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FISHES FROM AUSTRALIA AND LORD HOWE ISLAND.

No. 2.

By

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(Plates xiv-xvi.)

The Fishes of Lord Howe Island are remarkable both for their large number of species and for their diversity. Many are tropical species and inhabitants of the coral-reef, which, though situated so far south, is very similar to the reefs of the Coral Sea. Others are pelagic forms, and some apparently come from the deep seas which encompass the island. Myctophids and Gempyllids are not infrequently cast up on the various beaches in considerable numbers, while such rarities as *Xenogramma, Argyropelecus, Tetragonurus, Zenopsis,* and *Cubiceps* have been made known from specimens found stranded on the sand. Some of these appear to be inhabitants of deep water, and the reason for their occurrence at the surface is not apparent. Perhaps some cold-water current is diverted from its course by unusual weather conditions, and brings the fishes from their usual environment to the surface where they become helpless under reduced pressure and higher temperatures. Whatever be the cause, the fact remains that the beaches of Lord Howe Island provide a host of interesting fishes so far unknown from any other source.

A number of these were secured for the Trustees of the Australian Museum by the late Mrs. T. Nicholls, and still others are coming to hand through the interest of Mr. R. Baxter, of which several are dealt with in the following paper.

Mr. E. H. Rainford, of Bowen, Queensland, continues to forward exceedingly rich collections from the neighbourhood of Port Denison. A remarkable new genus and species herein described is called *Rainfordia* as some small acknowledgment of his greatly valued help in making the fishes of that region known.

Family Gonostomidæ.

Maurolicus *Cocco.*

Maurolicus Cocco, Nuovi Ann. Sci. Nat. ii, 1838, p. 32 (*amethystino-punctatus*).

Triarcus Waite, Tr. N. Zeal. Inst. xlii, 1910, p. 387 (*australis*).

Synonymy.—When examining specimens of *Maurolicus australis* Hector, Waite, by some strange circumstance, counted only three instead of four gill-arches. He therefore removed the species from the family Gonostomidæ under a new generic name *Triarcus*. I am indebted to Mr. G. Archey, of the Canterbury Museum, for the loan of the two specimens studied by Waite, and for the privilege of re-examining them. I find four gill-arches as is normal in *Maurolicus*, though the outer arch is removed from one side of the smaller specimen, and all other characters similar to those of Cocco's genus.

MAUROLICUS PENNANTI AUSTRALIS *Hector*

(Plate xiv; fig. 1.)

Maurolicus australis Hector, Tr. N. Zeal. Inst. vii, 1875, p. 250, pl. xi. *Id.* Hutton, Index Faun. N. Zeal., 1904, p. 50.

Gonostoma australis Hutton, Tr. N. Zeal. Inst. viii, 1876, p. 215.

Maurolicus amethystinopunctatus Gunther, Ann. Mag. Nat. Hist. (4) xvii, 1876, p. 399, and Tr. N. Zeal. Inst. ix, 1877, p. 472.

Triarcus australis Waite, Tr. N. Zeal. Inst. xlii, 1910, p. 386, pl. xxxviii, fig. 1.

D.10-11; A.23; P.17-18; V.7; C.19. Depth, 4.6-4.7 in the length to the base of the tail; head, 3.2-3.7 in the same. Eye, 2.9-3.0 in the head, and longer than the snout.

Photophores.—Preorbital 1; Postorbital 1; preopercular 1; subopercular 1. Branchiostegals 6. Jugular 6. Lateral 9. Thoracic 12. Ventral 6. Anal 1, 15-17. Caudal 8-9. Body with large cycloid scales, most of which are missing.

Dorsal fin originating nearer the base of the tail than to the front margin of the eye. Ventrals inserted beneath the anterior dorsal ray. Anal originating behind the vertical of the last dorsal ray; the rays of its anterior third are longer and stronger than those of the remainder, but apparently the fin is not divided into two portions and its rays are evenly spaced. The dorsal and anal rays are so fragile and imperfect that the correct outline of these fins cannot be satisfactorily determined. Adipose dorsal long and opposite the hinder half of the anal. Pectorals reaching about half or more than half the distance between their bases and the ventrals.

Colour.—Dark above, silver on the sides, the junction of the two colours sharply defined.

Specimens examined.—These notes are based upon two examples from New Zealand, and one from Lord Howe Island. The two former are the specimens which were examined by Waite, who described and figured the larger example as *Triarcus australis*. He counted three instead of four gill-arches, and his statement of the number of

fin-rays does not agree with what I observe. The rays are difficult to see with a good Zeiss binocular microscope, however, so the discrepancy is easily accounted for. The accompanying figure is prepared from the smaller of the New Zealand specimens, which is in somewhat better condition than the other. The example from Lord Howe Island agrees in all details with the others.

Affinities.—The identity of *M. australis* and *M. amethystino-punctatus* (=*M. pennanti*) was suggested by Gunther in 1876. I have compared the New Zealand specimen with eight of *M. pennanti* from the Mediterranean and find no tangible differences between them. The dorsal fin is a little farther forward in *australis,* originating above the ventrals and terminating in advance of the vertical of the anterior anal ray. The general form also appears more slender than in *pennanti,* but the differences are so slight that they may well prove to be not even of subspecific value.

Localities.—Province of Canterbury, New Zealand. Two specimens, including the pleisotype of Waite's description and figure.

Blenkinthorpe Beach, Lord Howe Island; collected by R. Baxter, 1922. One specimen.

VINCIGUERRIA RAOULENSIS *Waite.*

Gonostoma raoulensis Waite, Trans. N.Z. Inst. xlii, 1910, p. 373, pl. xxxv, fig. 1.

