

SCIENTIFIC RESULTS OF EXPLORATIONS BY THE U. S. FISH COMMISSION STEAMER ALBATROSS.

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NO. IV.—DESCRIPTIONS OF NEW SPECIES OF FISHES COLLECTED AT THE GALAPAGOS ISLANDS AND ALONG THE COAST OF THE UNITED STATES OF COLOMBIA, 1857-'88.

BY

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In the winter and spring of 1888 the steamer *Albatross* made a cruise from Norfolk, Va., to San Francisco, in the service of the United States Fish Commission.

Extensive collections of fishes were made at various points off the coast of Central and South America. One of the most valuable of this series of collections was that from the region between the Galapagos Islands and Panama. This collection has been placed in our hands for study. In it are found the thirty-one new species mentioned in the present paper. These are described in advance of the appearance of the general report, by the consent of Hon. Marshall McDonald, U. S. Commissioner of Fisheries, and of Mr. Richard Rathbun, assistant in charge of the department of scientific investigation. The following is a list of the species which seem to be as yet undescribed:

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| Rajidæ: | 16. <i>Polyceirrhus rathbuni</i> . |
| 1. <i>Raja equatorialis</i> . | Uranoscopidæ: |
| Torpedinidæ: | 17. <i>Kathetostoma averruncus</i> . |
| 2. <i>Discopyge ommata</i> . | Gobiidæ: |
| Dasyatidæ: | 18. <i>Bollmannia chlamydes</i> . |
| 3. <i>Urolophus goodei</i> . | Scorpenidæ: |
| Synodontidæ: | 19. <i>Scorpena russula</i> . |
| 4. <i>Synodus evermanni</i> . | Triglidæ: |
| 5. <i>Synodus jenkinsi</i> . | 20. <i>Prionotus quiescens</i> . |
| Congridæ: | 21. <i>Prionotus albirostris</i> . |
| 6. <i>Ophisoma nitens</i> . | 22. <i>Prionotus xenisma</i> . |
| Ophisuridæ: | Blenniidæ: |
| 7. <i>Ophichthus evionthas</i> . | 23. <i>Runula azalea</i> . |
| 8. <i>Ophichthus rugifer</i> . | Batrachidæ: |
| Atherinidæ: | 24. <i>Porichthys nautopædium</i> . |
| 9. <i>Menidia gilberti</i> . | Ophidiidæ: |
| Stromateidæ: | 25. <i>Otophidium indefatigabile</i> . |
| 10. <i>Stromateus palometa</i> . | 26. <i>Leptophidium prorates</i> . |
| Serranidæ: | Gadidæ: |
| 11. <i>Diplectrum euryplectrum</i> . | 27. <i>Bregmaceros bathymaster</i> . |
| 12. <i>Prionodes stilbostigma</i> . | Pleuronectidæ: |
| 13. <i>Kuhlia arge</i> . | 28. <i>Azevia querna</i> . |
| Sparidæ: | 29. <i>Engyophrys sancti-laurentii</i> . |
| 14. <i>Xenocys jessie</i> . | 30. <i>Symphurnus atramentatus</i> . |
| Sciaenidæ: | 31. <i>Symphurnus leei</i> . |
| 15. <i>Larimus pacificus</i> . | |

1. *Raja equatorialis* sp. nov.

DIAGNOSIS.—Related to *Raja inornata* Jordan and Gilbert, from which it is at once distinguished by having four rows of spines below eyes, a series of stout spines on each side of tail in the male and no prickles on back except the median series and the spine on each shoulder. The size is much smaller (length, 14 inches), it being one of the smallest of the rays.

Type: No. 41,132, U. S. National Museum.

HAB.—Pacific Ocean, off coast of the United States of Colombia. $8^{\circ} 06' 30''$ N.; $78^{\circ} 51'$ W.

Description.—Disk to posterior base of pectorals one-third broader than long, the breadth exceeding the length by a distance equal to snout and eye; the breadth somewhat longer than length of tail (measured from vent); anterior margin concave in front of eyes. Snout produced at a rather acute angle, its tip rounded, its length from eye $3\frac{2}{3}$ in length of disk. Interorbital space rather strongly concave, its width $2\frac{2}{3}$ in snout. Eye not much larger than spiracles, 3 in snout. Width of mouth $1\frac{1}{2}$ in prenasal part of head; nasal flaps at angle of mouth deeply fringed. Pectorals reaching middle of ventrals, which are as long as from tip of snout to posterior border of spiracle. Claspers in typical example $1\frac{2}{3}$ in disk. Dorsals small, their length 2 in snout. Caudal small, not longer than eye. Snout above, with two rows of spines besides smaller asperities; a row of about 12 before and above eye and spiracle; a row of strong spines along line of back from posterior border of spiracle to second dorsal, these alternately large and small on the tail; a row of similar spines on each side of tail commencing just behind posterior base of ventrals and extending to caudal; a single spine on the shoulder on each side; four or five irregular rows near the anterior margin of the disk opposite the eyes; the length of this patch not as long as snout. Pectorals with the usual strong retrorse spines characteristic of the males of this genus. Small prickles present along the outer anterior margin of pectorals, interorbital area, on top of snout and along its margin for a distance equal to three-fourths of snout and beneath from tip to opposite posterior teeth, the anterior prickles strongest; a small patch in front of eyes. Teeth $\frac{4}{0}$.

Color, light brown, spotted with paler; the back with obscure reticulations of the ground color, forming honey-comb like markings, surrounding paler, an obscure roundish dusky blotch at middle of base of pectorals, and a darker one near their posterior base. Edges of ventrals, pectorals, and snout pale. Dark markings on interorbital area and below eye. No markings below.

This species is known from a single male specimen 14 inches in length dredged at a depth of 33 fathoms, at station 2797, off the west coast of Colombia, between Panama and the Galapagos Islands.

2. *Discopyge ommata* Jordan and Gilbert sp. nov.

DIAGNOSIS.—Separated from *Discopyge tschudii* by the spiracles having coarse fringes.

Type: No. 41,133, U. S. National Museum.

HAB.—Pacific Ocean off coast of Colombia, $8^{\circ} 06' 30''$ N.; $78^{\circ} 51'$ W.; also taken by Professor Gilbert at Panama in 1882.

Description.—Disk wider than long by $\frac{2}{3}$ interorbital width. Pectorals extending backward covering base of ventrals. Snout broadly rounded, not at all exserted, its length $4\frac{1}{2}$ in length of disk. Eye small, not quite half length of snout. Interorbital space slightly concave, its width $1\frac{1}{2}$ in snout. Spiracle smaller than eye, its margin fringed with 8 to 10 papillæ. Edge of nasal valve vaguely crenulate. Width of mouth $1\frac{2}{3}$ in preoral part of head; its anterior margin crenulate; preoral part of snout with distinct pores. Tail from vent to tip of caudal, very slightly shorter than rest of body from vent to tip of snout; a fold of skin on each side of tail extending to opposite posterior margin of first dorsal. Second dorsal narrower and higher than first, its length about equal to snout. Upper margin of caudal equal to snout and eye; its margin like that of dorsal, rounded. Ventrals large, adnate behind, with scarcely any antero-posterior margin.

Color brown, irregularly mottled and spotted with lighter and darker, these markings more pronounced nearer the margins of disk and on sides of tail; center of disk with a large blackish ocellated spot equal to length of snout, the darker center surrounded by a narrow pale circle, a pale spot in the center; snout pale. Posterior edge of pectoral and entire edge of ventrals pale, the lower posterior part of pectorals spotted. Dorsals and caudal pale, marbled with darker.

This species is known from a single female specimen dredged at a depth of 33 fathoms at Station 2795. A specimen was also obtained by Dr. C. H. Gilbert at Panama in 1882. This specimen was destroyed by fire before a description was published.

3. *Urolophus goodei* sp. nov.

DIAGNOSIS.—Approaching *Urolophus halleri* and *nebulosus*, from which it is separated by the presence of a strong spine on the middle of the back, by the more angular outline, the narrow ventrals, and the plain coloration.

Type: No. 41,150, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia: $8^{\circ} 06' 30''$ N., $78^{\circ} 51'$ W.

Description.—Disk (to posterior base of pectorals) broader than long by a distance equal to snout and half eye; anterior margins of disk very slightly convex from in front of eyes outwards. Snout with its tip exserted and sharply pointed, its length $3\frac{3}{4}$ in disk to base of pectorals. Eye about equal to spiracle, $3\frac{1}{4}$ in snout. Margin of spiracles not denticulated. Interorbital area scarcely concave, its width 2 in snout. Width of mouth 2 in preoral part of head. Nasal fold con-

cave behind, its edge fringed. Ventrals projecting considerably beyond disk, their length (from anterior margin of vent backwards) $1\frac{1}{4}$ in their breadth. Caudal spine large, its length equal to snout and half eye, its margin with 8-10 sharp forward-projecting spinules; its insertion anterior to middle of tail measured from pectorals, its tip reaching front of caudal. Caudal fin (measured from end of spine) equal to snout and eye. Length of tail greater than that of disk by a distance equal to eye and spiracle. Body (in young specimens) entirely smooth except for the presence of one (or two) sharp spine on middle of back. Color plain brown, paler toward margins of disk; no spots or distinct markings; under side not mottled; caudal dark above, margined with pale.

The above description was taken from a young female specimen 7 inches long. This specimen has the snout wholly smooth. Another about an inch shorter has *two* spines on middle of back and the snout prickly. Both specimens were dredged at Station 2795, with the preceding species. The snout is wholly smooth in the type. We have named this species for Dr. G. Brown Goode, Director of the U. S. National Museum.

4. *Synodus evermanni* sp. nov.

DIAGNOSIS.—Related to *Synodus poeyi* Jordan, but the snout shorter, the interorbital space broader; the pectorals reaching middle of ventrals, which are $1\frac{3}{5}$ in head; coloration, dark above; lining of gill cavity and of shoulder girdle, black.

From other related species the present one may be known by the large size of the scales.

Type: No. 41,144, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia, from $8^{\circ} 6' 30''$ N., $78^{\circ} 51'$ W., and $7^{\circ} 57'$ N., $78^{\circ} 55'$ W. Stations 2797 and 2795.

Description.—Head, $3\frac{1}{3}$ to $3\frac{3}{4}$ in length; depth, $6\frac{1}{2}$ to 7 ($7\frac{1}{2}$ – $8\frac{1}{4}$ in total). D. 1, 10; A. 1, 10. Scales, 4–47 to 49–5.

Body terete, rather robust; snout short, rounded rather than pointed, 4 in head. Mouth large; maxillary $1\frac{3}{4}$ in head. Interorbital area concave, rugose, its least width $5\frac{2}{5}$ in head; supraorbital ridge prominent, finely striate.

Origin of dorsal nearer adipose fin than snout by three-fourths width of interorbital area.

Anterior rays of dorsal coterminous with posterior when depressed; the last rays not filamentous; the free edge of the fin little concave; dorsal fin higher than long by nearly an eye's diameter, its length $2\frac{1}{5}$ in head. Lower jaw barely projecting. Lateral line with a blunt keel. Tip of ventrals reaching half way to vent (farther in young); their length $1\frac{3}{5}$ – $1\frac{4}{5}$ in head. Pectorals extending to near middle of ventrals, $1\frac{3}{5}$ – $1\frac{4}{5}$ in head. Lobes of caudal equal.

Color, dark above, pale below; 8 to 10 dusky greenish oblong spots along lateral line; between which and below lateral line are traces of

smaller spots. A dusky shade over opercle; skin lining opercle and shoulder girdle dark, the black markings surrounded by yellow. Adipose fin dark, edged with pale; caudal not barred, inner rays dusky; pectorals and dorsal somewhat dusky; other fins pale. Tip of chin scarcely dusky.

This species is known from numerous specimens dredged at a depth of 33 fathoms in Stations 2795 and 2797. The largest are about 8 inches in length.

It is named for Prof. Barton W. Evermann.

5. *Synodus jenkinsi* sp. nov.

DIAGNOSIS.—Closely allied to *Synodus scituliceps* Jordan & Gilbert, but the head larger, $3\frac{3}{4}$ in body; ventrals $1\frac{1}{2}$ in head and 6 rows of scales on cheeks.

Type: No. 41,171, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia; Stations 2795 and 2802; $8^{\circ} 6' 30''$ N., $78^{\circ} 51'$ W., and $8^{\circ} 51'$ (?), $79^{\circ} 31' 30''$ W.; also from Guaymas.

