

EDIBLE FISHES OF QUEENSLAND.

BY J. DOUGLAS OGILBY (ICHTHYOLOGIST).

(Plates XVI to XXVI.)

PART X.—PLESIOPIDÆ (No. 1).

PARAPLESIOPS Bleeker.

Ruppelia Castelnau, Proc. Zool. & Accl. Soc. Vie., ii, 1873, p. 51 (*prolongata* = *bleekeri*). Not *Ruepelia* Schinz.

Paraplesiops Bleeker, Verh. Akad. Amst., xv, 1875, Pseudochrom., p. 3 (*bleekeri*).

Body ovate or subovate, more or less compressed. Scales large or moderate, adherent, ciliated. Two lateral lines, the upper close to the dorsal profile and terminating below or a little behind the last dorsal rays, the lower along the middle of the tail; tubes simple and straight. Head large; cheeks partly, opercles wholly scaly, the scales cycloid. Mouth terminal and protractile, with rather wide, oblique cleft, the jaws equal; maxillary exposed and distally dilated, with supplemental bone. Jaws, vomer, palatines, and tongue armed with bands of villiform teeth, the outer and inner rows in the former somewhat enlarged and conical. Angle of preopercle entire or with several short coarse spines concealed beneath a membranous border.¹ One dorsal fin with xi or xii 9 to 11 rays, the interspinous membrane deeply cleft and penicillate; soft portion of fin much shorter than the spinous and acutely angulated behind; base of fin scaly. Caudal rounded, with 17 principal rays, the upper and lower simple. Anal short, with iii 10 to 12 rays, the soft portion similar to that of the dorsal. Pectorals more or less broadly rounded, with 18 or 19 rays. Ventral inserted below the pectoral-base, with i 4 rays, the outer soft ray thickened and produced, cleft nearly to the base. Gill-openings wide; gill-membranes separate, free from the isthmus; branchiostegals six; pseudobranchiæ present; gills four, a slit behind the fourth; gill-rakers short stout and spinulose. (*παρά*. near; *Plesiops*, an allied genus.)

A small genus, containing five species from the shores of Temperate Australia. Though small, good panfishes.

The following key to the species of *Paraplesiops* at present recognized having been sent to me by Mr. McCulloch, I gladly avail myself of his permission to publish it, more especially as in drawing it up he had the advantage of having before him good examples of all five species. Among other things he writes to me as follows:—"These fishes are very variable as regards their fin and scale counts.

¹ These spines are not present in the three extralimital species, and it may, therefore, be advisable to segregate the Queensland species under the subgeneric name *Acanthagonia*, characterized by their presence and the larger scales.

but you may rely upon the characters in the key.' I may add that he is of opinion that *P. poweri* and *P. jolliffei* are "colour varieties of one and the same species": a conclusion with which I can not agree for the reasons given previously.² In dealing, therefore, with the two last species I have added certain other characters to McCulloch's key, believing that with two fishes of almost identical size so great differences, as, for instance, are shown in the interorbital width and the width of the body, could not possibly exist in a single species; moreover, my second example of *P. jolliffei* fully supports my contention.

Key to the Species of Paraplesiops.

- a*¹. Preopercle entire; 34 or more scales on the upper branch of the lateral line and usually 6 between it and the lower branch.
- b*¹. Cheek-scales in about ten series; body light, with darker cross-bands .. 1. *bleekeri*.
- b*². Cheek-scales in two or three series; body darker, without cross-bands.
- c*¹. Eleven dorsal spines 2. *gigas*.
- c*². Twelve dorsal spines 3. *meleagris*.
- a*². Preopercle spinose above the angle: about 30 scales on the upper branch of the lateral line and five between it and the lower branch.
- d*¹. Body little compressed; interorbital region narrow; cleft of mouth subhorizontal; body dark purplish black, with darker cross-bands 4. *jolliffei*.
- d*². Body strongly compressed; interorbital region wider; cleft of mouth oblique; body lighter, without darker cross-bands 5. *poweri*.

PARAPLESIOPS BLEEKERI (Günther).

(Plate XVI.)

Plesiops bleekeri Günther, Brit. Mus. Catal. Fish., iii, 1861, p. 364; id., Fisch. d. Sudsee, pt. 2, 1874, p. 87, pl. lviii, fig. A; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 400; Ogilby, Catal. Fish. N. S. Wales, 1886, p. 22.

Ruppelia prolongata Castelnau, Proc. Zool. & Accl. Soc. Vic., ii, 1873, p. 51; id., Proc. Linn. Soc. N. S. Wales, iii, 1879, pp. 353, 359.

Paraplesiops bleekeri Bleeker, Verb. Akad. Amst., xv, 1875, Pseudochrom., p. 3; Boulenger, Catal. Percif. Fish., i, 1895, p. 338; Waite, Synops. Fish. N. S. Wales, 1904, p. 28; Stead, Edib. Fish. N. S. Wales, 1908, p. 60.

Ruppellia prolongata Ogilby, *ibid.*

? *Ruppellia prolongata* Zietz, Trans. Roy. Soc. S. Austr., xxxiii, 1909, p. 268.

ROUNDHEAD.

Devil Fish (Victoria, *vide* Castelnau).

Type localities:—?, Günther; Port Jackson, Macleay (*P. bleekeri*).
Hobson's Bay (*R. prolongata*).

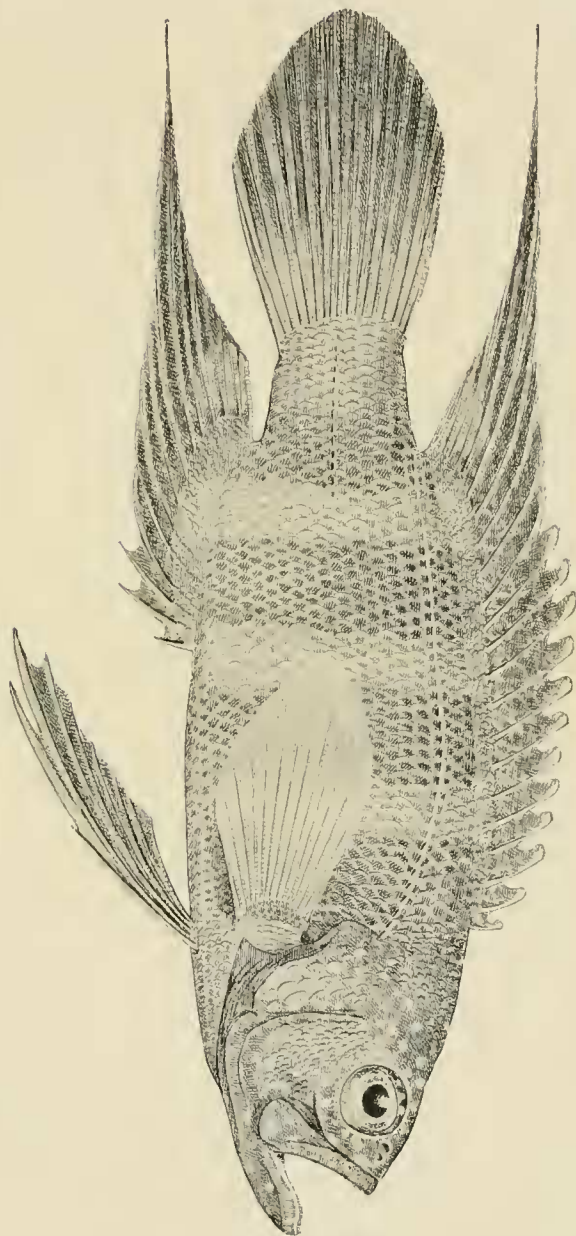
Body subovate and compressed, the ventral contour rather more arched than the dorsal, its width at the shoulders about half its depth, which is 2.7 to 2.83 in its length and a little more than the length of the head. Caudal peduncle about

² Proc. Roy. Soc. Queensl., xxviii, 1916, p. 113.

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Edgar R. Weale, del.

PARAPLESIOPS FLEEKERI (Günther). $\frac{1}{2}$ Nat. Size.



two fifths deeper than long, its least depth 5.67 to 6 in the body-length. Head about four ninths deeper than wide, the fronto-occipital profile sublinear and but little acclivous, that of the nape feebly rounded and somewhat raised above the level of the occiput, its width 1.83 to 2 in its length, which is 2.83 to 3 in that of the body. Snout with rounded profile, its length about one-eighth less than the eye-diameter, which is 3.5 to 3.67 in the length of the head. Interorbital region feebly convex, its width 1.2 to 1.5 in the eye-diameter. Jaws equal; cleft of mouth very oblique; maxillary extending to beyond the vertical from the posterior border of the pupil, its length half or rather more than half that of the head, the width of its gently rounded distal extremity 1.75 to 1.83 in the eye-diameter.

Premaxillaries with a band of villiform teeth, broad in front, gradually narrowing laterally, and an outer row of short, stout, curved, and somewhat distant teeth; a few slender, depressible teeth on each side of the symphysis posteriorly. Mandibular band similar anteriorly, but narrower and without depressible teeth; laterally the teeth are of equal size, in three to two series, the inner ones as strong as those of the outer row. An angular band of small teeth on the head of the vomer, each successive series decreasing in size from the outer row. Palatine teeth in a narrow, anteriorly claviform, band; pterygoids toothless. An elongate-ovate patch of small teeth on the tongue.

Scales in 36 series between the opercular flap and the root of the caudal fin, in 5 or 6/1/18 or 19 between the first dorsal spine and the ventral edge, those below the upper lateral line and on the opercles large and feebly etenoid, above that line small and cycloid, as also are those of the nape, parietal region, and cheek; rest of head naked. Lateral lines with 39/12 simple pores.