This is a species of *Vinciguerria,* and is perhaps not distinct from *V. lucetia* Garman (Mem. Mus. Comp. Zool. xxiv, 1899, p. 242, pl. j, fig. 2). Gilbert (Mem. Mus. Comp. Zool. xxvi. 6, 1908, p. 237) suggests the identity of *V. lucetia* of the Pacific with the typical *V. attenuata* from the Atlantic.

Locality.—Raoul Island, Kermadec Islands.

Family MYCTOPHIDÆ.

LAMPANYCTUS TOWNSENDI, *Eig. & Eig.*

(Plate xiv; fig. 2.)

Myctophum townsendi Eigenmann and Eigenmann, W. American Scientist, 1889, p. 125.

Lampanyctus townsendi Gilbert, Mem. Mus. Comp. Zool. xxvi. 6, 1908, p. 230, pl. iv, and Mem. Carnegie Mus. vi. 2, 1913, p. 98.
D.14; A.15; P.14; V.8; C.19. L. lat. 37.

Depth (10.5 mm.) 5.04 in the length to the hypural joint (53). Head (17.25) 3.07 in the same. Eye (5.25) 3.2 in the head; snout (3) 1.7, and interorbital width (4.75) 1.1 in the eye. Caudal peduncle (5) 3.4, fifth dorsal ray (10.5) 1.6, and pectoral (15.5?) 1.1? in the head.

Snout formed by a convex crest. Supra-ocular margins sharp but without spines directed forward. Nostrils close together, the anterior small and round, the posterior a larger vertical slit. Preopercular margin oblique. A narrow band of villiform teeth in each jaw.

Origin of the dorsal fin much nearer the tip of the snout than the base of the tail, and a trifle behind the insertion of the ventrals; the length of its base is equal to the distance between its posterior ray and the hinder base of the adipose fin and is a trifle longer than that of the anal. Anal commencing beneath the posterior ray of the dorsal and terminating below the adipose dorsal. Ventral reaching the first anal ray, and the pectoral a trifle farther. Caudal forked. Body covered with cycloid scales; those of the lateral line not enlarged.

Photophores.—A minute preorbital before the eye and just below the level of the nostrils; none on the cheeks. Two on the preoperculum, the upper well above and the lower well below the level of the maxillary. The suprapectoral is just below the lateral line. Upper infrapectoral in front of and above the middle of the pectoral base, the lower somewhat in advance of it. Five thoracics, the first widely separated from the second, which, with the third and fourth, forms a straight row near the ventral surface; the fifth is placed just before the first ventral ray. Supraventral midway between the ventral fin and the lateral line. Five pairs of ventrals; the first close together immediately behind the inner ventral ray, the second and third more widely separate, the fourth close together again, and the fifth spaced, though less so than the third. Three supra-anals in an oblique row; the first slightly more forward than the others, the middle one is nearer the lower than the upper, which touches the lateral line. Six or seven antero-anals in an oblique row; the first slightly lower and the last somewhat higher than the others. Two postero-laterals, the upper touching the lateral line below the adipose dorsal and the lower obliquely in advance of it. Five postero-anals, separated by an interspace from the antero-anals and from the pre-caudals. Three pre-caudals in an oblique row above the lower caudal spines and one at the end of the lateral line.

Luminous scales.—The upper surface of the caudal peduncle, in advance of and including the caudal spines, the whole lower surface, and the base of the anal fin are covered by white glandular luminous organs. Some scales on the back between the nape and the dorsal fin, before the adipose dorsal, and on the ventral surface between the thorax and the vent, are luminous together with some above and below the pectorals and at the base of the dorsal fin.

Colour.—Black, the photophores appearing as silver discs surrounded with black rings. The articulations of the dorsal, anal, and caudal rays are marked with grey.

Described and figured from a specimen, 65 mm. long, which was found stranded with many others on a beach at Lord Howe Island. It is largely denuded of scales, but the distribution of the luminous scales has been determined with the aid of other specimens.

Identity.—The specimen here described and figured agrees well with Gilbert's description and figure of *L. townsendi* from Ua Huka Island in the Marquesas Group.

Localities.—Lord Howe Island, stranded on a beach; collected by R. Baxter, 1922. Sunday Island, Kermadec Group; collected by R. C. Bell, 1909-1910.

Lampanyctus guntheri (*Goode and Bean?*) *Waite.*

Lampanyctus guntheri Waite, Trans. N. Zeal. Inst. xlii, 1910, p .372. (Probably not of Goode & Bean.)

Identity.—Eight specimens which were collected at the Kermadec Islands in 1908 by Mr. W. R. Oliver, were identified as *L. guntheri* by Waite, but if his description of them be correct, they cannot be that species. He described the dorsal fin as arising midway between the front margin of the eye and the base of the caudal, which is much farther forward than in *L. guntheri;* also, he counted three opercular and only one anterolateral photophore, instead of two opercular and two anterolaterals.

Mr. G. Archey, Assistant Curator of the Canterbury Museum, informs me that he is unable to find Waite's specimens in the collection under his charge. There are seven other *Lampanyctus,* however, collected at the Kermadecs by Mr. R. C. Bell in 1909-10, a year or so later than those described by Waite. They have been lent to me for examination, and I find them similar in all details to the Lord Howe example described and figured above as *L. townsendi.* Believing Waite's description to be incorrect, I suggest that his specimens were the same species, as it is unlikely they were correctly identified as *L. guntheri.*

Family Sternoptichidæ.

Argyropelecus Cocco.

Argyropelecus Cocco, Arch. R. Acad. Peloritano, 1829, p. 146 (*hemigymnus*).

Sternoptychides Ogilby, Proc. Linn. Soc. N.S.Wales (2) iii, 1888, p. 1313 (*amabilis*).

