

The length of the specimen (numbered 30334) is now 9.3 inches; head 1.1; chest very nearly the same; greatest height of body, $\frac{17}{20}$; vent to tip of tail, $1\frac{1}{2}$; dorsal from end of head, 5.

I have thought it worth while to describe this lamprey in some detail because of the interest which attaches to the locality and on account of the slightness of our knowledge of *I. castaneus*, to which our present example is most closely related.

UNITED STATES NATIONAL MUSEUM,
Washington, March 24, 1882.

Since the above was written I have found and examined the types of *Ichthyomyzon hirudo* and *I. castaneus* Girard. The first is 5 inches long and is certainly congeneric with *castaneus*, from which it differs in the number of mandibulary cusps. The maxillary tooth is tricuspid and a few of the lateral teeth are bicuspid. *Ichthyomyzon hirudo* and *I. castaneus*, therefore, show a departure from the type of the genus, which is *Petromyzon argenteus* Kirtland; they have the dorsals continuous as in *argenteus*, but the dentition is different. The maxillary cusps in *hirudo* and *castaneus* are placed close together. The lingual teeth are pectinate throughout, as in *Lampetra tridentata*. We are called upon now to decide whether *Petromyzon argenteus* Kirtland and Girard's two species of *Ichthyomyzon* (*hirudo* and *castaneus*) are all members of the genus *Ichthyomyzon*. In my opinion they are, but I should refer the three species of *Ichthyomyzon* to *Petromyzon*.

UNITED STATES NATIONAL MUSEUM,
June 14, 1882.

**NOTES ON A COLLECTION OF FISHES FROM JOHNSTON'S ISLAND,
INCLUDING DESCRIPTIONS OF FIVE NEW SPECIES.**

By ROSA SMITH and JOSEPH SWAIN.

The specimens which form the subject of the present paper were obtained in the spring of 1880 at Johnston's Island, by the captain of a vessel belonging to the North Pacific Guano Company. A can of alcohol was sent out on this vessel by Professors David S. Jordan and Charles H. Gilbert during their stay on the Pacific Coast of the United States in the interest of the United States Fish Commission. Johnston's Island is located about 700 miles southwest of the Hawaiian Islands, and approximates 17° north latitude, 170° west longitude. This collection, containing five new and many little known species, Professor Jordan has turned over to the writers for study. The specimens are now in the United States National Museum.

We are greatly indebted to Professor Jordan for the use of his library and for many valuable suggestions.

The following is a list of the species obtained :

1. *Ophichthys (Pisodontophis) stypurus* Smith & Swain.
2. *Gymnomuraena tigrina* (Less.) Blkr.
3. *Aulostomus chinensis* (L.) Lacépède.
4. *Polynemus kuru* Bleeker.
5. *Scombroides sancti petri* (C. & V.) S. & S.
6. *Caranx gymnostethoides* (Blkr.) Gthr.
7. *Holocentrus leo* Cuvier & Valenciennes.
8. *Holocentrus erythræus* Günther.
9. *Kuhlia taniura* (Cuv. & Val.) S. & S.
10. *Upeneus crassilabris* Cuv. & Val.
11. *Upeneus velifer* Smith & Swain.
12. *Upeneus (Mulloides) vanicolensis* (C. & V.) S. & S.
13. *Upeneus (Mulloides) preorbitalis* Smith & Swain.
14. *Chilinus digrammus* (Lac.) C. & V.
15. *Scarus perspicillatus* Steindachner.
16. *Julis verticalis* Smith & Swain.
17. *Julis clepsydralis* Smith & Swain.
18. *Harpe bilunulata* (Lac.) Smith & Swain.
19. *Chatodon setifer* Bloch.
20. *Acanthurus triostegus* (Linn.) Bloch. & Schn.
21. *Naseus lituratus* (Forst.) C. & V.
22. *Balistes aculeatus* Linn.
23. *Balistes buniva* Lac.
24. *Ostracion punctatum* Bl. & Schn.
25. *Tetodon meleagris* Lacép.
26. *Diodon hystrix* Linn.
27. *Platophrys mancus* (Brouss.) S. & S.

1.—OPHICHTHYS STYPURUS sp. nov.

Subgenus *Pisodontophis* Kaup.

Head $5\frac{1}{3}$ in trunk. Head and trunk together slightly longer than tail, exceeding the latter by the length of the snout. Snout blunt, $5\frac{1}{2}$ in head. Eye $2\frac{1}{2}$ in snout, 3 in interorbital space. Gape of mouth moderate, extending beyond eye, $3\frac{1}{2}$ in head. Anterior nasal tubes turned downward, conspicuous; posterior nostrils large. Teeth in lower jaw less blunt than in *O. xysturus* J. & G., in two series in front, becoming three posteriorly; two rows (the outer row being larger) of bluntish, conical teeth on each side of upper jaw, preceded by a patch of eight on extremity of nasal bone; smaller teeth on vomer in a band of two series.

Dorsal and anal fins rather high, the highest part of dorsal exceeding length of snout; dorsal beginning at the nape, at a distance from the snout equal to half the length of the head. Pectoral short, $1\frac{1}{2}$ in its base, $1\frac{3}{4}$ in snout; its free margin lunate. Gill-opening oblique, its

width equaling base of pectoral and $1\frac{3}{4}$ in isthmus. End of tail rather blunt and little compressed.

Ground color, in spirits, light olivaceous; round brown spots in four series on the sides, extending on the dorsal but becoming fainter on the fin; second series on lateral line, the spots of third mostly smaller; the spots of the different series sometimes alternating regularly, sometimes without definite order; the diameter of most of the spots in upper two series exceeding the snout; a fourth series of much smaller spots (not half the diameter of the largest ones) along sides of belly, almost disappearing on tail; small, irregular, more or less confluent spots on upper half of dorsal, the fin narrowly margined with whitish. Anal plain, light olivaceous. Pectorals with one or two small, obscure brown spots.

One fine specimen (26817 U. S. Nat. Mus.), $24\frac{1}{4}$ inches in length.

2.—GYMNOMURÆNA TIGRINA (Lesson) Bleeker.

Ichthyophis tigrinus "Lesson, Mem. Soc. d'Hist. Nat. Paris, iv, 399, and Voy. Coq. Zool. ii, 129, Atl. Pois. pl. 12; Richard's Voy. Ereb. and Terr. Fish, p. 96; Bleek. Versl. Ak. Wet. Natuurk. xv, 463."

Muraenoblenna tigrina Kaup, Cat. Apod. Fish. Brit. Mus. 93, 1856 (Strong Island, Havre, Carteret, Moluccas, Celebes); Blkr. 8th Bijdrage der Vischfauna van Amboina, p. 93, 1857 (Java); Blkr. Index Pisc. Actorum Sci. Soc. Indo-Mer, 5 (name only).

Gymnomurana tigrina "Blkr. Atl. Ichth. Mur. p. 113, pl. 21, fig. 3; Kner, Novara Fisch, p. 387"; Gthr. Cat. Fish. Brit. Mus. viii, 133, 1870 (Mauritius, Zanzibar, East Indian Archipelago, India).

Habitat.—Java, Mauritius, Zanzibar, East Indian Archipelago, India, Strong Island, Havre, Carteret, Moluccas, Celebes, Johnston's Island.

Head $4\frac{1}{2}$ in trunk. Head and trunk together exceed the tail by the width of the gape, the length from the tip of snout to vent being greater than that from vent to extremity of tail. Snout 8 in head. Eye $1\frac{1}{2}$ in snout, its position being over the middle of the gape. Gape $3\frac{1}{4}$ in head.

Teeth pointed, recurved, some of them depressible; in two series on upper jaw; anteriorly in two series in lower jaw, only one at the corner of the mouth; a few teeth on front of vomer. Posterior nostrils with tubes more conspicuous than anterior.

Color, in spirits, brownish, everywhere irregularly covered with nearly round blackish spots, varying in size from the orbit to $\frac{2}{3}$ of the gape; in front of the occiput the head is thickly covered with very small, dark spots; the spots on the body run together in places, forming blotches.

One specimen (26823), $17\frac{1}{2}$ inches long.

3.—AULOSTOMUS CHINENSIS (L.) Lacép.

Fistularia chinensis (in part) L. Syst. Nat. i, 515, 1766.

Aulostomus chinensis (in part) Lacép. v, 357, 1803.

Aulostoma chinense "Schleg. Faun. Japon. Poiss. 320"; "Richards, Ichth. Chin. 247"; "Peters in Wiegmann, Arch. 258, 1855"; Gthr. Cat. Fish. Brit. Mus. iii, 538, 1861 (Amboyna); "Playfair in Fish. Zanz. 79"; Blkr. Quat. Mem. Ichth. N. Guinée, 6 (name only); Street Bull. Nat. Mus. No. 774, 1877 (Honolulu); Blkr. Enum. Poiss. Japan 14, 1879 (name only); Gthr. Jour. Mus. Godeff. Fische der Südsee, 221, taf. 123, figs. B and C, 1881 (Indian Ocean and Archipelago, Sandwich, Society, and Paumotu Islands, Aneiteum).

Polypterichthys valentini "Bleek. Ternate, ii, 608."

Habitat.—China, New Guinea, Honolulu, Amboyna, Indian Ocean, Indian Archip., Society and Paumotu Islands, Aneiteum, Ternate, Johnston's Island.

Head 3 ($3\frac{1}{5}$); depth 12 ($12\frac{3}{5}$); D. X-3, 26; A. 3, 27.

Snout nearly $1\frac{1}{2}$ in head; its profile somewhat concave from end of snout to occiput. Eye 9 in snout, its diameter a little greater than interorbital width.

Spines of first dorsal free, remote, equal in length to orbital diameter; each spine attached by a broad membrane, and received into a narrow groove. Soft dorsal with a somewhat irregular margin, first branched rays $3\frac{1}{2}$ in snout, last ones about 6 in snout. Anal similar to soft dorsal, its base slightly longer than the dorsal; base of soft dorsal slightly longer than caudal peduncle. Caudal fin $3\frac{1}{2}$ in snout. Ventrals subtruncate, $5\frac{1}{4}$ in snout, about as long as pectorals. Peduncle nearly straight, narrow, its depth being $\frac{1}{4}$ of greatest depth of body.