Description.—Head about $3\frac{3}{4}$ to 4 in length to base of caudal; depth, $6\frac{1}{5}$ to 7. D. 1, 10 or 11; A. 1, 13. Scales, 5–62 to 65–6; 6 rows on cheeks.

Body slender, subterete, depressed. Snout broadly triangular, little pointed, $3\frac{1}{3}$ in head, its length about equal to its breadth at base. Mouth large; maxillary $1\frac{2}{3}$ in head. Interorbital area concave, rugose, slightly broader than eye, $5\frac{1}{2}$ in head; supraorbital, finely striate, with serrulate edge.

Origin of dorsal midway between adipose fin and anterior margin of pupil; free margin of fin concave; anterior rays of dorsal not extending so far as the last when depressed; last ray filamentous and half length of largest; fin higher than long by an eye's diameter.

Lower jaw included; teeth moderate. Lateral line without a keel. Tip of ventrals reaching slightly more than half way to vent; their length $1\frac{3}{4}$ in head. Pectorals reaching root of ventrals, 2 in head, and longer than snout and eye in larger specimens. Upper lobe of caudal the longer, $1\frac{1}{2}$ in head.

Color, brownish olive, white below; scales on back with paler specks; a few rows of scales below lateral line with numerous black dots; head not marbled; jaws not spotted, tip of lower black; inside of opercles dark; lining of shoulder girdle yellow. Pectorals and caudal dusky, former tipped with pale. Adipose fin dark, margined with paler; lower fins pale.

This species is known from numerous specimens, dredged at Station 2797 in 33 fathoms and at Station 2802 in 16. The largest is 13 inches in length. Specimens were also obtained by Jenkins and Evermann at Guaymas. The species is named for Dr. Oliver P. Jenkins.

6. *Ophisoma nitens* sp. nov.

DIAGNOSIS.—Related to *Ophisoma heterognathus* (Bleeker), but with the body (head and trunk) contained $2\frac{3}{8}$ times in tail; eye, 7 in head.

Type: No. ———, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia, $8^{\circ} 47' N.$, $79^{\circ} 29' 30'' W.$; dredged in 14 fathoms, at Station 2801.

Description.—Head $1\frac{1}{7}$ in trunk, $5\frac{1}{3}$ in tail; interorbital area 2 in the large eye; snout $4\frac{1}{2}$ in head, very soft; eye very large, 7 in head, $1\frac{2}{3}$ in snout; cleft of mouth $3\frac{1}{5}$ in head, extending slightly behind middle of eye; lower jaw considerably shorter than upper.

Body slender; tail compressed, $2\frac{2}{3}$ times as long as head and trunk.

Pectoral long and narrow, $2\frac{1}{2}$ in head, $1\frac{3}{4}$ times as long as gill-slit; dorsal beginning slightly in advance of root of pectoral.

Color olivaceous, upper parts of head and body with numerous fine black dots; a silvery shade across opercles and below lateral line.

Peritoneum bright silvery, giving the belly a pale color. Dorsal and anal with a narrow black margin, below which are a few small spots; pectoral pale.

This species is known from a single young example, 9 inches long, dredged at Station 2801, between the Galapagos and Panama.

7. *Ophichthus evionthas* sp. nov.

DIAGNOSIS.—Approaching *Ophichthus bonapartii* (Kaup), but having the head, body, and tail covered with numerous round or oval black spots, separated by a yellowish ground-color, and which, at about 15 places, are larger, and tend to form cross-bands.

Type: No. 41,476, U. S. National Museum.

HAB.—Hood Island, Galapagos Archipelago.

Description.—Head $4\frac{3}{4}$ in trunk; about 8 to 10 coarse wrinkles on opercles and throat; snout $4\frac{1}{2}$ in head; eye small, $2\frac{2}{3}$ in snout, much nearer angle of mouth than tip of snout; cleft of mouth $2\frac{1}{2}$ in head, extending slightly beyond eye; lower jaw considerably shorter than upper; teeth small, subequal, acute, recurved, all except anterior vomerine uniserial.

Body rather stout; tail very slightly longer than trunk.

Pectoral quite small, $9\frac{1}{2}$ in head, equal to eye, and slightly shorter than gill-opening; dorsal beginning about twice length of pectoral behind tip of latter.

Color, light olive, the entire body covered with numerous round or oval black spots, which are separated by a yellowish ground-color, at intervals. In about 15 places these spots are considerably enlarged, tending to form dusky cross-bands. At these points the spots extend farther down on the belly; spots most numerous and smallest on head, especially across jaws, behind angle of mouth, and across opercles; those which tend to form cross-bands on body and tail are the largest, especially the lowermost, which are brownish and more diffused; an irregular series along middle line of belly, this becoming a double series along base of anal; lower side of head profusely spotted.

Pectoral with two obscure spots on its anterior side; dorsal with 3

or 4 rows of spots, those of the upper row elongate; anal pale, the row of spots along each side extending slightly on fin.

This species is known from a single specimen, $19\frac{1}{4}$ inches long, taken at Hood Island. It is a female, full of eggs.

8. *Ophichthus rugifer* sp. nov.

DIAGNOSIS.—Closely allied to *Ophichthus triserialis* (Kaup), but differing as follows: Gill-opening, $2\frac{3}{4}$ in the long pectoral, which is $2\frac{2}{3}$ in head; dorsal beginning over middle of pectoral; head and entire body corrugated; no black occipital band; dorsal with a submarginal row of spots; anal pale; spots on under part of head not distinct; a dark shade extending from gular region across opercles. In other respects it agrees fully with the description of *O. triserialis*, as given in Jordan & Gilbert, Synopsis Fishes of North America, p. 359.

Type: No. 41,428, U. S. National Museum.

HAB.—Charles Island; Galapagos Archipelago.

Description.—Head, $2\frac{3}{4}$ in trunk; eye, $3\frac{2}{3}$ in gape, $1\frac{1}{2}$ in snout; gape, $2\frac{2}{5}$ in head; tail, more than $\frac{1}{3}$ longer than head and body; teeth, small, acute, biserial in both jaws and on front of vomer.

Color light olive, a row of rather large, round spots along lateral line; a series of smaller spots on each side above the lateral series and alternating with it; a row of submarginal spots on the dorsal fin, irregularly alternating with the second series. Top and sides of head with smaller spots; a dusky shade near the middle of each pectoral; lower parts pale except the jaws and throat.

This species is known from a single female example, $21\frac{1}{2}$ inches in length, taken at Charles Island.

9. *Menidia gilberti* sp. nov.

DIAGNOSIS.—Distinguished from *M. pachylepis* and *guatemalensis* (Günther) by the much smaller scales.

Type: No. 41,165, U. S. National Museum.

HAB.—Panama.

Description.—Head, $4\frac{2}{5}$ – $4\frac{1}{5}$ ($5\frac{1}{3}$ – $5\frac{2}{3}$ in total); depth, $5\frac{1}{3}$ – $5\frac{2}{3}$ ($6\frac{1}{3}$ – $6\frac{2}{3}$). D. VI–I, 9; A. I, 21 or 22. Scales, 4–48 or 49–4. Length, $4\frac{1}{4}$ inches.

Body rather slender, elongate, compressed, especially below. Head short, its upper surface slightly convex. Snout larger than eye, 3 to $3\frac{1}{2}$ in head. Maxillary, $1\frac{1}{2}$ in snout. Lower jaw included. Eye moderate, 3 to $3\frac{1}{2}$ in head, $1\frac{1}{6}$ to $1\frac{1}{4}$ in interorbital space. Teeth in jaws small, not close set, none on vomer or palatines. Gill-rakers long and slender, about 20 developed below angle.

Origin of first dorsal midway between posterior margin of head and base of caudal, its posterior margin opposite front of anal. Its longest spine $4\frac{1}{5}$ in head. Insertion of second dorsal midway between base of caudal and fifth scale in front of first dorsal, opposite middle of anal, its longest ray equal to snout. Distance between origin of second

dorsal and base of caudal equal to a distance from tip of snout to two-thirds an eye's diameter beyond upper angle of pectorals. Origin of anal midway between base of caudal and posterior base of pectorals, the base equal to distance from tip of snout to base of pectorals; longest ray equal to snout and eye. Pectorals reaching beyond origin of ventrals, $1\frac{1}{7}$ to $1\frac{1}{6}$ in head. Ventrals reaching half way to vent, $1\frac{2}{3}$ to 2 in head, their origin midway between front of anal and edge of preopercle. Vertical fins nearly or quite scaleless. Scales large and firm; those above with the edges distinctly crenate.

Color greenish, the back rather pale, the scales thickly dusted with brown dots; a narrow vertebral band, which is anteriorly accompanied by a short line on each side; this band is broadest posteriorly. A bluish-silvery lateral band, bordered by dark above, upper parts dotted with black; sides and belly paler than back, the upper two rows of scales below lateral band anteriorly with a few dots.

Tip of snout, head between eyes, and A-shaped area on top of head, dark; from the occipital mark a streak of dots extend to base of pectorals; only a few dots on top of opercles; lower jaw dusky; lining of opercle dark; fins all pale.

Of this species numerous specimens, the largest about $4\frac{1}{4}$ inches long, were obtained by the *Albatross* at Panama. Numerous specimens were also obtained at Panama in 1882, by Dr. Gilbert, for whom we have named the species.

The species lately described from Guaymas, by Jenkins and Evermann, under the name of *Atherina sardina*, is also a *Menidia*, and should stand as *Menidia sardina*.

10. *Stromateus palometa* sp. nov.

DIAGNOSIS.—Allied to *Stromateus medius* Peters, but distinguished by the greater number of dorsal and anal rays (D. III, 45 to 47; A. III, 45), and by its larger head. (Head $2\frac{3}{4}$ to 3 in length.)

Type.—No. 41,136, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia: $8^{\circ} 16' 30''$ N., $79^{\circ} 37' 45''$ W. Station 2804.

Description.—Head $2\frac{3}{4}$ to 3; depth 2. D. III, 45 to 47; A. III, 45. Length of type, $2\frac{3}{4}$ inches. Body ovate, compressed, rather deeper than in *S. triacanthus*; ventral outline most arched; profile evenly convex to nostrils, where it abruptly descends, rendering the snout very blunt. Mouth small; maxillary reaching middle of pupil, 3 in head. Jaws equal. Teeth comparatively long, slender, and close-set, especially in the lower jaw, where they form an even cutting edge. No teeth evident on vomer or tongue. Snout shorter than eye, $4\frac{1}{2}$ in head. Eye rather large, 3 to $3\frac{1}{2}$ in head (young). Gill-membranes entirely separate. Gill-rakers long and slender, the longest about half eye, about 17 developed below angle. Dorsal and anal spines subequal, the longest not half eye; distance from tip of snout to first soft ray

of dorsal less than depth of body by two-thirds diameter of eye. Base of anal slightly shorter than base of dorsal (perhaps longer in the adult). Pectorals as long as head. No trace of ventrals, the pubic bone ending in a sharp spine; the usual antrorse spines before dorsal. Region above lateral line without evident pores. Greatest width of head $2\frac{1}{2}$ in its length; cheeks scaly; opercle naked; body covered with very small scales.

Color, silvery, bluish above; body with numerous small black dots, which are most numerous along bases of fins, caudal peduncle, top of head, and snout, and largest along base of anal. Vertical fins covered with small black dots, those on dorsal and anal larger than those on caudal. Pectorals dotted.

Numerous specimens of this species, the largest $2\frac{3}{4}$ inches long, were dredged in station 2804, at a depth of 47 fathoms.

11. *Diplectrum euryplectrum* sp. nov.

DIAGNOSIS.—Allied to *Diplectrum radiale* and *D. macropoma*, distinguished from the former by having the fascicle of preopercular spines much wider, wider than eye; from the latter by having smaller scales, those on cheeks in 8 or 9 rows.

Type.—No. 41,141, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia, from $8^{\circ} 06' 30''$ N., $78^{\circ} 51' W.$, and $7^{\circ} 57' N.$, $78^{\circ} 55' W.$, $7^{\circ} 56' N.$, $79^{\circ} 41' 30'' W.$, stations 2797, 2795, 2805. Head (to end of opercular spine) $2\frac{2}{3}$ to $2\frac{3}{4}$ ($3\frac{1}{3}$ to $3\frac{1}{2}$); depth $3\frac{2}{3}$ to $3\frac{1}{2}$ ($4\frac{1}{3}$ to $4\frac{1}{2}$). D. X, 12; A. III, 8. Scales 8–50 to 55–18.