Though *Sternoptychides amabilis* differs considerably in general appearance from *Argyropelecus hemigymnus,* species intermediate in form have been described which prove *Sternoptychides* to be synonymous with *Argyropelecus.* Ogilby relied upon the dentition of *S. amabilis* to maintain his genus, but it is apparently similar to that of *A. caninus,* and is not essentially different from that of *A. hemigymnus.*

ARGYROPELECUS AMABILIS Ogilby.

(Plate xiv; fig. 3.)

Sternoptychides amabilis Ogilby, Proc. Linn. Soc. N.S.Wales (2) iii, 1888, p. 1313.

D.vii/9; A.?; P.10; V.?; C.17. About 34 muscle-bands between the shoulder and the base of the caudal fin.

Depth (32 mm.) 1.3 in the length to the hypural joint (42). Length of head (13) 3.2 in the same. Eye (5.8) 2.2 in the head; snout (3.5) 1.7 in the eye.

Interorbital space very narrow, with a crest on each side which commences above the nostril and converges towards the middle line till above the hinder portion of the eye, whence it again diverges to the nape; it terminates in a small occipital spine, and its posterior margin is feebly serrate. Another spine is present near the back, above the suspension of the shoulder-girdle. Nostrils large, close together before the middle of the eye. Eye apparently directed obliquely upward within the orbit. Mouth very oblique, the greater part of the margin of the upper jaw formed by the maxillary; this last is very thin and broad, and rather truncate posteriorly. Premaxillary teeth apparently in a single row, those near the symphysis larger than the others. A single row of curved teeth on the maxillary, of which the anterior ones are directed backward and the posterior forward. Mandibular teeth in two rows anteriorly and in one on the sides; several of the lateral teeth are enlarged and one is considerably longer than the others. Palate apparently toothless. Preopercular angle produced as a small spine. Gillrakers slender.

Photophores.—A large photophore is present on the preorbital immediately below the nostrils, and another behind the eye; one behind the end of the maxilla, and one behind the angle of the preoperculum; six form a row on the gill-membranes between the branchiostegal rays. Six form a curved row on each side of the isthmus, the hinder ones running upwards towards the base of the pectoral. Twelve on each side of the abdomen between the thorax and the ventral fin, and eight above them on the sides of which the two anterior are on a much higher level than the rest. Four pre-anal, six supra-anal, and four precaudal photophores.

The dorsal structure formed by the neural spines is supported by seven rays with serrulate borders, and the margin of the membrane is also finely serrate; the two posterior rays are close together. The origin of the dorsal fin is midway between the tip of the snout and the base of the caudal fin, and the length of its base is a little greater than the diameter of the eye; the rays are much broken, but are clearly nine in number. Adipose dorsal apparently consisting of a long low membrane. Anal fin very imperfect but apparently divided into two sections. Seven rays remain to represent the anterior half, of which the last is below the hinder margin of the second supra-anal photophore. Pectorals elongate, almost reaching the vertical of the ventrals. Ventrals scarcely discernible. Caudal forked.

The margin of the abdomen is finely serrated, the serræ being largest on each side of the vent. A series of minute spinules is also present on each side of the lower margin of the caudal peduncle.

Colour.—The greater part of the sides of the head and body is silver; the upper portion of the head and an area along the back, dark brown.

Described and figured from a specimen 42 mm. long without the tail. This is the best of the three typical examples upon which Ogilby based his genus and species *Sternoptychides amabilis*. Its caudal peduncle is damaged, so the precaudal photophores and spines have been copied from one of the others. All three are in such a bad state of preservation that they cannot be handled, and their examination is a matter of much difficulty. I am indebted to the Trustees of the Macleay Museum for the privilege of describing and figuring these specimens, which are the only known representatives of the species.

Locality.—Lord Howe Island.

Family RAINFORDIIDÆ *fam. nov.*

Genus RAINFORDIA *gen. nov.*

Body subcylindrical anteriorly, compressed posteriorly; head much depressed. Scales small, ctenoid; they cover the preorbital, maxilla and mandible and extend forward to the nostrils on the upper portion of the head, but leave the frontal bones exposed. Scales largely cover the soft dorsal, anal and caudal fins. Lateral line curved anteriorly, and reaching the base of the tail. Mouth large, mandible protruding; maxillary without a supplemental bone. Villiform teeth on both jaws, vomer and palatines. Preopercle with blunt teeth, operculum, subopercular and interoperculum with strong projecting spines. Pseudobranchiæ present. Gill-membranes free from the isthmus. Upper portion of the operculum attached to the shoulder-girdle by membrane. Gill-rakers rather short, about ten on the lower limb of the first gill-arch. Branchiostegals seven. Two dorsal fins widely separated, the first with about four weak spines; second dorsal with a weak spine and about nine rays. Anal with two slender spines and eight rays.

Genotype.—R. opercularis sp. nov.

Affinities.—This aberrant genus appears to be nearest to *Grammistes,* its small scales extending over the fins, weak anal spines, and the attachment of the upper part of the operculum to the shoulder girdle by membrane being similar to those characters in that genus. Its subcylindrical form, spinate subopercular, and depressed and partially naked head readily distinguish it from any other genus known to me. I therefore follow the advice of Professor D. S. Jordan, to whom I have submitted sketches and notes, and establish a new family for it to be ranged near the *Grammistiidæ.*

This genus is named after Mr. E. H. Rainford, whose untiring activities as a collector, have greatly enriched the Australian Museum with many rare finds from the coast of Queensland.

RAINFORDIA OPERCULARIS *sp. nov.*

(Plate xvi; fig. 3.)