Color, in spirits, brownish olive above, light olive below; four lighter horizontal olive bands on body, the two below lateral line not distinct except posteriorly—where the ground color is brownish below as well as above the lateral line—and on head, behind eye, three of these light bands being very distinct across the opercles; three light oblique bands across snout, with many other irregular light markings; a black band across maxillary, horizontal with snout; a small black spot in front of each pectoral and on a level with its lower edge; a larger one behind each pectoral in a line with the first. On median line of belly are six black spots about the size of the pupil; between vent and anal fin are four more similar ones. A black streak from the pupil through the nostrils. Peritoneum reddish brown.

One fine specimen (26819), $26\frac{1}{2}$ inches in total length.

4.—POLYNEMUS KURU Bleeker.

Polynemus kuru Blkr. Nat. T. Ned. Ind. iv, 600, 1853 (Ternate); Blkr. Conspect. Spec. Pisc. p. 6 (name only); Blkr. Enum. Spec. Pisc. Archip. Indic. 40, 1859 (Halmahera, Ternate, Amboyna, Saparua; name only); Günther, Cat. Fishes Brit. Mus. ii, 325, 1860 (taken from Bleeker); Blkr. Conspect. Molucc. Cognit. p. 5 (Ternate, Amboyna, Saparua; name only); Blkr. Beschrij. Visch. Amboina, p. 4 (name only); Blkr. Achtste Bijl. Visch. Amboina, pp. 3, 14 (name only); Blkr. Tweede Bijl. Schth. Fauna, Halmahera, pp. 2, 4 (name only).

Trichidion kuru Gill, Proc. Ac. Nat. Sci. Phila. 275, 1861 (name only).

Habitat.—Halmaleira, Ternate, Amboyna, Saparua, Batjan, Archip. Mollucca, Johnston's Island.

Head $3\frac{2}{7}$ ($4\frac{2}{3}$); depth $3\frac{1}{2}$ ($4\frac{2}{3}$); length (26837) $18\frac{1}{2}$ inches. D. VIII-I, 13; A. II, 12; scales, 8-66-12.

Allied to *P. approximans*, Lay & Bennett, from which it chiefly differs in coloration, number of anal rays, and in its higher dorsal and anal fins.

Body robust, compressed. Snout comparatively blunt; the profile from snout to dorsal gently and regularly curved. Mouth moderate, horizontal; tip of mandible behind posterior nostril. Maxillary 2 in head. Teeth in a continuous villiform band on palatines and pterygoids, the patch broader, especially on the pterygoids, than in *P. approximans*, and much broader than in *P. opercularis*; the premaxillary band also broad. Eye in head about $3\frac{1}{2}$ times, interorbital space slightly convex, 4 in head. Preopercle with few and irregular serrations. Tooth above the lobe of preopercle well developed. Gill-rakers one-fourth length of maxillary; about 20 on lower limb.

Scales large, almost smooth. Small scales nearly covering the soft dorsal, anal, and ventral fins; the membraneous flap of the spines of first dorsal scaled, but the connecting membrane entirely naked. Upper pectoral rays scaled nearly to their tips; all the rays covered with scales at their base; upper rays also closely scaled on posterior surface.

Dorsal fins well developed; second and third spines longest, $1\frac{2}{3}$ in head, about three-fourths length of longest soft ray. The first two rays of second dorsal longest, about $1\frac{2}{3}$ in head. Caudal large, widely forked, the upper lobe slightly the longer, and one-fourth longer than head. Anal shorter than soft dorsal, the base of the fin three-fourths of its greatest height; when depressed the tips of the two anterior rays extend very nearly as far as the tip of the last ray; the free margin of the fin lunate, similar to soft dorsal; first rays four-fifths length of first rays of soft dorsal, and $1\frac{2}{3}$ in head. First anal spine very small; second $4\frac{1}{4}$ in head. Ventral fins in head $1\frac{5}{8}$ times. Pectorals $1\frac{2}{3}$ in head; pectoral filaments 6, the superior one longest, $1\frac{1}{2}$ the length of head, reaching tip of ventrals.

Air-bladder large.

Adipose eyelid well developed.

Color olivaceous, the scales finely punctulate with brown; these punctulations most numerous on the upper and lower margins of the scales, forming longitudinal streaks along the rows of scales. The scales from the snout to the first dorsal, on the belly, and the space between the anal and caudal fins smaller, and on these regions the brown points are aggregated on the margins of the scales, making their outline conspicuous. Vertical fins dark; margin of dorsals blackish. Pectoral dark, purplish underneath. Ventrals light, but with some brown punctulations. Preopercle plain except its flap, which, together with the other opercles, is rather dark.

One fine specimen (26837), $18\frac{1}{2}$ inches in length.

5.—SCOMBROIDES SANCTI PETRI (C. & V.) Smith & Swain.

? *Chorinemus tolooo* Cuv. & Val. Hist. Nat. Poiss. viii, 377, 1831; Blkr. Spec. Pisc. Archip. Indic. 61, 1859 (Java, Sumatra, Nias); Blkr. Makr. Visch. 45 (Celebes, Ternate, Amboyna, Ceram).

Chorinemus sancti petri Cuv. & Val. Hist. Nat. Poiss. viii, 379, 1831; Blkr. Enum. Spec. Pisc. Archip. Indic. 61, 1859 (Java, Bali, Sumatra, Singapura, Bintang, Banka, Celebes, Ternate, Halmahera, Amboyna, Saparua, Ceram); Blkr. Makreelachtige Visschen p. 45 (Batavia, Pasuruan); Gthr. Cat. Fishes Brit. Mus. ii, 473, 1860 (Madagascar, Ceylon, China, Amboyna, Malayan Peninsula, Moluccas); Gthr. Jour. Mus. Godeff. Fische der Südsee, 138, 1873 (Kingsmill, Schiffer, Society and Sandwich Islands); Streets, Bulletin U. S. Nat. Mus. No. 7, 89, 1877 (Christmas Island); Blkr. Conspec. Moluc. Cognit. 11 (Halmahera, Amboyna, Ternate, Ceram, Archip. Molucca, Saparua, Banda; name only); Blkr. Vier. Bijd. Ichth. Fauna Japan, 5 (name only); Blkr. Zes. Bijd. Visch. Fauna Sumatra, 20 (Priaman; name only); Blkr. Beschrij. Visch. Amboina, 15 (name only); Blkr. Beschrij. Visch. Manado Makassar, 4, 18 (Macassar, Manado, Kema; name only); Blkr. Achtste Bijd. Visch. Amboina, 5, 18 (name only); Blkr. Bijd. Ichth. Fauna von Midden en oost Java, 8 (Pasuruan; name only); Lütke. Spolia Atlantica, 508, 511, 1878 (name only); Blkr. Tweede Bijd. Ichth. Fauna Halmahera, 4 (name only); Blkr. Nicuwe Verzam. Visschen, Batjan, 4 (name only); Day's Fish. Malabar, 95 (E. Coast Africa, Sea of India, Malasia, China, Malabar; name only).

? *Chorinemus mauritanus* C. & V. Hist. Nat. Poiss. viii, 382, pl. 286, 1831.

Head $4\frac{5}{7}$ ($5\frac{5}{7}$); depth $4\frac{3}{8}$ ($5\frac{2}{5}$); D. VI-I, 20; A. II-I, 18.

Body elongate; profile straight to occiput, thence gently curved. Snout bluntish, $3\frac{1}{2}$ in head; mouth oblique, lower jaw longest; maxillary terminating beneath posterior margin of eye, the supplemental bone well developed. Villiform teeth on jaws, tongue, vomer, palatines, and a broad patch on pterygoids. Eye $4\frac{5}{6}$ in head, $1\frac{1}{3}$ in interorbital space. Edge of upright limb of preopercle somewhat convex, slanting backward slightly. Gill-rakers strong, the longest $1\frac{1}{6}$ in eye, 19 on lower part of arch. Scales elongate-rhombic.

Margin of soft dorsal less concave than anal, second articulate ray highest, $2\frac{1}{3}$ in head, the tenth ray $2\frac{1}{5}$ in second. Caudal deeply forked, lower lobe longer, equal to length of head. First ray of anal highest, equaling highest dorsal ray. Ventrals 2 in head; pectorals 2 in head.

Color, in spirits, bluish above, silvery below; upper part of dorsal black, its base yellowish, the semi-detached dorsal finlets dusky; caudal irregularly washed with dark blue, middle rays yellowish; anal with a central black blotch, its semi-detached finlets yellowish-white; pectoral dusky, black at base posteriorly, a dark spot in the axil; ventrals yellowish. Top of head dark blue with metallic luster, below light silvery; an irregular band of very dark blue from occiput to caudal, making the dorsal outline dark; the greatest width of this band is one-half the ocular diameter; the two series of spots on the side are more or less indistinct, on one side seven above lateral line and four below; on the other side five above and five below lateral line, the lower anterior two larger and more distinct than the others.

One fine specimen (26825), $20\frac{1}{4}$ inches long.

6.—CARANX GYMNOSTETHOIDES (Bleeker) Günther.

Carangoides gymnostethoides Blkr. Makreelachtige Visschen, p. 61; "Blkr. Nat. T. Ned. Ind. i, p. 364"; Blkr. Spec. Pisc. Archip. Indic. p. 41, 1859 (Java).
Caranx gymnostethoides, Gthr. Cat. Fish. Brit. Mus. ii, 431 (Sea of Batavia).

Habitat.—Java, Sea of Batavia, Johnston's Island.

Head $3\frac{2}{7}$ (4); depth 3 ($3\frac{2}{5}$); D. VII–I, 31; A. II–I, 26.

Body elliptical, compressed; profile convex from snout to nostril, thence regularly arched to caudal; the ventral outline less convex, being almost straight from head to anal. Head longer than deep; snout rather blunt, 3 in head. Mouth low, somewhat oblique; maxillary $2\frac{3}{10}$ in head, extending opposite front of pupil; lower jaw little produced.

Teeth in villiform bands on jaws, vomer, palatines, and a patch on the tongue. Eye large, $1\frac{1}{2}$ in snout, $4\frac{2}{5}$ in head. Adipose eyelid little developed. Cheeks and temporal regions with fine scales; head otherwise naked. Scales rather small, those below pectoral smaller. A naked area on breast not widening forward from base of ventrals as much as in *C. orthogrammus* J. & G.

Lateral line but little curved, arched above pectorals, and gradually becoming straight at their tips; greatest depth of the arch about equal to pupil, the arched part of the line longer than the straight. Plates developed only in the posterior half of the straight part; the plates small with low keels, their spines little prominent; 25 developed plates, including small ones.