Description.—Body moderately elongate, heavy through shoulders; the back not much elevated; anterior profile convex, nearly straight above eyes; mouth large, maxillary reaching posterior border of eye, 2 in head; snout blunt, $3\frac{3}{4}$ in head; eye large, slightly shorter than snout, 4 in head. Interorbital space appearing slightly concave, $1\frac{2}{3}$ in eye. Teeth as in *D. radiale*. Preopercular process very wide, its width $1\frac{1}{4}$ times diameter of eye; spines long and slender, 15 to 20 developed; the lower angle not so strongly projecting as in *D. macropoma*. Opercular spine rather sharp, embedded. Gill-rakers rather long, stout as in other species, X + 12. Scales small, rather firm; smaller than in other species; 8 or 9 rows on cheeks; scales on opercle smaller than in *D. radiale* or *D. macropoma*.

Dorsal spines weak, pungent; second $1\frac{2}{3}$ in third; fourth and fifth almost equal, $3\frac{1}{2}$ in head; first soft ray 3 in head, shorter than next the last. Upper lobe of caudal longest, $1\frac{2}{5}$ – $1\frac{3}{5}$ in head, lower lobe $1\frac{2}{5}$ – $1\frac{4}{5}$ in head. First anal spine $1\frac{4}{5}$ in second, which is strongest and $1\frac{1}{2}$ in third, latter 5 in head; soft rays showing a convex margin; the longest $3\frac{2}{5}$ in head. Pectorals broad; their posterior margin truncate-concave, their length $1\frac{5}{8}$ in head. Ventrals $1\frac{5}{7}$ in head. Color, brownish above, as in *D. radiale*, becoming more yellowish and silvery below; sides with about 5 pairs of interrupted black bars; a large black blotch at base of cau-

dal. Markings on preorbital and cheeks rather indistinct; a large black spot above preopercular angle on opercle; lips bluish. Spinous dorsal dusky above; a small pale spot under tip of spines; soft dorsal plain olive, dark at base; inner rays of caudal tipped with dusky, a few lower rays pale; pectoral and anal pale; ventrals dusky.

This species is known from numerous specimens dredged by the *Albatross* at stations 2795 and 2797, at a depth of 33 fathoms, and at station 2805 at a depth of 51½ fathoms. The largest of these is about 7 inches long.

Taken with this species is another equally abundant and very closely related, distinguished chiefly by the larger scales. This seems to be *Diplectrum macropoma* (*Centropristis macropoma* Güther), originally described from Panama. The third species of this type, *Diplectrum radiale*, was obtained by the *Albatross* at Panama. In this species the breadth of the fascicle of preopercular spines is notably less, while in the fourth species, *D. formosum*, this fascicle is, in the adult, divided into two.

12. *Prionodes stilbostigma* sp. nov.

DIAGNOSIS.—Allied to *Prionodes lucioperanus* (Poey), but the coloration entirely different, and the body deeper.

Type.—No. —, U. S. National Museum.

HAB.—Pacific Ocean, off the coast of Ecuador, 0° 50' S., 89° 36' W.; depth, 45 fathoms; station, 2809.

Description.—Head 3 ($3\frac{2}{3}$) in length; depth, $3\frac{2}{3}$ ($4\frac{2}{3}$); D. X, 12; A. III, 7. Scales, 8–58–18.

Length of type, $7\frac{1}{4}$ inches.

Body elongate-elliptical, less slender than in *P. lucioperanus*; back not much elevated; anterior profile straight from tip of snout to front of dorsal. Snout sharp, $3\frac{1}{2}$ in head, lower jaw considerably projecting, mandible $3\frac{1}{2}$ in head. Mouth rather large; maxillary reaching nearly to middle of pupil, $2\frac{3}{4}$ in head. Eye large, a little shorter than snout, 4 in head. Interorbital space very slightly concave, ridged. Teeth small, anterior teeth of front row in both jaws slightly enlarged; posterior teeth of lower jaw also enlarged; vomerine teeth in a **A**-shaped patch. Preopercle finely serrate, the lower teeth a little coarser, the margin evenly rounded. Opercle ending in three spines of which the middle one is considerably the largest; membrane extending beyond spines. Gill-rakers moderately long and slender, about 9 developed.

Scales small, firm, ctenoid; 11 rows on cheeks; 11 vertical rows on opercle to base of spines; 2 rows on interopercle.

Spinous dorsal rather low, not notched; first spine about $1\frac{1}{2}$ in second, fourth very slightly longer than third, as long as from tip of snout to middle of eye, $2\frac{1}{2}$ in head; soft dorsal not elevated, first ray $2\frac{3}{4}$ in head. Upper lobe of caudal the longer, $1\frac{2}{3}$ in head; lower lobe, $1\frac{1}{2}$ in head. Second anal spine strongest, hardly as long as third, which is $3\frac{2}{3}$ in head; first, $1\frac{1}{2}$ in second; first anal ray, 3 in head; penultimate longest, $2\frac{1}{2}$

in head; last somewhat shorter. Pectorals pointed, $1\frac{1}{2}$ in head, reaching beyond tips of ventrals to vent. Ventrals $1\frac{2}{3}$ in head. Soft dorsal and anal with a few scales. Scales on breast and belly small.

Color reddish (probably crimson in life), becoming paler beneath, breast somewhat orange. A few small, round, pale spots on cheeks and opercles; occiput rather dark; lower jaw dusky; a slight bluish shade on preorbital. Anterior part of back with small indistinct light and dark specks; large, quadrate, inky-black spot larger than eye at base of soft dorsal, which involves the basal half of several rays, and extends downward almost to lateral line; in this blotch are traces of three darker spots; behind this, three much smaller, roundish, black spots, which extend on fin; below these a row of about 10 round black spots smaller than pupil, on median line of side extending from opposite front of large dorsal spot to base of caudal; below this series some fainter irregular spots of black; extending obliquely upwards and backwards from above tip of ventral fin to lateral line a large elliptical creamy or silvery blotch which is about as wide as interorbital and as long as snout and eye; this spot does not reach middle line of belly. Spinous dorsal with three rows of diffuse, confluent, black spots separated by pale streaks; soft dorsal marked with several black spots, which extend upward from body; above these a pale median longitudinal streak. Upper half of caudal red, with a few small black spots, lower lobe inky-black, with some pale edgings. Outer half of ventrals and anal dusky. Pectorals pale.

A single specimen was dredged at 45 fathoms at Station 2809, off the coast of Ecuador. It is a very interesting species, allied to *Prionodes luciopercaus*, but quite peculiar in color, having, among other things, the peculiar oblique cream-white band found in *Prionodes phæbe* and *P. brasiliensis*.

13. *Kuhlia arge* sp. nov.

DIAGNOSIS.—Closely allied to *Kuhlia taniura* (Cuvier and Valenciennes), an East Indian species, from which it is distinguished by its smaller eye, which is $3\frac{1}{3}$ to $3\frac{1}{2}$ in head.

Type: No. 41,169, U. S. National Museum.

HAB.—Chatham Island, Galapagos Archipelago.

Description.—Head $3\frac{1}{2}$ to $3\frac{3}{4}$ ($4\frac{1}{2}$ to $4\frac{1}{2}$); depth $2\frac{2}{3}$ ($3\frac{1}{2}$); D. IX-I, 11 A. III, 11. Scales 7-50 to 52-12. Length of type 6 inches. Body oblong, strongly compressed; back elevated above pectorals; the anterior profile straight and rather steep; caudal peduncle long, compressed. Mouth rather small, very oblique, the lower jaw considerably projecting; maxillary reaching anterior margin of pupil, $2\frac{2}{3}$ to $2\frac{3}{4}$ in head. Eye moderate, slightly longer than snout, $3\frac{2}{5}$ in head. Teeth very small, in narrow bands, those on vomer in a Λ -shaped patch. Preorbital very narrow, its edge anteriorly with strong retrorse serræ, the moderately broad maxillary not sheathed by it. The structure in this regard resembles that of *Serranida*, not that of *Sparida*. Least width of preorbital $3\frac{1}{2}$ in eye. Serræ of preopercle sharp and fine, well devel-

oped below angle. Gill-rakers long and slender, about $X + 21$. Scales rather small, etenoid, firm, 3 or 4 rows on cheeks, 2 rows on interopercle. Jaws, snout, and top of head naked. Opercle with two strong spines, the lower the larger and nearly as long as pupil. Lateral line anteriorly rather sharply curved upward, concurrent with the back. No accessory ventral scale. Nostrils very small, round, close together. Dorsal spines high and pungent, hardly flexible, the first half as long as the second, the fifth longest, $1\frac{2}{3}$ in head, reaching tip of eighth when depressed. Dorsal fins very slightly connected by membrane. Soft dorsal $1\frac{2}{3}$ in anal, first ray 2 in head. Caudal deeply forked, as long as head, its inner rays not quite half as long as outer. First anal spine $1\frac{2}{3}$ in second, which is strongest and equal in length to third; free margin of anal slightly concave, first soft ray $2\frac{3}{4}$ in head. Pectorals short, pointed, $1\frac{2}{3}$ to $1\frac{1}{2}$ in head. Ventrals moderate, reaching vent, $1\frac{2}{3}$ in head. Soft dorsal and anal free from scales; a scaly sheath along base of both dorsals.

Coloration, bluish above, sides brilliant silvery; soft dorsal with a black oblique bar across its anterior rays; median rays of caudal black, lobes tipped with white, and crossed by two oblique black bars, which are separated by cream-colored bands, which are brightest on inner rays; outer bar largest. In other words, caudal with two black and three white cross-bands on each lobe, these convergent backwards; lower fins pale; axil of pectoral dusky on the inner side.

In spite of the resemblance of *Kuhlia* to *Xenistius*, the former is evidently Serranoid, the latter Sparoid in its affinities.

Several specimens of this beautiful fish were obtained by the *Albatross* at Chatham Island, in the Galapagos. This species is exceedingly close to the East Indian *K. tenuira*, scarcely differing from Bleeker's description of the latter except in the smaller size of the eye.

*Xenocys** gen. nov.

DIAGNOSIS.—Closely allied to *Xenistius*, Jordan and Gilbert, from which it differs, in having the dorsal fins entirely separated, the spinous part of nine species, its base containing that of soft dorsal $1\frac{1}{2}$ times; nostrils smaller and closer together than in *Xenistius*; teeth smaller; the fins more densely scaled and the occipital crest lower.

Type.—*Xenocys jessia* Jordan and Bollman.

14. *Xenocys jessia* sp. nov.

Type: No. 41,166, U. S. National Museum.

HAB.—Charles Island, Galapagos Archipelago.

Head, $3\frac{1}{2}$ ($4\frac{1}{2}$); depth, $3\frac{2}{3}$ ($4\frac{2}{3}$). D. X-1, 13; A. III, 11. Scales, 8-51-15. Length of type, $8\frac{1}{2}$ inches.

Description.—Body narrowly but regularly elliptical, compressed; back little elevated. Mouth rather large, somewhat oblique; lower jaw

* *ξενός* strange; *οκός* swift.

somewhat projecting; maxillary rather broad, reaching nearly to middle of pupil, $2\frac{2}{7}$ in head. Eye large, its diameter greatest obliquely downward and backward; equal to snout, $3\frac{2}{5}$ in head; longitudinal diameter shorter than snout, $3\frac{1}{5}$ in head. Preorbital rather narrow, its narrowest place $2\frac{2}{3}$ in eye; its edge entire, sheathing the edge of the maxillary for its whole length. Teeth very small, bands wider than in *Xenistius californiensis*; those on vomer in a Λ -shaped patch, but very small. Nostrils minute, close together, the anterior round, the posterior oblong. Serræ of preopercle at angle blunt, rather flat, none below, those on ascending limb smaller and sharper. Gill-rakers long and slender, about $X+23$. Opercle without spines. Cheeks and top of head with small scales; lower jaw and snout with rudimentary scales; maxillary naked. Scales small, firm, ctenoid. Dorsal fins entirely separate, the interval between them about $\frac{1}{5}$ diameter of eye. Dorsal spines rather high, slender, and pungent; the first short, the third and fourth of equal length, 2 in head, reaching when depressed to the tip of eighth; the second $\frac{2}{3}$ of third. Soft dorsal longer than anal, its base about $\frac{4}{5}$ of an eye's diameter shorter than that of spinous dorsal. Second anal spine noticeably shorter than third, which is almost 4 in head; longest soft ray $2\frac{6}{7}$ in head. Soft dorsal, anal, and base of ventrals closely covered with small scales. Caudal deeply forked, its peduncle slender, its upper lobe $1\frac{1}{7}$ in head. Pectorals long, pointed, $1\frac{2}{5}$ in head; ventrals reaching slightly more than three-fifths distance to vent, $1\frac{2}{5}$ in head; axillary scale of ventrals well developed.

