

AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

Whitley, Gilbert P., 1927. The fishes of Michaelmas Cay, north Queensland.
Records of the Australian Museum 16(1): 1–32, plate i. [7 October 1927].

doi:10.3853/j.0067-1975.16.1927.776

ISSN 0067-1975

Published by the Australian Museum, Sydney

nature culture **discover**

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6 College Street, Sydney NSW 2010, Australia



THE FISHES OF MICHAELMAS CAY, NORTH QUEENSLAND.

By

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(Plate i, figs. 1-6, and Figure 1.)

Michaelmas Cay is a small islet on the Great Barrier Reef, about twenty-seven miles due north-east of Cairns, North Queensland. It was chosen as a site for sinking a bore by the Great Barrier Reef Committee of Brisbane, and the late Charles Hedley superintended the work of geological investigation there. Mr. Tom Iredale, of the Australian Museum, and myself were the guests of Mr. Hedley on the islet from 15th May to 13th June, 1926, when we were able to make extensive zoological collections.

The kindness and many courtesies of Mr. Hedley cannot now be adequately acknowledged, since he passed away in Sydney soon after the completion of his work on Michaelmas Cay.

The members of the boring party, Messrs. Eric and Donald Duffield, T. Hughes, and M. T. Bloomer, and the cook, Mr. C. Horridge, greatly assisted in the formation of collections. Mr. A. J. Moran, proprietor of the Strand Hotel, Cairns, did much to make our stay there an enjoyable one.

COLLECTING.

Since an offshore wind of a dangerous character blew nearly all the time we spent on the islet, little line-fishing was done from the catamaran placed at our disposal by Mr. Hedley. Most of the collecting was done on the coral reef, which, however, was only exposed during our stay for about three days per fortnight. Here it was noticed that some kinds of fishes were found only in certain types of coral or coral-growths. *Seriatopora hystrix* sheltered *Tetradrachmum aruanum* and *Gobiodon verticalis*. *Apogon savayensis* was only found in the Staghorn Coral, *Acropora hebes*. *Chromis lepisurus* lived in schools in large clumps of coral in the deeper water between the islet and the outer reef. The relationships of fishes to corals, and whether any commensalism exists between them, would form an interesting subject for study, and might reveal a balanced evolution between some fishes and their coral shelters.

At night, Mr. Eric Duffield and I sometimes waded and speared fish by lantern-light, or scooped them into a net as they floated.

Large mullets (*Mugil crenilabis*) and garfishes (*Hemiramphus dussumieri*) were secured in this way.

A few species of fishes were washed ashore by ones and twos, but *Stolephorus robustus* was commonly stranded. Although the beach was always well stocked with resting sea-birds, none were seen feeding on them. Schools of Flying Fishes (*Parexocetus brachypterus*) were sometimes seen over the coral reefs, and damaged specimens were washed ashore in May.

Lancelets and a new *Muraenichthys* were dredged together from a sandy bottom in two fathoms.

FISH-FAUNA.

Ogilby, in 1915, compiled a list of the fishes of the metropolitan district of Brisbane¹, in which he wrote: "If similar local lists were made for the various centres of population along the coast—Maryborough, Bundaberg, Rockhampton, Townsville, Thursday Island, Normanton, Burketown—they would be of inestimable value to the Department, firstly, in enabling it to gain a clearer insight into the problems of our food supply than is now possible, and secondly, in fixing with some degree of accuracy the limit of distribution of our more valuable commercial fishes." Since the publication of Ogilby's essay a little has been done in the direction he indicated, but enough is not yet known about the distribution of Queensland fishes to enable one to say whether the Barrier Reef or the coastal waters are divisible into zones having different fish faunas, though this appears on present evidence to be a feasible supposition.

In the limited time at our disposal, about one hundred and seventy specimens of fishes were collected from Michaelmas Cay. These are here referred to seventy-two species, of which fifty-two have already been listed from Queensland, sixteen are new records for the State, and four are regarded as new.

Family EPIGONICHTHYIDÆ.

On 1st-2nd June, 1926, Mr. T. Iredale and I dredged in about two fathoms over a sand and mud area not far from the beach of Michaelmas Cay, and obtained two species of lancelets. Both species were superficially alike as they wriggled in the water or screwed their way into damp sand. One of them, however, *Asymmetron caudatum*, was recognizable on closer observation by its long urostyle. It was whitish in general colour when alive, with the intestine showing through with a pinkish colour which appeared to extend slightly along the myocommas; it had a pinkish eye-spot and a green anus, and was slightly longer than the other species obtained, *Epigonichthys hedleyi*. The latter was also whitish in

¹ Ogilby.—The Commercial Fishes and Fisheries of Queensland. An Essay, Brisbane, 1915, p. 45.

general colour with the rays giving the dorsal fin a cellular appearance. A series of green hyphen-like marks extended from about the sixth myotome for a short distance along the upper part of the side; there was a greenish sheen behind the oral region, and the intestine appeared yellowish-brown, darker, because of contained food, towards the rectum and anus. Several specimens of a worm were dredged with the lancelets, and resembled them in appearance and habits; a similar worm is mentioned by Willey as accompanying *Asymmetron* in the Louisiades; others have been collected by Mr. E. H. Rainford at Bowen and recorded from Port Phillip by Sayce (Vict. Nat., xviii, 1902, p. 152). I am unfortunately unable, however, to indicate their systematic status.

The identification of the lancelets has been facilitated by my friend, Surgeon-Commander W. E. J. Paradise, R.A.N., who kindly mounted two specimens of each species for microscopical examination.

EPIGONICHTHYS HEDLEYI (Haswell).

Heteropleuron hedleyi Haswell, Rec. Austr. Mus., vii, 1, 1908, p. 33, fig. 1. Murray Island, Torres Strait. *Id.* Raff, Zool. Res. "Endeavour," i, 3, 1912, p. 305.

Epigonichthys hedleyi Ogilby, Mem. Qld. Mus., v, 1916, p. 72.

Fifteen specimens (Austr. Mus. regd. No. 1A.2810); two mounted in balsam, remainder in alcohol, from Michaelmas Cay, Great Barrier Reef, Queensland.

ASYMMETRON CAUDATUM Willey.

Asymmetron caudatum Willey, Quart. Journ. Micro. Sci., (n.s.), xxxix, 1, 1896, p. 219, Pl. xiii, figs. 1-4; and Zool. Res. vi, 1902, p. 725, fig. 14. Deboyne Islands, Louisiades. *Id.* Parker, Bull. Mus. Comp. Zool. Harvard, xlvi, 2, 1904, p. 49. *Id.* Ogilby, Mem. Qld. Mus., v, 1916, p. 72.

Heteropleuron (Asymmetron) lucayanum Haswell, Rec. Austr. Mus., vii, 1, 1908, p. 33. Not *Asymmetron lucayanum* Andrews 1893.

Asymmetron lucayanum Raff, Zool. Res. "Endeavour," i, 3, 1912, p. 305. Not *Asymmetron lucayanum* Andrews 1893.

Asymmetron candatum (misprint) Hubbs, Occ. Pap. Mus. Zool. Mich. Univ., cv, 1922, p. 16.

Fifteen specimens (1A.2809); two mounted in balsam, remainder in alcohol. Their characters are difficult to make out, but they have sixty-four myotomes and agree very well with Willey's descriptions.

Family ORECTOLOBIDÆ.CHILOSCYLLIUM OCELLATUM (*Bonnaterre*).

Squalus ocellatus Bonnaterre, Tabl. Encycl. Meth. Ichth., 1788, p. 8.
La mer du Sud.

Squalus oculatus Gray, Pisces, in King, Narr. Surv. Coasts Austr.,
ii, "1827" = 18 Apr., 1826 (*vide* Sherborn, 1914), append. p.
436. *Ex* Banks and Solander MS. Australia.

One small specimen (1A.2732), Michaelmas Cay; common in
shallow water, under rocks, and amongst coral, where it may be
caught by hand.

Gray's synonym appears to have been overlooked.

Family DUSSUMIERIIDÆ.STOLEPHORUS ROBUSTUS (*Ogilby*).

Sprattelloides robustus Ogilby, Proc. Linn. Soc. N.S. Wales, xxii,
1, 1897, p. 646. "Coast of N.S. Wales" = Maroubra. Types in
Australian Museum.

Stolephorus robustus McCulloch, Rec. Austr. Mus., xiii, 2, 1920,
p. 42, Pl. xi, fig. 1.

Frequently cast upon Michaelmas Cay in May-June, 1926. The
Australian Museum has specimens from North-west Islet and
Moreton Bay, Queensland; Port Jackson, Maroubra (types), Port
Hacking, and Shellharbour, New South Wales; Queenscliff, Vic-
toria; and off the Derwent River, Tasmania (from stomach of
"Barracouta," *Thyrsites atun*).

Family CLUPEIDÆ.HARENGULA PUNCTATA (*Rüppell*).

Clupea punctata Rüppell, Neue Wirbelth. Abyssin., Fische, 1837-38,
p. 78, Pl. xxi, fig. 2. Red Sea.

Clupea quadrimaculata Rüppell, *ibid.*, p. 78, Pl. xxi, fig. 3. Masso-
wah, Red Sea.

Sardinella lineolata Cuvier and Valenciennes, Hist. Nat. Poiss., xx,
1847, ed. 1, p. 272; ed. 2, p. 197. Trincomalee.

Harengula bipunctata Cuvier and Valenciennes, *ibid.*, ed. 1, p. 298;
ed. 2, p. 216. *Ex* *Clupea bipunctata* Ehrenberg MS. Massowah,
Red Sea.

Meletta obtusirostris Cuvier and Valenciennes, *ibid.*, ed. 1, p. 375;
ed. 2, p. 276. Seychelles.