Dorsal fin with xii 9 or 10 rays, originating above the pectoral base; spines moderately strong, the membranes of those in front deeply notched and penicillate; they increase gradually in length to the last, which is 1.75 to 2 in the length of the head and 2.33 to 2.5 in the sixth or seventh ray; these are subequal in length, 2.2 to 2.5 in the body-length. Caudal subeuneiform, 2.55 to 2.67 in the body-length. Anal fin with iii 10 rays, originating below the eleventh dorsal spine; spines strong, the third the longest, 1.87 to 2.17 in the length of the head and 2.6 in the sixth and longest ray, which is as long as or a little longer than that of the dorsal. Pectoral obtusely pointed, with 16 to 19 rays,³ as long as the head; seventh and eighth rays longest, extending to below the last dorsal spine. Ventral fin elongate and pointed, inserted slightly in advance of the pectoral-base, the length of the spine 1.5 in that of the head; outer ray bifid and inspissate, extending to or beyond the last anal spine, its length 2.25 in that of the body.

Gill-rakers 7 + 14, mostly reduced to mere spinulose pads, the last on the lower branch of the anterior arch broad and triangular, its length 2.67 in the eye-diameter. Pharyngeal bones mostly armed with small, closely set, globular teeth.

³The larger of my examples has 19 rays on each side, the smaller 16 on one side, 18 on the other.

Ochraceous, with four broad, transverse, purple bands. Head with scattered blue spots. All the fins, except the pectorals, which are uniform lemon-yellow, broadly tipped with violet; dorsal and anal sometimes with a few blue spots basally. (Named after Dr. Pieter Bleeker, the celebrated Dutch ichthyologist.)

Described from two Port Jackson examples, measuring respectively 182 and 233 mm., acquired by exchange from the Australian Museum, Sydney. Reg. No. I. 2858, 3116.

Distribution:—The unquestionable recorded range of this species is small, being restricted to the south-eastern corner of the mainland between Hobson's Bay and Port Jackson. The earliest notice of its occurrence was made by Dr. Günther who, after describing it, remarked that—"The locality in which this splendid species is found is unknown; I conclude, however, from its general appearance that it belonged originally to a collection made at the Norfolk Islands." Subsequently he figured it among the fishes of the South Seas, but with the statement that it had not come under the notice of Garrett. Nothing, however, has further transpired to give warrant for any such assumption. To Castelnau belongs the honor of first providing this species with "a local habitation and a name" (vernacular), he having recorded, under the title *Rüppellia prolongata*, a large example obtained presumably in the Melbourne Market, where it was sufficiently well known to have earned for itself the local name of "devil fish," though it is difficult to understand why so harmless and handsome a fish should be weighted with so opprobrious a title.⁴ Subsequently the same author noted the occurrence of the species in Port Jackson, and a few years later the writer was fortunate enough to catch a fine specimen in Port Hacking, as noted in his New South Wales Catalogue. So far as I can ascertain these three are the only localities from which the species has been directly recorded. Stead's remark, that "it is not uncommon in the vicinity of reefs and rocky localities generally along our (*i.e.* New South Wales) coastline," induces the belief that its range is not so restricted as would appear from the foregoing. Castelnau further published⁵ under *R. prolongata* a notice of a fish forwarded to him from

⁴ In his various notices of this fish Castelnau has got himself into a somewhat hopeless tangle by confusing under the same name two totally distinct species. Early in 1873 he wrote—"It forms a new genus (*Bleckeria*), characterised by the soft part of its dorsal and of the anal being considerably prolonged, and its ventrals formed of one spine and only three rays. This species (*catafracta*) is over a foot long and is covered with rather large scales." Later in the same year he again wrote—"In my paper on the Edible Fishes of Victoria, in the Exhibition Essays, 1873, I stated by a *lapsus calami* that this fish was my *Bleckeria catafracta* (*Lacépédia*)." This latter assignment of the name was not published until some months after the issue of the earlier paper, so that it would seem that, if *Bleckeria catafracta* was, as a name, of any scientific value, it would have to be listed as a synonym of *Paraplesiops bleekeri*, not of *Lacépédia catafracta*, which is possibly a latridid fish. Fortunately, however, *Bleckeria* is antedated by *Bleckeria* Günther, an ammodytidoid fish from the East Indian Seas. (See Brit. Mus. Catal. Fish., iv, 1862, p. 387.)

⁵ Res. Fish. Austr., 1875, p. 29.

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PARAPLESIOPS JOLLIFFEI Ogilby; holotype. 1 $\frac{1}{2}$ Nat. Size.

Phyllis F. Clarke, del.

Fremantle, W. A., by Mr. Bostock, but I have no hesitation in saying that this record appertains to some quite distinct plesiopid, possibly *P. mclagris*,⁶ a fact which tends to discredit Zietz's Gulf of St. Vincent record, that author having failed to detect Castelnau's error. Nothing is known of the breeding of this fish.

Uses:—Stead writes—"Although of edible value is not important enough to be regarded as a market fish, either present or prospective."

Dimensions:—Attains a length of 330 mm.

Our figure, which is taken from an Australian Museum example, has been placed at my disposal by the authorities of that institution.

PARAPLESIOPS JOLLIFFEI Ogilby.

(Plate XVII.)

Paraplesiops jolliffei Ogilby, Proc. Roy. Soc. Queensl., xxviii, 1916, p. 112.

BLUE-TIP LONGFIN.

Type locality:—Green Island, Moreton Bay.

Body ovate, the dorsal profile much more arched than the ventral, its width anteriorly about three fourths of its depth, which is 2.37 to 2.55 of its length and from a little to one seventh more than the length of the head. Caudal about one half deeper than long, its least depth 5.6 to 6 in the body-length. Head about one sixth deeper than wide, its upper profile and that of the nape linear and strongly acclivous, its width 1.33 in its length, which is 2.67 to 2.75 in that of the body. Snout short and blunt, with linear, subvertical profile, its length 1.33 to 1.4 in the eye-diameter, which is 3 to 3.25 in the length of the head; interorbital region feebly convex, its width 8.25 in the length of the head. Jaws equal; cleft of mouth subhorizontal; maxillary extending to below the hinder border of the eye, its length about half of that of the head.

Jaws with bands of villiform teeth, broadest anteriorly, where the outer and inner rows are composed of short, stout, widely set, conical teeth; a rectangular band of villiform teeth on the vomer and a short, straight, narrow band on the palatines; lingual teeth in a broader band.

Scales in 32 or 33 series along the middle of the side; in 4/1/14 to 16 from the base of the first dorsal spine obliquely backwards; tubes of lateral lines 28 to 30/12; opercles, except the preopercle, scaly, the rest of the head naked, except a biserial band of smaller scales on the cheek posteriorly; naked parts with numerous small open pores.

Dorsal with xii 10 rays, originating above the opercular flap; first and second dorsal spines short; the others gradually increasing in length to the last, which is 1.67 to 1.83 in the length of the head; outer border of soft dorsal acutely angulated, the 7th ray the longest, as long as or longer than the head, and

⁶ McCulloch has given us an excellent figure of this species in Rec. W. Austr. Mus., i, pt. 2, 1912, pl. ix.

reaching to or beyond the middle of the caudal. Caudal rounded, 2.33 to 2.44 in the body-length. Anal with iii 11 rays, originating below the 11th dorsal spine; third spine longest, a little shorter than the last dorsal spine, and 2.11 to 2.37 in the seventh and longest ray, which is considerably longer and reaches further back than that of the dorsal. Pectoral rounded, with 18 (17 to 19) rays, a little shorter than the head. Ventral two fifths longer than the pectoral, the second ray the longest, extending to the sixth to eighth anal ray; ventral spine 1.6 in the length of the head without the opercular flap.

Gill-rakers 11 on the lower branch of the anterior arch, the first 4 tubercular, the longest one fourth of the eye-diameter.

Body purplish black, the last third of the trunk and the tail with six obscure grayish cross-bands, which do not reach the dorsal surface. A blue band from the nostril to the angle of the preopercle, cheeks and opercles sparsely blue-spotted. Dorsal, caudal, anal, and ventral fins purple, the first two and the posterior rays of the third crossed by a network of grayish lines; pectorals greenish yellow. (Named after its collector, Mr. Edwin Alfred Jolliffe.)

Through the fortunate capture by its discoverer of a second example of this beautiful longfin, I am now in a position to give a fuller and more correct description than was heretofore possible, the head of the original specimen being much distorted. The present description, which supersedes the first, is, therefore, taken from two examples, measuring respectively 151 and 125 mm. over all, taken at Green Island, Moreton Bay, by Mr. Edwin Alfred Jolliffe, who generously presented them to the Queensland Museum, and after whom I have had much pleasure in naming it, in slight recognition of his keen interest in all matters relating to marine zoology.

Our illustration is taken from the smaller example mentioned above. Reg. No. I. 2669.

PARAPLESIOPS POWERI Ogilby.

(Plate XVIII.)

Paraplesiops poweri Ogilby, Proc. Roy. Soc. Queensl., xxi, 1907, p. 17.

BROWN LONGFIN.