Spinous dorsal rather weak, the highest spine $1\frac{3}{4}$ in snout (these spines probably varying according to the age). Soft dorsal long and low, with slender rays; a well-developed scaly basal sheath anteriorly; the first articulate ray is $1\frac{3}{4}$ in base of fin and $1\frac{1}{4}$ in head. Anal similar to soft dorsal. First free anal spine nearly obsolete, second small.

Caudal lobes moderate, equal, $1\frac{1}{5}$ in head; their length is much less than the depth from tip to tip.

Pectorals falcate, their tips slender, reaching tenth ray of anal; their length $2\frac{1}{2}$ in body (from snout to base of caudal fin); ventrals $2\frac{3}{5}$ in head.

Color, in spirits, about as in *C. orthogrammus*.

One fine specimen (26839), $15\frac{1}{2}$ inches in length.

7.—HOLOCENTRUS LEO Cuvier & Valenciennes.

Holocentrum leo C. & V. Hist. Nat. Poiss. iii, 204, 1829 (Society and Waigion Islands); "Less. Voy. Coquille, ii, 222"; "Cuv. Règne Anim. Ill. pl. 14, f. 1."; "Blkr. Kokos Islands, iii, 355, 1855"; Blkr. Enum. Spec. Pisc. Archip. Indic. 2, 1859 (Cocos, Batu, Celebes, Batjan, Amboyna); Blkr. Nat. T. Ned. Ind. vii, 355; "Blkr. Voy. Astrol. Poiss. p. 678, pl. 14, f. 3"; Blkr. Conspec. Molucc. Cognit. p. 5 (Batjan, Amboyna, Archip. Molucca; name only); Blkr. Beschrij. Visch. Manado Makassar, pp. 3, 13 (Manado; name only); Blkr. Achtste Bijd. Visch. Amboina, pp. 3, 13; Blkr. Nieuwe Verzam. Visschen Batjan, p. 3.

Holocentrum spiniferum Gthr. Cat. Fishes Brit. Mus. i, 39, 1859. (In part; the specimens from the Pacific.)

Habitat.—Society, Waigiou, Kokos, Batjan, Amboyna, Batu, Celebes, Manado, and Johnston's Islands.

Head 3 ($3\frac{1}{2}$); depth $2\frac{1}{2}$ (3); D. XI, 15-16; A. IV, 10; scales $3\frac{1}{2}$ -45-8.

Body ovate, compressed, elevated. Profile rather steep; from snout to occiput slightly concave, thence evenly curved. Mouth oblique, maxillary terminating opposite anterior half of pupil; lower jaw produced; snout pointed, $3\frac{1}{3}$ in head; eye 4 in head; interorbital space 7 in head; intermaxillary groove as long as snout. The lower of the two opercular spines smaller than the upper. The prominent striæ of opercle and suprascapula end in points, producing sharply serrate margins; all the other bones of shoulder-girdle smooth; subopercle scarcely striate, rather reticulate, its margin nearly smooth; posterior half of interopercle serrate; preopercle with a strong spine at the angle, which varies in length from $1\frac{1}{2}$ to $2\frac{1}{6}$ in the height of the straight upright limb of preopercle; posterior edge of preopercle coarsely serrate and slightly slanted forwards. Nasal bones prominent. Fan-like striations on occiput, and all the occipital bones coarsely serrate on their margins. The orbital rim much narrower than in *H. erythreus*, also less deeply lobed and more finely denticulate. Supraocular region rough with minute spines. As in *H. erythreus*, the infraorbital bone has a blunt tooth in front of the supplemental maxillary bone, and another beneath front part of eye, leaving the intervening space lunate and more or less serrate.

First dorsal spine is $1\frac{2}{3}$ in the third, which is the highest, and $1\frac{5}{8}$ in depth of body; the fourth is a trifle lower than the third, and thence the spines decrease regularly in height to the eleventh, which is $3\frac{2}{3}$ in the highest spine. In soft part of dorsal the third, fourth, fifth, and sixth rays are highest and equal the highest spine; the last ray less than a third of the highest; first ray unbranched, $1\frac{1}{2}$ in greatest depth of the fin, the margin rounded.

Caudal not deeply forked, its lobes rounded and about equal. Anal similar to soft dorsal, its third spine strong, $1\frac{1}{3}$ in third dorsal spine. Ventrals $1\frac{2}{3}$ in head. Pectorals scarcely longer.

Color, in spirits, nearly uniform. Checks and dorsal region somewhat darker than elsewhere, there being dark punctulations on the scales. Faint whitish lines follow the rows of scales along the sides, and are most noticeable on the caudal peduncle. The "halved" scales at base of spinous dorsal are of a bluish white superiorly. Fins plain, except that in one specimen the pectoral shows on the base of the rays on its posterior side a small gray spot formed by very minute punctulations. Peritoneum light.

Two fine specimens (29180), $11\frac{1}{4}$ inches in length.

8.—HOLOCENTRUS ERYTHRÆUS Günther.

Holocentrum erythrum Gthr. Cat. Fishes Brit. Mus. i, 32, 1859 (Sea of S. Christoval); Gthr. Jour. Mus. Godeff. Fische der Südsee, 99, 1873 (Soliman, New Hebrides, Hervey, Kingsmill, Society, Paumatu, and Sandwich Islands).

Habitat.—Soliman, New Hebrides, Hervey, Kingsmill, Society, Paumatu, Sandwich, and Johnston's Islands.

Head $2\frac{5}{8}$ ($3\frac{2}{8}$); depth $2\frac{5}{6}$ ($3\frac{1}{2}$); D. XI, 14; A. IV, 9; scales 3–50–6.

Body more elongate than in *H. lco*. Profile gently curved. Snout rather pointed, slightly shorter than eye, 4 in head. Mouth somewhat oblique; jaws about equal; maxillary extends to posterior margin of pupil, and is $2\frac{1}{3}$ in head; eye large, $3\frac{2}{3}$ in head; interorbital space $5\frac{1}{2}$ in head; intermaxillary groove slightly longer than diameter of eye. "The infraorbital bone has a rather short tooth in front of the supplementary bone of the maxillary, and another rather smaller one beneath anterior half of orbit; between them are five or seven small ones" (*Günther*). The remainder of the orbital rim is broad, with four or five serrate lobes. Occipital region with fan-like striations which end in points. Posterior part of supraorbital with small, distinct spines. Suprascapula striate, each stria ending in a point; otherwise the shoulder girdle is smooth. Preopercular spine variable, $1\frac{2}{3}$ to 2 in posterior edge of preopercle; upright limb of preopercle serrate, slightly convex, and slants backward a very little. Opercle striate, dentate, and having two spines, the upper one larger. Sub- and interopercle serrate only on posterior half, occasionally smooth.

Spinous part of dorsal fin rather low, first spine $1\frac{1}{2}$ in highest, which is $2\frac{3}{4}$ in depth of body; third, fourth, and fifth are highest, the spines evenly decreasing to the last, which is five-sevenths of first; soft part higher than spinous, its margin describing a nearly perpendicular line, the first ray unbranched, second ray highest, $1\frac{4}{5}$ in depth of body, thence regularly decreasing in height to the last, which is $3\frac{3}{4}$ in first.

Caudal well forked, upper lobe longer, $1\frac{2}{3}$ in head. Anal similar to soft dorsal; third anal spine large, $1\frac{4}{5}$ in head; fourth slender; $1\frac{1}{2}$ in third. Ventrals $1\frac{2}{3}$ in head; pectorals $1\frac{2}{3}$.

Color, in spirits, light olivaceous with indistinct bands along the sides; superiorly these bands are dark, caused by punctulations beneath the scales, the scales themselves evenly and very finely punctulate; above anal a few narrow, silvery bands, the scales not punctate in this region. The spinous dorsal is marked by a series of roundish, white spots along middle of fin, and a triangular white spot behind tip of each spine; the fins otherwise uniform. Peritoneum light.

"This species appears to be near *H. pccilopterum*, from which, however, it differs in several respects * * *; from *H. tierc* it may be distinguished by eleven dorsal spines, and from *H. tieroides* by a greater number of scales in the lateral line." (*Günther*.)

Two fine specimens (26813), 11 inches long.

9.—*KUHILIA TÆNIURA* (C. & V.) Smith & Swain.

Dules tæniurus C. & V. Hist. Nat. Poiss. iii, 114, 1829 (Java); "Blkr. Perc. 49";
Gthr. Cat. Fish. Brit. Mus. i, 267, 1859 (Chinese Sea); Blkr. Enum. Spec.
Pisc. Archip. Indic. 4, 1859 (Java).

Moronopsis tæniurus Blkr. Sur Genre *Moronopsis*, p. 2 (Java, Sumatra, Buro).

Habitat.—Java, Chinese Sea, Sumatra, Buro, Johnston's Island.

Head $3\frac{1}{3}$ ($4\frac{1}{4}$); depth $2\frac{5}{8}$ ($3\frac{2}{3}$); D. X, 11; A. III, 11; scales, 8-54-13;
Br. 6.

Greatest width on head behind eye, $2\frac{1}{3}$ in greatest depth. Ventral outline well arched to beginning of caudal peduncle, thence slightly concave to caudal fin, somewhat more curved than dorsal; profile nearly straight from end of snout to occiput, thence gently curved to caudal peduncle, which is little concave.

Snout rather pointed, very short, not two-thirds of orbital diameter. Eye large, $2\frac{4}{5}$ in head; interorbital width slightly less than diameter of eye. Mouth moderate, maxillary reaching almost to pupil, $2\frac{2}{5}$ in head. Teeth in villiform bands, the teeth on upper jaw higher and the band wider in front than on the sides; the band on mandible similar but narrower; minute teeth on palatines and pterygoids, and in a Λ -shaped band on vomer.

Preopercle finely pectinate on whole length of lower limb, becoming coarser at the angle, extending only on lower third of upright limb, which is scarcely oblique. The inferior of the two opercular spines longer and narrower than the superior one. Preorbital narrow, notched, the lobe in front of the notch serrate. Gill-rakers slender, long, 2 in eye, about 28 on lower part of gill-arch.

Scales moderate, minute ones extending upon caudal; a well developed basal sheath of small scales on dorsal and anal pectorals, with small scales on their base.