D.iv, i/9; A.ii/8; P.17; V.i/5; C.17. L.Lat. 46; about 80 rows of scales between the origin of the lateral line and the hypural joint; thirteen scales between the base of the first dorsal spine and the lateral line and thirty-two more to the vent.

Depth (18 mm.) 5.7 in the length to the hypural joint (103); head (38) 2.7 in the same. Eye (8.5) 4.4 in the head, and 1.2 in the interorbital space (10.3), which is 3.6 in the head. Snout (10.3) a little longer than the eye. Second dorsal spine (14) 2.7, seventh dorsal ray (18) 2.1, and pectoral (21) 1.8 in the head. Depth of caudal peduncle (14) 1.5 in its length (21).

Head flat above with a large scaleless area exposing the frontal bones. It is almost completely covered with small cycloid scales, which extend forward above the eye to the level of the posterior nostril; they are also present beneath the eye, on the maxillary, mandible and all the opercles. Anterior nostril tubular, the posterior a simple opening above the antero-superior angle of the eye. Maxillary extending backward to below the posterior third of the eye, its lower angle produced into a broad, flat spine. Mandible projecting well beyond the upper jaw. Preoperculum broadly rounded with several blunt teeth along its edge. Operculum and suboperculum with nine sharp spines along their margins which are largest above. Interoperculum with two small spines at its angle. Each jaw with a broad band of villiform teeth, which is widest anteriorly. Vomer with a curved band of minute teeth of which the hinder ones are largest. A narrow band of very small teeth on each palatine, which is expanded anteriorly. Tongue toothless. Gill-openings wide, the membranes united below the middle of the eye across the isthmus. Ten free gill-rakers on the lower limb of the first gill-arch and about five tubercles anteriorly; the posterior is longest, and is equal to about one-third of the width of the eye.

Body but little narrower than deep behind the pectorals, but strongly compressed posteriorly. It is entirely covered with small scales which are mostly ctenoid, but are cycloid near the head. The lateral line consists of simple spaced tubules; it curves upward slightly above the pectoral and then gradually descends to the middle of the caudal peduncle.

First dorsal commencing well behind the pectorals; its spines are weak and the second is longest. Second dorsal short and separated from the first by a wide interspace; its spine is very slender and its lower half is largely hidden by scales. Anal similar to and almost

opposite the dorsal; its two small and slender spines are completely hidden by scales. Pectorals rounded. Ventral spine weak, inserted a little in advance of the pectoral. Caudal subtruncate with its angles rounded.

Colour.—General colour dark orange with six lilac, black-edged stripes along each side, as illustrated in the accompanying figure; the ground colour is darkest on the middle of the sides, but is lighter yellow on the dorsal and ventral surfaces. Dorsal spines yellowish, the membrane transparent. Second dorsal dark basally, with a broad oblique yellow infra-marginal band from the first to the tip of the seventh ray, and a narrow whitish edge; succeeding rays reddish brown. Anal similar to the dorsal. Pectorals and ventrals pinkish yellow. A black, blue-edged ocellus at the base of the caudal. Caudal brown; its outer angles with white borders.

Described and figured from a specimen 124 mm. long.

Locality.—Middle Island, Edgecumbe Bay, Queensland; collected by Mr. E. H. Rainford, 1922.

Family Labracoglossidæ.

Evistus huttonii *Gunther.*

Platystethus huttonii Gunther, Ann. Mag. Nat. Hist. (4) xvii, 1876, p. 395, and Challenger Rept., Zool. xxxi, 1889, p. 13, pl. ii, figs. h-i.

An example 190 mm. long, differs from Gunther's description and figure in having more numerous rays in the dorsal and anal fins, but is so similar in all other details that it is probably not distinct from *E. huttonii.*

D.xvi/43; A.iii/35; V.i/5; P.18; C.15. About 103 tube-bearing scales on the lateral line between its origin and the hypural joint; about 10 scales between the back and the lateral line below the middle of the first dorsal.

Locality.—Tamar River Heads, Tasmania; received from the Victoria Museum, Launceston, 1903. This rare and interesting fish has hitherto been known only from New Zealand waters.

Family Blenniidæ (Salariinæ).

Ecsenius *gen. nov.*

General form of *Salarias,* but differing in the dentition. A curved row of fine, compressed, and moveable teeth in each jaw anteriorly; on each side of the mandible is a lateral row of six or seven small cardiform teeth extending backward along the elevated ridge of the jaw. No teeth on the palate, and no canines. Body naked; lateral line developed anteriorly. Dorsal fin deeply notched between the spinous and rayed portions; the rays of all the fins are simple. Gill-openings very wide, the membranes united across but free from the isthmus.

Type.—Ecsenius mandibularis sp. nov.

The Australian genera of the Salariinæ may be distinguished as follows:—

A. A row of cirri crossing the neck to the opercular lobes. *Cirripectes.*

AA. No such row of cirri, but a single tentacle may be present on each side of the neck.

B. Each side of mandible either toothless or with a single canine.

C. Sides of mandible toothless. *Salarias.*

CC. A canine on each side of the mandible. subg. *Alticus.*

BB. Each side of mandible with a row of about six small teeth; no canines. *Ecsenius.*

Ecsenius mandibularis *sp. nov.*

(Plate xv; figs. 1-2.)

D.xii/14; A.ii/17; P.13; V.2; C.13.

Depth (10.5 mm.) 4.7 in the length to the hypural joint (50); head (12) 4.1 in the same. Eye (4) 3.0 in the head. Fifth dorsal spine (10) 1.2, sixth dorsal ray (11) 1.09, twelfth anal ray (6.5) 1.8 in the head.