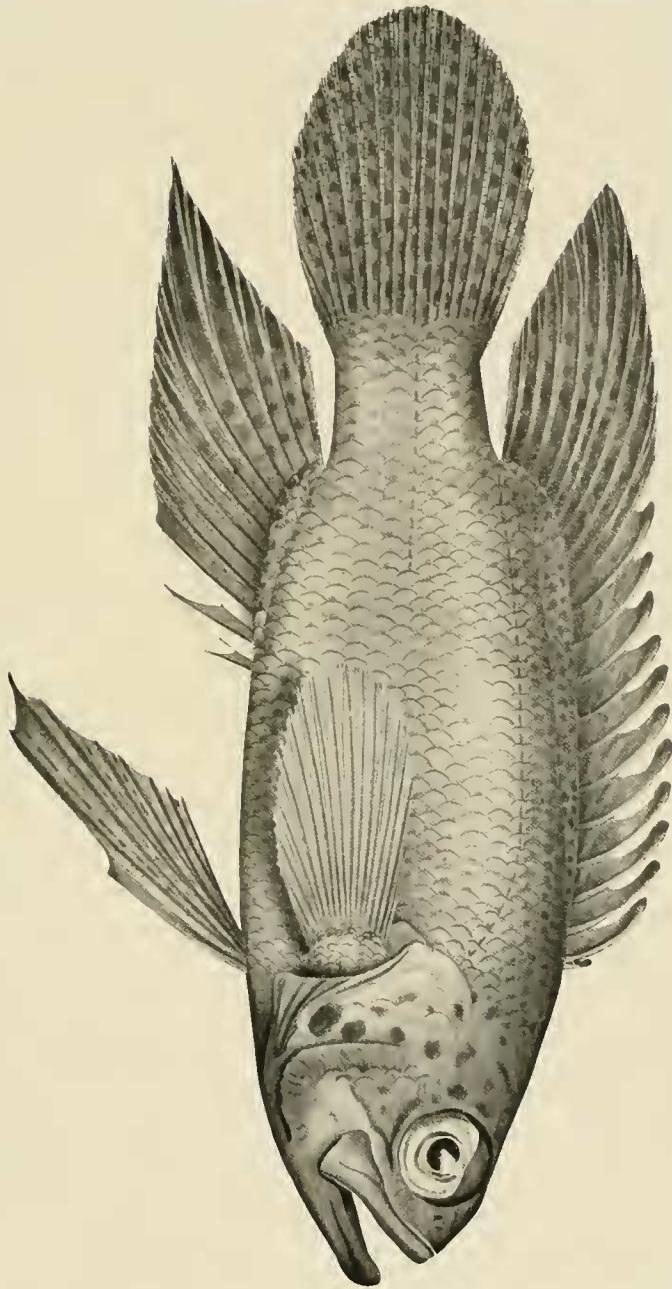
Type locality:—Mud Island, Moreton Bay.

Body subovate, the dorsal and anal contours subsymmetrical, its width anteriorly about four sevenths of its depth, which is 2.83 in its length and equal to the length of the head. Caudal peduncle about one half deeper than long, its least depth 6.2 in the body-length. Head one third deeper than wide, its upper profile and that of the nape linear and gently acclivous, its width 1.67 in its length. Snout short and blunt, with rounded, subvertical profile, its length 1.33 in the eye-diameter, which is one third of the length of the head; interorbital region feebly convex, its width 5.6 in the length of the head. Jaws equal; cleft of mouth rather strongly oblique; maxillary extending to below the last quarter of the eye, its length about half of that of the head.

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Phyllis F. Clarke, del.

PARAPLESIOPS POWERI Ogilby; holotype. Nat. Size.



Dentition as in *P. jolliffci*.

Scales in 33 series along the middle of the side; in 4/1/15 from the base of the first dorsal spine obliquely backwards; tubes of lateral lines 30/12. Otherwise as in *P. jolliffci*.

Dorsal with xii 10 rays, originating above the opercle; first spine short, the succeeding spines gradually increasing in length to the eighth and ninth, which are equal, longer than the tenth and eleventh, but shorter than the last, which is 1.83 in the length of the head; outer border of soft dorsal acutely angulated, the sixth ray the longest, rather longer than the head, and reaching to well beyond the middle of the caudal. Caudal rounded, 2.62 in the body-length. Anal with iii 10 rays, originating below the last dorsal spine; third spine longest, a little shorter than the last dorsal spine, and 2.37 in the sixth and longest ray, which is longer than and reaches somewhat further back than that of the dorsal. Pectoral obtusely pointed, with 18 rays, a little shorter than the head. Ventral one third longer than the pectoral, the second ray the longest, extending to the second anal ray; ventral spine 1.6 in the length of the head without the opercular flap.

Gill-rakers 12 on the lower branch of the anterior arch, all but the first 3 tubercular, the longest about one sixth of the eye-diameter.

Uniform greenish brown, the upper surface and the sides of the head with a purplish gloss. Sides of head with scattered blue spots, which only become prominent after death. All the fins blackish, except the pectorals and the basal third of the ventrals, which are pale yellowish brown. (Named after its collector Mr. Percy Power.)

Described from the type specimen, the only one so far obtained. It measures 172 mm. in total length, and was taken at Mud Island, Moreton Bay, by Mr. Percy Power, by whom it was presented to the Amateur Fishermen's Association of Queensland. It is now deposited in the type collection of the Queensland Museum, through the favor of the Association. Reg. No. I. 1548.

PART XI.—LUTIANIDÆ (No. 1).

APRION Cuvier & Valenciennes.

Aprion Cuvier & Valenciennes, Hist. Nat. Poiss., vi, 1830, p. 543 (*virescens*); Günther, Brit. Mus. Catal. Fish., i, 1859, p. 81; Bleeker, Atlas Ichth., viii, 1877, p. 76.

Sparopsis Kner, Sitz. Akad. Wien, lviii, 1868, p. 27 (*latifrons*).

Body elliptical, compressed. Scales moderate or rather small, adherent, finely ciliated. Lateral line complete, not extending on the caudal fin, the tube short and simple. Head scaly, except the interorbital region, snout, preorbital, suborbital ring, preopercle, and mandible. Snout moderate; preorbital wide.

Cleft of mouth moderate and oblique, the lower jaw slightly the longer. Canine teeth in both jaws, succeeded by a villiform band; vomer and palatines with villiform teeth; tongue toothless. Eye large. Nostrils contiguous, the anterior valvular. Preopercle entire or finely serrulate posteriorly; opercle with a blunt point; suprascapula serrated. Dorsal fin with x 11 rays, the spines slender and flexible, naked as also are the soft rays, the last of which is more or less produced. Caudal forked. Anal fin with iii 8 rays, similar to the soft dorsal. Pectoral long and pointed, with 15 to 18 rays. Ventral inserted below or behind the pectoral-base, the outer ray usually produced, without accessory scale. Gill-rakers in moderate number, well developed. (*a*, priv.; *πρίων*, a saw.)

Perciform fishes from the Indian and Western Pacific Oceans. Species 4 or 5.

APRION MICROLEPIS (Bleeker).

Chatopterus microlepis Bleeker, Versl. Akad. Amst. (2) iii, 1869, p. 80.

Aprion (Aprion) microlepis Bleeker, Verh. Akad. Amst. xiii, 1873, Révis. Lutjanus etc. p. 96; id., in Pollen & Van Dam, Faun. Madagascar, pt. 4, 1875, Poiss., pp. 26, 96; id., Atlas Ichth., viii, 1877, p. 78, pl. ccxxxv, fig. 6.

Apharcus rosceus Castelnau, Proc. Linn. Soc. N. S. Wales, iii, pt. 4, 1879, p. 373; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 386; Woods, Fish & Fisher. N. S. Wales, 1882, p. 15; Ogilby, Catal. Fish. N. S. Wales, 1886, p. 13; Waite, Synop. Fish. N. S. Wales, 1904, p. 33.

Aprion rosceus McCulloch, Rec. Austr. Mus., xi, 1917, p. 173, pl. xxx.

ROSEATE SEA-BREAM.

Type localities:—Amboina (*Apr. microlepis*).

Port Jackson (*Aph. rosceus*).

Body elliptical and somewhat compressed, the dorsal profile rather more arched than the ventral, its width 1.63 in its depth, which is 3.57 in its length and subequal to the length of the head. Caudal peduncle two and three fourths times as long as deep, its least depth 3.14 in the depth of the body. Head about two fifths longer than deep, the upper profile level and gently acclivous from above the nostrils to the occiput, which with the nape is feebly rounded, its width 1.8 in its length, which is 3.44 in that of the body. Snout rather long, with gently convex profile, its length 2.9 in that of the head. Eye moderate, its diameter 1.3 in the length of the snout, 3.75 in that of the head, and twice its distance from the angle of the maxillary groove; interorbital region convex, its width one fifth more than the eye-diameter and 3.14 in the length of the head. Lower jaw prominent, the maxillary extending to somewhat beyond the anterior border of the eye, its length 2.6, that of the mandible 2, in the length of the head. Preopercle feebly serrated, some of the teeth on the rounded angle enlarged; opercle with a pair of small spines.

Scales in 63 or 64 transverse series above the lateral line; 7/1/16 scales between the spinous dorsal and the vent; cheek scales in 7 series.

Dorsal fin with x 11 rays, the soft portion 1.44 in the length of the spinous; sixth spine longest, but scarcely longer than the fourth, fifth, seventh, and eighth, its length 2.44 in that of the head; soft dorsal a little lower than the spinous, one fourth longer than high, the posterior branch of the last ray produced, two sevenths more than the longest spine, but not reaching to the base of the caudal. Caudal deeply emarginate, with the lobes acute, the middle rays one third of the upper lobe, which is 3.33 in the body-length. Anal fin with iii 8 rays, originating below the second dorsal ray, the spines slender and flexible, the third the longest, 3.75 in the length of the head and a little shorter than the first ray; soft anal one sixth longer than high, the last ray similar to that of the dorsal, and seven ninths more than the second spine. Pectoral with 16 rays, its length 3.55 in that of the body, the fifth ray longest, not reaching to the vertical from the vent; below the fifth the rays rapidly decrease in length, so that the seventh is only three fifths of the length of the longest. Ventral long and pointed, with the outer ray slightly produced, extending as far back as and 1.25 in the length of the pectoral, which is about as long as the head.