First dorsal spine shortest, $2\frac{1}{3}$ in eye, second $1\frac{2}{3}$ in eye, third spinal three times height of first, fourth and fifth highest, $1\frac{5}{6}$ in head, thence decreasing to ninth, which is 4 in head, the tenth spine 3 in head; soft part of dorsal obliquely truncate, its first ray $2\frac{1}{2}$ in head, the last $4\frac{1}{3}$ in head. Anal somewhat concave, its soft portion longer than articulate part of dorsal, and the median rays lower than those of soft dorsal; first anal spine $1\frac{3}{4}$ in third, second stronger and little shorter than third, which is 3 in head. Caudal deeply forked, upper lobe slightly longer, $1\frac{1}{5}$ in head. Ventral not reaching vent, 2 in head. Pectoral $1\frac{2}{3}$ in head.

Color, in spirits, bluish, with metallic luster above, bright silvery below; fins light yellowish, thickly dotted with brown, except ventrals and lower part of pectorals; an obscure light band conforms to the caudal outline near its margin, and the fin is narrowly edged with dusky. Lining of mouth bluish. Peritoneum brown.

Our alcoholic specimens do not show the markings on the caudal fin which previous writers have described.

“Elle est caractérisée * * * par les cinq bandes brunes de la caudale.” (*Bleeker.*)

Two fine specimens (26814), 11 $\frac{3}{8}$ inches in length.

10.—UPENEUS CRASSILABRIS Cuvier & Valenciennes.

Upeneus crassilabris Cuv. & Val. Hist. Nat. Poiss. vii, 523, 1831 (New Guinea); Blkr. Enum. Spec. Pisc. Archip. Indic. 38, 1859 (name only); Gthr. Cat. Fishes Brit. Mus. i, 411, 1859 (taken from Cuv. & Val.); Blkr. Vischfauna Nieuw-Guinea, p. 8 (name only).

Parupeneus crassilabris Blkr. Quatrième Mem. Fanne Ichthyologique Nouvelle Guinée; Blkr. Révision Mulloïdes, 33, 1874? (from Cuv. & Val.) (New Guinea).

Habitat.—Indian Archipelago, New Guinea, Johnston's Island.

Head 3 ($3\frac{2}{3}$); depth 3 ($3\frac{2}{3}$); D. VIII, 9; A. I, 7; scales 2-31-6.

Body oblong, compressed, robust. Head and anterior part of body heavy. Profile concave from snout to a point midway between the nostrils, thence regularly curved to first dorsal; snout long, blunt, $1\frac{2}{3}$ in length of head. Ventral outline little curved; caudal peduncle two-thirds length of head, its least depth almost twice in its length. Mouth moderate, little oblique, the lower jaw included; maxillary $2\frac{1}{3}$ in head, terminating between the nostrils.

Strong, blunt, but conical, teeth in one series in each jaw, the teeth more or less widely separated. Eye $2\frac{3}{4}$ in snout and 5 in head; inter-orbital space very convex, $3\frac{2}{3}$ in head.

Preopercle with upright limb slanting obliquely forwards; opercular spine strong. Gill-rakers 2 in eye, $4\frac{1}{2}$ in maxillary, about 28 on lower limb of arch.

Barbels two-thirds length of head, reaching posterior margin of subopercle. Scales large, ctenoid.

Dorsal fins well developed; third and fourth spines longest, $1\frac{1}{3}$ in head, twice the height of soft dorsal, the last of which are scarcely longer than the first; soft dorsal two-thirds as high as long, its length 2 in head. Caudal moderate, well forked, upper lobe more rounding, $1\frac{3}{8}$ in head. Anal differs from soft dorsal in having its first branched rays one-fourth longer than the last, the unbranched ray also slightly exceeding the last ray; the greatest height of the fin $2\frac{3}{8}$ in head. The membrane of the first soft ray envelopes a small spine, which, being thus covered, might easily be overlooked; the first articulate ray of anal, as in soft dorsal, not branched. Ventral fins large, $1\frac{1}{3}$ in head, about reaching tips of pectorals.

Air-bladder large.

Color, in spirits, olivaceous, lighter below, the fish, as a whole, having a smutty appearance; exposed part of each scale punctulate with brown; first dorsal and caudal dusky; base of soft dorsal dusky, upper half irregularly light and dark; anal with irregular dusky bars; soft dorsal,

caudal, and anal tipped with black; ventrals yellowish, spine and connecting membrane smutty; pectorals yellow, their base, the preorbital, and upper part of head purple. Barbels very dark; branchiostegal membrane purple. Peritoneum light.

According to Cuvier and Valenciennes *Upeneus crassilabris* is "voisin du *cyclostome*. * * Ce poisson paraît avoir été jaune, avec des points ou des lignes peu marquées sur les côtés. La première dorsale est violette; la seconde n'a que la base de cette couleur; la moitié supérieure est rayée de cinq à six raies parallèles longitudinales, alternativement blanches et violettes. L'anale, beaucoup plus pâle, a des points violets et un plus grand nombre de raies obliques. La caudale est plus foncée que la dorsale, et elle a des points blancs plus ou moins effacés. Les pectorales sont jaunes, plus ou moins olivâtres. Les ventrales ont les trois rayons externes colorés en violet, et les internes jaunâtres. La membrane branchiostège et les barbillons sont d'un brun violet plus ou moins foncé."

11.—UPENEUS VELIFER sp. nov.

Head $3\frac{1}{2}$ ($3\frac{5}{8}$); depth $3\frac{1}{2}$ ($3\frac{5}{8}$); D. VIII, 9; A. I, 7; scales 2-29-6.

Allied to *Upeneus trifasciatus* (Lac.) Cuv. & Val.

Body less robust than in *U. crassilabris*. Profile from beginning of dorsal fin to a point above center of orbit, a gentle and regular curve; thence to the snout a straight oblique line. Snout rather pointed, lower jaw included; lips thin; maxillary $2\frac{2}{3}$ in head; eye rather small, high, and far back, its diameter contained $3\frac{1}{3}$ times in the snout (measured obliquely from eye) and $5\frac{1}{2}$ times in the head.

Teeth blunt, isolated, in a single series in each jaw; the overlapping upper jaw shows all the teeth of the premaxillary in the closed mouth. No teeth on vomer or palatines. A strong, blunt spine on opercle. Gill-rakers 28 on lower limb.

Barbels slender and long, extending slightly beyond base of ventral, nearly as long as head. Scales ctenoid, moderate.

Dorsal fins well developed; third spine highest, equaling two-thirds of the greatest depth, the spines following about evenly decreasing in height to the eighth, which is two-sevenths of the third. In the second dorsal the first ray is shortest, $3\frac{2}{3}$ in depth of body, all between the first and ninth about equal and slightly higher than the first; the posterior half of the ninth, or split ray, is $2\frac{1}{3}$ times as high as the intermediate rays, and exceeds the highest dorsal spine; when depressed it extends onto the caudal one-fifth of the greatest length of the caudal; outline of soft dorsal slightly concave. Anal about one-fifth higher than soft dorsal; its last ray, however, is less produced, being six-sevenths of the last ray of the dorsal, and, depressed, does not reach base of caudal; anal outline somewhat convex from first ray to the split ray, which, similarly to that ray in the soft dorsal, is produced beyond rest of fin. The first ray of second dorsal and anal unbranched but plainly articu-

late. Caudal well developed, forked, its lobes rounded. Pectoral $1\frac{1}{3}$ in head. Ventrals not quite reaching the vent, $1\frac{1}{3}$ in head.

Air-bladder large, lined with black.

Color, in spirits, yellowish, with dark markings; head gray; a black spot on the median line between occiput and first dorsal; a blackish band across the back between the dorsal fins, another at base of soft dorsal, and a third on the caudal peduncle; all these bands becoming lighter below the lateral line; a gray blotch below lateral line, nearer second band than the one on the tail. First and second dorsal spines black, the whole upper portion of spinous dorsal dark, the membrane connecting the fourth, fifth, sixth, and seventh spines nearly black, forming a blotch; second dorsal very dark, with about three narrow whiteish stripes, and inconspicuous white spots on its base; caudal plain, yellow, narrowly margined with brown above, less narrowly margined with black below; anal dark, its marginal third with three light lines disposed horizontally; nearer the base the membrane is crossed by white bars at right angles with the rays, almost forming a network of lines; pectorals dusky at base, otherwise plain yellow; ventral spine nearly black, the rest of the fin dusky, with about nine slightly waving lines of white across the rays. Lower lip and barbels gray, tips of the barbels fading into yellowish. Branchiostegal membrane dusky. Peritoneum light.

This species is closely allied to *U. trifasciatus* (Lac.) C. & V., from which its most conspicuous differences (according to a figure in the Jour. Mus. Godeffroy) are the extreme elongation of the last ray in both the soft dorsal and the anal fin, and the greater length of the barbels, which pass beyond the base of the ventrals, while in this figure the barbels only reach the posterior margin of the subopercle. Lacépède's figures, copied from Commerson, represent the specimen which he calls *Mullus bifasciatus* as having the barbels shorter than the head, and *M. trifasciatus* with the barbels nearly attaining the extremity of the ventral fins. Of the barbels Cuvier & Valenciennes say: "ils ne dépassent pas l'angle du préopercule, et ceux du *mulle trois-bandes* dépassent même l'opercule. Cependant la figure, qui est de Sonnerat, les exagère, en les faisant aller jusques sous les ventrales."—(Hist. Nat. Poiss. iii, 468.) In the figures by Lacépède the dorsal and anal fins are low in both *M. bifasciatus* and *M. trifasciatus*.

One specimen (26822), $10\frac{3}{4}$ inches in length.

12.—UPENEUS VANICOLENSIS (C. & V.) Smith & Swain.

Upeneus vanicolensis C. & V. Hist. Nat. Poiss. vii, 521, 1831 (Vanicolo).

Upeneus vanicolensis Blkr. Nat. T. Ned. Ind. iv, 601, 1853.

Mulloidés vanicolensis Blkr. Ternate ii, 601, 1853; Gthr. Cat. Fishes Brit. Mus. i, 404, 1859 (seas of Ternate and Vanicolo); Bleeker, Enum. Spec. Pisc. Archip. Ind. 39, 1859 (name only); Blkr. Conspect. Spec. Pisc. p. 6 (Halmabeira, Ternate, Archip. Molucca; name only); Blkr. Révision Mulloïdes, p. 14, 1874? (Ternate, Sangir).

Habitat.—Vanicolo, Ternate, Sangir, Halmaheira, Archip. Molucca, Johnston's Island.

Head $3\frac{1}{2}$ ($4\frac{2}{3}$); depth $4\frac{1}{3}$ ($5\frac{1}{4}$); D. VIII-I, 8; A. II, 6; scales, $2\frac{1}{2}$ -36-6.