Anterior profile of the head almost vertical, the forehead projecting slightly beyond the jaws. A very low obtuse ridge on the occiput and nape. Maxillary reaching backward a trifle beyond the vertical of the hinder margin of the eye. Lips with entire margins. A simple tentacle at each posterior nostril; ocular and nuchal tentacles wanting. Head with a series of simple pores around the eyes, across the nape, around the preoperculum and on each side of the mandibles. Anterior mandibular row of teeth about half as long as that of the upper jaw and much less curved; the teeth are flattened, with rounded tips. The two rows of lateral mandibular teeth are subparallel, and the teeth are directed inwards towards each other (Fig. 2b).

Dorsal fin originating above the end of the operculum and very deeply notched between the spinous and soft portions; the anterior portion is a little shorter than the posterior. The fifth spine is longest, and a trifle shorter than the longest rays, and the twelfth is very short. Dorsal rays simple, the median ones longest. Anal rays simple, their tips with thickened dermal lobes anteriorly. Pectoral rounded, its rays simple; the fifth lowest longest and the four beneath it somewhat thickened. Ventral rays simple, inserted in advance of the origin of the dorsal. Caudal rays simple, some of them irregularly produced.

Colour-marking.—Light brown in formalin, with a bluish tinge on the sides. Two rows of brown spots which are round and spaced; the upper row near the back, the lower along the middle of the sides to the base of the tail. Fins almost without marking, but the thickened tips of the anal rays are distinctly lighter than the rest of the fin.

Described and figured from a male specimen, 64 mm. long.

Variation.—The female (Fig. 2a) differs from the male in the form of its fins and in having no occipital crest. The fin-rays are all shorter, and those of the anal lack the anterior dermal lobes. A series of twenty specimens shows that the fin-rays vary as follows:—D.xii/13-16; A.i-ii/16-18; P. 13; C.12-13; V.2, a minute third ray sometimes present.

Locality.—Twenty-three specimens, 46-64 mm. long, were collected by myself on the reef at Masthead Island, off Port Curtis, Queensland.

Salaris *Cuvier.*

Key to Australian species..—

A. Dorsal fin not or scarcely notched between the spines and rays.
  B. No occipital crest.
    C. Nuchal tentacles large, fringed; body and fins variegated. *fasciatus.*
    CC. No nuchal tentacles; body and fins nearly black. *fuscus.*
  BB. An occipital crest. *spaldingi.*
AA. Dorsal fin incised between the spines and rays.
    D. Mandibular canines large.
      E. 21 dorsal and 23 anal rays. *belemnites.*
      EE. 17 dorsal and 19 anal rays. *irroratus.*
    DD. Mandibular canine small or absent.
      F. Margin of upper lip crenulate.
        G. Ocular tentacles simple; about 18 dorsal and 19 anal rays; small mandibular canines present. *crenulatus.*
        GG. Ocular tentacles fringed; 19-20 dorsal and 19-20 anal rays; no mandibular canines. *meleagris.*
      FF. Margin of upper lip entire.
        H. Ocular tentacles simple; 19-20 dorsal rays. *rivulatus.*
        (*S. mulleri* Klunzinger apparently enters this section.)
        HH. Ocular tentacles branched; 21-23 dorsal rays.
        (*S. kingii* Cuv. & Val. apparently enters this section.)
          I. Body with thin dark longitudinal lines; caudal plain. *lineatus.*
          II. Body without longitudinal lines.
            J. No occipital crest; soft dorsal and caudal without dark borders. *dussumieri.*
            JJ. An occipital crest; soft dorsal and caudal with dark borders. *geminatus.*

Salarias fasciatus *Bloch.*

(Plate xv; fig. 3.)

Salarias fasciatus (Bloch) McCulloch & McNeill, Rec. Austr. Mus. xii, 2, 1918, p. 10—references and synonymy.

The accompanying figure represents a specimen, 69 mm. long, from a pool in the reef at Two Isles, off Cape Bedford, Queensland. It was collected by Messrs. C. Hedley and E. A. Briggs in July, 1916.

SALARIAS CRENULATUS *Weber*.

(Plate xvi; figs. 1-2.)

Salarias crenulatus Weber, Notes Leyden Mus. xxxi, 1909, p. 144, and Siboga Exped. lvii, Fische, 1913, p. 532, fig. 112.

D.xii/18; A.19; P.14; V.2; C.11.

Total length 79 mm. Depth (13 mm.) 4.8 in the length to the hypural joint (63); head (12.5) 5.04 in the same. Eye (4) 3.1 in the head. Ninth dorsal spine (11.25) 1.1 in the head; fifteenth dorsal ray (13) 0.04, and third anal ray (21) 0.6 longer than the head.

Orbit forming the anterior profile of the head and projecting beyond the jaws. A very low obtuse ridge on the occiput and nape. Maxillary reaching backward to below the hinder margin of the eye. Upper lip fringed with a row of short tentacles. A single row of fine moveable teeth in each jaw and a minute canine on each side of the mandible. Head with a series of simple pores around the eyes, across the nape, around the preoperculum and on each side of the mandible. A simple tentacle before and another behind the anterior nostril; Another longer one above the eye and a short one on each side of the neck.

Dorsal fin originating above the operculum and distinctly notched between the spinous and soft portions; the anterior portion is a little shorter than the posterior. The median spines are sub-equal in length but are shorter than the longest rays; the last is much shorter than the penultimate. Dorsal rays simple, increasing slightly in length to about the fifteenth; the last united by membrane to the base of the caudal. Anal rays simple, with the membrane deeply incised between each; the second to fifth are greatly produced and feather-like, and the last is connected by membrane to the peduncle. Pectoral rounded, its rays simple, the sixth lowest longest. Ventrals of two simple rays, inserted beneath the origin of the dorsal. Caudal slightly rounded, its rays bifurcate.