Color grayish-black above, silvery below, with about 7 distinct, black, straight, parallel stripes on back and sides which extend across opercles and cheeks, those above lateral line indistinct in old specimens. The upper stripes are about as wide as the interspaces, the lower narrower; top of head with distinct stripes; fins dusky, except the ventrals.

Numerous specimens of this beautiful and most graceful fish were obtained at Charles Island. The species is named for Mrs. Jessie Knight Jordan.

15. *Larimus pacificus* sp. nov., (*Larimus breviceps* of authors, from the Pacific coast).

DIAGNOSIS.—Separated from the Atlantic species *Larimus breviceps* Cuvier, by the shape of the mouth, which is less oblique and similar to that of *L. fasciatus*, by the small anal spine, 3 in head, and by the distance between origin of ventrals and anal, which is more than depth of body, so that the ventrals do not reach vent.

Type.—No. 41,168, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia. Station 2802: $8^{\circ} 38' N.$, $79^{\circ} 31' 30'' W.$ Also taken at Panama, Punta Arenas, and Mazatlan.

Description.—Head, 3 ($3\frac{3}{4}$); depth same; D. X-I, 27; A II, 6. Scales, 6-50-8. Length of type, $5\frac{1}{2}$ inches.

Body compressed, formed as in other species; back elevated, regularly rounded from snout to last dorsal ray; ventral outline most arched

anteriorly, base of anal oblique. Profile of head depressed very slightly before dorsal and above eyes. Snout short, $4\frac{3}{4}$ in head. Eye moderate, equal to width of interorbital, 4 in head. Mouth rather large; maxillary reaching posterior border of eye, $2\frac{1}{5}$ in head. Premaxillary opposite middle of pupil. Width of preorbital one-third eye.

Pores of snout and chin as in other species of *Larimus*.

Preopercle with a narrow, crenulate, membranous border; scapular scale with well-developed membranous teeth; opercle, with three graduated, stiff, membranous spines above and another below. Gill rakers, long and slender, longest equal to length of eye; about 20 developed below angle.

Scales on head and anterior part of breast cycloid; bases of membranes of fins scaly. First dorsal spine inserted over base of pectorals; fourth spine longest, $2\frac{1}{2}$ in head. Anterior and posterior soft rays of dorsal subequal, 3 in head. Second anal spine, 3 in head; second anal ray, $2\frac{1}{2}$ in head. Distance between origin of ventrals and anal one-fifth more than depth of body. Pectorals $1\frac{1}{4}$ in head, reaching anus. Ventrals not reaching vent by almost half eye, $1\frac{2}{5}$ in head.

Coloration essentially similar to that of *Larimus breviceps*, silvery, with confluent dusky spots forming dark streaks along the rows of scales; numerous black dots from snout to caudal below lateral line; opercle appearing dusky externally, because the skin lining the region around pseudobranchiæ is inky black; dorsal, caudal, anal, and pectorals somewhat dusky; soft dorsal pale at base, then with a dusky and a pale longitudinal streak, the distal half dusky; general coloration less yellow than in *breviceps* and the streaks along scales more prominent.

The specimens referred by us to *Larimus breviceps* were taken by the *Albatross* at the island of St. Lucia. The type of the present species was dredged in 16 fathoms at Station 2802, between the Galapagos Islands and Panama.

Other specimens apparently of the same species have been taken by Dr. Gilbert at Mazatlan, Punta Arenas, and Panama.

16. *Polycirrhus rathbuni* sp. nov.

DIAGNOSIS.—Related to *Polycirrhus peruanus* (Steindachner), from which it is separated by its shorter pectoral ($1\frac{2}{3}$ to $1\frac{3}{4}$ in head), shorter dorsal spines (longest, $2\frac{1}{2}$ in head), longer snout ($3\frac{3}{4}$ in head), and more dorsal rays (D X-I, 29-30); a large black humeral spot.

Type.—No. 41,170, U. S. National Museum.

HAB.—Panama.

Description.—Head $3\frac{1}{2}$ ($4\frac{2}{5}$); depth, $3\frac{2}{5}$ ($4\frac{1}{4}$). D. X-I, 29-30; A. II, 9. Lateral line, 53-55. Length of type, 7 inches.

Body elongate, compressed; back elevated, profile from snout to dorsal straight or slightly S-shaped; ventral outline gently arched, base of anal oblique; caudal peduncle short and compressed.

Head low, little compressed. Snout short and blunt, $3\frac{3}{4}$ in head,

Mouth small; maxillary slightly longer than in *peruanus*, reaching pupil, 3 in head. Eye shorter than snout, $4\frac{1}{2}$ in head. Teeth small, villiform, outer enlarged, those of upper jaw largest.

Preopercle with a crenulate membranous border; least width of preorbital 6 in head. Gill-rakers short and rather thick; 5+10 present, lower much smaller.

Scales on snout, below eyes, and on anterior part of breast, cycloid; caudal scaly; dorsal and anal nearly scaleless, with a scaly sheath at base.

First dorsal spine very short, inserted over base of pectorals; third and fourth equal, $2\frac{1}{3}$ in head. Anterior dorsal rays 3 in head, posterior $2\frac{1}{2}$. Second anal spine 3 in head, longest ray, 2. Distance between bases of ventrals and anal, 3 in body. Pectorals not extending beyond ventrals, $1\frac{2}{3}$ to $1\frac{3}{4}$ in head. Ventrals not reaching vent, $1\frac{2}{7}$ to $1\frac{2}{5}$ in head, outer ray filamentous. Longest caudal ray $1\frac{1}{7}$ in head, fin shaped as in *peruanus*, the median rays longest, the upper lobe slightly truncate and slightly concave, the lower cut off still more obliquely.

Color bluish-silvery, more yellow beneath; scales from base of pectorals to caudal with larger dots. Back with four or five very faint broad dusky cross-bands, the one at end of spinous dorsal largest; a black spot larger than eye near origin of lateral line. Membrane of spinous dorsal thickly dusted; soft dorsal with a pale streak through its middle. Anal, outer half of ventrals, and nearly all of pectorals dusky; caudal rusty at base, followed by a pale area and then a dusky one.

Several specimens of this species were obtained by the *Albatross* at Panama. It is named for Mr. Richard Rathbun of the U. S. Fish Commission.

17. *Kathetostoma averruncus* sp. nov.

DIAGNOSIS.—Allied to the Australian species *Kathetostoma leve*, differing in the smaller number of dorsal rays and perhaps in coloration.

Type: No. —, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Columbia; $8^{\circ} 57' N.$, $79^{\circ} 31' 30'' W.$ (Station 2800).

Description.—Head, $2\frac{2}{3}$ ($3\frac{1}{3}$); depth, $3\frac{3}{4}$ ($4\frac{1}{2}$). D. 13; A. 13. Length of type, $4\frac{1}{2}$ inches.

Body short and robust, its width behind base of pectorals equal to length of top of head. Head very large, its width at preopercle less than its length by half length of eye. Mouth large, vertical; maxillary 2 in head. Snout $1\frac{2}{5}$ in eye. Eye rather small, 5 in head. Teeth of lower jaw largest, inner row of both jaws enlarged and movable. Lower jaw without tentacle. Interorbital space slightly concave, $1\frac{1}{2}$ times length of eye. Premaxillary groove as broad as long, $1\frac{1}{2}$ in eye; obtuse behind, extending backward just past middle of pupil. Distance between bases of humeral spines $1\frac{1}{4}$ in top of head. Preorbital with three spines in front directed forward and downward. Preopercle with three spines below angle directed downward and forward. Two antrorse

spines on mandible, and two on breast before ventrals. Bones of top of head coarsely granular, striate, no naked area above except premaxillary groove; two points on occipital region whence granular ridges radiate; opercles and orbital bones coarsely granular, but not striate. No trace of scales or of spinous dorsal. Base of dorsal equal to base of anal, $1\frac{2}{5}$ in head; longest ray equal to depth of cheeks. Pectorals half eye, length greater than that of top of head. Ventrals reaching more than half way to vent, their length equal to that of top of head.

A few small depressions resembling imbedded scales on region before dorsal and above head.

Color, blackish-brown, mottled with paler; lower parts pale, dusted with brown; lips and gular region black. Dorsal dusky, with five indistinct, partly confluent, whitish spots along its base. Anterior part of anal pale, posterior thickly dusted with blackish, tips of rays pale. Pectorals blackish, faintly barred; axil dusted outside, inner part very pale. Ventrals pale. Caudal with three irregular oblique dark bars. Floor of mouth pinkish; tongue dusted with dark specks.

A single specimen of this remarkable form was dredged at Station 2800, at a depth of seven fathoms.

18. *Bollmannia* Jordan gen. nov.

DIAGNOSIS.—This new genus differs from *Lepidogobius* by having no fleshy processes on inner edge of shoulder girdle, the interorbital area narrower and without trace of median keel, and by the very large etenoid scales. From *Gobius* proper it is distinguished by the presence of 7 dorsal spines and by the presence of large scales on the cheeks.

I have named this genus in honor of my late colleague, Mr. Charles Harvey Bollman, whose untimely death while engaged in the exploration of the rivers of Georgia, took place while this paper was passing through the press.—D. S. J.

18. *Bollmannia chlamydes** Jordan, sp. nov.

Type: No. 41,158, U. S. National Museum.

HAB.—Pacific Ocean off coast of Colombia; Station 2800, $8^{\circ} 51' N.$, $79^{\circ} 41' 30'' W.$; and Station 2805, $7^{\circ} 56' N.$, $79^{\circ} 41' 30'' W.$

Description.—Head $3\frac{1}{2}$ (5 to $5\frac{1}{2}$); depth $4\frac{1}{2}$ ($6\frac{2}{3}$ to 7). D. VII, 15; A. 15. Scales in a longitudinal series about 28; 8 or 9 in a cross-series at vent. Length of type $4\frac{3}{4}$ inches. Body rather robust, compressed. Head large and heavy, its profile evenly curved. Mouth very large, oblique; the lower jaw projecting; maxillary reaching to opposite pupil, $2\frac{1}{3}$ to $2\frac{2}{7}$ in head. Teeth small, sharp, in several series, the outer, especially in lower jaw, somewhat enlarged. Eye longer than snout, $3\frac{3}{4}$ to 4 in head. Interorbital area very narrow, concave, its least width about one-third

* *Χλάμυδης* = cloaked.

of eye or almost equal to pupil. Scales very large, efenoid; little reduced on breast and nape; about 8 before dorsal, where they are little smaller than on body; top and sides of head with large scales; scales on cheeks in four rows; two rows on upper part of opercles. The scales on head lost in some of the specimens. Dorsal spines slender, filamentous, fifth longest, $1\frac{1}{5}$ in head; first 2 in head, last $3\frac{1}{2}$ to 4. First soft dorsal ray $2\frac{2}{3}$ in head, the ante-penultimate longest and about equal to head. First anal ray equal to snout, the ante-penultimate $1\frac{1}{4}$ in head. Middle caudal rays very long, somewhat more than half length of body. Pectorals $1\frac{1}{5}$ in head. Ventrals $1\frac{1}{3}$.

Color, olivaceous, darkest above; scales with a few black dots, some of the posterior occasionally dark-edged. Sides with 8 to 10 obscure dusky vertical bars, which are narrower than the interspaces and in some specimens wholly obsolete. Snout bluish; opercles with a dark shade; lips, gular region, and anterior branchiostegals very dark in males. Upper part of spinous dorsal darkest, with a few lighter dark-edged oval spots, a well-marked black blotch between last two spines; soft dorsal dusky, usually with about three well-developed rows of lighter, dark-edged oval spots. Anal dusky, crossed by two narrow bluish streaks. Some of the last rays occasionally have a few spots similar to those on dorsal. Caudal, pectorals, and ventrals dusky, tinged with blue; ventrals edged with pale.

Many specimens of this abundant species were dredged at Station 2800 in seven fathoms and in Station 2805 in fifty-one and one-half fathoms.

19. *Scorpaena russula* sp. nov.

DIAGNOSIS.—Allied to *Scorpaena fernandeziana* Steindachner and *Scorpaena sonora* Jenkins & Evermann. It is distinguished from the former by its naked opercles and pale ventrals and anal, from the latter by having no coronal spines; the maxillary 2 in head and no large black spots on spinous or soft dorsals.