- Meletta venenosa* Cuvier and Valenciennes, *ibid.*, ed. 1, p. 377; ed. 2, p. 277. Seychelles.
- Harengula moluccensis* Bleeker, Nat. Tijd. Ned. Ind., iv, 1853, p. 609. Ternate and Amboina.
- Harengula kunzei* Bleeker, Nat. Tijd. Ned. Ind., iv, 1853, p. 609. Ternate.
- Clupea (Harengula) dubia* Bleeker, Atl. Ichth., vi, 1872, p. 108. Based on *Sardinella lineolata* C. & V. Bouron.
- Harengula stereolepis* Ogilby, Proc. Linn. Soc. N.S. Wales, xxii, 1898, p. 759. Torres Strait, Queensland. *Id.* Banfield, Tropic Days, London, 1918, p. 184.
- Clupea mizun*, Kishinouye, Journ. Imp. Fish. Bur. Tokyo, xiv, 3, 1907, p. 98, Pl. xx, fig. 3. Riukiu Islands.
- Clupea kunzii* Günther, Fische Südsee, viii, 1909, p. 382.
- Sardinella kunzei* McCulloch, Rec. Austr. Mus., ix, 3, 1913, p. 355, fig. 55.
- Clupea (Harengula) stereolepis, venenosa, and moluccensis* Weber and Beaufort, Fish. Indo-Austr. Archip., ii, 1913, pp. 76-77 and 377, fig. 28 on p. 81 (scale).
- Sardinella moluccensis* Cockerell, Mem. Mus. Qld. Mus., iii, 1915, p. 36 (scales).
- Harengula punctata* Regan, Ann. Mag. Nat. Hist., (8), xix, 1917, p. 390. *Id.* Barnard, Ann. S. Afr. Mus., xxi, 1925, p. 114. *Id.* McCulloch and Whitley, Mem. Qld. Mus., viii, 2, 1925, p. 132.
- Clupea (Harengula) moluccensis* Delsman, Treubia, viii, 1926, p. 218, footnote.

Three specimens in the Australian Museum have the following characters:—Teeth in jaws, on palatines, and back of tongue. Forty or more rows of scales. Origin of dorsal nearer snout than caudal. Eye three in head, upper jaw two in same. Eighteen-nineteen preventral scutes, eleven-fourteen postventrals. D.ii/16; A.17-18.

Localities.—Michaelmas Cay, off Cairns, N. Queensland; found dead on beach, 17th May, 1926; coll. T. Iredale and G. P. Whitley.

Murray Island, Torres Strait (Ogilby). Giza, Solomon Islands (Prof. A. Watson).

Family ECHELIDÆ.

MURÆNICHTHYS IREDALEI, *sp. nov.*

(Fig. 1.)

Head (14 mm.) 11.6 in total length (163). Tail (84) longer than trunk (78). Depth (4) 3.5 in head. Eye (1) and interorbital

(1) 2 in snout (2). Snout to dorsal origin 83 mm. Dorsal (80 mm.) shorter than anal (84).

Head elongate, bag-like before the gill slits. Cleft of mouth extending well behind eye. Upper jaw longer than lower. A single row of backwardly curving teeth in each jaw, and along the narrow ridge of the vomer. The lateral line extends along the upper part of the head to a little behind the eye, where it divides into a short nuchal and a longer genal row of pores. Other rows of pores along top of head over eyes, and along upper and lower jaws.

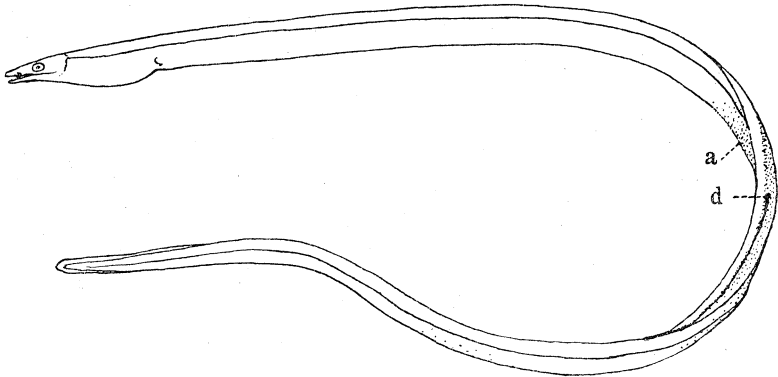


Fig. 1.—*Muraenichthys iredalei* Whitley *sp. nov.* Holotype, 163 mm. long, from Michaelmas Cay, Queensland. a. Origin of anal fin. d. Origin of dorsal fin.

Body very elongate. Dorsal originating as a rudimentary unpigmented area behind the vertical of the vent and extending to the tip of the tail where it joins the anal. Anal a little higher than dorsal, yet almost vestigial; like the dorsal it is situated in a groove. Lateral line running fairly high anteriorly, along the middle of the tail posteriorly. Tail one-thirteenth longer than trunk, almost rectangular in transverse section anteriorly.

Colour brownish, darker along the back, where there are innumerable blackish punctations. A fuscous area along each side of the thorax. The viscera show through blackish just behind the gill-slits. Fins without pigment.

Described and figured from the holotype, a spirit specimen, 163 mm. long; Australian Museum registered No. 1A.2743.

Locality.—Michaelmas Cay, off Cairns, Queensland, in sandy shallows of coral reef, 1st June, 1926. A smaller paratype, dredged with lancelets from the same locality, agrees with the holotype.

Named after Mr. Tom Iredale, of the Australian Museum, whom I accompanied on the collecting trip to Michaelmas Cay.

The new species belongs to that section of *Muraenichthys* which has the dorsal originating behind the vertical of the vent. It differs mainly from *M. aoki* Jordan and Snyder² in its proportions, and from *M. tasmaniensis* McCulloch³ in having uniserial vomerine teeth. *M. oliveri* Waite⁴ has much smaller eyes.

Family OPHICHTHYIDÆ.

LEIURANUS SEMICINCTUS (*Lay and Bennett*).

Ophisurus semicinctus Lay and Bennett, Fishes in Zool. Beechey's Voyage, 1839, p. 66, Pl. xx, fig. 4. Oahu.

One specimen (1A.2742), Michaelmas Cay.

Family MURÆNIDÆ.

GYMNOTHORAX UNDULATUS (*Lacépède*).

Muraenophis undulata Lacépède, Hist. Nat. Poiss., v, 1803, pp. 629 and 644, Pl. xix, fig. 2. No locality.

Muraena (Gymnothorax) undulata Weber and Beaufort, Fish. Indo-Austr. Archip., iii, 1916, p. 376.

One small specimen (1A.2739) from Michaelmas Cay.

GYMNOTHORAX CHILOSPILUS *Bleeker*.

Gymnothorax chilospilus Bleeker, Ned. Tijds. Dierk., ii, 1865, pp. 52 and 142. Sumatra, Amboina, Ceram and Buro. *Id.* Atl. Ichth., iv, 1865, p. 103, Pl. clxxxix, fig. 2.

Muraena (Gymnothorax) chilospilus Weber and Beaufort, Fish. Indo-Austr. Archip., iii, 1916, p. 379, fig. 188.

A specimen (1A.2740) from Michaelmas Cay, off Cairns, North Queensland. New record for Australia.

GYMNOTHORAX PICTUS (*Thunberg*).

Muraena picta Thunberg, De Muræna, 1789, p. 8 (*vide* Sherborn).

Muraena (Gymnothorax) picta Weber and Beaufort, Fish. Indo-Austr. Archip., iii, 1916, p. 363, figs. 175, 180, 182 and 183.

One specimen (1A.2741), Michaelmas Cay.

ECHIDNA NEBULOSA (*Thunberg*).

Muraena nebulosa Thunberg, De Muræna, 1789, p. 7 (*vide* Sherborn).

Id. Day, Fish, India, i, 1878, p. 673, Pl. clxxii, fig. 2.

² Jordan and Snyder.—Proc. U.S. Nat. Mus., xxiii, 1901, p. 863, fig. Misaki.

³ McCulloch.—Zool. Res. "Endeavour," i, 1, 1911, p. 19, fig. 5. Oyster Bay, Tasmania.

⁴ Waite.—Trans. N.Z. Inst., xlii, (1909), 1910, p. 374, Pl. xxxv, fig. 2. Kermadec Islands.

One specimen (1A.2697) from Michaelmas Cay, 27th May, 1926. Others in Australian Museum from Murray Island and Two Isles, North Queensland; Lord Howe Island; New Hebrides; Samoa; Batavia.

LEIHALA POLYZONA (*Richardson*).

Muraena polyzona Richardson, Ichth. Voy. "Sulphur," 1845, p. 112, Pl. iv, figs. 11-14. No locality.

Echidna polyzona McCulloch and Whitley, Mem. Qld. Mus., viii, 2, 1925, p. 135.

A twenty-inch specimen from Michaelmas Cay (1A.2694). Others in the Museum from Green Island, off Cairns, Queensland; Bougainville, Solomon Islands; Haapia, Friendly Islands; Duke of York Island and Malakula, New Hebrides.

The broad expanse of vomerine dentition admits this species into the genus *Leihala* recently proposed by E. K. Jordan⁵.

Family SYNGNATHIDAE.

DORYRHAMPHUS MELANOPLEURA (*Bleeker*).

Syngnathus melanopleura Bleeker, Nat. Tijds. Ned. Ind., xv, 1858, p. 464. Nova-selma.

Doryrhamphus melanopleura Weber and Beaufort, Fish. Indo-Austr. Archip., iv, 1922, p. 64, fig. 27. *Id.* Duncker and Mohr, Mitt. Zool. Mus. Hamburg, xli, 1925, p. 107.

One specimen (1A.2713), 46 mm. long, from Michaelmas Cay has the brood-pouch distended by eggs containing well developed embryos. It was caught on the outer coral reef, 27th May, 1926. Three others were collected by the late Allan R. McCulloch at Green Island, nearby.

Family BELONIDÆ.

TYLOSURUS TEREBRA, *sp. nov.*

(Pl. i, fig. 6.)

D.ii/19; A.ii/22; P.i/11; V.i/5; C.13.