Colour-marking.—Light yellowish-brown in formalin with eight dusky cross-bands, which may be very indistinct. The sides of the body beneath the spinous dorsal are mottled with numerous rounded brown spots, which give place to dark bluish spots below the soft dorsal. A dark bar from the eye crosses the preorbital to the chin, and a dark area on the cheeks forms a cross-band on the throat. Upper portion of the opercular margin bluish-black. Dorsal fin with indefinite oblique dark lines. Pectoral with regular rows of brown spots on the rays. Median caudal rays dusky.

Described and figured from a male example, 79 mm. long.

Variation.—A female (Fig. 2) differs from the male in having the occipital ridge less pronounced, and none of the anal rays produced. In twelve other specimens, there are xii/18-19 dorsal, and 18-19 anal rays. Some are much lighter in colour than the others, and their markings are not often so well defined as in the specimen figured.

Identity.—The specimens here described and figured are evidently *S. crenulatus* Weber, though they have 18-19 instead of 16-17 dorsal rays, and exhibit some small colour differences. The white lines on the head, which are described by Weber, are not evident in any of my specimens, and the cross-bands of the body are situated upon the upper instead of the lower half. There are no spots on the caudal peduncle, and no rows of spots on the caudal fin. All these are small differences, however, and probably are due in part to the fact that my specimens are preserved in formalin instead of alcohol. I therefore believe them to be correctly identified as *S. crenulatus.*

Locality.—Coral-reef at Masthead Island, off Port Curtis, Queensland; collected by A. R. McCulloch, September, 1904.

Salarias rivulatus *Rüppell.*

Salarias rivulatus (Rüppell) McCulloch & McNeill, Rec. Austr. Mus. xii, 2, 1918, p. 15, pl. iii, figs. 3-4.

Salarias atratus Macleay, Proc. Linn. Soc. N.S. Wales vii, 1882, p. 361.

Synonymy.—*S. atratus* is represented in the Macleay Museum by two specimens, 55 and 81 mm. long from Port Moresby. They are accompanied by their original labels and are clearly typical specimens, though they differ from Macleay's brief description in having xiii/20 spines and rays in the dorsal fins, and ii/22 in the anal instead of D.xii/20 and A.19 respectively. Nasal, ocular and nuchal tentacles are present in each, and also an occipital crest. They are almost bleached, but traces of colour-marking are present on the body and fins which, together with all other characters, are similar to those of *S. rivulatus* as described and figured by McCulloch & McNeill (*loc. cit.*).

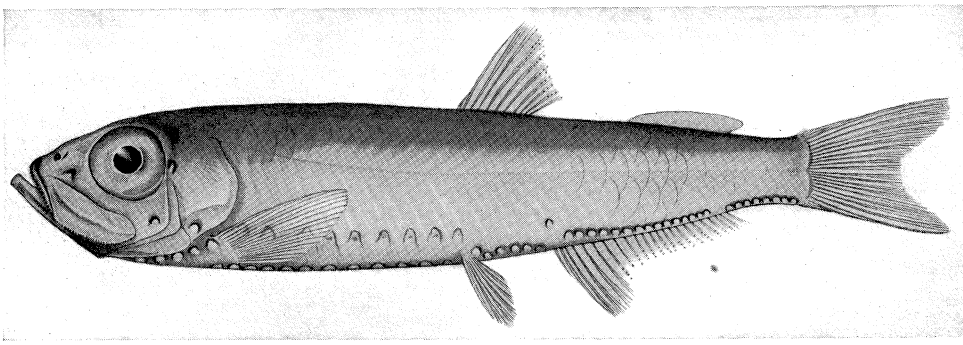
Locality.—Port Moresby, Papua; collected by Andrew Goldie, 1881.

EXPLANATION OF PLATE XIV.

Fig. 1. *Maurolicus pennanti australis* Hector. A specimen 54 mm. long, from the Province of Canterbury, New Zealand.

„ 2. *Lampanyctus townsendi* Eigen. and Eigen. A specimen 65 mm. long, from Lord Howe Island. The distribution of the luminous scales as here illustrated has been determined by the aid of other specimens from the same locality.

„ 3. *Argyropelecus amabilis* Ogilby. Lectotype of *Sternoptychides amabilis*, 42 mm. long, without the tail, from Lord Howe Island.



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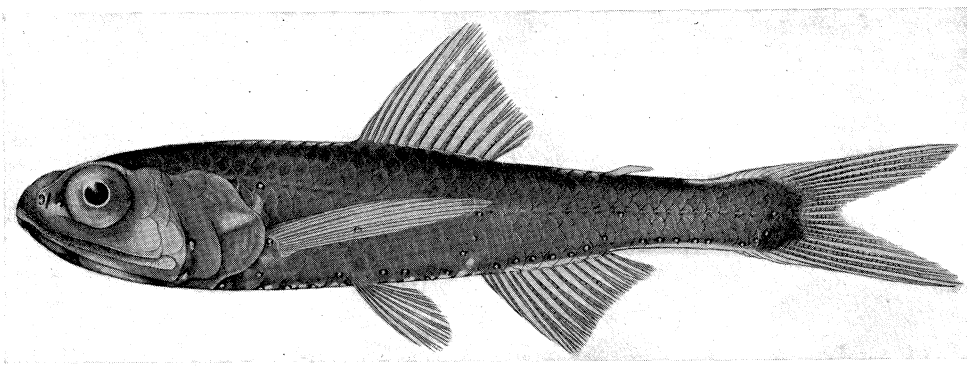