Gill-rakers of moderate length and strength, 16 on the lower branch of the anterior arch, the longest 1.86 in the eye-diameter.

Upper surface and sides roseate, shading into pearly white below, the upper surface of the head and the snout washed with violet. Fins pinkish, the dorsal with a median saffron band, and with a basal saffron or pearly spot between each pair of spines and rays; anal with a pearly basal and saffron marginal band; tips of caudal, pectoral, and ventral rays grayish. (*μικρός*, small; *λεπίς*, scale.)

Described from a specimen, 395 millim. long, taken in Moreton Bay by Mr. A. E. Wood, and presented by him to the Queensland Museum; Reg. No. I. 2509. I have also had the opportunity of examining a larger example (482 millim.), caught by Mr. John Colclough on the Snapper Banks off Moreton Bay, and now the property of the Amateur Fishermen's Association.

Historical:—But little is known of this rare and beautiful fish, which was originally described from two small examples obtained at Amboina; some years subsequently its describer included it in the catalogue of fishes, published by Pollen & van Dam in their "Faune Madagascar," on the strength of an example received from Réunion. As *Aphareus roseus* Castelnau described it two years later from Port Jackson, and his type not being available for re-examination, the error was perpetuated in all subsequent lists of New South Wales fishes. It was, therefore, with especial pleasure that I discovered, in the collection of the Queensland Museum, the specimen from which the above description was drawn up, and am thus enabled to fix the position of Castelnau's fish.

Uses:—Nothing appears to have been recorded as to the edible qualities of this species or its congeners, but as it is a fairly large and robust fish, it is doubtless of equally good quality for the table as its lutianoid allies.

Range:—East Coast of Australia, Amboina, and Réunion.

Dimensions:—Attains a length of fully 600 millim. (Castelnau).

Remarks:—Since writing the above McCulloch has described and figured this fish as *Aprion rosus* Castelnau; nevertheless I still hold to the opinion that our fish cannot be separated from that of Bleeker.

PART XII.—NEMIPTERIDÆ (No. 1).

NEMIPTERUS Swainson.

Nemipterus Swainson, *Classif. Fish.*, ii, 1839, pp. 172, 223 (*filamentosus* = *nematophorus*); Jordan & Thompson, *Proc. U. S. Nat. Mus.*, xli, 1912, p. 563.

Synagris Günther, *Brit. Mus. Catal. Fish.*, i, 1859, p. 373 (*furcosus*); Day, *Fish. India*, pt. 1, 1875, p. 90; Jordan & Thompson, *ibid.* Subgenus.

Dentex Bleeker, *Atlas Ichth.*, viii, 1877, p. 80 (*teniopterus*). Not of Cuvier.

Anemura Fowler, *Proc. Acad. Nat. Sci. Phila.*, 1904, p. 527 (*notatus* = *teniopterus*) = *Synagris*.

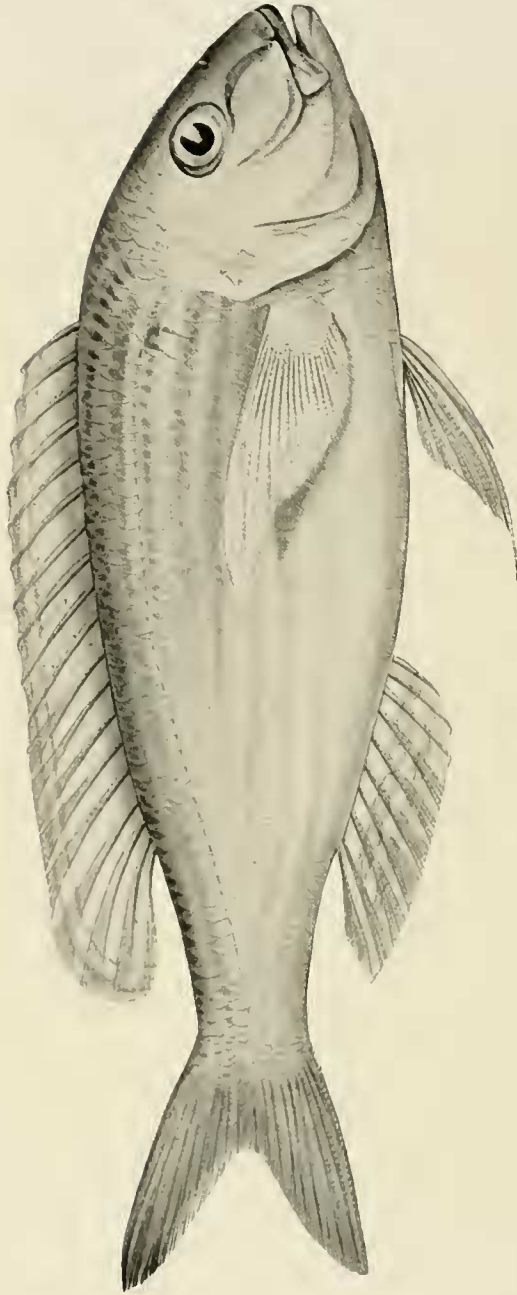
Odontoglyphis Fowler, *ibid.* (*tolu*); Jordan & Thompson, *ibid.* Subgenus.

Euthyoptroma Fowler, *ibid.* (*blochii*); Jordan & Thompson, *ibid.* Subgenus.

Body elliptical and compressed. Scales moderate, adherent, ciliated. Lateral line complete, not extending on the caudal fin, the tubes simple. Head moderate, with wide smooth preorbital, the occiput, opercles (except the preopercle), and cheeks scaly, those of the latter arranged in three series; scales of head cycloid and smooth, except those of the parietal region, and a row between the occiput and nape, the scales of which are modified so as to form mucigerous organs. Mouth terminal and protractile, with moderate slightly oblique cleft, the jaws equal; maxillary mostly exposed, without supplemental bone. Jaws with a band of villiform teeth, the outer row conical and somewhat enlarged; upper jaw with three or four pairs of moderately strong canines; canines of lower jaw, if present, weak. Preopercle entire or feebly serrulate; opercular spine weak or absent. Dorsal fin scaleless, with x 9 rays, the spines feeble and sometimes filamentous. Caudal deeply forked, the upper ray sometimes filamentous. Anal with iii 7 rays, similar to the soft dorsal. Pectoral pointed, with 15 to 18 rays. Ventral inserted below or behind the pectoral-base, with i 5 rays, the outer sometimes produced; accessory ventral scale present. Six branchiostegals. Air-bladder notched posteriorly. Pyloric appendages in small number. (*νήμα*, a thread; *πτερόν*, a fin.)

Perciform fishes of moderate size, inhabiting the warmer zones of the Indian and Western Pacific Oceans, ranging from the Red Sea and East Coast of Africa through the Indian Seas northwards to China and Japan, and eastwards through Malaysia to New Guinea, the Louisiade Archipelago, and the East Coast of Australia. They are panfishes of excellent flavor, and as they are found in

QUEENSLAND FISHES.



NEMIPTERUS THEODOREI Ogilby; holotype. ♂ Nat. Size.

Phyllis F. Clarke, del.

large numbers off our shores in moderately deep water where the sea-bed is smooth, they should at no distant date form a cheap and pleasant addition to the breakfast tables of Brisbane. Five species belong to the Queensland fauna and may be recognized by the following key—

- a*¹. Both jaws with distinct canines; dorsal spines low, the membranes not notched, none of the spines or rays filamentous (*Synagris*).
- b*¹. Scales in transverse series 4, 1/14; spinous dorsal higher than the soft; coloration uniform 1. *guntheri*.
- b*². Scales in transverse series 4/1/11; spinous dorsal lower than the soft; body with yellow bands 2. *taniopterus*.
- a*². Lower jaw without distinct canines; dorsal spines all low, the membranes not notched, the spines scarcely exerted (*Euthyoptroma*).
- c*¹. Median dorsal spines longest.
- d*¹. Scales in transverse series 3, 1/12; upper caudal ray not produced; coloration uniform 3. *upencoides*.⁷
- d*². Scales in transverse series 3, 1/10; upper caudal ray filiform; body with yellow bands 4. *aurifilum*.
- c*². Posterior dorsal spines longest.
- e*¹. Scales in transverse series 3, 1/9; upper caudal ray not produced; body with yellow bands 5. *theodorci*.

NEMIPTERUS THEODOREI Ogilby.

(Plate XIX.)

Nemipterus theodorci Ogilby, Proc. Roy. Soc. Queensl., xxviii, 1916, p. 113.

BUTTERFLY BREAM.

Type locality:—Caloundra Bank, S.Q.

Body elliptical, the ventral contour as much or a little more arched than the dorsal, which is linear and feebly declivous behind the origin of the dorsal, its width 1.8 to 2.1 in its depth, which is 3 to 3.2 in its length and as much as to one tenth less than the length of the head. Caudal peduncle slender, its least depth 1.8 to 2 in its length and 2.8 to 3 in the depth of the body. Head one sixth to two ninths longer than deep, its upper profile evenly and gently convex, its width somewhat less than half its length, which is 3.1 to 3.25 in that of the body. Snout with moderately declivous profile, its length 2.37 to 2.5 in that of the head. Diameter of eye 1.5 to 1.67 in the length of the snout, 3.67 to 4 in that of the head, and subequal to the width of the preorbital. Interorbital region gently convex, its width 1.22 to 1.33 in the eye-diameter and 4.5 to 5 in the length of the head. Jaws equal; maxillary not extending to the level of the eye, its length 2.63 to 2.83, that of the mandible 2.4, in the length of the head. Opercle with a small spine.