Depth (10 mm.) 24.3 in total length (243), head (89) 2.7 in same. Eye (7.5) equal to interorbital, 2 in postorbital portion of head (15). Upper jaw, from tip to anterior orbital rim (66) 2.9 times length of rest of head (23). Depth of caudal peduncle (4) 1.25 in its breadth (5). Length of pectoral (19) 4.6 in head.

⁵ Jordan.—Proc. U.S. Nat. Mus., lxxvi, 1925, p. 5. Orthotype, *Echidna leihala* Jenkins 1903.

Top of head with series of bony radiating ridges converging into a vertex behind each eye. A few radiating ridges over the operculum. Interorbital scaly where it is sunken between the ridges. Preoperculum, operculum, and occiput scaly. Eye large, just free of dorsal profile, with a flap over pupil. Maxillary elongate, concealed by preorbital when mouth is closed. Jaws elongate, the lower the longer, armed with many subvertical canines which tend to slant backward in the lower jaw. Sides and outer margins of jaws with many small thorn-like teeth. Median area of lower jaw with transverse ridges. Nostrils in large pyriform cavities. No gill rakers.

Body elongate, deeper than broad anteriorly, but considerably depressed on the keeled caudal peduncle. Scales cycloid. Lateral line continuous from breast to just behind anal fin as a series of slit scales running along lower part of body and ascending slightly over ventral and anal fins; a branch extends up to each pectoral base. Vent somewhat in advance of the anal.

Anal originating noticeably in advance of dorsal and terminating behind it. The anterior rays of both fins form lobes, and their posterior rays do not reach the caudal. Pectorals pointed. Ventrals entirely inferior, shorter than pectorals; their origin nearer anterior border of eye than base of caudal. Caudal emarginate, the lower lobes apparently the longer.

Colour.—In life the general colour was sea-green with intense silvery iridescence, especially on the sides and lower surfaces. Three greyish longitudinal lines on back, the middle one thickest. Purplish iridescence below preorbital and in the green on the top of the head when the fish was turned in the light. Fins greenish, the caudal with an indefinite dusky area on the distal half of the upper lobe. A bluish line along the sides, which turned bright silver in certain lights. Axil of pectoral dark green.

After preservation in alcohol, the colour is yellowish-brown, darker above, with three dark lines along the back. Lateral streak silvery green. A dark spot on upper part of preopercular border, and a dark blotch on caudal. Caudal keel silvery, not black.

Described and figured from the unique holotype, 243 mm. in total length, from Michaelmas Cay, Great Barrier Reef, off Cairns, Queensland; collected by T. Iredale and G. P. Whitley, 7th June, 1926. The specimen was swimming at the surface inshore at night, and was netted by lamp-light. Austr. Mus. regd. No. 1A.2736.

The specific name is given in allusion to the drillers, Messrs. Eric H. and Donald Duffield, T. Hughes and M. T. Bloomer, of Melbourne, who, with Mr. Charles Horridge, the cook, spent much of their leisure in helping Mr. Iredale and myself to secure specimens.

*Family EXOCETIDÆ.*PAREXOCETUS BRACHYPTERUS (*Richardson*).

Exocætus brachypterus Richardson, Rept. 15th Meet. Brit. Assoc. Adv. Sci., (1845) [Sept.-Oct.] 1846, p. 265. Based on Parkinson's figure No. 108 of *E. brachypterus* Solander MS. from Tahiti.

Exocætus mento Cuvier and Valenciennes, Hist. Nat. Poiss., xix, "1846" = May, 1847, ed. 1, p. 124; ed. 2, p. 90. Pondicherry.

Exocætus solandri Cuvier and Valenciennes, *op. cit.*, ed. 2, p. 94. *Ex* "[*Exocætus*] *brachiopterus*" Solander MS. Tahiti.

Parexocætus mento Bleeker, Atl. Ichth., vi, 1866, p. 77, Pl. ccli, fig. 6. *Id.* Barnard, Ann. S. Afr. Mus., xxi, 1925, p. 267.

Exocætus atrodorsalis Günther, Ann. Mag. Nat. Hist., (3), xx, 1867, p. 67. Cape York.

Exocætus gryllus Klunzinger, Verh. Zool. Bot. Ges. Wien, 1871, p. 585. Red Sea. *Fide* Günther, Zool. Rec., (1871) 1873, p. 109.

Parexocætus brachypterus Weber and Beaufort, Fish. Indo-Austr. Archip., iv, 1922, p. 174, fig. 60.

Seven specimens were washed ashore in a more or less mutilated condition at Michaelmas Cay. The species was occasionally seen flying over the reefs in the lagoon.

Exocætus brachypterus vs. *mento*. Both names appeared to have been published in the same year, 1846, so I wrote to Mr. C. Davies Sherborn for more precise dates. He courteously replied (*in lit.*, 5th September, 1926): "Exocætus brachypterus Richardson, 15 Rept. Brit. Assoc. We have no knowledge of exact dates of these repts. But usually the vol. appears the following Sept. or Oct." Mr. Sherborn has given the date of the nineteenth volume of the *Histoire Naturelle des Poissons* as May, 1847⁶.

Family HEMIRAMPHIDÆ.

HEMIRAMPHUS (HYPORHAMPHUS) DUSSUMIERI

Cuvier and Valenciennes.

Hemiramphus dussumieri Cuvier and Valenciennes, Hist. Nat. Poiss., xix, 1847, p. 33 (*fide* Sherborn); ed. 2, p. 24. Seychelles.

Hemirhamphus dussumieri Weber and Beaufort, Fish. Indo-Austr. Archip., iv, 1922, p. 155.

Three fine specimens (1A.2733-2735) preserved from Michaelmas Cay. Very common at surface inshore, especially at night. The species has not hitherto been recorded from Australia.

⁶ Sherborn.—Ann. Mag. Nat. Hist., (9), xv, 1925, p. 600.

Family ATHERINIDÆ.

HEPSETIA LACUNOSA (*Bloch and Schneider*).

Atherina lacunosa Bloch and Schneider, Syst. Ichth., 1801, p. 112.
Ex Forster MS. New Caledonia. *Id.* Ogilby, Mem. Qld. Mus.,
 i, 1912, p. 40, Pl. xii, fig. 2, and text-fig. b.

Hepsetia lacunosa Jordan and Hubbs, Monogr. Atherinidæ, 1919,
 p. 33.

Six specimens (1A.2805-7) were collected from those washed
 ashore, one or two at intervals, at Michaelmas Cay in May-June,
 1926.

Family MUGILIDÆ.

MUGIL CRENILABIS *Bonnaterre*.

Mugil crenilabis Forskal, Descr. Anim., 1775, p. 73. Non-binomial
 work. Red Sea. *Id.* Bonnaterre, Tabl. Encycl. Meth., Ichth.,
 1788, p. 180. *Ex* Forskal. *Id.* Weber and Beaufort, Fish. Indo-
 Austr. Archip., iv, 1922, p. 256.

Mugil cirrhostomus Bloch and Schneider, Syst. Ichth., 1801, p. 121.
Ex J. R. Forster MS. Pacific Ocean.

Mugil crenilabris Günther, Fische Südsee, vii, 1881, p. 219, Pl. cxxii,
 fig. a.

Life Colours.—Head, body, and tail greyish-green with a frosty
 silvery tint, especially noticeable on sides and ventral surface. Fins
 plain; pectorals yellowish with a bluish-black axillary mark
 extending along first ray.

Three specimens showed the following variation: D.iv/9-10;
 A.iii/9-10; L. lat. 39-40 to hypural; l. tr. from origin of first dorsal
 13-13½.

Seen in schools on windward side of islet at night, usually
 swimming sluggishly along bottom, when they could be netted by
 hand by lamp-light, or, when disturbed, skimming along near
 surface, often making splendid leaps.

Locality.—Michaelmas Cay, off Cairns, Queensland, a seventeen-
 inch specimen preserved (1A.2693). A small specimen in Australian
 Museum from Santo, New Hebrides. The record of this species
 from "Southern Queensland" by Ogilby⁷ has been hitherto
 overlooked.

Family HOLOCENTRIDÆ.

HOLOCENTRUS SPINIFER (*Bonnaterre*).

Sciæna spinifera Forskal, Descr. Anim., 1775, p. 49. Work non-
 binomial. Djedda, Red Sea. *Id.* Bonnaterre, Tabl. Encycl.
 Meth., Ichth., 1788, p. 120. *Ex* Forskal.

⁷ Ogilby.—Ann. Rept. Amat. Fisherm. Assoc. Qld., (1905-6) 1906, p. 9.

Holocentrus spinifer Rüppell, Neue Wirbelth., Fische, 1838, p. 97, Pl. xxv, fig. 1.

Colour.—General colour pinkish-red, lighter below; each scale with a silvery centre. A few violet dots along junctions of some lateral scale-rows. Cheek-scales with a bronze sheen. Pupil black, surrounded by a golden ring, rest of eye pinkish-brown. A gout of crimson on upper half of preoperculum, another in pectoral axil, and a third on the inner proximal half of the pectoral fin. Whole of first dorsal vivid scarlet, other fins yellow.

Specimen caught at Michaelmas Cay, 21st May, 1926; length 283 mm. to end of middle caudal rays; head preserved. Regd. No. 1A.2814.

The species has not hitherto been recorded from Australia.

Family SOLEIDÆ.

PARDACHIRUS PAVONINUS (*Lacépède*).

Achirus pavoninus Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 658 and 660. No locality = Dutch East Indies (*vide* Ogilby).

Pardachirus pavoninus Ogilby, Mem. Qld. Mus., v, 1916, p. 142, Pl. xvi. *Id.* Norman, Biol. Res. "Endeavour," v. 5, 1926, p. 288.

Two specimens (1A.2706 and 2945), in sandy shallows, Michaelmas Cay.

SOLEICHTHYS HETERORHINOS (*Bleeker*).

Solea heterorhinos Bleeker, Act. Soc. Sci. Indo-Neerl., i, 1856, p. 64. Amboina.

Solea (Solea) heterorhinus Bleeker, Atl. Ichth., v, 1865, p. 17, Pl. ccxl, fig. 2.