Body rather slender; ventral outline almost as much curved as dorsal; profile gently, and nearly evenly, curved from snout to first dorsal fin. Caudal peduncle tapers evenly from dorsal and anal to the caudal fin, and nearly equals length of head; its least depth $2\frac{1}{3}$ in its length.

Snout short, bluntnish, $2\frac{3}{4}$ in head; mouth small, maxillary reaching posterior nostril, $2\frac{1}{5}$ in head. The bands of villiform teeth very narrow; in front two series in each jaw, on the sides only one. Eye large, $1\frac{1}{4}$ in snout, $3\frac{1}{2}$ in head; interorbital space moderately convex, 3 in head. Upright limb of preopercle straight; opercular spine small.

Gill-rakers slender, $2\frac{1}{2}$ in maxillary, 7 in head, about 25 on lower limb of arch.

Barbels $1\frac{3}{5}$ in head, extending beyond posterior margin of eye.

Scales, moderate, ctenoid; preorbital smooth.

Dorsal fins moderate; spines of first dorsal rather weak, depressible into a groove; first spine *very minute*, second and third longest, $1\frac{1}{3}$ in head, those following evenly decreasing in height to the eighth spine, which is 3 in head. The first ray of the second dorsal fin is unbranched, and, showing no articulations, has the appearance of a true spine, slightly shorter than the last soft ray, and 4 in head; the second articulate ray is contained $1\frac{1}{5}$ times in the highest dorsal spine. Caudal well forked, its longest rays $1\frac{1}{4}$ in head. Anal with two spines, the first of which is *very minute*; otherwise, similar to soft dorsal, though a very little higher. Pectorals $1\frac{2}{3}$ in head. Ventrals $1\frac{1}{3}$ in head. Air-bladder moderate. Peritoneum, black.

Color, in spirits, grayish-green above lateral line, lighter below, with yellow metallic luster; minute black punctulations on scales above lateral line; none below.

One specimen (30,873), $6\frac{1}{2}$ inches long.

13.—UPENEUS PREORBITALIS sp. nov.

Head $3\frac{2}{5}$ ($4\frac{1}{6}$); depth $4\frac{1}{6}$ ($5\frac{1}{2}$). D. VIII-9; A. I, 7; scales 2-37-5.

Body more slender than in U. *vanicolensis* C. & V.; ventral outline almost straight, dorsal outline well curved; profile from snout to dorsal regularly curved; caudal peduncle $1\frac{1}{3}$ in head, its least height $3\frac{1}{4}$ in head.

Mouth nearly horizontal, maxillary 3 in head, terminating behind anterior nostril; lower jaw produced. The band of villiform teeth moderate in both jaws, in a patch in front, narrowing posteriorly. Eye moderate, $2\frac{1}{2}$ in snout, $4\frac{1}{3}$ in head; interorbital space slightly concave, $4\frac{1}{4}$ in head; preorbital very deep, $2\frac{1}{4}$ in head.

Gill-rakers short and rather slender, $4\frac{1}{2}$ in maxillary; 19 on lower limb of arch.

Barbels $1\frac{1}{2}$ in head, reaching posterior margin of preopercle. Scales large, ctenoid.

Dorsal fins medium; spinous dorsal depressible into a groove; first spine rudimentary, scarcely perceptible, second and third spines longest, $1\frac{2}{3}$ in head, eighth spine 4 in second. The first ray of soft dorsal is unbranched but evidently articulate, shorter than the first branched ray, which is $2\frac{1}{3}$ in head, thence about regularly decreasing in height. Caudal well forked, its longest rays $1\frac{1}{3}$ in head; anal similar to soft dorsal, its spine *very minute* and first ray unbranched but plainly articulate. Ventrals 2 in head. Pectorals $1\frac{2}{3}$ in head. Air-bladder moderate.

Color, in spirits, nearly uniform yellowish; snout dusky, fins plain. Peritoneum dark.

One fine specimen (29,662), $14\frac{3}{4}$ inches long.

14.—CHILINUS DIGRAMMA (Lacép.) Cuv. & Val.

Sparus radiatus, Bl. Schn. p. 270, tab. 56 (not of Linn.).

Labrus digramma Lacép. Hist. Nat. Poiss. iii, pp. 448, 517, 1802.

Cheilinus commersonii, "Benn. Proc. Comm. Zool. Soc. i, 167."

Cheilinus coccineus, "Rüpp. Atl. Fische, p. 23."

Cheilinus digrammus, Cuv. & Val. Hist. Nat. Poiss. xiv, 98, 1839 (Isle of France, Séchelles, Madagascar, New Guinea); Blkr. Overzigt Labroëden, 4 (name only), 38 (descriptions); Blkr. Tweede Bijd. Ichth Fauna Halmaheira, 2, 4 (name only).

Cheilinus radiatus, Bleek. Atl. Ichth. i, p. 68, tab. 26, fig. 1, 1862; Gthr. Cat. Fishes Brit. Mus. iv, 131 (Moluccas, Amboyna, Lonisiade Archipelago, Cape Flattery, N. E. Australia); Gthr. Fish. Zanz. p. 89; "Klunz. Fisch. d. Roth. Meer. p. 556"; Blkr. Vischsooten van Amboina, p. 21; Blkr. 8th Bijdrage Amboina, 7, 25 (name only); Blkr. Conspec. Molucc. Cognit. 18 (Halmaheira, Batjan, Amboyna, Ternate, Archip. Molucc.; name only); Blkr. Bijd. Visch. Nieuw Guinea⁷ 3, 11 (name only); Blkr. Beschrij. Visch. Manado Makassar, 5, 25 (Manado, Macassar); Blkr. Nieuwe Verzam Visschen Batjan, 5 (name only); Blkr. Quat. Mem. Ichth. Nouv. Guinée, 6 (name only).

Habitat.—Isle of France, Séchelle, Madagascar, New Guinea, Moluccas, Amboyna, Louisiade Archipelago, Cape Flattery, N. E. Australia, Halmaheira, Batjan, Ternate, Archip. Molucc., Manado, Macassar, Johnston's Island.

Head $2\frac{1}{4}$ ($3\frac{1}{6}$); depth 3 ($3\frac{2}{3}$); length (26815) $12\frac{1}{2}$ inches; D. IX, 10; A. III, 8; scales, $1\frac{1}{2}$ –21– $5\frac{1}{2}$; Br. 5.

Body rather slender; profile not steep; snout rather pointed, $2\frac{3}{4}$ in head; lower jaw produced; mouth little oblique, maxillary not reaching eye; anterior canine teeth strong; eye 7 in head; interorbital space $4\frac{2}{3}$ in head; nostrils very small; gill-rakers placed wide apart, 10 on lower part of arch, the longest ones 3 in eye; slit behind last gill obsolete; gill-membranes not joined to the isthmus.

First dorsal spine as high as orbital diameter, the spines increasing slightly in height to the last, which is one-half higher than first; soft part of dorsal higher than spinous, its highest rays 3 in head, the outline rounded; caudal subtruncate; first anal spine equals diameter of

eye, second and third increasing in height, as usual; soft portion little higher than that of dorsal. Ventrals short, $2\frac{1}{3}$ in head; pectorals fan-shaped, $2\frac{2}{3}$ in head.

Most of the tubes of lateral line simple.

Color in spirits, chocolate above, lighter below; a narrow light band crosses the back immediately behind soft-dorsal fin, fading out just before it reaches the space close behind anal, thus outlining the base of caudal peduncle; this light mark extending up on the dorsal fin, almost meeting the central light line of the dorsal, the pedunculate band seeming to be a continuation of the middle dorsal line. A light streak outlines the cheek superiorly, becoming fainter where it extends across opercles to the upper base of pectoral. A series of similar light lines extends obliquely downward from eye across cheeks and opercles; these lines somewhat waving, and coalescing more or less; two or three light streaks on preorbital, running from eye toward snout; nasal region vermiculate, with similar light markings. Dorsal fin chocolate, with two light lines running lengthwise of the fin; soft part brownish only at base, transparent superiorly, yet somewhat dusky. Caudal copper-green, its outer rays of a brown, like the back; anal light, tinged with green; a very dark brown spot on base of ventrals, covering half the fin; pectorals transparent, uniform yellowish; teeth greenish.

Three fine specimens in the collection.

The name *radiatus*, having been given to this species through an erroneous identification, cannot be retained.

15.—SCARUS PERSPICILLATUS Steindachner.

Scarus (Scarus) perspicillatus Steind. Neue Seltene Fisch-Arten aus. k. k. Museen Wien, etc., p. 16, taf. iv, f. 1, 1879 (Sandwich Islands).

Habitat.—Sandwich Islands, Johnston's Island.

Head $3\frac{1}{3}$ (4); depth $2\frac{3}{8}$ ($3\frac{1}{8}$); D. IX, 10; A. III, 9; Br. 5; scales, $1\frac{1}{2}$ -23-6.

Body oblong, compressed. Ventral outline well and regularly curved, exceeding dorsal. Head longer than deep; snout rather blunt, $2\frac{1}{3}$ in head; eye moderate, 3 in snout; interorbital space equals snout. Lips thin, covering half the dental plate; upper lip double only at the corner of the mouth. Dental plates crenulate; no posterior canines. Gill-rakers numerous, short, and very slender.

Scales large; one series of six scales on cheek, and an extra scale below this series. Tubes of lateral line irregularly branched, and the branches more or less waved; not very prominent.

Dorsal and anal spines rather flexible, not pungent; dorsal rather low and of nearly equal height throughout, $3\frac{1}{3}$ in head. Anal similar to soft part of dorsal, its height $2\frac{1}{3}$ in head. Caudal emarginate, $1\frac{2}{3}$ in head. Pectorals $1\frac{1}{3}$ in head. Ventrals $1\frac{1}{3}$ in head.

In spirits olivaceous brown, little lighter below. Dorsal and anal smutty, both lighter anteriorly and on marginal half of the fins; a well defined dusky line running horizontally near the margins of both, leaving the edges of the fins plain light colored. Pectorals and caudal dusky; ventrals plain, light colored. Head marked with yellow as follows: a line in front of the eyes outlines a brownish oblong figure, which extends vertically across the snout, not quite equal to the eye in width, becoming narrower on median line of snout, its length six times that of its greatest width; an indistinct line passes over the interorbital space, curves around anterior margin of eye, and ends before reaching the scales on the cheek; a more distinct line runs nearly parallel with preopercular membrane; a horizontal, waving band on the middle of the cheek is continuous with a wider band on chin, this having its lower edge evenly waved; a narrow, nearly lunate, band on each side of the lower jaw; round and oblong spots on cheek and jaws. Obscure dots on some of the scales of ventral region, above anal, and more noticeable ones behind pectoral fins. All the foregoing markings yellow. Teeth rosy; peritoneum dark.