⁷ Bleeker (Atlas Ichth., pl. ceexviii, fig. 2) figures this species with a large oval blackish shoulder-spot, but no mention is made of it in his original description (Nat. Tijds. Nederl. Ind., iii, 1852, p. 725).

Upper jaw with four pair of small canines, the outer pair the longest; lower jaw without true canines, which are replaced by an outer series of enlarged conical teeth, which is continued backward along the side of the jaw, the largest teeth being on the middle of the side.

Scales in 48 series above the lateral line; 3 1/9 in the series between the spinous dorsal and the vent. Accessory ventral scale slenderly lanceolate, as long as or a little longer than the eye-diameter.

Dorsal fin originating above the opercular spine; spinous portion low, the tips of the spines scarcely projecting beyond the interspinous membrane, the spines gently graded to the last, which is 2.4 to 2.5 in the length of the head and 1.3 to 1.4 in the penultimate and longest ray; soft dorsal one third to two fifths longer than high, posteriorly angulate, its length 1.3 to 1.4 in that of the head. Caudal forked, with pointed lobes, the middle rays 2.55 to 2.67 in the upper and somewhat longer lobe, which is 3.5 to 3.67 in the body-length. Anal fin originating below the second dorsal ray, the third spine the longest, 2.88 to 3 in the length of the head; soft portion as long as to one tenth longer than high, the rays increasing very gradually to the sixth, which equals the last and is three tenths to four ninths more than the third spine. Pectoral pointed, with 17 rays, its length 3 to 3.5 in that of the body, the sixth ray the longest, extending to above the vent. Ventral inserted below the pectoral-base, the spine moderate and slender, 1.67 to 2 in the outer ray, which is produced, is a little shorter than the pectoral, and extends to the second anal spine.

Gill-rakers 5 + 7 on the anterior arch, short, stout, and strongly spinulose, the longest 5.5 in the eye-diameter.

Roseate above, shading imperceptibly through the iridescent pink of the sides to the pearly white of the lower surface; sides below the lateral line with five greenish yellow horizontal bands, each of which occupies the middle of a series of scales, the upper and lower bands shorter and less conspicuous than the intervening bands; a brilliant crimson shoulder-spot, covering the upper half of two consecutive scales, which vary from the second and third to the fourth and fifth below the lateral line. Upper surface and sides of head with a tinge of lavender overlying the pink; a curved light blue bar from the front of the eye, passing along the upper edge of the preorbital, and anteriorly changing gradually to a deep violet; a similar but less conspicuous bar along its lower edge; upper lip yellow; cheeks and opercles pink with golden reflections, the lower series of cheek-scales with a shimmering violet iridescence; a distinct greenish blue spot, preceded by a purplish spot, behind the upper angle of the preopercle. Lower two thirds of iris vivid scarlet, upper third green, the line of demarcation sharply defined. Dorsal fin pink, bordered by a broad gold-edged puce band; caudal pinkish yellow, broadly tipped with rose, its upper ray edged with gold, its lower with rose; anal with the basal half yellow, the distal half lilaceous silvery, the former traversed by a basal and two median pale blue bands; pectorals and ventrals colorless. (Named after the Hon. Edward Granville Theodore, in recognition of the fact that to him is attributable the formation of a Department

of Fisheries, by means of which it is hoped that both the public and the professional fishermen will materially benefit; and by which it may be expected that the vast importance of our fishing industries, so shamefully neglected in the past, may be brought into adequate prominence.)

Described from three examples, measuring 248 to 267 mm., taken by hook on the Caloundra Bank, and presented respectively to the Amateur Fishermen's Association by its President, Mr. Thomas Welsby, and to the Queensland Museum by Mr. T. C. Troedson and myself, the largest of the three being selected as the type; Reg. No. I. 2648. In elegance of form and beauty of coloration this species equals, if indeed it does not surpass, any other fish of our seas, even the wonderful rainbow-fishes and butterfly-fishes of our coral reefs paling to insignificance before its delicate loveliness.

Our illustration is taken from the holotype, and should be studied along with the color-pattern of recent specimens given above for, as with all fishes of similar delicacy, the various tints are extremely evanescent, and disappear almost immediately in preservatives.

Note on Synagris furcosus Günther.

After carefully examining the literature of this fish from both points of view, I am unable to satisfy myself as to its identity with the *Dentex furcosus* of Cuvier and Valenciennes, because, in the first place, while that fish is said to have been obtained by Raynaud "in the roadstead of Trincomalee," it has not since been found in Indian waters, and Day has omitted it from his great work on the "Fishes of India, Burma, and Ceylon";⁸ and, in the second place, because the description of its form, as given by the French authors, does not agree well with that of Günther. This author, who had before him seven specimens from various eastern localities on which to form an opinion, made the species the type of his new genus *Synagris*, but kept the eastern fish united to the western and somewhat hypothetical *Dentex furcosus*, a conclusion which has not been borne out by subsequent research. Bleeker, it may be observed, was also dissatisfied with Günther's identification, for he writes—"M. Gunther rapporte cette espèce au *Dentex furcosus* dont cependant la justesse me semble avoir besoin d'être prouvée."⁹ Since, therefore, the name *furcosus* was undeniably given in the first place to a western—Ceylonese—species it becomes impossible to retain it for the eastern fish, it seems, therefore, necessary to give a distinctive title to the latter. In 1870 Day described from Andaman specimens a fish which he named *Dentex (Synagris) notatus*.¹⁰ Five years later he records the same fish from the "Seas of India," holding it to be "a slight variety of *S. furcosus* Günther," which name he places with some hesitation in the synonymy of *S. notatus*, being evidently of opinion that Günther's name had no *locus standi*, since it was doubtful whether

⁸ True, Day has doubtfully included Valenciennes' fish in the synonymy of his *S. notatus*, but Bleeker has indisputably shown that that supposititious species was identical with *S. taniipterus*.

⁹ Atlas Ichth., viii, 1877, p. 85.

¹⁰ Proc. Zool. Soc. London, 1870, p. 684.

it were identical with the *Dentex furcosus* of the Histoire Naturelle. Bleeker, however, two years later, as mentioned above, showed that Day's fish was inseparable from *Nemipterus taniopterus*,¹¹ which identification was subsequently admitted to be correct by Day himself. In view, therefore, of the failure of Indian naturalists to rediscovers the true *D. furcosus*, the question arises as to whether *D. taniopterus* was not founded on a more carefully preserved specimen of the former fish. The eastern form has been recorded from Amboina, the Louisiade Archipelago, Damlay (? Darnley) Island, and Australia (*Günther*); Palm Islands, Cape Grenville, North and North-East Australia (*Macleay*). There is, therefore, a wide and unbridged gulf between the reputed ranges of the two forms; nor should it be forgotten that Bleeker, with the illimitable resources at his command, never got either species.

I, therefore, propose to separate the eastern fish as *Nemipterus güntheri*, with the following synonymy, leaving to my Indian confreres the task of clearing up the mystery of *D. furcosus*.

NEMIPTERUS GÜNTHERI nom. nov.

Synagris furcosus Günther, Brit. Mus. Catal. Fish., i, 1859, p. 373; Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i, 1877, p. 271; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 383; id., ibid., viii, 1863, p. 262. Not *Dentex furcosus* Cuvier & Valenciennes.

Dentex furcosus Bleeker, Verh. Akad. Amst. xiii, 1873, Rev. Espèce. Dentex, etc., p. 12; id. Atlas Ichth., viii, 1877, p. 85. After *Synagris furcosus* Günther.

I append here the description of a unique specimen of *Nemipterus* in the collection of the Queensland Museum, in order to call the attention of northern observers to this extraordinarily deep form, and perchance obtain further examples. McCulloch suggests that the example has suffered an injury to the spine, which might account for the depth of the body, but the specimen is in good condition and well nourished, and shows no external sign of injury. Should McCulloch's suggestion be correct the fish would be classed as *N. güntheri*.

NEMIPTERUS sp.

Lutjanus rubicundus de Vis; nom. nus.

Genyorange rubicauda Kent, Great Barrier Reef, 1893, p. 369; nom. nud.

This fish was caught at Somerset, N.Q., by Mr. Kendal Broadbent and measures 218 mm. Reg. No. I. 2580.

Body subovate, the dorsal contour much more arched than the ventral, its profile evenly rounded from the nape to the caudal fin, the highest point being above the base of the pectoral fin; width of body 2.17 in its depth, which is 2.6 in its length and a little more than the length of the head. Caudal peduncle moderately stout, its least depth 1.44 in its length and 3.17 in the length of the head. Head three tenths longer than deep, the upper profile feebly convex, its width about half its length, which is 2.8 in that of the body. Snout with strongly declivous profile, its length 2.5 in that of the head. Diameter of eye 1.43 in the

¹¹ *Dentex taniopterus* Cuvier & Valenciennes, Hist. Nat. Poiss., vi, 1830, p. 246.

length of the snout, 3.55 in that of the head, and one eighth more than the least width of the preorbital; interorbital region feebly convex, its width a trifle less than the eye-diameter and 3.75 in the length of the head. Jaws equal; maxillary extending to the vertical from the anterior border of the eye, its length 2.77, that of the mandible 2.3, in the length of the head. Opercle with a small spine.

Each jaw with 3 pair of moderate canines, the outer the longer.

Scales in 50 series above the lateral line, in 4/1/14 between the spinous dorsal and the vent. Accessory ventral scale slenderly lanceolate, rather less than the eye-diameter.