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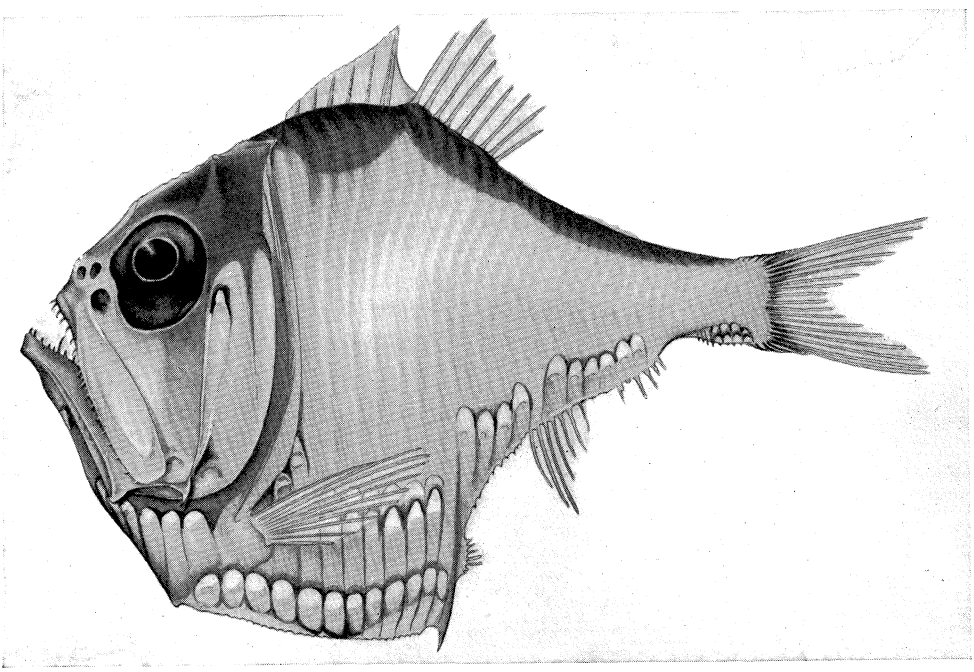

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A. R. McCULLOCH, del.

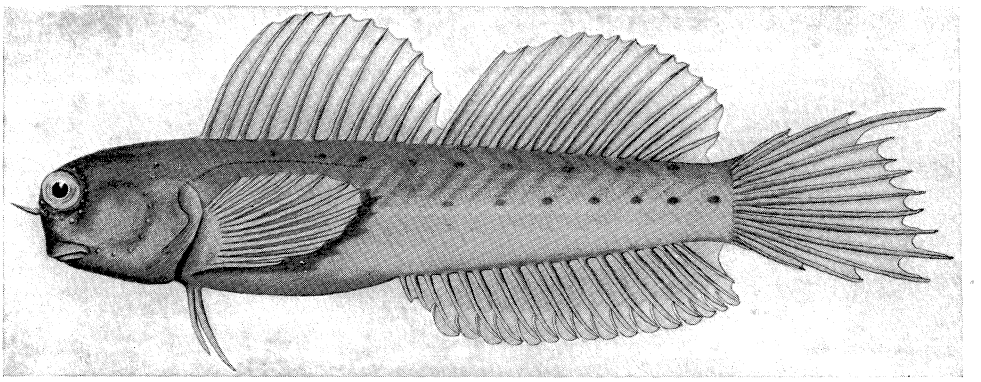
EXPLANATION OF PLATE XV.

Fig. 1. *Ecsenius mandibularis* McCulloch. Male, Holotype, 64 mm. long, from Masthead Island, off Port Curtis, Queensland.

„ 2a. *Ecsenius mandibularis* McCulloch. Female, Paratype, 53 mm. long, from Masthead Island, off Port Curtis, Queensland.

„ 2b. *Ecsenius mandibularis* McCulloch. Mandibular dentition, showing anterior and lateral teeth.

„ 3. *Salarias fasciatus* Bloch. A specimen 69 mm. long, from Two Isles, off Cape Bedford, Queensland.



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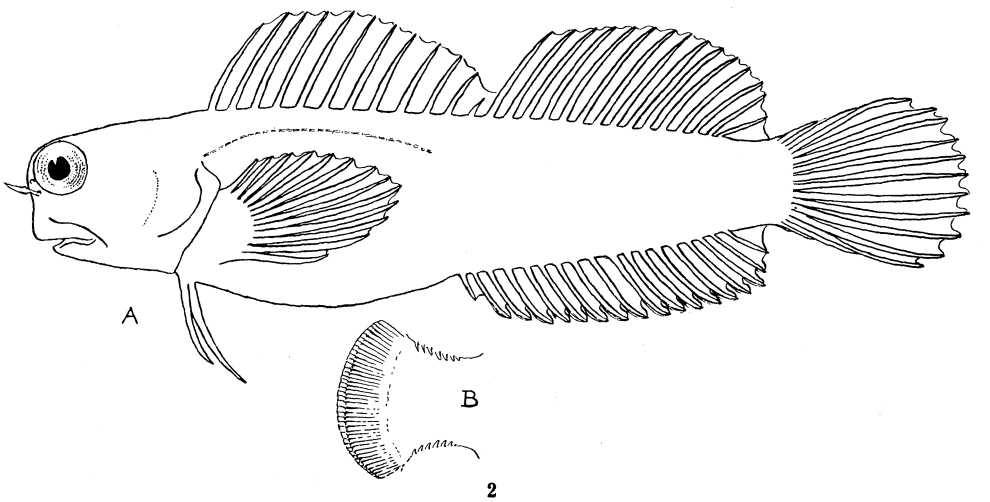