One fine specimen (26833), 15 inches long.

16.—JULIS VERTICALIS sp. nov.

Head $3\frac{1}{5}$ ($3\frac{2}{3}$); depth $3\frac{1}{5}$ ($3\frac{2}{3}$); length (26829) 11 inches. D. VIII, 13; A. III, 11; Br. 6; scales $2\frac{1}{2}$ –27– $8\frac{1}{2}$. (These measurements were taken to end of middle rays of caudal.)

Body oblong, compressed, rather robust; dorsal and anal outlines about equally curved; head longer than deep; snout somewhat blunt, $2\frac{2}{7}$ in head; eye moderate, $6\frac{2}{3}$ in head. Branchiostegal membranes forming a fold across the isthmus.

Scales moderate, becoming smaller in front of ventrals; small scales on base of dorsal, anal, and caudal fins. Gill-rakers short, 16 on lower part of arch; slit behind last gill wholly obsolete. Tubes of lateral line forked once on most of the scales anterior to caudal peduncle.

Spinous dorsal low; the anterior spines about $5\frac{1}{2}$ in head; the spines increasing slightly in height posteriorly; height of soft portion of dorsal fin $3\frac{1}{3}$ in head. Caudal with outer rays produced, but not greatly so; the greatest length of the fin $1\frac{2}{7}$ in head. Anal similar to soft dorsal. Pectorals $1\frac{2}{3}$ in head. Ventrals short, $2\frac{2}{3}$ in head.

In spirits olivaceous brown; each scale with a conspicuous dark, vertical streak, forming two vertical lines on the body for each scale of the lateral line. Head, dorsal, and produced rays of caudal purplish-brown, caudal otherwise olivaceous; anal with a light purplish basal band, otherwise brownish; ventrals purplish dusky; pectorals olivaceous, washed in part with purple. Peritoneum light.

One fine specimen.

17.—JULIS CLEPSYDRALIS sp. nov.

Head $3\frac{1}{4}$ ($3\frac{5}{8}$); depth $3\frac{1}{4}$ ($3\frac{5}{8}$); length (26826) $7\frac{1}{2}$ inches. D. VIII, 13; A. II, 11; Br. 6; scales 2–27–8. (These measurements taken to end of middle rays of caudal.)

Body rather stout; head longer than high; jaws about equal; snout little pointed, $2\frac{4}{5}$ in head; eye $5\frac{1}{2}$ in head, $1\frac{1}{2}$ in interorbital space. Branchiostegal membrane forming a fold across the isthmus. Gill-rakers short and weak, about 12 on lower part of arch. No slit behind last gill.

Pores of lateral line mostly branched, forming three or four spreading tubes on the scale. The scales extend up on base of dorsal and anal fins, smaller ones on base of caudal. Scales on breast reduced in size.

Dorsal low, its first spine equaling orbital diameter; spines gradually increasing, the last being twice the height of first; soft portion slightly higher than spinous. Anal similar.

Outer caudal rays greatly produced, the filamentous part nearly as long as the head. Ventrals $1\frac{3}{5}$ in head; although their first ray is produced the ventrals do not quite reach the vent. Pectorals $1\frac{1}{5}$ in head.

Color, in spirits, blackish. Head, dorsal and anal fins black; posterior portion of body blackish olivaceous; an hour-glass-shaped lighter area on shoulders, extending across thorax, this area bounded in front by the outline of the black head. Pectoral blue-black in the axil; base of fin yellowish, followed by a black blotch that covers the upper rays to their extremities, descending obliquely forward leaves the lower rays plain yellowish and transparent at their tips. Caudal blackish. Ventrals light, transparent, the spine and first ray dusky. Peritoneum gray, with a pinkish shade.

One fine example.

18.—HARPE BILUNULATA (Lacép.) Smith & Swain.

Labrus bilunulatus Lacép. Hist. Nat. Poiss. iii, 454, 526, pl. 31, 1802.

Cossyphus bilunulatus Cuv. & Val. Hist. Nat. Poiss. xiii, 121, 1839 (Seas of India, Isle de France); Gthr. Cat. Fish. Brit. Mus. iv, 105, 1862 (Isle de France, Amboyna, Mauritius); "Gthr. Fish. Zanz. p. 87"; Blkr. Atl. Ichth. i, 160, tab. 38, fig. 3; Blkr. Neg. Bijl. Visch. Amboina, 4 (Amboyna); Blkr. Index Pisc. Actorum Sci. Soc. Indo-Neer. 4 (name only); Gthr. Jour. Mus. Godeff. Fische der Südsee, 240, pl. 130, 1881 (Mauritius, Zanzibar, Amboyna, Misol, Sandwich Islands).

Cossyphus alboteniatus C. & V. Hist. Nat. Poiss. xiii, 141, 1839 (Sandwich Islands); Gthr. Cat. Fish. Brit. Mus. iv, 105 (taken from Cuv. & Val.).

Gymnopropoma (bilunulatum) Gill, Proc. Phil. Acad. Nat. Sci. 1863 (generic diagnosis only).

Habitat.—Seas of India, Isle of France, Amboyna, Mauritius, Zanzibar, Misol, Sandwich Islands, Johnston's Island.

Head $2\frac{7}{8}$ ($3\frac{1}{4}$); depth $2\frac{2}{3}$ ($3\frac{2}{5}$); D. XII, 10; A. III, 12; scales $5\frac{1}{2}$ –35–13

Head longer than deep; upper lip thin, lower lip narrow. Gill-rakers short, 13 on lower arch. Ventrals reach vent, nearly as long as head. The outer ray of ventral and outer rays of caudal produced. Scales on cheeks and occiput much smaller than elsewhere, in about 12 rows on the cheeks.

The fatty hump on forehead, which is usually seen on mature individuals in this genus, is wholly undeveloped.

Color, in spirits, yellow olivaceous, with darker olivaceous waving-streaks running horizontally between the rows of scales; these lines becoming mere brown spots above and below, but forming two bands behind the eye, which converge into one in front of the eye; under jaw scarcely spotted except near the gape of the mouth. A dark brown blotch between the soft dorsal and the lateral line extending around the posterior part of the soft dorsal, Λ -shaped, as seen from above, close up under the fin, but not extending on it; the dorsal fin with a dark spot anteriorly, the margin of connecting membrane brownish along whole of spinous portion. Teeth white.

A larger specimen (17 inches in length) is darker everywhere, with the dorsal, caudal and ventral fins dusky, and the blotch between soft dorsal and lateral line less prominent. The ventrals are longer, reaching third anal spine.

Two fine specimens, numbered 26830, $15\frac{3}{4}$ inches in length.

19.—CHÆTODON SETIFER Bloch.

Chatodon setifer Bl. Naturg. ausländ. Fische, t. 426, f. 1, 1797; Bloch & Schn. Systema Ichthyologie, 225, 1801 (Tranquebar); Cuv. & Val. Hist. Nat. Poiss. vii, 76, 1831 (Bolabold); "Guérin, Iconogr. Poiss. pl. 22, f. 1"; "Less. Voy. Cog. Zool. ii, 175, Poiss. pl. 29, f. 2"; "Richards, Ichth. China, p. 246"; Cuv. Règne Anim. III. Poiss. pl. 38, f. 1; "Jenyns, Zool. Beagle, Fishes, p. 61"; Gthr. Cat. Fishes Brit. Mus. ii, 6, 1860 (Isle de France, Amboyna, China, Aneiteum); Gthr. Jour. Mus. Godeff. Fish. Süd. 36, taf. 26, B. 1873.

Pomacentrus filamentosus, Lacép. iv, pp. 506, 511, 1802.

Chatodon schanus C. & V. vii, 74, 1831 (Timor, Guam, Tongatabou, Isle of France, Batavia).

"*Chatodon auriga*, var. Rüpp. N. W. Fische, p. 28."

Chatodon lunaris "Gronov. Syst. ed. Gray, p. 70."

Chatodon auriga Bleek. Celebes, iv, 164.

Habitat.—Tranquebar, Bolabold, Isle of France, Amboyna, China, Aneiteum, Timor, Guam, Tongatabou, Celebes, Johnston's Island.

Head $3\frac{1}{10}$ ($3\frac{2}{3}$); depth $1\frac{2}{3}$ (2). D. XII, 24; A. III, 20; scales 6-14-13. (In a straight horizontal series from head to caudal 15, about 44 in first row above lateral line.)

Body ovate. Profile steep; from dorsal to occiput convex, thence concave to snout. Snout pointed, conical; mouth nearly horizontal, maxillary 4 in head; teeth ordinary; eye $1\frac{3}{4}$ in snout, 4 in head; inter-orbital space $1\frac{1}{2}$ in snout.

Gill-rakers very short and slender; suprascapula striate and dentate.

First dorsal spine $1\frac{3}{4}$ in snout, thence almost evenly increasing in height to the sixth, which is $2\frac{2}{5}$ in head, seventh to eleventh about equal, twelfth 2 in head; the soft portion of dorsal higher than spinous, its highest rays $1\frac{1}{6}$ in head, its margin rounded. The filiform elongation of the fifth ray is broken off. Caudal truncate. Middle rays of anal longest, giving a bluntly pointed outline to the fin; second anal spine not as long as third and scarcely stronger, $2\frac{1}{3}$ in head. Ventrals $1\frac{2}{3}$ in head. Pectorals $1\frac{1}{3}$ in head. Scales finely ctenoid. Fins scaled as usual.

Preopercle crenulate at the angle and on lower margin.