Type: No. 41,160, U. S. National Museum.

HAB.—Pacific coast of Colombia, Stations 2797 and 2795, $8^{\circ} 6' 30''$ N., $78^{\circ} 51'$ W., and $7^{\circ} 57'$ N., $78^{\circ} 55'$ W.

Description.—Head $2\frac{1}{3}$ to $2\frac{1}{2}$ (3 to $3\frac{1}{5}$); depth $3\frac{1}{5}$ to $3\frac{1}{3}$ (4 to $4\frac{1}{4}$). D. XI, 1-10; A. III-5. Lateral line, 45 to 47. Length of type, 6 inches.

Body robust, compressed; back little elevated, profile very gently arched from snout to origin of spinous dorsal. Mouth large; maxillary reaching posterior margin of pupil, 2 in head. Snout $4\frac{1}{2}$ in head. Eyes large, $3\frac{1}{2}$ in head. Interorbital space narrow, concave, its width a little less than one-third eye. Occipital and suborbital pits absent. Gill-rakers short and thick, 5 or 6 developed.

Nasal spines short and sharp, not longer than length of nostrils. Pre-ocular spine very prominent, larger than others on top of head. Supra-ocular spine not so strong as postocular and tympanic, which are close

together, the latter followed by a low striate ridge which bears the low occipital and nuchal spines. No coronal spines.

Temporal ridge prominent, ending in a spine, and with two blunt spines in front; below these, and about half way to suborbital stay, is another small and blunt spine. Preorbital with two large forward projecting spines in front; suborbital stay with a prominent ridge which bears a small spine below anterior margin of pupil, and two more behind posterior margin (in the young the first of these two is absent). Preopercle with four distinct spines, besides some four smaller projections, the largest spine with a small one immediately below. Opercular spines two, large and sharp, the lower the longer.

Scales small, scarcely ctenoid, those on belly much reduced; breast and region in front of pectorals and ventrals scaled; antedorsal region with 3 or 4 rows of imbedded scales; temporal region with a few imbedded scales; cheeks with about 4 rows of large scales below the suborbital stay; membrane of opercles with a few scales, the opercle itself naked. Scales of body without fleshy flaps. Supraorbital tentacle developed in the young, disappearing in the adult. Dorsal spines not as high as soft rays, the fin deeply notched; first spine 2 in eye, second $1\frac{2}{5}$, third almost equal to eye, fourth and fifth almost equal, 3 in head, twelfth $3\frac{1}{4}$ in head. Longest soft ray of dorsals $2\frac{1}{2}$ in head. First anal spine $2\frac{1}{4}$ in second or 2 in eye, second anal spine longer than third and equal to eye; longest soft ray equal to that of dorsal. Pectorals long. $1\frac{1}{2}$ in head. Ventral reaching vent, very slightly more than 2 in head, Caudal equal to pectoral.

Color, dark brown above, probably crimson in life, pale below level of upper half of pectorals. Upper half of head dark but without any distinct spots, the back more or less mottled with dusky. Spinous dorsal with a dusky band at base and another across its middle; soft dorsal dark at base and with three or four irregular rows of small, obscure brownish spots. Caudal tipped with black, traces of a narrow dark bar across its middle. Pectorals slightly tipped with black, the middle slightly mottled. Ventrals and anals pale or with traces of black on tips of rays.

Numerous specimens were dredged at a depth of 33 fathoms in Stations 2795 and 2797.

20. *Prionotus quiescens* sp. nov.

DIAGNOSIS.—Related to *Prionotus stephanophrys* Lockington, but the interorbital area concave; the bones of head much striate and granulated, and the caudal differently colored. It also bears some resemblance to the Atlantic species *Prionotus stearnsi*.

Type: No. 41,153, U. S. National Museum.

HAB.—Pacific Ocean off coast of Colombia; from Station 2800, $8^{\circ} 51' N.$, $79^{\circ} 31' 30'' W.$; Station 2805, $7^{\circ} 56' N.$, $79^{\circ} 41' 30'' W.$; Station 2801, $8^{\circ} 47' N.$, $79^{\circ} 23' 30'' W.$; and Station 2802, $8^{\circ} 38' N.$, $79^{\circ} 31' 30'' W.$

Description.—Head $2\frac{1}{2}$ to $2\frac{3}{4}$ ($3\frac{1}{5}$ to $3\frac{1}{3}$ with caudal); depth 4 to $4\frac{1}{2}$ (5 to 6). D. X-12; A. 11. Scales, in lateral line, 50 to 55; in a longitudinal series, 60 to 70. Length of types about 5 inches. Body rather slender, compressed, not much narrowed above, the width of the nape between the occipital spines 4 to $4\frac{1}{5}$ in head. Head moderately elongate, not elevated; eyes not prominent, the profile from snout to nape almost straight or slightly convex. Snout broad, of about equal length and breadth, $2\frac{1}{2}$ to $2\frac{2}{3}$ in head; anterior margin marginate; preorbital little projecting, its edge with about 15 to 20 fine serrae, the anterior strongest with the exception of the last one, which is directed backwards.

Surface of bones of head smoother than usual in this genus and with fine radiating granular striae, those on opercles, cheeks, and top of head most strongly developed.

Mouth rather large, maxillary $2\frac{1}{2}$ in head, reaching slightly beyond anterior orbital rim.

Band of palatine teeth narrow. Eye moderate, $4\frac{1}{3}$ to 5 in head. Orbital rim not especially elevated, its edges granulated, especially anteriorly, preorbital and postorbital spines small and blunt. Interorbital not deeply concave, rather wide, its least width $4\frac{2}{3}$ to 5 in head. No groove across top of head behind orbital rim. Occipital ridges present, the inner very low, ending in a very small spine; outer large, ending in a moderate spine, the pair diverging, their inner edges serrulate, the spines extending to nearly opposite first dorsal spine. Temporal region with a slight elevated roughish ridge, but no spine. Preopercular spine long and sharp, its anterior edge somewhat serrulate, no smaller spine below it and none on suborbital stay. Opercular and humeral spines well developed sharp. No trace of spines on suborbital or preorbital. There are but three distinct spines on each side of the head, occipital, opercular, and preopercular. Membranous flap of opercle with a few scales. Gill-rakers long and slender, about equal to half diameter of eye, 8 to 10 well developed.

Scales quite small, those on breast (between ventrals) larger than those on belly or throat; scales extending beyond base of pectorals to isthmus; about 12 to 15 rows between occiput and front of dorsal.

Spinous dorsal rather low; first spine not strongly serrulate, $\frac{3}{4}$ length of second, which is $2\frac{1}{2}$ in head; first ray of second dorsal weakly serrulate at base; longest ray shorter than snout and slightly less than 3 in head. Longest anal ray $3\frac{1}{2}$ in head. Caudal lunate, $1\frac{1}{2}$ to $1\frac{3}{4}$ in head. Pectoral reaching last dorsal ray, a little more than half body. Ventrals reaching vent, $1\frac{2}{5}$ to $1\frac{1}{2}$ in head.

Coloration in spirits, grayish, unspotted, more dusky above; spinous dorsal dusky, a distinct black spot between fifth and sixth spines; soft dorsal with three rows of diffuse spots. Caudal dusky on the outer three-fifths and base. Pectorals mostly black, with faint pale cloudings. Ventrals and anal pale. Coloration perhaps red in life.

This small species was dredged in large numbers in 7 fathoms depth at Station 2806; in 14 fathoms at Station 2801; in 16 fathoms at Station 2802; and at 51½ fathoms at Station 2805. Probably none of the specimens examined are fully grown.

21. *Prionotus albirostris* sp. nov.

DIAGNOSIS.—Approaching *Prionotus quiescens* in technical characters, but very different in appearance; easily distinguished by the form, armature, and coloration of the head.

Type: No. 41,162, U. S. National Museum.

HAB.—Pacific Ocean, off the coast of Colombia; Station 2795; 7° 57' N., 78° 55' W.

Description.—Head 3 in length ($3\frac{3}{4}$ with caudal); depth $4\frac{1}{2}$ ($5\frac{3}{4}$). D. X-12; A. 11. Pores along lateral line 50 to 55. Length of the type $5\frac{1}{2}$ inches. Body moderately elongate, little compressed, narrowed above, the width of the nape between the occipital spines being $4\frac{1}{2}$ in head. Head rather short and high; eyes prominent, the anterior profile regularly concave, the eyes and forehead less prominent than in the next species. Snout broad, its breadth at angle of mouth almost equal to its length, $2\frac{1}{2}$ in head; its anterior margin not produced, but slightly emarginate, serræ short and even, bluntish, about 20 well developed; whole edge of preorbital with fine serræ. Anterior nostril with a large black flap. Surface of bones of head with strong radiating striæ, those in front of eyes most broken up into granulations. Mouth moderate, maxillary $2\frac{3}{4}$ in head, not reaching front of eye; band of palatine teeth rather broad. Eye rather large, $4\frac{1}{2}$ in head. Interorbital space narrow, deeply concave, smoother than rest of head, its least width $6\frac{1}{2}$ in head. Orbital rim elevated, with coarse spine-like striæ in front, inner largest, forming the preocular spine; upper margin with moderately strong serræ ending behind in a large, supraocular spine. No groove across top of head behind orbital rim. Occipital ridges strong, the inner pair with a few asperities at base, ending in a compressed spine; the outer with stronger serræ at base and extending to opposite first dorsal spine. Temporal ridge slightly crenulate, with two blunt spines. Preopercular spine without a smaller one at base, its edge serrulate; suborbital stay with an elevated serrulate ridge but no spine. Opercular spine small and blunt, smaller than the strong humeral spine. No spines on suborbital or preorbital. Membranous flap of opercle scaly. Gill-rakers rather long and slender, longer than interspaces, about equal to one-third of eye, five most strongly developed. Scales small, those on belly smaller than those on breast, not extending before a line drawn between base of pectorals and ventrals; about seven scales between occiput and dorsal; spinous dorsal moderately high, the first spine very strongly serrulate in front, shorter than second, which is one-half head; first ray of second dorsal serrulate at base, the longest ray very slightly longer than snout.

Longest anal ray 3 in head. Caudal subtruncate, $1\frac{1}{3}$ in head. Pectorals long, reaching to the last dorsal ray or even farther in young specimens, $1\frac{9}{10}$ in body. Ventrals reaching third anal ray, $1\frac{1}{4}$ in head.

Coloration in spirits grayish, unspotted, darkest above, and with darker cross-shades. Snout and jaws white; the tip of both jaws, a bar across both jaws, and one behind angle of mouth, black. A black bar on anterior and another on posterior part of interorbital, the latter extending across the cheeks. First dorsal dusky, vaguely clouded with darker; second, irregularly spotted, its posterior half dusky. Caudal, broadly black at base and tip; its middle part yellowish. Pectorals dark, with a slight violet shade, and traces of darker mottlings. Middle of anal dusky. Ventrals dusky on upper surface.

This species is known from several specimens, the largest $5\frac{1}{2}$ inches long, dredged at Station 2795, at a depth of 33 fathoms. In its concave profile and prominent eyes it resembles the next species, but its affinities are with the large-mouthed forms, the allies of *Prionotus evolans*.

22. *Prionotus xenisma* sp. nov.

DIAGNOSIS.—Approaching *Prionotus punctatus* C. & V., from which it is at once separated by the form of the snout and the outline of the profile. It approaches still more closely to *P. birostratus*, from which it is separated by the presence of a smaller spine at the base of the spine on the preopercle. The latter species has also smaller scales and the humeral spines smaller than the spine on the opercle.

Type: No. 41,151, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia, at Station 2795, $7^{\circ} 57' N.$, $78^{\circ} 55' W.$

Description.—Head $2\frac{1}{2}$ to $2\frac{3}{4}$ (3 to $3\frac{1}{4}$ in total); depth $3\frac{1}{3}$ to $3\frac{1}{2}$ (4 to $4\frac{1}{4}$). D. VIII–11; A. 10. Scales in a longitudinal series, 60 to 70; about 43 oblique series, between gill opening and tail; 35 to 40 pores in lateral line. Length of type, 4 inches.

Body short and robust, little compressed, the width of the nape, between occipital spines, 6 to $6\frac{1}{2}$ in head. Head, short and high; eyes, prominent; the profile angulated, concave before eye, convex above it. Snout short and broad, its breadth greater than its length, which is $2\frac{3}{4}$ in head; its anterior margin deeply emarginate, the preorbital produced on each side into a broad triangular spiniferous lobe, which is nearly equal to half diameter of eye.