One specimen (1A.2948), Michaelmas Cay.

Family EPINEPHELIDÆ.

EPINEPHELUS MERRA *Bloch*.

(Pl. i, fig. 4.)

Epinephelus merra Bloch, Nat. Ausl. Fische, vii, 1793, p. 17 (*vide* Sherborn). *Id.* Bloch, Ichtyologie, x, 1797, p. 15, Pl. cccxxix. Sea of Japan.

Common at Michaelmas Cay. I have also collected this species at North-West Islet, Capricorn Group, Queensland.

A young specimen (1A.2715) from Michaelmas Cay, 46 mm. long, is here figured to show the disposition of the colour-markings at this stage.

EPINEPHELUS SUMMANA (*Bonnaterre*).

Perca summana Forskal, Descr. Anim., 1775, p. 42. Work non-binomial. Red Sea. *Id.* Bonnaterre, Tabl. Encycl. Meth., Ichth., 1788, p. 132. *Ex* Forskal.

Epinephelus summana Boulenger, Cat. Fish. Brit. Mus., (2) i, 1895, p. 248.

One from Michaelmas Cay (1A.2960). New record for Australia.

Life Colours.—General colour pale green with brown wavy or reticulating markings becoming broken up in places or congealed to form irregular bars; better marked on dorsal, anal, and caudal fins, where they enclose roundish green spots. The edges of those fins are white with a broad inframarginal band of dark brown, almost black. Head with no definite markings, the brown and the pale green being clouded. Pectorals and ventrals lighter marked than other fins, their spots obscure. Pupil dark brown, surrounded by golden ring; rest of eye dusky brown on golden yellow ground. The colours are well shown in Bleeker's figure⁸.

D.xi/16; A.iii/9; head 102 mm., length 289.

*Family PSEUDOCROMIDÆ.**PSEUDOCROMIS FUSCUS Müller and Troschel.*

Pseudochromis fuscus Müller and Troschel, Horæ Ichthyologicae, iii, 1849, p. 23, Pl. iv, fig. 2 (*fide* Günther). Celebes. *Id.* McCulloch, Biol. Res. "Endeavour," v, 4, 1926, p. 186 (references and synonymy).

One specimen (1A.2745), Michaelmas Cay, coral reef. The following is a copy of the original description of *P. fuscus*, kindly forwarded by the Chief Librarian, Public Library, Melbourne.

PSEUDOCROMIS FUSCUS Nob. nov. sp.

(Taf. iv, fig. 2.)

Der Kopf ist 4 mal in der ganzen Länge des Fisches enthalten. Der Unterkiefer ist etwas länger als der Oberkiefer. Die Entfernung der Augen von der Schnauzenspitze ist etwas kleiner als der Durchmesser eines Auges, die Entfernung beider Augen von einander ist etwas kleiner als der Durchmesser eines Auges. Das hintere Nasloch steht dem Auge sehr nah. Der obere Theil des hinteren Randes der Kiemendeckels trägt einige äusserst kleine Spitzchen. Die Rückenflosse beginnt gerade über der Insertion der Brustflossen. Hinter den drei Stacheln der Rückenflosse, welche nach hinten an Länge zunehmen, folgen fünfzehn einfache gegliederte, und auf diese wieder noch eilf verzweigte Strahlen. Die Rückenflosse hört dicht von der Schwanzflosse auf, und ihre hintere Spitze reicht bis auf den Anfang der Schwanzflosse; dasselbe gilt von der Afterflosse. Die Schwanzflosse ist abgerundet. Die Seitenlinie steigt Anfangs in die Höhe und nähert sich der

⁸ Bleeker.—Atl. Ichth. vii, 1870, Pl. cclxxxii, fig. 2, as *E. bataviensis*.

Basis der Rückenflosse, mit der sie parallel verläuft, bis sie abbricht. Die untere Seitenlinie befindet sich von da an in der Mitte des Körpers, und ist aus neun Schuppen gebildet.

B.6. D.3.15.11. A.3.14. P.18. V.1.5.

Farbe: gleichmässig braun.

Grösse: 2½ Zoll.

Vaterland: Celebes, durch Schönlein.

PSEUDOCROMIS (LEPTOCROMIS) TAPEINOSOMA *Bleeker*.

Pseudochromis tapeinosoma Bleeker, Nat. Tijd. Ned. Ind., iv, 1853, p. 115. Amboina.

Pseudochromis (Leptochromis) tapeinosoma McCulloch, Biol. Res. "Endeavour," v. 4, 1926, p. 192, Pl. li, figs. 1-2.

Three males (1A.2746) from Michaelmas Cay, coral reef.

Family PLESIOPIDÆ.

PHAROPTERYX MELAS (*Bleeker*).

Plesiops melas Bleeker, Verh. Batav. Gen., xxii, 1849, p. 9. Bali.

Pharopteryx melas Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 261, Pl. xxxviii, fig. 3. *Id.* Ogilby, Mem. Qld. Mus., ii, 1913, p. 84.

Life Colours.—Head, body, and tail olive-brown; some yellow on the branchiostegal membranes which are violet at the isthmus, and some yellow interorbital speckles. Eye golden, rimmed with violet. In some specimens there are a few vertical brownish bars and white spots on the sides of the head. Dorsal rich brown, the tips of the rays orange, followed by a whitish stripe; lower part of fin crossed by one or two oblique violet-blue stripes. Anal reddish-brown with a blue sub-horizontal stripe. Pectorals greyish; ventrals greyish, densely speckled with brown. Eleven dorsal spines.

Locality.—Michaelmas Cay, off Cairns, Queensland; four specimens (1A.2749-2752).

The Australian and Papuan species of *Pharopteryx* appear to be distinguishable as follows:—

A. Dorsal with twelve spines.

B. Dorsal and anal almost reaching vertical of middle of caudal.
Head 4 in total length *woodlarkensis*⁹.

BB. Dorsal and anal terminating well before vertical of middle of caudal. Head about 3½ in total length *nigricans*¹⁰.

AA. Dorsal with eleven spines (abnormally ten, *vide* Ogilby) . . . *melas*.

⁹Thiollière.—Ichthyologie, in Montrouzier, Essai sur la Faune de l'Île de Woodlark ou Moïou, 1856, p. 160 (*Plesiops*). Woodlark Island. Reprint from Ann. Soc. imp. d'agric., &c., Lyon, viii, 1856.

¹⁰Rüppell.—Atl. Reise Nordl. Afrika, 1828, p. 15, Pl. iv, fig. 2 (*Pharopteryx* on plate). Mohila, Red Sea.

Family APOGONIDÆ.

APOGON SAVAYENSIS *Günther*.

Apogon savayensis Günther, Proc. Zool. Soc. Lond., 1871, p. 656. Savay (Samoa). *Id.* Günther, Fische Südsee, i, 1873, p. 21, Pl. xix, fig. b. *Id.* Day, Fish. India, i, 1878, p. 60, Pl. xvi, fig. 5. *Id.* McCulloch, Proc. Linn. Soc. N.S. Wales, xlvi, 4, 1921, p. 469.

Amia savayensis Jordan and Seale, Bull. U.S. Fish. Comm., xxv, 1906, p. 239, fig. 33.

Life Colours.—Body colour olive-greenish, almost crossed by five subvertical silvery streaks beneath the dorsal fins. A saddle-shaped smoky blotch over the caudal peduncle and crossing the lateral line, and an oblique black streak below and behind the eye, which is dull blue with a black pupil. Dorsal and anal yellowish; spinous dorsal with a dusky mark on distal half. Pectorals pinkish, ventrals whitish; rays of caudal olive, their membranes hyaline.

Eight specimens (1A.2757) were caught by removing masses of a yellowish-green staghorn coral (*Acropora hebes* Dana) from the water; the species was not found in any other kind of coral at Michaelmas Cay.

FOWLERIA AURITA (*Cuvier and Valenciennes*).

Apogon auritus Cuvier and Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 443. Mauritius.

Apogonichthys polystigma Bleeker, Atl. Ichth., viii, 1875, Pl. cccxxii, fig. 4.

Amia polystigma Bleeker, *Op. cit.*, vii, 1876, p. 101.

One (1A.2755), Michaelmas Cay.

NECTAMIA FUSCA (*Quoy and Gaimard*).

Apogon fuscus Quoy and Gaimard, Voy. "Uranie," Zool., 1825, p. 345. Guam.

Amia fusca Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 244, fig. 38.

Nectamia fusca Jordan, Copeia No. 44, 1917, p. 47.

A specimen (1A.2756), 40 mm. long, from Michaelmas Cay, agrees well with the descriptions and figure quoted above, but lacks the dark mark on the tail. The species has not hitherto been recorded from Australia.

CHEILODIPTERUS QUINQUELINEATUS *Cuvier and Valenciennes.*

Cheilodipterus quinque-lineatus Cuvier and Valenciennes, Hist. Nat. Poiss., ii, 1828, p. 167. Bola-Bola, Society Islands. *Id.* Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Philad. Exhib.), 1875, p. 9.

Paramia quinque-lineata Bleeker, Atl. Ichth., vii, 1875-6, p. 105, Pl. cccxxvi, fig. 2.

The Australian Museum has one small specimen from Michaelmas Cay, and several from Murray, Hayman, and Holbourne Islands, Queensland.

Family CARANGIDÆ.

TRACHINOTUS BAILLONII (*Lacépède*).

Cæsiomorus bailloni Lacépède, Hist. Nat. Poiss., iii, 1802, p. 92, Pl. iii, fig. 1. No locality = Fort Dauphin, Madagascar (*vide* Cuv. and Val.).

Trachinotus bailloni Ogilby, Mem. Qld. Mus., v, 1916, p. 149, Pl. xviii.

Four specimens (1A.2698, 2702) from Michaelmas Cay, where the species was very common in the shallow water inshore. Small specimens swam in the wavelets which lapped the beach, but, by the alacrity of their movements, always managed to avoid being washed ashore. At night they could be caught in a hand-net by lamp-light.

TRACHINOTUS OVATUS (*Linnaeus*).