Color, in spirits, pale olivaceous with dark and black markings; five dark lines ascend obliquely from shoulder-girdle to dorsal, seven similar ones ascend obliquely from anal meeting the anterior lines at a right angle; above the seven lines and running parallel with them are about four wider greenish-brown bands, which anteriorly describe a right angle ascending to the dorsal, this part of the wide bands thus running parallel with the lines on front part of body, the ground color between these bands being of a sulphur yellow. A black band descends perpendicularly across the eye, narrower and fading out above, a third wider than orbital diameter below the eye, the bands of the two sides, extending across the interopercle, meet at the isthmus. A black oval spot near the margin on the sixth, seventh, eighth, ninth, and tenth soft rays of dorsal. Between the posterior spines of the dorsal the connecting membrane is narrowly margined with black, the soft dorsal edged with black to the twenty-third ray. The extreme edge of caudal fin is white, anterior to which is a narrow space of gray margined with black, then a dull-yellow lunate space equal in width to both the other marginings; the base of the caudal being grayish leaves this lunate space outlined by a gray line, the dusky ground color covering the anterior two-thirds of the length of the fin. And with a thread-like line of black near its margin. Pectorals and ventrals plain. Peritoneum dusky.

One fine specimen (26831), $7\frac{1}{2}$ inches long.

20.—ACANTHURUS TRIOSTEGUS (L.) Bloch. & Schn.

Chætodon triostegus Linn. Syst. Nat. i, 463; Brouss. Ichthy. fig. and description, 1782; Gmel. Syst. Nat. 1246, 1788 (Pacific & Indian Oceans).

Chætodon couagga Lac. iv, 727, 1802.

Acanthurus zebra Lac. Hist. Nat. Poiss. iii, pl. 25, fig. 3, 1802, iv, 160, pl. 6, fig. 3, 1802; C. & V. Hist. Poiss. x, 197, 1835 (Isle de France, Séchellés, Marianna, N. Zealand, Oulan, Society and Sandwich Islands).

Acanthurus triostegus Bl. & Schn. Syst. Ichthy. 215, 1801 (Pacific and Indian Oceans); Blkr. Enum. Spec. Pisc. Archip. Indic. 75, 1859 (name only); Blkr. Conspec. Molucc. Cognit. 12 (Buro, Amboyna, Ternate, Ceram, Archip. Molucc.; name only); Blkr. Bijl. Visch. N. Guinée, 4, 10 (name only); Blkr. Zes. Bijl. Visch. Sumatra, 5, 21 (Kauer, Trussan, Padang, Ulakan, Sibogha, Priamam); Blkr. Twaalfde Bijl. Visch. Celebes, 2 (name only); Blkr. Beschrij. Visch. Amboina, 6 (name only); Blkr. Beschrij. Manado Makassar, 4, 20 (Manado; name only); Blkr. Achtste Bijl. Visch. Amboina, 5, 20 (name only); "Blkr. Verhand. Batav. Genootsch. xxiii, Teuth. 13; Jenyns, Voy. Beagle, Fishes, 75"; Gthr. Cat.

Fish. Brit. Mus. iii, 327, 1861 (Amboyna, Celebes, Malayan Archipelago, Sandwich Islands, Aneiteum, W. Coast of Australia, Mauritius, New Zealand); Gthr. Jour. Mus. Godeff. 108, 1873 (Polynesia, Sandwich Islands, Indian Ocean).

Harpurus fasciatus "Forst. Deser. Anim. ed. Licht. 216."

Acanthurus hirado "Benn. Ceyl. Fishes, 11, pl. 11; Blkr. Bat. Gen. xxiii, Teuth. 13."

Acanthurus subarmatus "Benn. Whal. Voy. ii, 278."

Teuthis australis "Gray in King's Survey of the coasts of Austr. ii, 435."

Habitat.—Isle of France, Séchellés, Marianna, New Zealand, Oulan, Society Islands, Sandwich Islands, Buro, Amboyna, Ternate, Ceram, Archip. Moluca., New Guinea, Sumatra, Kauer, Trussau, Padang, Ula-kan, Sibogla, Priamam, Celebes, Manado, Macassar, Malayan Archip., Aneiteum, W. Coast of Australia, Mauritius, Polynesia, Indian Ocean, Johnston's Island.

Two fine specimens, numbered 26820, 7 inches in length.

21.—NASEUS LITURATUS (Forst.) Cuv. & Val.

Harpurus lituratus "Forst. Deser. Anim. ed. Licht. 218."

Acanthurus lituratus Bl. & Schn. 216, 1801.

Acanthurus harpurus "Shaw, Zool. iv, 381."

Aspisurus elegans "Rüpp. Atl. Fische, 61, taf. 16, fig. 2."

Aspisurus carolinarum "Quoy & Gaim. Voy. Uran. Zool. 375, pl. 63, fig. 1 (New Ireland)."

Prionurus coume "Less. Voy. Cog. Zool. ii, 151 (Otaïti, Matavaï)."

Naseus lituratus C. & V. x, 282, 1835; "Blkr. Celebes, iii, 763"; Gthr. iii, 353, 1861 (Olaheiti, Aneiteum, Malayan Archipelago, Red Sea, Polynesia); Gthr. Jour. Mus. Godeff. 124, taf. 82, 1873 (Society Islands, Red Sea, East Coast of Africa, Sandwich Islands); Blkr. Conspec. Moluca. Cognit. 12 (Amboina, Archip. Moluca; name only); Blkr. Zes. Bijl. Visch. Sumatra, 11 (Batæ; name only); Blkr. Beschrij. Visch. Amboina, 17 (name only); Blkr. Beschrij. Visch. Monado, Makassar, 20 (Macassar); Blkr. Aeltste Bijl. Visch. Amboina, 20 (name only); Blkr. Visschen Van Diemensland, 11 (name only).

Acanthurus lituratus Blkr. Bijl. Visch. N. Guinea, 3, 11 (name only); "Blkr. Nat. T. Ned. Ind. iii, 763."

Aspisurus lituratus "Rüpp. N. W. Fische, 130."

Habitat.—New Ireland, Uran, Otaïti, Matavaï, Celebes, Aneiteum, Malayan Archip., Red Sea, Polynesia, Society Islands, East Coast of Africa, Sandwich Islands, Amboyna, Archip. Moluca., Sumatra, Batæ, Manado, Macassar, Van Dieman's Land, New Guinea, Ulea, Gulf of Suez, Isle of France, Johnston's Island.

Two fine specimens, numbered 26812, measuring 10½ inches.

22.—BALISTES ACULEATUS Linnæus.

Balistes aculeatus "L. Syst. Nat. i, 406, 1766"; Bloch, Naturgeschichte ausländ. Fische, i, 183, 194, 1786, pl. 149 (Red Sea); Gmel. Syst. Nat. 1466, 1788 (Indian Ocean, Red Sea); Bloch & Schn. Syst. Ichth. 465, 1801 (Indian Ocean, Red Sea); Lay & Benn. in Beechey's Voy. Zool. 69, pl. 22, fig. 2, 1839 (Loo-Choo Islands); "Jenyns, Zool. Beagle Fish. 155, 1842; Blkr. Vehr. Bat. Gen. xxiv, Balist. 15, 1852; Hollard, Ann. Sc. Nat. i, 333, 1854"; Gthr. Cat. Fish. Brit. Mus. viii, 223, 1870 (Isle of France, Island of Johanna, Zanzibar, W. Coast of Africa, Moluccas, Amboyna, China Seas, Fiji Islands, Micronesia, Seychelles,

Mauritius); Blkr. Conspec. Molucc. Cognit. 21 (Amboyna, Archip. Molucc., Banda; name only); Blkr. Zes. Bijd. Visch. Sumatra, 13 (Nias; name only); Blkr. Ichth. Fauna Borneo, 12 (Ignata; name only); Blkr. Twaalfde Bijd. Visch. Celebes, 2 (name only); Blkr. Beschrij. Visch. Amboina, 823 (name only); Blkr. Beschrij. Visch. Manado Makassar, 6, 29 (Manado; name only); Blkr. Achtste Bijd. Visch. Amboina, 8, 28 (name only); Blkr. Einige Visschen Van Diemensland (name only); Streets, Bull. U. S. Nat. Mus. No. 7, 79, 1877 (Fanning Islands).

Balistes ornatissimus "Less. Voy. Cog. Zool. Poiss. i, 119, pl. 10, fig. 1, 1830."

Balistes armatus "Cuv. R. An. Ill. Poiss, pl. 112, f. 2, 1829-30."

Balistes striatus "Gronov. Syst. ed. Gray, 32."

? *Balistes assasi* "Forsk. 75, n. 112"; Gmel. 1471, n. 12, 1788 (Red Sea).

Balistes (Balistapus) aculeatus "Blkr. Atl. Ichth. Balist. 120, pl. 2, f. 3."

Baliste epineux Lac. Hist. Nat. Poiss. i, 367, pl. 17, f. 1, 1798.

Habitat.—Indian Ocean, Red Sea, Loo-Choo Islands, Isle of France, Island of Johanna, Zanzibar, W. Coast of Africa, Moluccas, Amboyna, China Seas, Fiji Islands, Micronesia, Seychelles, Mauritius, Archip. Molucca, Banda, Nias, Ignata, Manado, Van Diemen's Land, Sumatra, Fanning Islands, Johnston's Island.

Two fine examples, numbered 26816 and 29760; length 11 inches.

23.—BALISTES BUNIVA Lacépède.

Balistes ringens "Osbeck, Voy. Chin. ii, 93, 1771, not of L.;" Bloch, Ausl. Fisch. 183 (foot-note), pl. 152, fig. 2, 1786; Bloch & Schn. Syst. Ichth. 472, 1801 (Indian and Chinese Seas); "Rich. Voy. Samar. Fish. 21, pl. 16, f. 1-4, 1848; Rep. Ichth. Chin. Rep. 15th Meet. Brit. Assoc. 201, 1846; Hollard, Ann. Sc. Nat. 4th series, 1854, Zool. i, 317; Bleek. Act. Soc. Sc. Ind. Néere viii, 1860; Sumatra viii, 69" (not of Linn.).

Baliste sillonné Lac. Hist. Nat. Poiss. i, 370, pl. 18, fig. 1, 1798 (China Sea, E. Coast of Africa).

Balistes buniva Lac. Hist. Nat. Poiss. v, 669, pl. 21, f. 1, 1803; Gthr. Cat. Fish. Brit. Mus. viii, 227, 1870 (Jamaica, St. Croix, St. Helena, Zanzibar, China Seas, Sandwich Islands); Streets, Bulletin U. S. Nat. Mus. No. 7, 56, 1877 (Honolulu).

? *Balistes picens* Poey, Proc. Acad. Nat. Sci. Phila. 180, 1863 (Cuba); Poey, Proc. Acad. Nat. Sci. Phil. 177, 1863 (name only); "Repert. Fis. Nat. Cuba, ii, 435, 1868."