Dorsal fin originating above the angle of the preopercle, the spinous portion high, the spines scarcely projecting beyond the interspinous membrane, the 5th and 6th the longest, 2.22 in the length of the head, and two ninths more than the four anterior rays, which are equal, those succeeding them gradually decreasing in length; soft dorsal three fourths longer than high, posteriorly rounded, its length two thirds of that of the head. Caudal deeply forked, with pointed lobes, the middle rays 3.25 in the upper lobe, which is rather the longer and is one third of the body-length. Anal fin originating below the 1st dorsal ray, the 3rd spine the longest, 3.75 in the length of the head; soft anal two fifths longer than high, the three anterior rays subequal and longest, one fourth more than the 3rd spine; last ray slightly produced, nearly as long as the anterior rays. Pectoral pointed, with 17 rays; its length 3.75 in that of the body; 5th ray longest, extending to above the origin of the anal. Ventral inserted below the inferior axil of the pectoral, the spine moderate and slender, 1.56 in the 2nd and longest ray, which is 1.45 in the length of the head and extends to a little beyond the vent.

The colors of our specimen have faded to a rusty yellow, but we learn from Günther that it is "uniform," while we may infer from de Vis' manuscript name that its general tint is reddish.

PART XIII.—SCIÆNIDÆ (No. 1).

Sciænoides part. Cuvier, Règne Anim.; Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 1; Müller, Abh. Akad. Berlin, 1844, p. 201.

Sciænida part. Owen, Lect. Comp. Anat. Vert., Fish., 1846, p. 49.

Sciænida Richardson, Ichth. China & Japan, 1846, p. 223; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 265; Day, Fish. India, pt. 2, 1876, p. 181; Jordan & Evermann, Fish. North & Mid. Amer., pt. 2, 1898, p. 1392.

Sciænoidæ Cantor, Catal. Malay. Fish., 1850, p. 56.

Sciænoidæi Bleeker, Arch. Néerl. Sci. Nat., xi, 1876, p. 323.

THE JEWFISHES.

Body elliptical or subovate, compressed, covered with adherent ctenoid or cycloid scales. Lateral line complete, mostly following the curvature of the back, and extending on the caudal fin. Head large, with moderate, more or less obtuse

snout, almost wholly scaly, the mucigerous system strongly developed. Mouth terminal and somewhat protractile; maxillary wholly or partly concealed beneath the preorbital, without supplemental bone; chin usually porigerous, sometimes with a barbel. Teeth in the jaws usually in villiform bands, with or without an outer enlarged row, sometimes uniserial; canines present or absent; roof of mouth and tongue toothless. Two approximate nostrils on each side. Preopercle usually with a feeble serrature; opercle with two flat points. Dorsal fin divided into two portions by a deep notch, the soft portion the longer, the spinous depressible in a more or less complete groove. Caudal usually rounded or emeate. Anal with one or two spines, much shorter than the soft dorsal.¹² Ventrals inserted below or behind the pectoral-base, close together, each with 5 rays, and with or without an axillary scale. Gill-openings wide; gill-membranes separate, free from the isthmus; seven branchiostegals; pseudobranchiæ usually present; gills four, a slit behind the fourth. Air-bladder, when present, mostly large with many lateral appendages; otoliths of large size. Stomach caecal; intestinal canal with two convolutions; pyloric appendages usually in small number and weak. Subocular shelf, when present, consisting of a small and usually slender process of the second suborbital. Vertebrae 24 to 30; anterior precandals without parapophyses and with sessile ribs, the posterior ribs on parapophyses.

A large and important family of perciform percoids, inhabiting the sandy shores of all warm seas, except those of the Pacific Islands, from which, though abundant on both shores of that ocean, they are unaccountably absent. They freely enter estuaries, through which they make their way upwards, eventually ascending the rivers to far beyond the influence of the tide. These excursions are not, however, undertaken for the purpose of depositing their spawn, as in the case of the salmon and shad, but primarily as predatory raids on the schools of small mullets, herrings, and prawns, which swarm at certain seasons in the extratidal reaches. Some species are, however, wholly confined to fresh water, and it is possible that the ancestral scianids were purely fluviatile, in which case the excursions above referred to may be the outcome of an instinctive desire to get back for a time at least to their original environment. Dr. Günther takes a converse view of the case to that which I have here advanced; he writes—"The fishes of the 'Meagre' family are chiefly coast-fishes of the tropical and subtropical Atlantic and Indian Oceans, preferring the neighbourhood of the mouths of large rivers, into which they freely enter, *some of the species having become so completely naturalised in fresh water that they are never found now-a-days in the sea.*"¹³ I think, however, that to those who have practical experience of these fishes, the theory put forward by me above will appeal more strongly. Some of the species, such as the Eastern Atlantic "*maigre*" (*Sciæna hololepidota*),¹⁴ our

¹² Except in *Scirphus* Ayres (Proc. Cal. Acad. Sci., ii, 1861, p. 80), in which the anal fin is at least as long as the soft dorsal.

¹³ Study of Fishes, 1880, p. 427.

¹⁴ *Labrus hololepidotus* Lacépède, Hist. Nat. Poiss., iii, 1802, p. 517. This name has a year's preference over *Cheilodipterus aquila* of the same author—ibid., v, 1803, p. 685.

own "jewfish" (*S. antarctica*), the Californian "white sea-bass" (*Cynoscion nobilis*),¹⁵ etc., attain a very large size, specimens exceeding one hundred pounds having been recorded, but the majority of the species do not exceed a foot or eighteen inches in length; most of them, however, are valuable as food-fishes. All the jewfishes are carnivorous, and as they bite greedily and struggle hard for freedom when hooked, they are alike favorites with the angler and the epicure. The large and complicated air-bladder, common to most of these fishes, is used extensively in the manufacture of an inferior brand of isinglass,¹⁶ and so adds materially to the value of the fish; so much so, indeed, that Day, writing of the Indian species, states—"The air-vessels of many of these fishes are extensively collected along the coast of India as they afford isinglass, which is exported to China and elsewhere. As food, however, their flesh is rather tasteless when young and coarse when large, consequently in many localities, as Kurrachee or in Beloochistan, the sounds or air-vessels are as valuable as the whole of the remainder of the fish." The otoliths or ear-bones of these fishes are very large and are often beautifully sculptured, pitted, or papillated, differing so much *inter se* that the various Australian species may be readily distinguished from an examination of these bones alone. Many of these fishes are capable of producing sounds so plainly, while still at some distance below the surface, that these are readily perceptible by the occupants of a boat passing above them; the method by which the sound is produced has not been definitely decided, though several theories have been propounded; some authorities suggest that it is caused by the clashing together of the pharyngeal teeth, but I am more inclined to believe in the theory advanced by Jordan and Evermann¹⁷ that it is "caused by forcing the air from the air-bladder into one of the lateral horns." This theory is supported by the fact that in the two species most widely credited with this accomplishment, the "maigre" and the "drum" (*Pogonias chromis*)¹⁸ of the Eastern United States, the air-bladder is exceptionally large and complicated. The same authors also assert—"None occurs in deep water and none among rocks."¹⁷ While the former statement is irrefutable, the latter, though in the main correct, needs some modification. I have personally seen fine jewfish taken close in to Wolf Roek, an outlier of Double Island Point and a noted haunt of the jew; also at "Jewfish Shoal" some miles further south, where, according to Mr. J. Hirst Stevens, Inspector of Fisheries for the State of Queensland, the bottom is "mixed rock and coarse shingle, the rock predominating." The same gentleman also informs me that jewfish may be taken on rocky ground in many parts of the South Queensland Coast. As regards the breeding of these fishes I must confess myself to be quite in the dark. The young of all our other edible estuarine fishes—whiting, flathead, bream, etc.—are well known from their earliest stages, but

¹⁵ Ayres, Proc. Cal. Acad. Sci., 1860, p. 78.

¹⁶ The most highly prized isinglass is that which is procured from the air-bladders of the "tassel-fishes" (*Polynemidæ*).

¹⁷ Fish. North and Mid. Amer., pt. 2, 1898, p. 1392.

¹⁸ *Labrus chromis* Linnæus, Syst. Nat., ed. 12, 1766, p. 479.

I am unable to find anyone who has ever seen a baby jewfish; when they make their first appearance in our estuaries they are about a foot long, but where they came from is a question to which I can find no answer.

About thirty genera and one hundred and fifty species of sciaenoid fishes are recognized by Jordan and Evermann¹⁷ and Boulenger,¹⁸ the majority of which belong to the typical genus *Sciana*.

Key to the Australian Genera.

- | | | | | | |
|--|----|----|----|----|--------------------------|
| a ¹ . Precaudal vertebrae more numerous than those of the caudal (<i>Otolithina</i>). | | | | | |
| b ¹ . Canine teeth present in both jaws | .. | .. | .. | .. | 1. <i>Otolithus</i> . |
| b ² . No true canine teeth in either jaw | .. | .. | .. | .. | 2. <i>Atractoscion</i> . |
| a ² . Precaudal vertebrae fewer than those of the caudal (<i>Scianina</i>). | | | | | |
| c ¹ . No true canine teeth in either jaw | .. | .. | .. | .. | 3. <i>Sciana</i> . |

OTOLITHUS Cuvier.

Otolithus part. Cuvier, Règne Anim. (*ruber*); Cuvier & Valenciennes, Hist. Nat. Poiss., v. 1830, p. 59; Cantor, Catal. Malay. Fish., 1850, p. 56; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 305; Day, Fish. India, pt. 2, 1876, p. 195.