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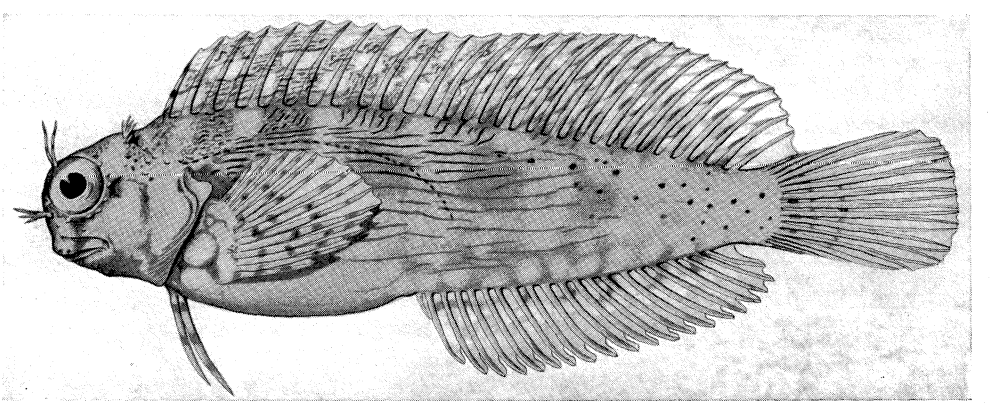

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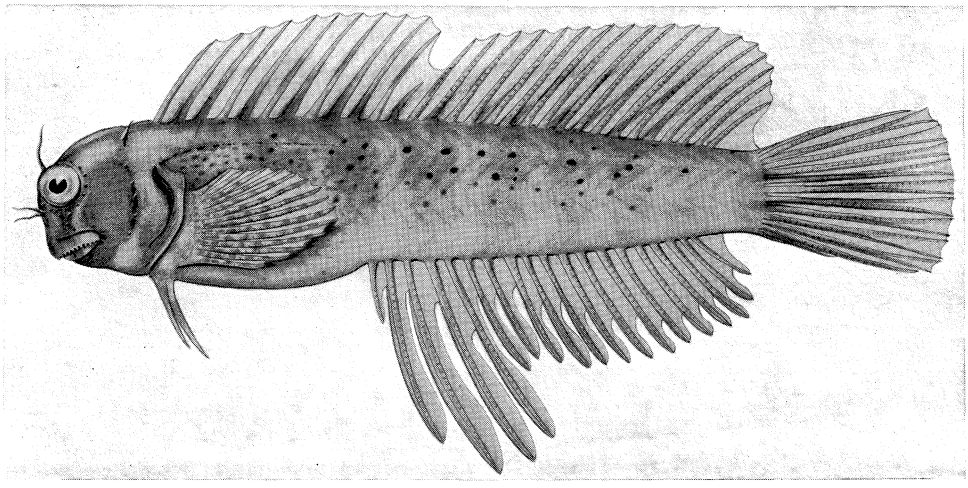
A. R. McCULLOCH and F. A. McNEILL, del.

EXPLANATION OF PLATE XVI.

Fig. 1. *Salarias crenulatus* Weber. A male, 79 mm. long, from Masthead Island, off Port Curtis, Queensland.

„ 2. *Salarias crenulatus,* Weber. A female, 66 mm. long, from Masthead Island, off Port Curtis, Queensland.

„ 3. *Rainfordia opercularis* McCulloch. Holotype, 124 mm. long, from Whitsunday Passage, Queensland.



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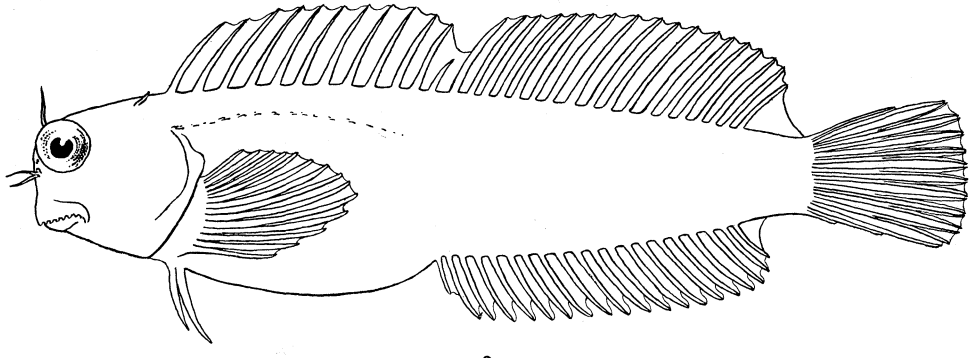

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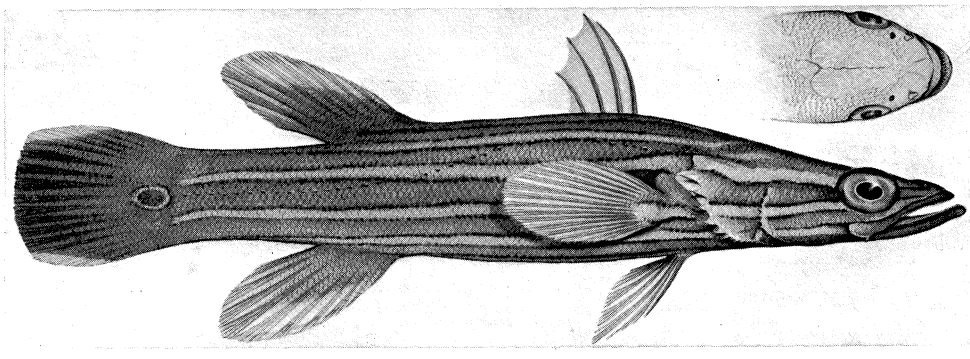

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