(?)"	17 "
Anal. — Distance from snout	152 "	146 "
Length of base	34 "	33 "
Length of longest ray (first)	55 "	50 "
Length of last ray	12(?)"	16 "
Caudal. — Length of middle rays	23 "	19 "
Length of external rays, upper lobe	59 "	50 "
Length of external rays, lower lobe	100+ "	221 "
Pectoral. — Distance from snout	67 "	62 "
Length	77+ "	84 "
Ventral. — Distance from snout	103 "	99 "
Length	285+ "	240 "
Branchiostegals	11 "	—
Dorsal	11 "	11 "
Anal	12 "	13 "
Pectoral	9 "	9 "
Ventral	7 "	7 "
Number of scales in lateral line	55	60
Number of transverse rows above lateral line	9	9
Number of transverse rows below lateral line	8 or 9	9

Goode, G. Brown and Bean, Tarleton H. 1886. "Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U.S. Coast Survey Steamer Blake, Lieut. Commander C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett," *Bulletin of the Museum of Comparative Zoology at Harvard College* 12, 153–170.

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