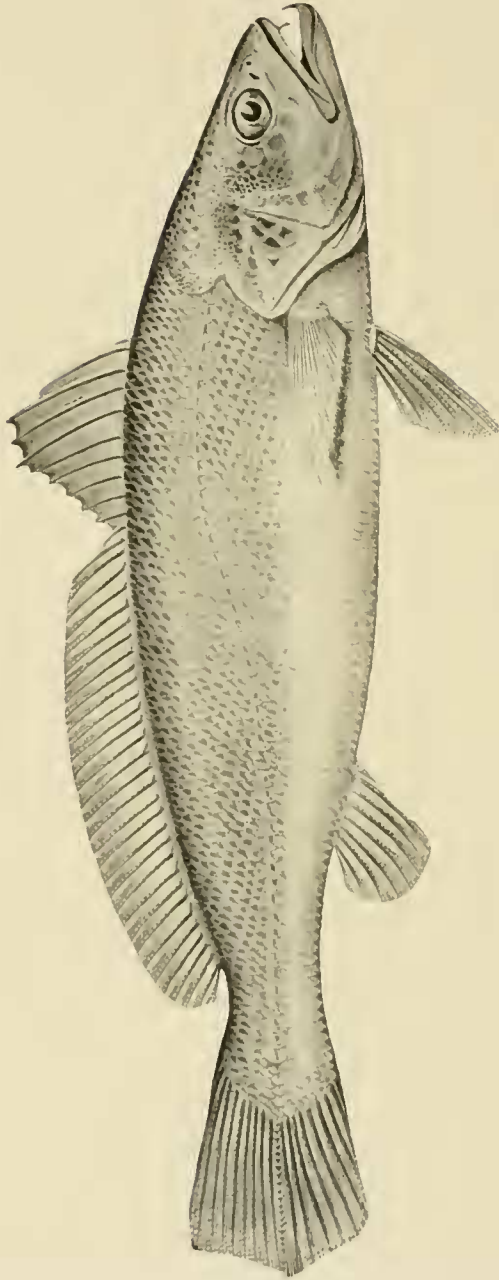
Body elliptical or elongate-elliptical, compressed. Scales moderate or small, adherent, cycloid. Lateral line gently curved to below the middle of the soft dorsal, thence straight along the middle of the tail, and extending to the tip of the caudal fin; tubes profusely ramose, not quite reaching to the border of the scale. Head moderate, with pointed snout and rather narrow preorbital, almost wholly scaly, the mucigerous system well developed. Mouth terminal, with wide oblique cleft, the lower jaw projecting. Premaxillaries with a narrow band of villiform teeth, an outer enlarged row of subulate teeth, and a strong curved canine on either side of and some distance from the symphysis; mandibles somewhat similarly armed, but the villiform band, if present, is reduced to a small anterior patch, while there may be only a single median canine, or if a pair inserted close together, so as to fit between the premaxillary pair and enter a groove or even a socket in the upper lip when the mouth is closed; roof of mouth and tongue smooth. Nostrils approximate, close in front of the eye, the posterior the larger. Eyes rather small and anterior. Preopercle feebly denticulate in the young, smooth or crenulate in the adult; opercle with two weak points. Two dorsal fins, united at their bases, with x (rarely ix or xi) i 25 to 31 rays, the spines weak and flexible; second dorsal lower but much longer than the first. Caudal emeate. Anal short, with ii 7 to 11 rays, the spines weak. Pectoral obtusely pointed, with 16 to 18 rays. Ventrals thoracic, close together, each with a feeble spine and five soft rays, the outer the longer; a small accessory ventral scale. Gill-rakers in rather small number, short and slender. Pyloric appendages few.

Shore fishes of moderate or rather large size, inhabiting the warmer parts of the Indian and Western Pacific Oceans, freely ascending rivers for predatory

¹⁷ Fish. North and Mid. Amer., pt. 2, 1898, p. 1392.

¹⁸ Camb. Nat. Hist., vii, 1904, p. 663.

QUEENSLAND FISHES.



OTOLITHUS ARGENTUS Cuvier and Valenciennes. ♂ Nat. Size.

Phyllis F. Clarke, del.

purposes. These fishes are of considerable value for the table, and the isinglass obtained from their air-bladders or "sounds" is of good quality. I recognize only the following species as belonging to the restricted genus *Otolithus*.

1. *argenteus*. v. supra.
2. *latoides* Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 98; id., Atlas Ichth., viii, 1876, pl. cccxxxiv, fig. 1.
3. *maculatus* (Kuhl & van Hasselt) Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 64; Bleeker, *ibid.*, fig. 3.
4. *ruber* Schneider, in Bloch, Syst. Ichth., 1801, p. 75, pl. xvii.

Note:—*Otolithus leuciscus* Gunther,²⁰ from Manila, is referred to this genus by Jordan and Richardson,²¹ but since its describer expressly writes "the lower jaw without canines in front" I can not admit the correctness of their identification. Also Seale describes two Bornean species as *O. dolorosus*²² and *O. orientalis*²²; unfortunately the paper in which they are described is missing both from our library and that of the Australian Museum, Sydney, and I am, therefore, perforce, obliged to omit them, owing to the loose way in which the generic name has been applied in the past.

OTOLITHUS ARGENTEUS Kuhl & van Hasselt.

(Plate XX.)

Otolithus argenteus (Kuhl & van Hasselt) Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 62; Richardson, Ichth. China & Japan, 1846, p. 225; Bleeker, Verh. Batav. Gen., xxiii, 1850, Seien. p. 15; Cantor, Catal. Malay. Fish. 1850, p. 61; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 310; id., Proc. Zool. Soc. London, 1861, p. 222; Day, Fish. Malabar, 1865, p. 58; Kner, Zool. Novara, i, Fisch., pt. 2, 1865, p. 135, pl. vi, fig. 4 (air-bladder); Playfair, Fish. Zanz., 1866, p. 53; id., Proc. Zool. Soc. London, 1868, p. 9; Bleeker, Verh. Akad. Amst., xiv, 1874, Seien., p. 9; id., Atlas Ichth., viii, 1876, pl. cccxxxv, fig. 5; Day, Fish. India, pt. 2, 1876, p. 197, pl. xlv, fig. 3.

SILVER TERAGLIN.

Type locality:—Java.

Body slenderly elliptical and compressed, the dorsal contour considerably more arched than the ventral, which is gently rounded between the isthmus and the anal fin, its width 1.75 in its depth, which is 3.8 in its length and 1.16 in the length of the head. Abdomen long, its length from ventral-base to vent 2.75 in that of the body and as long as the space between the vent and the root of the caudal. Caudal peduncle one third longer than deep, its least depth 3.38 in the length of the head. Head about one fourth deeper than wide, the fronto-occipital profile linear and but little acclivous, passing imperceptibly into the gentle occipito-nuchal convexity, its width one half of its length, which is 3.33 in that of the body. Snout pointed, with convex profile, its length one fourth of

²⁰ Ann & Mag. Nat. Hist. (4) x, 1872, p. 398.

²¹ Check-List Fish. Philipp. Arch., 1910, p. 33.

²² Philipp. Journ. Sci., 1911, pp. 280, 281, pls. iii, iv.

that of the head. Diameter of eye $1/25$ in the length of the snout and 4.67 in that of the head. Preorbital narrow, its width 2.17 in the eye-diameter. Interorbital region moderate and convex, its width equal to or a little more than the eye-diameter. Nostrils approximate, the posterior somewhat the larger and situated directly in front of the eye, the anterior on a higher level. Lower jaw slightly projecting; cleft of mouth oblique, rising to the level of the middle of the eye. Maxillary extending to below the middle of the eye, its length 2.5 in that of the head, the width of its obliquely truncated distal extremity about four sevenths of the eye-diameter. Vertical limb and angle of preopercle with a few weak and widely separated denticles, that on the angle being the largest; hinder limb subvertical; opercle with two feeble points.

Both jaws with a row of short stout subulate teeth, behind which in the premaxillaries is a narrow band of villiform teeth; these are not present in the mandible; a long curved canine on each side of the symphysis in the upper jaw, and a single median and somewhat stronger one in front of the lower.

Scales cycloid, in 72 to 75 series above the lateral line, in $8\frac{1}{19}$ below the spinous dorsal; head almost entirely scaly, the scales varying greatly in size, the largest being on the middle anterior area of the opercles and along the infero-posterior borders of the eye. One or two series of minute scales along the bases of the soft dorsal and anal, the interradial membranes naked; basal half of caudal fin scaly. Lateral line forming a gentle curve to above the origin of the anal, thence straight and extending to the end of the caudal fin, the tube-bearing body-scales 50 to 52, the tubes profusely arborescent along the posterior two thirds of the body. Snout with a pair of inconspicuous pores, situated above the bases of the canine teeth; chin apparently poreless.

Dorsal fins with x or xi, i 29 rays, the first originating above the ventral-base, the last spine united to but barely half so long as that of the soft dorsal; spines slender and flexible, the first short, the fourth the longest, 2.16 in the length of the head and 1.38 in its base, which is 2.14 in that of the second dorsal, the rays of which increase slightly in length to about the eighteenth, which is 1.37 in the fourth spine and one third of the length of the head; length of its base 2.5 in that of the body; last ray divided nearly to the base. Caudal fin cuneiform, the lower median rays the longest, 5.44 in the body-length. Anal with ii 7 rays, originating below the thirteenth dorsal ray; spines weak, the first excessively small, the second about half the length of the second ray, which is the longest, 2.57 in the length of the head; base of anal 5.43 in that of the second dorsal. Pectoral pointed, with 16 rays, the sixth the longest, 1.44 in the length of the head, and extending to below the tenth dorsal spine. Ventral inserted a little behind the pectoral-base, and about one eighth shorter than that fin, the first ray the longest, not extending midway to the vent.

Gill-rakers $3 + 10$, the longest two fifths of the eye-diameter and five sevenths of the longest fringes. Air-bladder rather small, with 25 to 32 fringed appendages on either side. Six pyloric caeca.

Silvery, washed with blue above the lateral line.

Described from two specimens, measuring respectively 260 and 275 mm., trawled by the Endeavour in Edgecumbe Bay at a depth of fourteen fathoms on sand and mud.