Melichthys ringens Bleek. Act. Soc. Sc. Indo-Néere. vi, Sumatra viii, 69; "Blkr. Atl. Ichth. v, 108, pl. 220, f. 2, 1865"; "Blkr. Balist. pl. vi, f. 2."

Balistes niger "Gthr. Fish. Zanz. 135, pl. 19, f. 1, 1866."

Habitat.—Indian Ocean, China Sea, Sumatra, E. Coast of Africa, Cuba, Zanzibar, Jamaica, St. Croix, St. Helena, Sandwich Islands, Johnston's Island.

Three fine specimens, numbered 26818, 8 inches long.

24.—OSTRACION PUNCTATUM Bl. & Schn.

Ostracion pointillé Lacép. i, 442, 445, pl. 21, f. 1, 1798 (Isle de France).

Ostracion punctatus Bl. & Schn. 501, 1801; "Cuv. Règne An.;" "Jenyns, Zool. Beagle, Fish. 158; Blkr. Nat. Tyds. Ned. Ind. xi, 108, and Atl. Ichth. Ostræ, 39, pl. 2, fig. 4; Hollard, Ann. Sc. Nat. vii, 165, 1857"; Gthr. Cat. Fishes, viii, 261, 1870 (Ind. Ocean and Archip.; Pacific); Blkr. Conspec. Molucc. Cognit. 22 (Archip. Molucc. Banda; name only); Blkr. Quat. Mem. Ichth. N. Guinée, 4, 22 (name only).

Ostracion lentiginosus Bl. & Schn. 501 (India).

Ostracion meleagris, "Shaw, Zool. v, 428, pl. 172, and Zool. Misc. pl. 253."

Habitat.—Indian Ocean and Archipelago, Zanzibar, India, Archip. Molucc., Banda, New Guinea, Isle of France, Johnston's Island.

One fine specimen (26821).

25.—TETRODON MELEAGRIS Lacép.

Tetrodon meleagris Lac. i, 476, 505, 1798 (Seas of Asia); Bl. & Schn. Syst. Ichthy. 507, 1801 (Asia); "Richards, Voy. Sulphur, Fish. 122, pl. 57, figs. 1-3"; Gthr. Cat. Fish. Brit. Mus. viii, 299, 1870 (Polynesia).

Tetrodon lacrymatus "(Cuv.) Quoy & Gaim. Voy. Uran. Poiss. 204."

Habitat.—Asia, Polynesia, Johnston's Island.

Three fine specimens (26811).

26.—DIODON HYSTRIX L.

Diodon hystrix, L. Syst. Nat. i, 413; Bl. Naturgeschichte ausländ. Fische. i, 91, 1786 (name only); Bris. Barnev. Rev. Zool. 141, 1846"; Gthr. Cat. Fish. Brit. Mus. viii, 306, 1870 (Gaboon, Fernando Po, Calabar, West Indies, Jamaica, Cape Seas, Amboyna, Indian Ocean, Society Islands); Bean (No. 23779), Proc. U. S. Nat. Mus. iii, 75, 1880 (Bermuda; name only); Poey, Proc. Acad. Nat. Sci. Phil. 179, 1863 (name only).

Diodon atinga Bl. tab. 125, i, 91 (name only); Bl. & Schn. Syst. Ichth. 511, 1801 (American Seas, Cape of Good Hope); "Kaup Wieg. Arch. 227, 1855 (not L.); Poey, Proc. Acad. Nat. Sci. Phil. 179, 1863 (name only).

Diodon plumieri, Lacép, ii, pp. 2, 10; i, pl. 3, fig. 3.

Diodon brachiatus Bl. & Schn. p. 513, 1801.

Diodon punctatus, "Cuv. l. c. 132; Blkr. Conspec. Molucc. Cognit. 21 (Amboyna, Ternate, Ceram, Archip. Molucc., Banda; name only); Bleeker, Verh. Bat. Gen. xxiv, Blootk. p. 19"; Blkr. Elfde. Bijd. Visch. Celebes, 4 (name only); Blkr. Zev. Bijd. Visch. Sumatra (Lamong); Blkr. Beschrij. Visch. Amboina, pp. 8, 23 (name only); Blkr. Achtste Bijd. Visch. Amboina, 28 (name only); Blkr. Tweede Bijd. Ichth. Fauna Ba toë, 4 (name only).

Holocanthus hystrix "Gronov. Syst. ed. Gray, 27."

Paradiodon hystrix "Bleek. Atl. Ichth. Gymnod, 66, pl. 3, fig. 2."

Habitat.—Gaboon, Fernando Po, Calabar, West Indies, Jamaica, Cape Seas, Amboyna, Indian Ocean, Society Islands, Cape of Good Hope, Bermudas, Ternate, Ceram, Archip. Molucc. Banda, Celebes, Sumatra, Lampong, Batoë, Johnston's Island. (Much of the above synonymy is doubtful.)

Length (26842) 24½ inches.

Spines all more or less flattened except behind the pectorals, where they are round; in about 18 series between nostrils and dorsal fin. First spine behind nostril, 2¼ in pectoral; shorter and stronger spines in front of dorsal, becoming longer again on tail; spines behind pectoral about as long as that fin.

Color, in spirits, purplish dusky above and on sides; belly light; back, sides, and fins with small dark spots, much more numerous than the spines; lips purplish brown with small dark spots.

A specimen (28267) from Mazatlan, $10\frac{1}{2}$ inches in length, differs in the following particulars: spines behind pectorals somewhat shorter, and all the spines more keeled; more spines on interorbital space; color darker above and the spots larger, scarcely more numerous than the spines.

One large specimen.

27.—PLATOPHRYS MANCUS (Broussonet) Smith & Swain.

Pleuronectes mancus Brouss. Ichth. description on figure, 1782 (Pacific). (Not *Rhomboidichthys mancus* Gthr.)

Habitat.—Pacific Ocean.

Head $3\frac{2}{3}$ ($4\frac{1}{4}$); depth 2 ($2\frac{1}{4}$); length (26838) 16 inches. D. 98; A. 78; scales about 95; Br. 6.

Body elliptical, the profile continuous with the dorsal curve, the snout projecting and the nasal bones forming a prominent knob; ventral outline a regular and gentle curve from gill-opening to caudal peduncle; lower jaw produced beyond upper, a pointed knob below and behind symphysis.

Head not much higher than long; mouth moderately oblique, small for a large mouthed species, the maxillary reaching little beyond anterior rim of eye, $2\frac{2}{3}$ in head. Pointed teeth in two series in each jaw, those of the inner and larger series becoming somewhat smaller posteriorly, the teeth on maxillary not extending as far back on the blind side; the outer series of few small teeth. Eyes small, the lower orbit 7 in head, the upper one slightly smaller; the lower orbit wholly in advance of the upper; the concave interorbital space $2\frac{5}{8}$ in head; the orbital rim a sharp ridge without distinct knobs.

Nostrils apparently wanting. Cheeks and opercles more or less scaly. Gill-rakers rather long, the length of longest 2 in upper orbit; 10 on lower part of arch, none above.

Scales cycloid, not deciduous, similar on both sides, but without accessory scales on the blind side.

Dorsal fin beginning on the snout, the first ray on the blind side, about as long as superior orbit, the rays gradually increasing in height to the posterior third of the fin, where they are $2\frac{2}{3}$ in head; thence rapidly decreasing to end of fin. Anal similar, its highest rays not opposite the highest part of dorsal, but a little farther back. Pectoral of eyed side falcate, the second ray one-fourth longer than head, produced into a filament; pectoral of blind side $1\frac{5}{8}$ in head. Ventrals moderate, when depressed reaching past front of anal. Caudal bluntly pointed, $1\frac{3}{8}$ in head.

Coloration in spirits: everywhere mottled with gray and brown; the fins (except pectoral on blind side) marked with same colors, but the spots more nearly round and less complicated. On the colored side there is a large, irregular blackish blotch behind pectoral, a round black spot on the lateral line half way between head and caudal fin. About

twelve blackish spots at regular intervals on dorsal fin, six or seven similar ones on anal. The ventral on the eyed side is marked like the anal. The colors and spots extend over on the blind side on the nasal bones, premaxillary, chin, and interopercle. The skinny flap in the mouth between the teeth and vomer is also spotted.

One specimen (26838), 16 inches in length.

This species, well described and figured by Broussonet in 1782, seems not to have been seen by any succeeding author. The specific name "*maneus*" has been wrongly transferred by Dr. Günther to the very different *Platophrys heterophthalmus* of the Mediterranean.

INDIANA UNIVERSITY, April 4, 1882.

DESCRIPTION OF A NEW CYPRINODONT (*ZYGONECTES INURUS*),
FROM SOUTHERN ILLINOIS.

By DAVID S. JORDAN and CHARLES H. GILBERT.

Zygonectes inurus sp. nov. (29666.)

Zygonectes melanops Jordan, Bull. Ills. Lab. Nat. Hist. No. 2, 52: not *Haplochilus melanops* Cope, = *Gambusia holbrooki* (Agassiz).

Zygonectes melanops Jord. & Gilb. Syn. Fish. N. A. 340.

Closely allied to *Zygonectes dispar* Agassiz.

Body rather short and high, compressed, the back considerably arched; caudal peduncle deep and compressed; head small, much narrowed forwards; interorbital space twice as wide as diameter of orbit; eye rather large, $3\frac{1}{2}$ times in head—as long as snout, which equals mandible; teeth small, in villiform bands, the outer series not at all enlarged; height of caudal peduncle at vertical behind anal fin $1\frac{1}{4}$ in head; at base of caudal $1\frac{1}{2}$ in head.

Dorsal small, posteriorly inserted; distance from its origin to snout twice that to base of caudal; length of base of fin $2\frac{3}{4}$ in head; the vertical from origin of dorsal passes through middle of anal base. Distance from origin of anal to base of caudal $1\frac{1}{2}$ times in that to tip of snout; length of anal base equalling one-half that of head; its longest ray two-thirds head; pectoral broad, reaching beyond base of ventrals, $1\frac{1}{4}$ in head.

Scales in regular series, the humeral scale not enlarged; 29 oblique series of scales from scapula to base of caudal fin; 9 in an oblique series from vent to middle of back.

Head $3\frac{3}{8}$ in length; depth $3\frac{3}{8}$. D. 6; A. 9; scales 29.9.

Color: Brownish, light on belly and sides of head; sides and back with a few scattered dark brown specks, these forming inconspicuous series behind pectorals; caudal peduncle punctate with brown specks below; opercles silvery; a very decided, well-defined, brownish-black