Surface of bones of head finely and densely granular striate. Mouth small, maxillary 3 to $3\frac{1}{2}$ in head, not reaching front of eye. Band of palatine teeth rather broad.

Eye large, 4 in head. Interorbital space narrow, deeply concave, and granular striate, its least width 6 to $6\frac{1}{2}$ in head; orbital rim elevated, its edges granular serrate; no distinct preorbital spine, whole edge of preorbital finely serrulate; a groove across top of head behind the blunt supraorbital spine. Occipital ridges present, the outer granular

and not spinous; the inner rather sharply elevated into a short spine; the outer rather wide, extending to second dorsal spine. Temporal region with an elevated roughish ridge, on which are two bluntish prominences. Preopercular spine large and strong, with a smaller one at its base. Opercular spine long and sharp; humeral spine usually larger than opercular. No spines on suborbital.

Membranous flap of opercles not scaly. Gill-rakers short, slender, longer than interspaces, and about equal to three-fifths of pupil. Naked skin of throat with numerous papillæ. Scales rather small, of about equal size on breast and belly; extending beyond base of pectorals, anterior margin forming an obtuse angle; 3 or 4 rows of rudimentary scales between occiput and dorsal. Spinous dorsal high, the first spine longest, $1\frac{3}{4}$ to $1\frac{1}{2}$ in head; anterior margin of first three spines with numerous granule; second spine slightly more than two in head, all the spines stout; longest ray of second dorsal shorter than snout, $3\frac{1}{6}$ in head. Longest anal ray $3\frac{2}{3}$ in head. Caudal slightly lunate, $1\frac{3}{5}$ in head. Pectorals quite short, reaching fifth ray of second dorsal, 3 in body. Ventrals reaching anal, $1\frac{2}{5}$ in head.

Three short granular interspinal bones projecting through the skin between first and second dorsal, the anterior less robust than others.

Coloration in spirits grayish (probably red in life); dusky above and irregularly mottled; a distinct dark spot before base of caudal. Dorsal dusky, with a large black ocellated spot between fourth and fifth spines; dorsal spines with a row of dark spots on their anterior margin; soft dorsal with three rows of dark spots. Pectorals blackish, a few of the upper rays pale on the inner side. Ventrals and anal pale. Caudal barred with dusky.

Very many specimens of this small species were dredged at Station 2795 at a depth of 33 fathoms.

At Station 2805 another species was obtained which resembles this very closely. It is, however, a little more elongate, with rather smaller scales, the caudal fin spotted, and no distinct dark spot at base of caudal. In this species there is no trace of a second spine at the base of the large preopercular spine, and the humeral spine is rather smaller than the opercular. Both have the snout birostrate, the forehead and eyes very prominent, and the pectorals very short. One of these is probably *Prionotus birostratus* of Richardson, and both agree with the short description of the latter given by Dr. Günther. In view of this doubt, we have identified the species with the smaller scales as *P. birostratus*, as Richardson says "Scales very small." Besides the four species mentioned in this paper, specimens were obtained of *Prionotus miles* Jenyns at Charles Island, and of *P. horrens* Richardson at Station 2802.

Runula* genus novum. (Blenniidae.)

Allied to *Petroskirtes* Rüppell, but with the small, inferior mouth destitute of canines; body slender; dorsal fin continuous, its species and soft rays indistinguishable; gill openings reduced; scales none.

Type.—*Runula azalea* sp. nov.

23. *Runula azalea* sp. nov.

Type: No. —, U. S. National Museum.

HAB.—Indefatigable Island, Galapagos Archipelago.

Description.—Head $4\frac{1}{5}$; depth $6\frac{1}{5}$; D. about 40, the count uncertain; A. about 25, the count uncertain. Length of type, 2 inches.

Body moderately elongate, not much compressed; head rather long, its upper outlines convex; snout short and very blunt; mouth entirely inferior, transverse, each jaw provided with long, slender, close-set curved teeth; no evident posterior canines; upper jaw rather behind nostril; eye moderate, equal to snout and nearly equal to interorbital width, 4 in head; no tentacles on head; gill membranes fully united to the isthmus, the gill opening reduced to a vertical slit, its lower edge opposite middle of base of pectoral; no scales; lateral line very high, concurrent with the back. Dorsal fin very low, continuous; the feeble spines and soft rays indistinguishable, the fin beginning at occiput; anal similar to soft dorsal. Caudal lunate behind, free from dorsal and anal. Pectorals and ventrals small, each about $1\frac{1}{5}$ in head.

Color reddish brown, silvery below; a black spot surrounded by paler at base of caudal; dorsal with about 6 black cross-bars; anal with four; other fins pale.

A single specimen 2 inches long, taken at Indefatigable Island, in the Galapagos.

24. *Porichthys nautopædium* † sp. nov.

DIAGNOSIS.—Similar to *Porichthys margaritatus*, differing chiefly in color. Top and sides of head and space above pectorals with numerous round black spots, which behind pectorals form 6 to 8 vertical half cross-bars; dorsal not margined with black, but with 8 to 10 black submarginal spots; anal, with the exception of a few posterior rays, pale; caudal black at base and tip; pectorals with a few dots at base and on upper rays; a roundish white blotch below eye, below this a jet-black crescent; head $3\frac{1}{3}$ to $3\frac{2}{3}$; depth $4\frac{1}{5}$ to $5\frac{1}{2}$. D. II, 37; A. 33. Palatine teeth small, one or two slightly enlarged. Series of shining spots arranged as in *P. margaritatus*.

Type: No. 41,145, U. S. National Museum.

* Latin *runa*, a dart.

† *ναυτοπαίδιον*, sailor-boy, from the common name of "midshipman," given in allusion to the "buttons" on the belly of the fish.

HAB.—Pacific Ocean off coast of Colombia, from Station 2802, $8^{\circ} 38' N.$, $77^{\circ} 31' 30'' W.$, and Station 2795, $7^{\circ} 57' N.$, $78^{\circ} 55' W.$

This species was obtained in large numbers at Station 2795 at a depth of 33 fathoms, and at Station 2802 at a depth of 16 fathoms. The largest specimens are about $4\frac{1}{2}$ inches long. It may prove to be merely a color-variety of the northern *P. margaritatus*.

25. *Otophidium indefatigabile* sp. nov.

DIAGNOSIS.—Allied to *Otophidium taylori* (Girard), but with fewer gill-rakers, smaller teeth, and somewhat different coloration.

Type: No. —, U. S. National Museum.

HAB.—Indefatigable Island, Galapagos Archipelago.

Description.—Head $4\frac{2}{5}$ ($4\frac{1}{2}$); depth $5\frac{2}{3}$ ($5\frac{1}{2}$). Length of type 4 inches.

Body rather short, compressed, width of nape $2\frac{1}{2}$ in head. Mouth large; maxillary reaching to opposite posterior margin of pupil, $1\frac{1}{5}$ in head. Outer row of teeth of each jaw very slightly enlarged. Snout shorter than eye, 4 in head. Eye large, 3 in head. Interorbital space 2 in eye. Interorbital area with a thin crest under the skin, this ending in two compressed spines, one turned forward, the other backward, over front of eye, these spines concealed by the skin. Gill-rakers short and thick, less than half pupil; four developed. Dorsal beginning at end of anterior third of pectorals, longest ray $3\frac{1}{2}$ in head. Pectorals 2 in head. Inner ventral filament longest, 2 in head. Air-bladder short and thick, with a foramen. Scales very small, more or less imbricated on body. Head naked. Opercle with a sharp, partly concealed spine. Pseudobranchiæ present.

Color, pale yellowish-brown, silvery on belly and sides of head. Back with about twelve irregular dark cross-bands, the alternate ones being narrower and broken up into spots, two before dorsal; a few scattered spots about as large as pupil on sides, these most distinct about the shoulder. Dorsal pale, first rays black, and with three or four other black blotches on upper part. Anal black, margined with white. Pectorals pale, axil dusky. Caudal and posterior part of anal pale. Chin pale.

The single specimen which is type of this species was obtained at Indefatigable Island, in the Galapagos. Its nearest relative seems to be the Californian *O. taylori*.

26. *Leptophidium prorates* sp. nov.

DIAGNOSIS.—Closely allied to the Atlantic species, *L. brevibarbe* (Cuvier), the scanty descriptions of the latter species being insufficient for comparison.

Type: No. 41,149, U. S. National Museum.

HAB.—Panama and Station 2801, $8^{\circ} 47' N.$, $79^{\circ} 29' 30'' W.$

Description.—Head $4\frac{1}{3}$ to $4\frac{2}{3}$ ($4\frac{2}{3}$ to $4\frac{3}{4}$); depth $7\frac{1}{3}$ to $8\frac{1}{6}$ ($7\frac{2}{3}$ to $8\frac{1}{2}$). Length of type 10 inches. Body moderately elongate, compressed, con-

siderably stouter than in *L. profundorum*. Mouth large; maxillary reaching about half pupil's length beyond posterior border of eye, $2\frac{1}{4}$ in head. Outer teeth slightly enlarged, a little movable, those of upper jaw largest. Snout shorter than eye, 5 in head. Eye large, $4\frac{1}{2}$ in head. Interorbital space $1\frac{2}{3}$ in eye. Gill-rakers rather long and slender, one-fourth length of eye; four developed. Tip of snout with a strong spine directed forwards and slightly downwards. Opercle without spine, ending in a flat projection covered by skin. Dorsal beginning over middle of pectorals, longest ray 4 in head. Pectorals $2\frac{1}{2}$ in head. Inner ventral filament shortest, the longer $2\frac{2}{3}$ in head.

Scales regularly imbricated but very small, about 225 in a longitudinal series; scales on top of head extending forward to base of ethmoid spine; sides of head covered with small scales. Lateral line not reaching end of tail.

Color, olivaceous, paler below; scales rather profusely dotted with black. A pale shade across opercles. Lower jaw, gular region, and anterior branchiostegals dusted. Dorsal and anal margined with black, the band on anal the broader; pectorals pale.

Air bladder oblong-lanceolate.

Specimens of this species were obtained at Panama and at Station 2801, south of Panama.

27. *Bregmaceros bathymaster* sp. nov.

DIAGNOSIS.—Closely allied to *Bregmaceros maclellandi*, but apparently differing in the larger size of its scales and in the shorter ventrals.

Type: No. 41,137, U. S. National Museum.

HAB.—Pacific coast of South America, taken at Station 2804, $8^{\circ} 16' 30''$ N., $79^{\circ} 37' 45''$ W.

Description.—Head $5\frac{2}{3}$; depth $6\frac{2}{3}$. D. about 1, 18, 22, the small rays so broken that the count is uncertain. A. about 18, 22 + V. 4 or 5. Scales about 50, the count very uncertain. Length 2 inches.

Body moderately elongate, compressed, the form somewhat as in *Ophidion*, the back not elevated. Head short and small, moderately compressed; bones of head thin, without serrature or spine; eye moderate, 3 in head; interorbital space ridged, about as broad as eye; snout blunt, rather shorter than eye; mouth very oblique, the jaws subequal; maxillary reaching to beyond middle of eye, $2\frac{1}{2}$ in head; lower jaw flattish, curved upward; teeth in both jaws moderate, slender, close set, recurved, apparently in a single series. Tongue conspicuous; no teeth evident on vomer or palatines; branchiostegals 7 or 8; gill membranes separate, free from the isthmus; no evident pseudo-branchiæ; gill-rakers obsolete; no barbels about jaws.

Body with rather large, thin, caducous, scales (nearly all of them fallen in the typical specimens so that they can not be counted).

Dorsal fin beginning with a single long and very slender spine on occiput, this nearly one-third longer than head. Behind this, for a dis-

tance about equal to its length, the rudimentary rays, if present, do not rise above the sheath on each side. Nearly opposite the vent begins the dorsal proper, the distance of its first ray from snout being about two-fifths length of body; about 12 rays are moderately elevated, about three-fourths length of head. The others are gradually shorter and more slender, becoming too small to count, until just before caudal, where the fin becomes conspicuous again, this posterior lobe not half so high as the anterior. Anal opposite dorsal and similar to it, the first ray close behind vent; caudal free from dorsal and anal, the caudal peduncle truncate at its base. Ventrals of 3 long rays, with a fourth at the inner base of the third; this fourth is probably a rudiment of two. The ventrals are jugular in position, the rays very long and filamentous, the longest about half the body, reaching end of anterior lobe of anal, but not to the middle of the fin. Pectorals inserted high, somewhat shorter than head. Vent slightly behind end of anterior third of total length.