Gasterosteus ovatus Linnaeus, Syst. Nat., ed. 10, 1758, p. 296. Asia.

Trachinotus ovatus Ogilby, Rept. Mar. Dept. Qld., (1908-9) 1909, Append. v, p. 19, and Mem. Qld. Mus., v, 1916, p. 154, Pl. xix.

One small specimen (1A.2703) caught with *T. bailloni* at night, Michaelmas Cay.

Family EMMELICHTHYIDÆ.

EMMELICHTHYS NITIDUS *Richardson.*

Emmelichthys nitidus Richardson, Ichth. Voy. "Erebus" and "Terror," 1845, p. 47, Pl. xxix, figs. 7-8. West Australia.

One specimen of this rare fish (1A.2797) was washed ashore dead at Michaelmas Cay on 22nd May, 1926. New record for Queensland.

Colours.—Lavender on back crossed by three broad longitudinal bands, lower parts of body silvery. Dorsal fin-rays pink, the

membranes hyaline; anal and ventrals white, caudal pink, pectoral white with a small dark basal blotch.

Family LUTJANIDÆ.

LUTJANUS *sp. juv.*

(Pl. i, fig. 2.)

A specimen, 34 mm. long, from Michaelmas Cay (1A.2808), figured here, has the following characters: D.x/14; A.iii/8; C.17 (15 branched); L. lat. 51.

First dorsal spine short. Scales ctenoid; an enlarged one in ventral axil. Sides of head and body scaly. Maxillaries, mandible and interorbital region naked. Seven rows of scales between origin of spinous dorsal and lateral line. Preoperculum serrated, one very large and several strong spines at angle. Strong teeth in jaws, on vomer and palatines; none on tongue.

[LUTJANUS RUSSELLII (*Bleeker*).

Mesoprion russellii Bleeker, Verh. Bat. Gen., xxii, 1849, Perc., p. 41. Malayo-Moluccan Archipelago.

Lutjanus russellii Bleeker, Atl. Ichth., viii, 1876, p. 71, Pl. ccc, fig. 2.

One specimen from Cairns (1A.2796); a coastal species not met with at Michaelmas Cay. The Museum also has specimens from Port Darwin and Pellew Group, Northern Territory; Murray Island and Moreton Bay, Queensland; and Richmond River, New South Wales. Another, purchased from Dr. F. Day, came from Akwab.]

Family POMACENTRIDÆ.

POMACENTRUS WARDI *Whitley*.

Pomacentrus trilineatus Bleeker, Atl. Ichth., ix, 1877, Pl. cccvi, figs. 1-6. (East Indies.) *Non* Cuvier and Valenciennes, 1830.

Pomacentrus wardi Whitley, Rec. Austr. Mus., xv, 5, 1927, p. 301, fig. 1. Heron Island, Great Barrier Reef, Queensland.

One small specimen from Michaelmas Cay (1A.2776). Surgeon-Lieutenant L. Lockwood, R.A.N., has recently collected specimens from Whitsunday Passage and South Percy Island, Queensland.

Variation.—Typical specimens of *P. wardi* have the following characters: D.xiii/15 (sometimes 16, rarely 14); A.ii/15 (rarely 16). 17-19 tube-bearing scales. Males very dark brown with dark pectorals and yellowish or brownish tails, usually with a few whitish flecks on the snout. Females lighter brown, most of the scales with a fuscous pencilled crescent; dorsal sometimes lighter

than anal and ventrals. Opercular and axillary dots present or absent. Young specimens are lighter than adults, with or without a white-edged black ocellus on the distal half of the soft dorsal, and with many whitish flecks on body-scales, head, and fins. The caudal in the young may be fuscous or yellowish.

A specimen from Cape Wessel, Northern Territory (1A 1700) has fourteen dorsal spines and rays, but is distinguished in no other characters from the Queensland forms mentioned above.

Another specimen from "German New Guinea" [= Mandated Territory of New Guinea] agrees with Bleeker's fig. 2, having a much flecked body, prominent opercular spot, and a large ocellus on the proximal half of the dorsal fin.

Pomacentrus wardi has been recorded from Port Darwin, Northern Territory, and Port Denison, Queensland, by Klunzinger¹¹.

Of Bleeker's figures, 1 and 2 are identical with my New Guinea form, 4 and 5 resemble Queensland females, whilst I have seen no specimens corresponding to 3 and 6, which, however, appear to come well within the limits of the variation of this species.

POMACENTRUS SUFFLAVUS *sp. nov.*

(Pl. i, fig. 3.)

D.xiii/15; A.ii/15; P.17; V.i/5; C.15. Sc. 26 to hypural; 17 tube-bearing scales on 1. lat.

Depth, including scaly sheath of dorsal (14 mm.), 2 in length to hypural joint (28). Head (9) 3.1 in the same. Interorbital (3) and snout (2.5) smaller than eye (4).

Upper part of head flattened between the eyes, which are large. Preorbital distinct from suborbital. Preoperculum serrated, other opercles entire. Head scaly except around nostrils and lips and along the suborbital, which is incipiently serrated and bears a row of pores. About sixteen predorsal scales. Teeth sharp, compressed.

Body deep, compressed and covered with scales which extend on to all the fins except the ventrals, which, however, have axillary scales. Lateral line ascending in an even curve with seventeen tubes, followed on the sides of the tail by a number of irregularly disposed pierced scales.

Soft dorsal and anal pointed; first ventral ray filiform, reaching beyond vent when adpressed. Pectorals rounded. Caudal emarginate, with rounded lobes.

Colour in spirits brownish-yellow, the fins lighter. Some whitish flecks along the cheeks below the suborbitals and others on the

¹¹ Klunzinger.—Sitzb. Akad. Wiss. Wien, lxxx, 1, 1879, p. 376 (*recte* 396 = p. 72 of reprint), as *P. trilineatus*.

opercles. A series of similar white marks forms a descending white band along a scale-row on the lower part of the side, and is continued as an inframarginal band along the soft anal fin. The anal spines and the tips of the anterior rays are fuscous. The vent and an axillary spot on the pectoral are blackish.

Described and figured from the holotype, 28 mm. in length from snout to hypural joint, from Michaelmas Cay, off Cairns, North Queensland; collected by T. Iredale and G. P. Whitley in May, 1926. It is the larger of two specimens obtained at the same time. Australian Museum registered No. 1A.2777.

Besides the holotype, there is a series of twelve specimens, 31.75 mm. long, in the Australian Museum. These show that the dark anal border, axillary spot on the pectoral, and black vent are constant. Specimens a little larger than the holotype have a blue opercular spot in addition. The white flecks on the head and sides become more boldly marked with age, whilst some specimens have upright whitish marks on the body-scales.

The colours of a specimen from Holbourne Island, Queensland, were noted as follows:—"General colour after preservation in weak spirit, canary yellow. The top of the head, nape, and greater part of sides more or less tinged with olive. A streak of pale pink from the eye to the upper lip; a series of similarly coloured dots from the corner of the mouth around the eye to the upper limb of the preoperculum and some large similar spots on the operculum. A pale blue spot at the commencement of the lateral line and a black one in the axil. Fins yellow like the body, the anterior portion of the dorsal olive, and a broad, darker, olive margin at the anterior portion of the anal." The pink markings become milky-white in alcohol.

Larger specimens have the suborbital strongly denticulated and separated from the preorbital by a notch, and have the preoperculum markedly more serrated than the young.

Localities.—Queensland, Barrier Reef, one specimen; Holbourne Island, Hayman Island reef, and Whitsunday Passage (E. H. Rainford), nine specimens; North-west Islet, Capricorn Group (G. P. Whitley), one specimen; Michaelmas Cay (T. Iredale and G. P. Whitley), holotype and paratype.

Habitat.—Amongst coral, Great Barrier Reef, Queensland.

POMACENTRUS ALBIFASCIATUS *Schlegel and Müller*.

Pomacentrus albifasciatus Schlegel and Müller, Verh. Nat. Ges. Ned. overz. bezitt. (Zool.), Pisces, 1844, p. 21. Celebes.

Eupomacentrus albofasciatus Bleeker, Atl. Ichth., ix, 1877, Pl. ecccciii, fig. 6.

One from Michaelmas Cay has D.xii/16; A.ii/13.

New record for Australia.

POMACENTRUS CHRYSURUS Cuvier and Valenciennes.

Pomacentrus chrysurus Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 423. (*Ex Chaetodon chrysurus* Broussonet MS.) La Mer du Sud. *Id.* Günther, Cat. Fish. Brit. Mus., iv, 1862, p. 29. *Id.* Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 281. *Id.* Whitley, Austr. Zool., iv, 4, 1926, p. 230.

Eleven from Michaelmas Cay. A post-larval specimen has a large white-edged dorsal ocellus. This appears to recede posteriorly with age.

GLYPHISODON HEDLEYI *sp. nov.*

(Pl. i, fig. 5.)

D.xiii/12; A.ii/13; P.17; V.i/5; C.15. L. lat. 17. L. tr. 3/1/9½.

Head (15 mm.) 3·5 in the length to the hypural joint (53); depth (22·5) 2·3 in the same. Eye (5) 3, interorbital (4·5) 3·3, snout (3·3) 4·5, and depth of caudal peduncle (8) 1·9, in the head.

Upper profile of head convex, steeper than the lower. Head scaly except for an area in front of the eyes and around the mouth, the superior scales terminating on the convex interorbital. Many of the scales on each side of the nape and a few on the top of the head are punctured by pores. A series of minute circular pores passes around the hinder margin of the orbit and another skirts the preorbital; there are also scattered pores on various parts of the head. Eye large, its diameter slightly longer than the interorbital width. Nostrils a simple opening on each side of the snout. Preorbital and all the opercles entire; two small opercular spines, well separated. Maxillary reaching vertical of anterior margin of eye. Teeth blunt, compressed, in a single series in each jaw. Gill-rakers long, slender, close-set.

Body compressed, entirely covered with well-developed ctenoid scales which extend on to parts of all the fins except the ventrals. The scales are largest and most regular on the sides, in about twenty-six transverse series, but become smaller as they encroach upon the fins. Along the dorsal and anal bases the marginal scales are somewhat acuminate. The lateral line extends to below the end of the first dorsal and consists of seventeen tube-bearing scales. About six punctured scales extend along each side of the caudal peduncle and a few more are asymmetrically disposed between them and the tubiferous ones. About thirteen predorsal scales. Ventral surface between anal and ventral fins carinate; the anus is in a slit before the anal spines. A small genital papilla.

Dorsal arising slightly behind the vertical of the ventral spines and terminating a trifle behind the vertical of the base of the last anal ray. The soft dorsal is somewhat pointed and is higher than the spinous. Membrane of first dorsal produced into pennant-like

flaps, with a deep incision behind each. Anal similar to dorsal, originating below the centre of the fish; the first ray is simple, the rest branched. Pectoral rounded, a little shorter than head. Ventrals long and angular, extending to anal spines. Caudal lobes much rounded, the lower more so than the upper.

Colour.—The collector noted the colours as “brilliant blue in life, tail orange-red; and ocelli on the head.” After preservation in spirits, the body and unpaired fins are uniformly blue, with the exception of the scaleless portion of the caudal, which is yellowish with a narrow black margin. Many of the scales on the sides have one or two minute blue-edged ocelli at their angles. The outer half of some of the scales had a burnished tinge. An irregular dark blue bar crosses the snout, passes through the eye and resolves itself into a series of blue blotches on the scales immediately over the lateral line. A similar series of blotches, which may have been the “ocelli on the head” noted in the live specimen, extends from above the eye to the second row of scales below the first dorsal. Other dark-blotched scales on the opercle, lower part of preopercle, and in irregular series on the sides just above the pectoral. A brownish bar along base of pectoral, but no axillary blotch or spot. Fins uniform with no ocelli; pectorals yellowish, ventrals light bluish.

Described and figured from the holotype, 53 mm. in length to the hypural joint. It was collected at Dauco Island Reef, off Port Moresby, Papua, by the late Allan R. McCulloch, Austr. Mus. regd. No. 1A.1328.

Mr. McCulloch also collected a paratype at St. Crispin Reef, off Port Douglas, Queensland. I collected a young specimen at North-West Islet, Queensland.

Another paratype from Michaelmas Cay, Queensland, agrees with the Papuan specimen, but has the soft dorsal and anal produced into pointed lobes.

Affinities.—*Glyphisodon hedleyi* is related to *G. uniocellatus* Quoy and Gaimard, but lacks the light ventral colouring and the prominent dark blotch near the end of the soft dorsal which is a regular characteristic of that species.

I name this novelty in honour of the late Charles Hedley, F.L.S., who directed the boring operations of the Great Barrier Reef Investigation Committee at Michaelmas Cay.

Range.—Queensland and Papua.

GLYPHISODON (PARAGLYPHIDODON) MELAS *Cuvier and Valenciennes*.

Glyphisodon melas Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 472. *Ex* Kuhl and Van Hasselt MS. Java. *Id.* Schlegel and Müller, Verh. Nat. Ges. Ned. overz. bezitt., Zool. (Pisces), 1844, p. 23, Pl. v, fig. 2.

Glyphisodon ater Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 473. *Ex* Ehrenberg MS. Massowah, Red Sea.

Glyphidodon melas Günther, Cat. Fish. Brit. Mus., iv, 1862, p. 45.

Paraglyphidodon melas Bleeker, Atl. Ichth., ix, 1877, Pl. cccxiv, fig. 4.

A fine specimen (1A.2758) from Michaelmas Cay. In life it was uniformly black except for the pectorals, which were tinged with bottle-green. The species has not hitherto been recorded from Australia.

GLYPHISODON MODESTUS *Schlegel and Müller.*

Glyphisodon modestus Schlegel and Müller, Verh. Nat. Ges. Ned. overz. bezitt., Zool. (Pisc.), 1844, p. 23, Pl. vi, fig. 2. Java.

Glyphisodon phaiosoma Bleeker, Verh. Bat. Genootsch., xxii, 1849, p. 9. Bali.

Glyphidodon modestus and *phaiosoma* Günther, Cat. Fish. Brit. Mus., iv, 1862, p. 55.

Glyphisodontops modestus Bleeker, Atl. Ichth., ix, 1877, Pl. ccciii, fig. 9.

With the assistance of Calisch's Dictionary¹², I have made the following translation of the original description of this species.

Body oblong, unicoloured, without spots.

Glyphisodon modestus n. sp. Drawn from life at Java by Maurevert. Colour very pale; body white; dirty pale citron-yellow on the back. Fins of the same colour, but paler. Dorsal, caudal and anal pale bluish towards their margins. A pale red stripe along the upper margin of the dorsal fin. Length 3 to 4 inches. D.13 + 12; A.2 + 12. Caudal slightly emarginate. Collected by Kuhl and van Hasselt in the Java Sea, from the north coast of Java and the south coast of Borneo; also on the west coast of Sumatra.

One specimen, 90 mm. in total length, from Michaelmas Cay, allows the addition of this species to the Australian fauna. Regd. No. 1A.2778.

D.xiii/13; A.ii/13. 16(?) tube-bearing scales (some missing). L. tr. 11.

Head 4, height 3 in total length. Preorbital 2 in eye. Suborbital and opercles entire. Caudal lobes and soft dorsal and anal rounded. First ventral ray filiform, reaching vent. Brownish on head, body, and fins. Pectorals yellowish. No axillary spot. The Michaelmas Cay specimen agrees better with Bleeker's figure than with Schlegel and Müller's.

¹² Calisch.—Nederlandsch-Engelsch Wordenboek, 1875.

GLYPHISODON ZONATUS *Cuvier and Valenciennes*.

Glyphisodon zonatus Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 483. New Guinea. *Id.* Whitley, Austr. Zool., iv, 4, 1926, p. 230, Pl. xxxiv.

One small specimen (1A.2779) from Michaelmas Cay.

TETRADRACHMUM *Cantor*.

Dascyllus Cuvier, Règne Anim., ed. 2, ii, 1829, p. 179. Orthotype, *Chatodon aruanus* Linnæus. Preoccupied by *Dascillus* Latreille 1796, a genus of Coleoptera, sometimes written *Dascyllus*.

Pirene Gistel, Naturg, Thierr. höhere Schulen, 1848, p. ix. New name for *Dascyllus* Cuvier and Valenciennes 1830 (= Cuvier 1829), not Latreille 1797 (= 1796). Preoccupied by *Pyrene* Bolten 1798, a genus of Mollusca.

Tetradrachmum Cantor, Journ. Asiatic Soc. Bengal, xviii, 2, Nov.-Dec. (?), 1849, p. 1222. *Id.* Cat. Malay. Fish., 1850, p. 240. New name for *Dascyllus* Cuvier 1829, preoccupied.

Since *Pirene* Gistel is preoccupied in Mollusca, the next name, *Tetradrachmum* Cantor, must be used for *Dascyllus* Cuvier (*non* Latreille).

Cantor's name was first published in the November, 1849, number of the Journal of the Asiatic Society of Bengal, but may not have appeared until December, 1849, or even later. The Catalogue of Malayan Fishes was probably printed late in 1850, as the Australian Museum copy is inscribed "Tho. Horsfield. From the author, Feb. 21st, 1851."

TETRADRACHMUM ARUANUM (*Linnæus*).

Chatodon aruanus Linnæus, Syst. Nat., ed. 10, 1758, p. 275, and ed. 12, 1766, p. 464. "Indiis" = Aru Islands. *Id.* Bloch, Ichthyologie, vi, 1788, Pl. cxcviii, fig. 2.

Dascyllus aruanus Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 434.

Sixteen specimens (1A.2759) from Michaelmas Cay agree with Cuvier and Valenciennes's description of the disposition of the colour markings.

TETRADRACHMUM XANTHOSOMA (*Bleeker*).

Dascyllus xanthosoma Bleeker, Nat. Tijd. Ned. Ind., ii, 1851, p. 247. Banda. *Id.* Günther, Cat. Fish. Brit. Mus., iv, 1862, p. 14; and Fische Südsee, vii, 1881, p. 237, Pl. cxxiv, fig. C.

One from Michaelmas Cay (1A.2763) and three from the New Hebrides (I.13910-12) are in the Australian Museum. New record for Australia.

ACANTHOCHROMIS LONGICAUDIS (*Alleyne and Macleay*).

Heptadecanthus longicaudis Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i, 1877, p. 343, Pl. xv, fig. 3. Cape Grenville, Queensland.

Acanthochromis longicaudus McCulloch and Whitley, Mem. Qld. Mus., viii, 2, 1925, p. 166.

One (1A.2762) from Michaelmas Cay.

CHROMIS LEPISURUS (*Cuvier and Valenciennes*).

(Pl. i, fig. 1.)

Heliases lepisurus Cuvier and Valenciennes, Hist. Nat. Poiss., v, 1830, p. 498. New Guinea.

Chromis lepisurus Bleeker, Atl. Ichth., ix, 1877, Pl. ccccciii, fig. 7.

Heliastes lepidurus Day, Fish. India, 1878, p. 389, Pl. lxxxii, fig. 1.

Four specimens from Michaelmas Cay, where the species was quite common in large stocks of coral some distance from the shore; one of them is here figured. Mr. E. H. Rainford has collected this species at Holbourne Island, Queensland, but it has not hitherto been recognized from Australia.

Specimens are in the Australian Museum from Dauco Island reef, off Port Moresby, Papua (McCulloch); Howla Island, Solomons; Andaman Islands (Day collection); Vavau, Friendly Islands; and Aneiteum, New Hebrides.

AMPHIPRION PERCULA (*Lacépède*).

Lutjanus percula Lacépède, Hist. Nat. Poiss., iv, 1802, p. 239. New Britain.

Amphiprion percula Günther, Fische Südsee, vii, 1881, p. 225, Pl. cxxiv, fig. A. *Id.* Saville-Kent, Gt. Barrier Reef, 1893, pp. 33 and 145, chromo-pl. i.