Color brown above, sides and below silvery; back and base of anal closely dotted with dusky. Dorsal mostly dusky; caudal pale, dusky at base, with a narrow white cross-bar; lower fins pale. The dark markings on front of back assume something of the form of lengthwise streaks.

Two specimens of this species, $1\frac{3}{4}$ and 2 inches in length were dredged at Station 2804, in 47 fathoms depth. The species is very close to the Chinese *Bregmaceros maclellandi*. It seems, however, to have larger scales and rather shorter ventrals.

28. *Azevia querna* * sp. nov.

DIAGNOSIS.—Distinguished from *A. panamensis* (Steindachner) by having much smaller *cyloid* scales on eyed side and by its plain coloration.

Type: No. 41,159, U. S. National Museum.

HAB.—Pacific Ocean off coast of Colombia; from Station 2802, $8^{\circ} 38' N.$, $79^{\circ} 31' 30'' W.$, and from Station 2800, $8^{\circ} 51' N.$, $79^{\circ} 21' 30'' W.$

Description.—Head $3\frac{1}{3}$ to $3\frac{2}{3}$ (4 to $4\frac{2}{3}$); depth $2\frac{1}{3}$ ($2\frac{3}{4}$). D. 91 to 95; A. 73 to 75. Scales along lateral line 90 to 95. Length of type 8 inches.

Body shaped as in *Azevia panamensis*. Mouth large; maxillary $1\frac{1}{5}$ in head. Teeth as in *panamensis*, in single series, rather long and slender, the anterior somewhat more enlarged. Snout 5 in head, its tip hooked over the lower jaw, so that the outer canines project. Interorbital space rather narrow, slightly concave, with a few small scales, its width a little less than pupil, one-third diameter of eye. Eyes moderate, $5\frac{1}{2}$ in head, the upper somewhat in advance. Gill-rakers short and broad, as in *panamensis*, each with 3–4 strong teeth.

Scales small, cyloid on both sides, those below pectorals more reduced than in *panamensis*; about 65 in a cross-series; anterior part of lateral line bent slightly upward, this portion about $3\frac{1}{2}$ in straight part.

* *Quernus*, oaken, i. e., tanned.

Dorsal beginning above and between the nostrils, the anterior rays short, but with free tips; longest ray $2\frac{1}{2}$ in head. Pectorals of eyed side $1\frac{4}{5}$ to 2 in head, of blind side $2\frac{1}{3}$ to $2\frac{1}{2}$. Ventrals subequal, both 6-rayed, $2\frac{4}{5}$ in head, extending one-third their length beyond vent.

Color plain brown, unspotted. Fins dusky, thickly punctulate; young with two large oval indistinct dark spots on dorsal and anal, three on caudal, of which the middle is much larger.

Numerous specimens, the largest about 8 inches in length, were dredged in 7 fathoms at Station 2800, and in 16 fathoms at Station 2802. The closely related species, *Azevia panamensis*, was obtained at Station 2797. *Azevia querna* is probably the species obtained by Professor Gilbert at Mazatlan in 1882. (See Jordan & Goss, Review *Pleuronectidae*, 1889, p. 271.)

29. *Hippoglossina macrops** Steindachner.

HAB.—Pacific Ocean off coast of Colombia; at Station 2805, $7^{\circ} 56' N.$, $79^{\circ} 41' 30'' W.$

Description.—Head 3 ($3\frac{3}{4}$ to $3\frac{4}{5}$) in length; depth $2\frac{3}{4}$ to $2\frac{3}{4}$ ($3\frac{1}{3}$ to $3\frac{1}{2}$). D. 60 to 63; A. 47 to 49. Scales along lateral line 70 to 75. Length of type 7 inches.

Body regularly elongate, elliptical, dorsal and ventral outlines equally curved; orbital rim entering anterior profile, which is equally curved before and behind eyes; greatest depth of body above pectorals. Mouth rather large, the maxillary reaching about to middle of pupil, $2\frac{1}{3}$ to $2\frac{3}{5}$ in head. Teeth equally developed on both sides, small and equal, uniserial. Snout 5 in head; the premaxillary spine prominent. Interorbital space a narrow, sharp, naked ridge; eyes large, the lower slightly in advance of upper, $3\frac{2}{3}$ to 4 in head. Gill-rakers moderately long and slender, the longest 3 in length of ventral of eyed side; 9 developed, the last 2 much shorter.

Scales small, firm, strongly ctenoid, those below pectoral much reduced, about 40 in a cross series; arch of lateral line strongly marked, $2\frac{2}{3}$ to $2\frac{4}{5}$ in straight part.

Dorsal beginning above middle of pupil of upper eye, its anterior rays low, its longest rays $2\frac{2}{7}$ in head. A strong antrorse spine before anal. Pectoral of eyed side 2 in head, that of blind side $2\frac{1}{2}$ to $2\frac{3}{5}$ in head. Ventrals subequal, both 6-rayed, 4 in head, extending more than half their length beyond anus. Both are lateral, but that of eyed side nearest ridge of abdomen, and a little behind its fellow. Last ray of left ventral joined to abdomen alongside of anal spine. Caudal acute, its peduncle long.

Color greyish brown, a row of six round, bluish spots, smaller than pupil, along base of dorsal, four similar spots along base of anal, and a few indistinct smaller ones on rest of body and head. Body with six

* These specimens, at first taken by us for a distinct species, seem to be the young of *Hippoglossina macrops*.

large black spots somewhat smaller than eye; these are regularly four below dorsal and two above anal, the first of dorsal above arch of lateral line, the second above anterior third of straight part, the third at base of last rays and almost forming a cross-bar with the one at base of anal rays.

Dorsal, anal, and caudal dusky, with small whitish spots; a pale spot at base of last four dorsal and anal rays; a small black spot at base of outer caudal rays on peduncle. Pectorals and ventrals dusky, but not spotted. Right side immaculate.

Numerous specimens were dredged at Station 2805, at a depth of $51\frac{1}{2}$ fathoms.

Engyophrys gen. nov.

Allied to *Platophrys* (Swainson), but having the interorbital space very narrow and armed with a spine, and the scales of moderate size and cycloid. Gill-rakers obsolete. No anal spine. Gill-membranes entirely separate.

It is nearest the genus *Engyprosopon* Günther, but in that group the interorbital space is broader, the scales ctenoid, and the gill-rakers developed.

Type: *Engyophrys sancti-laurentii*.

30. *Engyophrys sancti-laurentii* * sp. nov.

DIAGNOSIS.—This peculiar species is distinguished from species of *Platophrys* and *Engyprosopon* by its very narrow interorbital ridge; from the species of *Arnoglossus* by the form of the body, the short gill-rakers, etc.; and from all related species by the peculiar coloration of the blind side.

Type: No. 41,155, U. S. National Museum.

HAB.—Pacific Ocean, off coast of Colombia; from Station 2805, $7^{\circ} 56' N.$, $79^{\circ} 41' 30'' W.$, and Station 2795, $7^{\circ} 57' N.$, $78^{\circ} 55' W.$

Description.—Head $2\frac{2}{5}$ to $2\frac{4}{7}$ (3 to $3\frac{1}{2}$); depth $1\frac{2}{3}$ to 2 (2 to $2\frac{1}{3}$). D. 78 to 85; A. 68 to 72. Scales 60 to 68, along lateral line. Length of type $4\frac{1}{2}$ inches.

Body broadly ovate, much compressed, the greatest depth over pectorals; dorsal and ventral outlines equally curved; profile scarcely concave before eyes. Mouth very small, oblique, the maxillary reaching opposite pupil of lower eye, 4 to $4\frac{1}{2}$ in head. Teeth present on blind side well developed, close set, and even; none on vomer. Snout short, $4\frac{1}{2}$ to 5 in head. Interorbital space a very narrow, sharp, scaleless ridge, the ridge forking above pupil, leaving a very narrow concavity anteriorly; lower ridge armed with a strong spine, turned backward, inserted just above pupil of lower eye. Anterior orbital rim of upper eye rather high, entering profile. Eyes large, lower in advance

* In allusion to the gridiron-like markings on the blind side.

of upper, $3\frac{3}{4}$ to 4 in head. Gill-rakers almost obsolete, represented by 5 or 6 small fleshy papillæ.

Scales moderately small, cycloid, and not very firmly attached; small scales on rays of dorsal and anal fins; arch of lateral line short and small, but abrupt, 4 to 5 times in straight part. Dorsal beginning on blind side just behind posterior nostril and in front of eye. Pectoral of colored side 2 in head, that of blind side $2\frac{1}{2}$ in head. Ventrals of colored side slightly longest, 3 in head; that of colored side with 6 rays, of blind side with 5 or 6 rays.

Color of left or eyed side blackish-brown, with scattered white and black spots, the latter most prominent along base of dorsal and anal fin. Three large black non-ocellated blotches on straight part of lateral line, the first at beginning, second at middle, third on peduncle. Fins dusky; dorsal and anal with scattered white and black spots; caudal with five black spots arranged in a curved series. Blind side with five or six curved parallel dusky bands as wide as eye, the first beginning on interopercle and curving across cheeks to along base of dorsal; second beginning at throat and curving along posterior margin of preopercle, and extending on back, parallel with the first from vent; third curving around in front of pectorals, across posterior part of opercle, and extending to base of dorsal fin behind the middle; rest behind pectorals. All of these bands fade out behind middle of body, so that the posterior portion is immaculate. In young examples these bands are very faint or obsolete.

Numerous specimens, the largest about $4\frac{1}{2}$ inches long, were dredged at Station 2795, at a depth of 33 fathoms, and at Station 2805 at a depth of $51\frac{1}{2}$ fathoms.

31. *Symphurus atramentatus* sp. nov.

DIAGNOSIS.—Related to *Symphurus atricauda* (Jordan & Gilbert), but distinguished by having 3-6 black oblong blotches on posterior part of dorsal and anal; the general coloration darker; the scales and eyes larger.

Type: No. 41,157, U. S. National Museum.

HAB.—Station 2795, off the Pacific coast of Colombia, $7^{\circ} 57' N.$, $78^{\circ} 55' W.$

Description.—Head $4\frac{2}{3}$ to 5 (5 to $5\frac{1}{3}$); depth $3\frac{1}{3}$ to $3\frac{2}{3}$ ($3\frac{1}{2}$ to $3\frac{1}{2}$). D. 92 to 95; A. 75 to 78. Scales 95 to 100, 38 in a cross-series. Length of type $4\frac{1}{2}$ inches.

Body more elongate than in *S. atricauda*.

Eyes larger than in *S. atricauda*, the upper in advance of lower, vertical diameter of both $3\frac{1}{2}$ to 4 in head. Cleft of mouth somewhat more curved than in *S. atricauda*, otherwise similar.

Scales larger than in *S. atricauda*, 95 to 100 in a longitudinal series, 38 in a cross-series; spines on posterior margin not so strong.

Ventral fins (measured from angle of gill-opening) $2\frac{2}{3}$ to 3 in head.

Color light brown, irregularly barred and marbled with darker; several irregular grayish bars most distinct on posterior parts, a distinct narrow dark bar behind gill-opening. Anterior part of dorsal and anal fins pale, posterior dark; anterior part with 4 to 7 dusky oblique areas, posterior part with 3 to 6 roundish inky-black spots. Caudal black narrowly tipped with white. All the scales with a narrow dark edge.

This small sole is very closely related to the others of the genus. We are, however, unable to identify it with either of the two species, *S. atricauda* and *S. elongatus*, found on the Pacific Coast, and therefore give it a new name. Many specimens were dredged at a depth of thirty-three fathoms at Station 2795.

32. *Symphurus leei* sp. nov.

DIAGNOSIS.—Related to *Symphurus atricauda* (Jordan & Gilbert), but the body with four wide black cross-bands, and the form more elongate.

Type: No. 41,134, U. S. National Museum.

HAB.—Station 2804, off the Pacific coast of Colombia, 8° 16' 30" N., 79° 37' 45" W.

Description.—Head 4 to $4\frac{1}{2}$ ($4\frac{1}{3}$ to $4\frac{2}{3}$); depth $3\frac{1}{5}$ to 4 ($4\frac{1}{5}$ to $4\frac{1}{3}$). D. 95 to 100; A. 80 to 85. Scales 80 to 90, 35 to 38 in a cross-series. Length of types $4\frac{1}{4}$ inches.