Three specimens (1A.2760-1) from the folds of a large brown anemone (*Discosoma*) in shallow water, Michaelmas Cay. Saville-Kent states that these fishes take up their "residence within the gastric cavity of their host," but none observed by me entered the anemone's mouth, but ensconced themselves amongst its tentacles and ample folds.

Specimens in Austr. Mus. from Port Darwin, Murray Island, Cairns Reef, Two Isles, Hope Islands, Green Island; Solomons, Duke of York Island, Line Islands, and New Guinea.

Family CORIDÆ.

HALICHORES TRIMACULATUS (*Griffith*).

Julis trimaculata Griffith, Anim. Kingd. (Cuv.), x, 1834, Pl. xlv, fig. 2. Name and fig. only.

Julis trimaculata Quoy and Gaimard. Voy. "Astrolabe," Zool., iii, 1835, p. 705, Pl. xx, fig. 2. Vanikoro.

Halichæres trimaculatus McCulloch, Rec. Austr. Mus., ix, 3, 1913, p. 385.

One from Michaelmas Cay.

HALICHORES OPERCULARIS (*Günther*).

PlatyGLOSSUS opercularis Günther, Cat. Fish. Brit. Mus., iv, 1862, p. 148. Fiji. *Id.* Playfair, Fish. Zanzibar, 1866, p. 95, Pl. xii, fig. 1.

One specimen (1A.2790) from Michaelmas Cay.

STETHOJULIS CASTURI *Günther*.

Stethojulis albovittata Bleeker, Atl. Ichth., i, 1862, p. 132, Pl. xlv, fig. 5. Not *Labrus albovittatus* Lacépède 1802.

Stethojulis casturi Günther, Fische Südsee, vii, 1881, p. 255, Pl. cxli, fig. A. Pelew Is., &c. *Id.* Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 296, Pl. xlv, fig. 1.

A specimen (1A.2791) from Michaelmas Cay, 28th May, 1926, is the first to be recorded from Australia.

HINALEA AXILLARIS (*Quoy and Gaimard*).

Julis axillaris Quoy and Gaimard, Voy. Uranie, Zool., 1824, p. 272. Sandwich Islands.

Stethojulis axillaris Bleeker, Atl. Ichth., i, 1862, p. 136, Pl. xlv, fig. 3. *Id.* Jordan and Evermann, Bull. U.S. Fish. Comm., xxiii, 1, 1905, p. 283, fig. 121.

Two specimens from coral, Michaelmas Cay. Others in Austr. Mus. from Murray Island, Queensland; Lord Howe Island; New Guinea; and New Hebrides.

THALASSOMA DORSALE (*Quoy and Gaimard*).

Julis dorsalis Quoy and Gaimard, Voy. "Astrolabe," Zool., iii, 1835, p. 713, Pl. xv, fig. 5. Ile de France.

One from Michaelmas Cay.

Family PARAPERCIDÆ.PARAPERCIS CYLINDRICA (*Bloch*).

Sciæna cylindrica Bloch, Nat. ausl. Fische, vi, 1792, p. 42 (*fide* Sherborn), and Ichtyologie, ix, 1797, p. 37, Pl. ccxcix, fig. 1. Locality unknown.

One specimen (1A.2705) on reef, Michaelmas Cay, 27th May, 1926.

Family TRICHONOTIDÆ.TRICHONOTUS SETIGER *Bloch and Schneider*.

Trichonotus setiger Bloch and Schneider, Syst. Ichth., 1801, p. 179, Pl. xxxix (*T. setigerus* on plate). Eastern India. *Id.* Cuvier and Valenciennes, Hist. Nat. Poiss., xii, 1837, p. 316. *Id.* Bleeker, Nat. Tijd. Ned. Ind., vii, 1854, p. 251. *Id.* Rendahl, K. Svenska Vet. Akad. Handl., lxi, 9, 1921, p. 20, figs. 4a-c (scales).

Trichonotus polyophthalmus Bleeker, Nat. Tijd. Ned. Ind., v, 1853, p. 243. Ceram.

Trichonotus setigerus Günther, Cat. Fish. Brit. Mus., iii, 1861, p. 484. *Id.* Günther, Journ. Mus. Godeff., i, 4, 1873, p. 266. *Id.* Macleay, Proc. Linn. Soc. N.S. Wales, ii, 4, 1878, p. 359. *Id.* Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx, 1, 1879, p. 396 (*lege* 376). *Id.* Schmeltz, Cat. Mus. Godeff., vii, 1879, p. 51. *Id.* Day, Suppl. Fish. India, 1888, p. 795, and text-fig. *Id.* Johnstone, Ceyl. Pearl Oyster Fish., ii, Suppl. Rept., xv, 1904, p. 215, Pl. i, fig. 7.

Trichonotus setifer Bleeker, Ned. Tijd. Dierk., iv, 1873, p. 233 (*fide* Weber and Beaufort 1911).

? *Trichonotus blochii* Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Philad. Exhib.), 1875, p. 22. Gulf of Carpentaria. *Id.* McCulloch and Whitley, Mem. Qld. Mus., viii, 2, 1925, p. 173.

A post-larval specimen, 33 mm. long, from Michaelmas Cay, has the following characters:—Head 7.5 mm., caudal 5, height 3, and ventrals 3. Eyes minute. Lower jaw longer than upper, with a large knob at the symphysis. One long dorsal, its anterior rays not differentiated from the others, arises over the pectorals. Dorsal and anal free from caudal; ventrals approximate.

Without reference to Castelnau's type, I am unable to state whether *T. blochii* is distinct from *T. setiger* or not.

The species has been recorded from Bowen by Schmeltz, but his record was unknown to McCulloch and Whitley when their list of Queensland fishes was compiled (1925, *loc. cit. supra*). Mr. E. H.

Rainford has collected two specimens from Bowen and noted the colours as "grey above, with a mauvy tinge; yellowish-white below. Rows of bright electric-blue spots along body and head." The Michaelmas Cay specimen was uniformly yellowish-brown. Rendahl has recorded this species from Cape Jaubert and Klunzinger noted it from Port Darwin, but it is evidently rare or very local, since it was not obtained by Dr. Paradise, who has made extensive collections of fishes in north Australia.

Family CALLIONYMIDÆ.

CALLIONYMUS MICROPS *Günther*.

Callionymus microps Günther, Fische Südsee, vi, 1877, p. 192, Pl. cxiii, fig. c. Tonga.

Synchiropus microps Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 415.

Specimens in the Australian Museum from the outer barrier, St. Crispin Reef, Port Douglas, Queensland, and the New Hebrides. Three from pools on outer reef at Michaelmas Cay, where the species was common. New record for Australia.

Family ELEOTRIDÆ.

ASTERROPTERIX SEMIPUNCTATUS *Rüppell*.

Asterropteria semipunctatus Rüppell, Atl. Reise Nordl. Afrika, Fische, 1830-1, p. 138, Pl. xxxiv, fig. 4. Massowah, Red Sea. *Id.* McCulloch and Ogilby, Rec. Austr. Mus., xii, 10, 1919, p. 273 (references and synonymy).

Only two specimens from Michaelmas Cay. Abundant at North-West Islet, Capricorn Group (Whitley). Schmeltz¹³ recorded this species from Bowen as *Eleotris cyanostigma*. The Australian Museum has specimens from Suva, Fiji.

EVIOTA VIRIDIS (*Waite*).

Allogobius viridis Waite, Rec. Austr. Mus., v, 3, 1904, p. 177, Pl. xxiii, fig. 3. Lord Howe Island.

Eviota zonura Jordan and Seale, Bull. U.S. Fish. Bur., xxv, 1906, p. 386, fig. 75. Apia and Pago Pago, Samoa.

Eviota viridis McCulloch, Rec. Austr. Mus., ix, 3, 1913, p. 386.

Six specimens, 19-23 mm. long, from Michaelmas Cay. Common in coral.

¹³ Schmeltz.—Cat. Mus. Godeff., vii, 1879, p. 47.

VALENCIENNEA LONGIPINNIS (*Lay and Bennett*).

Eleotris longipinnis Lay and Bennett, Zool. Beechey's Voy. "Blossom," 1839, p. 64, Pl. xx, fig. 3. Loo-Choo.

Valenciennaea longipinnis McCulloch and Ogilby, Rec. Austr. Mus., xii, 10, 1919, p. 263.

One from Michaelmas Cay.

Family GOBIIDÆ.

GOBIODON VERTICALIS *Alleyne and Macleay*.

Gobiodon verticalis Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i, 1877, p. 333, Pl. xii, fig. 4. No locality = Darnley Island, Torres Strait (*vide* McCulloch). *Id.* McCulloch and Ogilby, Rec. Austr. Mus., xii, 10, 1919, p. 208, Pl. xxxii, fig. 2.

Life Colours.—Head and body green; vertical bars of reddish-brown cross the cheeks and bases of pectorals. Their place is taken by similarly coloured spots on the back, and spots coalescing to form short horizontal bands on the lower part of the sides. Fins all yellow; caudal and anal rays dark-tipped.

Locality.—Michaelmas Cay, off Cairns, North Queensland; coll. T. Iredale and G. P. Whitley, 24th May, 1926. Two specimens preserved.

PARAGOBIODON ECHINOCEPHALUS (*Rüppell*).

Gobius echinocephalus Rüppell, Atl. Reise Nordl. Afrika, Fische, 1830-1, p. 136, Pl. xxiv, fig. 3. Massowah, Red Sea.

Paragobiodon echinocephalus McCulloch and Ogilby, Rec. Austr. Mus., xii, 10, 1919, p. 239, Pl. xxxiv, fig. 1 (references and synonymy). *Id.* Whitley, Austr. Zool., iv, 4, 1926, p. 233.

Twenty-six specimens (1A.2712), 18-35 mm. long, from Michaelmas Cay.

GOBIUS ORNATUS *Rüppell*.

Gobius ornatus Rüppell, in Atlas zu Rüppell, Reise (Senckenb. Nat. Ges.), Fische (—), 1830 or 1831, p. 135. Massowah, Red Sea. *Id.* McCulloch and Ogilby, Rec. Austr. Mus., xii, 10, 1919, p. 227, Pl. xxxiii, fig. 2 (references and synonymy).

A specimen, 45.5 mm. long, from Michaelmas Cay has the following characters:—D.vi/10; A.9; Sc. 26; teeth pluriserial, tongue not notched; upper pectoral rays short, not yet silk-like. The spots of adults are larger than those of the young, especially on the fins. Surgeon-Lieutenant Lockwood found this species common around Hervey Bay, South Queensland.

Family SCORPÆNIDÆ.

SEBASTAPISTES *Streets*.

Sebastapistes Streets, Bull U.S. Nat. Mus., vii, 1877, p. 62. *Ex Gill MS.* Logotype, *Scorpena strongia* Cuvier and Valenciennes.

SEBASTAPISTES BYNCENSIS (*Richardson*).

Scorpena byncensis Richardson, Ichth. Voy. "Erebus" and "Terror," 1845, p. 22, Pl. xiv, figs. 3-5. North-west coast of Australia.

A series of specimens in the Australian Museum shows that the orbital cirrhi may be present, poorly developed, or absent. The colour varies between ashy grey and brilliant brown and white, but the colour pattern is quite constant in more than fifty specimens. One from Murray Island has D.xiii/9.

The species was common under lumps of dead coral in shallow water at Michaelmas Cay, and remained practically motionless when exposed. One of the specimens from that locality had a long, thick orbital cirrus; D.xi/i, 10; A.iii/5; about 22 modified scales on lateral line, and l. tr. 11/1/18.

Scorpena tristis Klunzinger¹⁴ and *S. bakeri* Seale¹⁵, from the Red Sea and Guam respectively, may be synonyms of this species. *S. laotale* Jordan and Seale¹⁶ certainly is identical, as topotypes from Samoa and specimens collected by A. R. McCulloch in the New Hebrides show.

Family CEPHALACANTHIDÆ.

DACTYLOPTENA ORIENTALIS *Cuvier and Valenciennes*.

Dactylopterus orientalis Cuvier and Valenciennes, Hist. Nat. Poiss., iv, 1829, p. 134, Pl. lxxvi. Indian Ocean.

A small specimen (1A.2714) washed up on the beach at Michaelmas Cay, 18th May, 1926.

Family BLENNIIDÆ.

TRIPTERYGION ATROGULARE *Günther*.

Tripterygion atrogulare Günther, Journ. Mus. Godeff., i, 1873, p. 267. Bowen. *Id.* Whitley, Austr. Zool., iv, 4, 1926, p. 235.

Life Colours.—Ground colour greyish; body with very irregular bars of dark brown and a few red dots on the sides; top of head flecked with red, a dark bar on the snout. Eye green; pupil black,

¹⁴ Klunzinger.—Synop. Fische Roth. Meers., Verh. Zool.-Bot. Ges. Wien, xx, 1870, p. 802 (*vide* Evermann and Seale, 1907); and Fische Roth. Meeres, 1884, p. 70.

¹⁵ Seale.—Occ. Pap. Bishop Mus., i, 3, 1901, p. 120.

¹⁶ Jordan and Seale.—Bull. U.S. Bur. Fish., xxv, 1906, p. 376, fig. 72.

surrounded by a coppery ring. Dorsal variegated with brownish; anal whitish with pink rays; pectorals whitish proximally and pink distally; ventrals whitish; caudal whitish with a few short brown bars on the rays.

Günther gives the colours as clear brownish; ventral surface of body and base of pectoral black; tail with a small black spot above and below, and a specimen from Port Denison in the Australian Museum conforms with his description, but another from the same locality agrees better with a series collected in coral at Michaelmas Cay, May, 1926. I have also obtained this species from North-West Islet, so that it seems to be fairly common along the entire Great Barrier Reef.

PETROSCIRTES PUNCTATUS (Cuvier and Valenciennes).

Blennechis punctatus Cuvier and Valenciennes, Hist. Nat. Poiss., xi, 1836, p. 287. Bombay.

Omobranchus punctatus Swainson, Nat. Hist. Fish. Amphib., ii, 1839, p. 274.

Petroscirtes punctatus Günther, Cat. Fish. Brit. Mus., iii, 1861, p. 231. *Id.* Schmeltz, Cat. Mus. Godeff., vii, 1879, p. 48.

One from Murray Island (Hedley and McCulloch); two from Michaelmas Cay. Schmeltz's record of this species from Bowen, Queensland, has been generally overlooked; it is evidently not a common species in Australia.

SALARIAS FASCIATUS (Bloch).

Blennius fasciatus Bloch, Nat. ausl. Fische, ii, 1786, p. 110 (*vide* Sherborn) and Ichtyologie, v, 1787, p. 91, Pl. clxii, fig. 1. East Indies.

Salarias fasciatus McCulloch, Rec. Austr. Mus., xiv, 2, 1923, p. 123, Pl. xv, fig. 3.

Five, 79-134 mm., from Michaelmas Cay; common.

Family BATRACHIDÆ.

CORYZICHTHYS DIEMENSIS (Lesueur).

Batrachoides diemensis Lesueur, Journ. Acad. Nat. Sci. Philad., (n.s.), iii, 2, May, 1824, p. 402. "Van Diemen's Land (Peron)" = Shark's Bay, Western Australia. Specimen in the Jardin des Plantes, Paris; described from a drawing.

Batrachus quadrispinis Cuvier and Valenciennes, xii, 1837, p. 487. "Mer des Indes (Peron)." Probably based on Lesueur's specimen.

Batrachus diemensis Richardson, Ichth. Voy. "Erebus" and "Terror," ii, 1845, p. 17, Pl. viii, figs. 1-2.

Coryzichthys diemensis Ogilby, Ann. Qld. Mus., No. 9, 1908, p. 51.

Id. McCulloch, Rec. Austr. Mus., xv, 1, 1926, p. 39.

Coryzichthys guttulatus Ogilby, Proc. Roy. Soc. Qld. xxiii, 1910, p. 42. Aru Islands.

Synonymy.—A co-type of *Coryzichthys guttulatus* Ogilby, in the Australian Museum (No. I.9486), has been compared by me with the large series of *C. diemensis* Lesueur in the same collection. I find no characters whereby Ogilby's species may be maintained as distinct.

Three specimens were caught at Michaelmas Cay, one of which was eating an octopus.

Family BALISTIDÆ.

BALISTAPUS ACULEATUS (*Linnæus*).

Balistes aculeatus Linnæus, Syst. Nat. ed. 10, 1758, p. 328. India.

Balistes (Balistapus) aculeatus Bleeker, Atl. Ichth., v, 1869, pp. 111 and 120, Pl. ccxvi, fig. 3.

Two specimens (1A.2695-6) from coral, Michaelmas Cay.

Family OSTRACIIDÆ.

OSTRACION TUBERCULATUM *Linnæus*

Ostracion tuberculatum Linnæus, Syst. Nat., ed. 10, 1758, p. 331. India.

Ostracion (Ostracion) tetragonus Bleeker, Atl. Ichth., v, 1865, pp. 31 and 39, Pl. cci, fig. 2, and Pl. cciii, fig. 2.

One specimen (1A.2704) of this common Great Barrier Reef boxfish from Michaelmas Cay.

Family TETRAODONTIDÆ.

TETRAODON HISPIDUS *Linnæus*.

Tetraodon hispidus Linnæus, Syst. Nat., ed. 10, 1758, p. 333. India.

Id. E. K. Jordan, Proc. U.S. Nat. Mus., lxvi, 1925, p. 42.

Tetraodon hispidus Linnæus, Syst. Nat., ed. 12, i, 1766, p. 411. *Id.* Günther, Fische Südsee, ix, 1910, p. 466, Pl. clxxvii.

Colours.—Two specimens of this species from Michaelmas Cay agree well with Günther's figure quoted above. The life colours of the larger, 15½ inches long, were as follows:—Greyish-brown suffused with olive-green on head, back, sides, and tail, speckled

with large whitish spots with nebulous edges. Belly whitish with irregular sub-horizontal prolongations of the greyish-brown colouring of the sides. Teeth white. Pupil of eye large, black, surrounded by bright golden yellow. Dorsal and anal plain greyish-brown, with a pale dusky blotch near tips, the rays yellowish. Pectoral rays bright yellow, the membranes hyaline. Base of pectoral and area surrounding axil and gill-opening black with bright yellow spots and bars.

This species, evidently common on the Great Barrier Reef, is very sluggish and may be caught by hand.

CANTHIGASTER BENNETTI (*Bleeker*).

Tropidichthys bennetti Bleeker, Nat. Tijd. Ned. Ind., vi, 1854, p. 504. Amboina.

Canthigaster bennetti McCulloch, Mem. Qld. Mus., vii, 4, 1922, p. 245.

One from Michaelmas Cay; others in Australian Museum from Murray Island and St. Crispin Reef, Queensland.

EXPLANATION OF PLATE I.

- Fig. 1. *Chromis lepisurus* (Cuvier and Valenciennes). A specimen, 95 mm. long, from Michaelmas Cay, Queensland.
- Fig. 2. *Lutjanus sp. juv.* A specimen, 34 mm. long, from Michaelmas Cay, Queensland.
- Fig. 3. *Pomacentrus sufflavus* Whitley *sp. nov.* Holotype, 28 mm. long to hypural joint, from Michaelmas Cay, Queensland.
- Fig. 4. *Epinephelus merra* Bloch. A young specimen, 46 mm. long, from Michaelmas Cay, Queensland.
- Fig. 5. *Glyphisodon hedleyi* Whitley *sp. nov.* Holotype, 53 mm. long to hypural joint, from Dauco Island reef, Papua.
- Fig. 6. *Tylosurus terebra* Whitley *sp. nov.* Holotype, 243 mm long, from Michaelmas Cay, Queensland.