Body more elongate than in *S. atricauda* or *S. atramentatus*, approaching that of *S. elongatus*; outline of under part of head more oblique than in the other Pacific Coast species.

Eyes larger than in the preceding species, the upper in advance of lower, their vertical diameter 5 to $5\frac{1}{2}$ in head. Cleft of mouth extending slightly farther back than in *S. atricauda* or *atramentatus*, but not beyond eye as in *S. elongatus*; maxillary reaching posterior border of eye $3\frac{2}{3}$ to 4 in head. Snout $5\frac{1}{5}$ to $5\frac{2}{3}$ in head.

Opercular flap larger than in other Pacific species.

Scales comparatively large, not so firmly imbedded as in *S. atricauda* or *atramentatus*; those on opercles rather large.

Ventrals $3\frac{1}{3}$ to $3\frac{1}{2}$ in head.

Color light brown, speckled with darker, and with three or four broad black cross-bands, width of median bands $2\frac{1}{2}$ to 3 in head, the posterior band widest. Caudal and the posterior $\frac{2}{5}$ of the dorsal and anal black; no black spots on dorsal. Scales thickly punctulate, but with no distinct darker edgings.

Many specimens of this species were obtained at Station 2804 at a depth of 47 fathoms. It is evidently very different from *S. atramentatus*, and needs comparison only with *S. elongatus*, from which it seems to be sufficiently distinct. We have named the species for Prof. L. A. Lee and Mr. Thomas Lee, naturalists on board the *Albatross* when the species was discovered.

The following is a complete list of the species obtained at Panama, at the Galapagos Islands (Charles, Chatham, Hood, James, Indefatigable, Albemarle, and Abingdon), and at the various dredging stations off the west coast of the United States of Colombia. These stations are numbered 2794 to 2809. The following table gives the location and depth of water of each:

Dredging stations.

Station No.	Latitude.			Longitude.			Depth in fathoms.
	°	'	"	°	'	"	
2794	7	37	0 N.	78	46	30 W.	62
2795	7	57	0	78	55	0	33
2796	8	5	0	78	51	0	33
2797	8	6	30	78	51	0	32
2799	8	44	0	79	9	0	29½
2800	8	51	0	79	31	30	7
2801	8	47	0	79	29	30	14
2802	8	38	0	79	31	30	16
2803	8	27	0	79	35	0	26
2804	8	16	30	79	37	45	47
2805	7	56	0	79	41	30	51½
2809	0	50	0 S.	89	36	0	45

Galeorhinidæ :

Eulamia lamiella (Jordan & Gilbert). Chatham.

Galeocerdo maculatus (Ranzani). Panama.

Galeus dorsalis (Gill). Panama.

Rajidæ :

Raja equatorialis Jordan & Bollman. Station 2797.

Torpedinidæ :

Discopyge ommata Jordan & Gilbert. 2797.

Dasyatidæ :

Urolophus goodei Jordan & Bollman. 2797

Siiuridæ :

Tachysurus platypogon (Günther). 2795.

Tachysurus elatturus (Jordan & Gilbert). (Var. ?) 2800.

Albulidæ :

Albula vulpes (L.). Panama.

Clupeidæ :

Pellona panamensis Steindachner. Panama.

Clupea sp. (very young). Indefatigable.

Stolephoridæ :

Cetengraulis mysticetus (Günther). Panama.

Stolephorus poeyi Günther. Panama.

Stolephorus ischanus Jordan & Gilbert. Panama.

Synodontidæ :

Synodus evermanni Jordan & Bollman. 2805, 2797, 2795.

Synodus jenkinsi Jordan & Bollman. 2797, 2800, 2799.

Murænidæ :

Muraena lentiginosa Jenyns (= *M. pinta* Jordan & Gilbert). Charles.

Ophisuridæ:

Ophichthus evionthas Jordan & Bollman. Hood.

Ophichthus rufiger Jordan & Bollman. Charles.

Congridæ:

Ophisoma nitens Jordan & Bollman. 2801.

Muraenesox coniceps Jordan & Gilbert. 2795. Panama.

Cyprinodontidæ:

Pecilia elongata Günther. Panama.

Exocoetidæ:

Exocoetus cyanopterus C. & V. James.

Halocypselus evolans (L.), 6° south of equator.

Fodiator acutus (C. & V.). Panama.

Hemiramphus unifasciatus Ranzani. Panama.

Hemiramphus roberti (C. & V.). Indefatigable. Chatham.

Tylosurus stolzmanni (Steindachner). Indefatigable; Panama.

Fistularidæ:

Fistularia depressa Günther. Panama.

Mugilidæ:

Mugil curema C. & V. Panama.

Mugil cephalus L. (rammelsbergi). Chatham; Hood.

Mugil species nova (?).

Chaenomugil proboscideus (Günther). Panama.

Querimana harengus (Günther). Panama.

Atherinidæ:

Menidia gilberti Jordan & Bollman. Panama.

Polynemidæ:

Polydactylus opercularis (Gill). 2804. Panama.

Polydactylus approximans Lay & Bennett, 2800. Panama.

Trichiuridæ:

Trichiurus lepturus L. Panama.

Scombridæ:

Scomber colias Gmelin. Albemarle.

Scomberomorus maculatus (Mitchill). Panama.

Carangidæ:

Oligoplites altus (Günther). Panama.

Oligoplites saliens (Bloch & Schneider). Panama.

Decapterus hypodus Gill. Charles.

Caranx latus Agassiz. Panama; Chatham.

Caranx hippos (L.). Panama.

Vomer setipinnis (Mitchill). 2800, 2801, 2797, 2802, 2804. Panama.

Chloroscombrus orqueta Jordan & Gilbert. Panama.

Seriola dorsalis Gill (?). Albemarle.

Stromateidæ:

Stromateus palometta Jordan & Bollman. 2804.

Centropomidæ:

Centropomus armatus Gill. Panama.

Serranidæ:

Rypticus nigripinnis Gill. Panama.

Epinephelus labriformis (Jenyns). Indefatigable; Charles.

Serranidae—Continued.

- Epinephelus analogus* Gill. Charles; Panama.
Mycteroperca olfax (Jenyns). Abiugdon; Charles.
Paranthias furcifer (C. & V.). Albemarle; Chatham; Hood; Charles.
Paralabrax albomaculatus (Jenyns). Albemarle; Charles.
Prionodes stilbostigma Jordan & Bollman. 2809.
Prionodes fasciatus Jenyns. Hood; Albemarle; Charles.
Diplectrum radiale (Quoy & Gaimard). 2800. Panama.
Diplectrum macropoma (Günther). 2795, 2797, 2800, 2799. Panama.
Diplectrum euryplectrum Jordan & Bollman. 2795, 2805, 2797.
Cratinus agassizi Steindachner. Charles.
Kuhlia arge Jordan & Bollman. Chatham.

Sparidae.

- Xenichthys xanti* Gill. Panama.
Xenocys jessie Jordan & Bollman. Charles.
Lutjanus inermis Peters. Panama.
Lutjanus guttatus Steindachner. Panama.
Hæmulon scudleri Gill. Panama.
Anisotremus bilineatus (C. & V.). Hood. Indefatigable.
Anisotremus tenuiatus Gill. Panama.
Pomadasis panamensis (Steindachner). 2805, 2800, 2801.
Pomadasis macracanthus (Günther). Panama.
Pomadasis leucisens (Günther). Panama.
Pomadasis elongatus (Steindachner). Panama.
Orthopristis chaleus (Günther). Panama; Albemarle; Chatham; Charles.
Calamus taurinus (Jenyns). Charles.
Archosargus pcurtalesi (Steindachner). Chatham.

Mullidæ:

- Upeneus grandisquamis* Gill. 2800. Panama; Chatham.

Sciænidæ:

- Archoscion remifer* (Jordan & Gilbert). Panama.
Cynoscion reticulatus (Günther). Panama.
Cynoscion stolzmanni Steindachner(?). Panama.
Cynoscion phoxocephalum (Jordan & Gilbert). Panama.
Nebria microps C. & V. Panama.
Larimus argentus (Gill). Panama.
Larimus pacificus Jordan & Bollman. Panama.
Bairdiella ensifera (Jordan & Gilbert). Panama.
Bairdiella armata Gill. Panama.
Bairdiella chrysoleuca (Günther). Panama.
Stelliferus oscitans Jordan & Gilbert. Panama.
Stelliferus erieymba Jordan & Gilbert. Panama.
Sciæna typica (Gill). Panama.
Sciæna imiceps Jordan & Gilbert. Panama.
Micropogon altipinnis Günther. Panama.
Polycirrhus rathbuni Jordan & Bollman. Panama.
Polycirrhus dumerili Bocourt. Panama.
Menticirrhus nasus (Günther). Panama.

Gerridæ:

- Gerres gracilis* (Gill). Panama.
Gerres californiensis (Gill). Panama.
Gerres cinereus (Walbaum). Chatham.
Gerres peruvianus Cuv. & Val. Panama.

Chaetodontidæ:

Chaetodon humeralis Günther. Panama.

Ephippidæ:

Chaetodipterus faber (L.). Panama.

Pomacentrida:

Pomacentrus sp (very young). Indefatigable.

Labridæ:

PlatyGLOSSUS nicholsi Jordan & Gilbert. Charles.

PlatyGLOSSUS dispilus Günther. Panama

Malacanthidæ:

Canlolatilus princeps (Jenyns). Charles; Albemarle.

Scorpenidæ:

Scorpena histrio Jenyns. Hood; Charles; Panama.

Scorpena russula Jordan & Bollman. 2797, 2795.

Triglidæ:

Prionotus horrens Richardson. 2800.

Prionotus miles Jenyns. Albemarle; Charles.

Prionotus quiescens Jordan & Bollman. 2800, 2801, 2804, 2805, 2795.

Prionotus albirostris Jordan & Bollman. 2795.

Prionotus birostratus Richardson. 2795.

Prionotus xenisma Jordan & Bollman. 2805, 2795.

Gobiidæ:

Gobius soporator C. & V. Panama.

Bollmannia chlamydes Jordan. 2804, 2805, 2803, 2802, 2800.

Blenniidæ:

Runula azalea Jordan & Bollman. Indefatigable.

Uranoscopidæ:

Kathetostoma averruncus Jordan & Bollman. 2800.

Batrachidæ:

Batrachoides pacifici (Günther). Panama.

Porichthys nautopedium Jordan & Bollman. Indefatigable, 2796, 2795, 2802, 2805.

Thalassophryne dowi Jordan & Gilbert. 2800.

Ophidiidæ:

Leptophidium prorates Jordan & Bollman. 2801. Panama.

Otophidium indefatigabile Jordan & Bollman. Indefatigable.

Gadidæ:

Bregmaceros bathymaster Jordan & Bollman. 2804.

Pleuronectidæ:

Paralichthys adpersus (Steindachner). Panama.

Paralichthys sp. nov. ? *adpersus* aff. Panama.

Syacium ovale (Günther). (Including *S. latifrons*, ♂ of same species.) 2800. Panama. 2795, 2797.

Azevia panamensis (Steindachner). 2797.

Azevia querna Jordan & Bollman. 2800, 2801, 2802.

Citharichthys spilopterus Günther. Panama. 2803.

Etropus crossotus Jordan & Gilbert, 2802. Panama.

Etropus species nova?, 2802, 2803.

Engyophrys sancti-laurentii Jordan & Bollman. 2805, 2795.

Pleuronectidæ—Continued.

- Platophrys constellatus* Jordan. 2795, 2797, 2796.
Platophrys leopardinus (Günther). Chatham.
Hippoglossina macrops Steindachner. 2805, 2804.
Achirus fonsecensis (Günther). Panama.
Symphurus atramentatus Jordan & Bollman. 2795, 2797, 2805.
Symphurus elongatus (Günther). 2804.
Symphurus leei Jordan & Bollman. 2800, 2802, 2803.

Balistidæ:

- Balistes capistratus* Shaw. Chatham.

Tetraodontidæ:

- Spheroides fürthi* (Steindachner). 2800.
Spheroides politus (Ayres). Panama.
Spheroides annulatus (Jenyns). Indefatigable; Albemarle; Panama; Chatham.
Spheroides angusticeps (Jenyns). Chatham; Charles; Panama.
Tetraodon erethizon (Jordan & Gilbert). Panama.

Lophiidæ:

- Lophius* sp. (very young). 2804.

Malthidæ:

- Malthe elater* Jordan & Gilbert. Panama.

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