Variation:—Although after an exhaustive comparison of our fish with Day's description and Bleeker's figure I have no hesitation in identifying it as *O. argenteus*, it is interesting to note that in both my examples there is an eleventh spine interpolated between the spinous and the soft dorsals, with both of which it is united, its length being subequal to the tenth spine of the first dorsal and rather less than half the spine of the second. Mr. McNeill, however, tells me that the other specimens, eight in number, have the ordinary number of ten spines in the first dorsal.

Historical:—The Silver Teraglin is yet another of the fishes, which were first brought to the notice of European scientists through the indefatigable labors of those industrious Dutch naturalists Messrs. Kuhl and van Hasselt, who sent home a painting of a specimen taken at Batavia; this drawing subsequently came into the hands of Valenciennes and formed the basis of his description of the species, the name inscribed upon the painting being retained by him. From the same source we gather that Dussumier found the fish upon the Malabar Coast of India, and further that Major Farquhar figured it from an example captured in the Straits of Malacca, and which forms one of the collection of drawings of Indian animals made by him and deposited in the library of the India House, London. From Canton it was recorded by Richardson, while Cantor writes—"at Pinang this species is taken in numbers from June till August." Günther next listed a British Museum example from Ceylon, and during the following year reported the occurrence of "this marine species" in the far-off rivers of Nepal, whence the skin of a large specimen was brought by Mr. B. H. Hodgson and presented to the same institution. Col. Playfair a few years later announced its capture at Aden and off the "mouth of the Paugani River," an East African stream, which enters the ocean opposite to the northern extremity of the Island of Zanzibar, and the same observer subsequently collected it in the sea at Cape Saint Mary, Madagascar. Bleeker received examples from Celebes, Madura, Borneo, Java, Banca, Singapore, Nias, Sumatra, Pinang, Siam, China, Bengal, and Madagascar. Tenison Woods recorded its presence in Lake Bombon, Luzon, and finally Evermann and Seale reported it from Bacon in the Philippine Archipelago. The present record adds a long stretch of coast-line to its range, the most easterly locality previously reported having been Bleeker's Celebesian one; incidentally it is also the first notification of the presence of a true *Otolithus* in Australian waters. The southern fish, described respectively by Günther and Macleay as *Otolithus atclodus* and *O. teraglin*, having proved to belong to the allied genus *Atractoscion*, now takes its place in our system as *A. atclodus*.²³

²³ My friend Mr. J. H. Hamson, whose knowledge of our edible fishes is extensive and reliable, assures me that the southern teraglin occasionally occurs in Moreton Bay, but in the absence of a specimen it is impossible to admit it to our faunal list.

Uses:—Cantor, alluding to Pinang, states that—“it is valued by the natives as an article of food,” and goes on to say that “owing to the small size of the air-vessel it yields but a small quantity of isinglass, the quality of which, however, is considered very good.”

Food:—From an examination of the stomachs of Pinang examples the same author concludes that its principal food supply was drawn from smaller fishes and crustaceans.

Range:—From the East Coast of Africa, Madagascar, and South-Western Arabia, through all the Seas of India to those of Siam, Southern China, the Malay Archipelago, and the East Coast of Queensland.

Dimensions:—Attains a length of 800 mm.

Illustration:—Taken from one of the specimens described above.

ATRACTOSCION Gill.

Attractoscion Gill, Proc. Acad. Nat. Sci. Phila., 1862, p. 18 (*aquidens*).

Body elongate-elliptical, compressed. Scales small and adherent. Lateral line forming a long gentle curve to the caudal peduncle. Head conical, with rather long pointed snout and narrow preorbital, almost wholly scaly. Mouth terminal, with very wide oblique cleft, the lower jaw projecting. Teeth in the jaws in cardiform bands, without canines, the lateral mandibular teeth the strongest. Eyes small and anterior. Preopercle feebly denticulated in small, entire in large, examples; opercle with two weak spines. Two dorsal fins with x, i 27 to 31 rays, the spines slender and flexible, the soft dorsal lower but much longer than the spinous. Caudal fin lunate. Anal short, with ii 8 or 9 rays, the spines feeble. Pectoral pointed. Ventral inserted below the pectoral-base. Pseudobranchiæ present. Pyloric appendages in small number. (*ἄτρακτος*, a spindle; *Sciæna*, an allied genus.)

Shore-fishes of large size from the Coasts of South-Eastern Australia and South Africa. Like their relatives, the Jewfishes, which they closely resemble in appearance and habits, they are noted for their voracity, but unlike them they confine their depredations to the more open waters of bay and beach. Both species are held in high estimation for the table.

I am not altogether satisfied as to the generic position of the Australian fish. Waite very rightly removed it from the genus *Otolithus*, with which it has only an external affinity, but in referring it to *Cynoscion*²⁴ he has, I conceive, made an equally grave mistake. That genus, according to its author and all those who follow Gill's splendid constructional work, invariably possesses a pair of canines in the upper jaw, though they may be small as in *C. nobilis*²⁵ and its allies. In our fish there are no canine teeth in either jaw at any stage of existence. Being, however, reluctant to establish a new genus for our Australian fish, in a family already overweighted with small genera, I propose to resuscitate

²⁴ Gill, Proc. Acad. Nat. Sci. Phila., 1862, p. 18. Type *Johnius regalis* Schneider.

Gill's genus *Atractoscion*, thus associating in a natural group our fish with the *Otolithus aquidens*²⁵ of the Cape Seas, and removing from that genus all the species of *Cynoscion* included by Jordan and Evermann under the subgeneric title *Atractoscion*,²⁶ which, having canine teeth in the upper jaw, manifestly can not be associated with fishes which have the "teeth cardiform and pluriserial" without canines in either jaw.

ATRACTOSCION ATELODUS (Günther).

Otolithus atelodus Günther, Ann. & Mag. Nat. Hist. (3) xx, 1867, p. 60; Woods, Fish. & Fisher. N. S. Wales, 1882, p. 54, pl. xvii; Ogilby, Catal. Fish. N. S. Wales, 1886, p. 24; id., Edib. Fish. N. S. Wales, 1893, p. 75, pl. xxxiii.

Otolithus teraglin Macleay, Proc. Linn. Soc. N. S. Wales, v. 1880, p. 48.

Cynoscion atelodus Waite, Synops. Fish. N. S. Wales, 1904, p. 31; Stead, Fish. Austr., 1906, p. 113; id., Edib. Fish. N. S. Wales, 1908, p. 67, pl. xxxviii; Roughley, Fish. Austr., 1916, p. 115, pl. xxxvi.

TERAGLIN.

Type localities:—Australia (*O. atelodus*).

Sydney Market (*O. teraglin*).

Body slenderly elliptical and compressed, the ventral contour much more arched than the dorsal, which is but gently rounded from the occiput to the peduncle, its depth about one fourth of its length and a little less than the length of the head. Abdomen long, its length from ventral-base to vent 2.25 in that of the body and four fifths more than the space between the vent and the root of the caudal. Caudal peduncle about one third longer than deep, its least depth 3.6 in the length of the head. Head with the upper profile linear or feebly emarginate, its length 3.5 to 3.67 in that of the body. Snout slightly blunt anteriorly, its length 3.67 in that of the head. Eye small, its diameter 1.5 to 1.67 in that of the snout, and 5.8 to 6.25 in that of the head. Preorbital narrow, its width about one half of the eye-diameter. Interorbital region rather wide and convex, its width from one third to one half more than the eye-diameter and 4.12 to 4.38 in the length of the head. Nostrils moderately approximate, pierced in a naked groove directly in front of the eye, the anterior small and circular, the posterior elongate-oval and vertical. Lower jaw projecting; cleft of mouth wide and but little oblique, rising to the level of the middle of the eye. Maxillary extending to below or a little beyond the hinder border of the eye, its length 2 to 2.25 in that of the head, the width of its rounded distal extremity nearly equal to the eye-diameter. Preopercle rounded, the vertical limb and angle with a few small slender distant teeth, which usually disappear with advancing age; opercle with two feeble spines.

Premaxillary teeth in a villiform band, broadest in front, and a symphyseal patch of much stronger recurved cardiform teeth, and with one or two rows of stout teeth along each side; mandible with a large anterior patch of teeth

²⁵ Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 66.

²⁶ Fish. North & Mid. Amer., pt. 2, 1898, pp. 1413 to 1415 incl.

similar to that of the premaxillaries, and two lateral series, the inner of which contains the strongest teeth in either jaw.

Scales small and cycloid, in 74 to 77 series above the lateral line, in 16/1/33 below the first dorsal.

Dorsal fins with x, i 29 to 31 rays, the first originating slightly behind the opercular flap, the last spine united to and not much shorter than that of the soft dorsal; spines slender and flexible, the first very small, the fourth the longest, 2.5 to 2.75 in the length of the head, and 2 to 2.2 in its base, which is 1.5 to 1.67 in that of the second dorsal, the rays of which increase very gradually in length to about the seventeenth, which is 1.33 in the fourth spine and 3.67 in the length of the head; length of base 2.67 in that of the body. Caudal fin lunate, the lobes equal and pointed, the upper 4.33 to 4.67 in the body-length. Anal inserted posteriorly, with ii 9 rays, originating below the nineteenth or twentieth dorsal ray, the spines short and weak, the second rather more than half the length of the first ray, which is the longest and somewhat less than the length of the head; base of anal about two ninths of that of the second dorsal. Pectoral short and pointed, with 19 rays, its length 1.6 to 1.9 in the length of the head, and extending to below the eighth dorsal spine. Ventral inserted below the pectoral-base and a little shorter than that fin, the outer ray the longest, 1.86 to 2 in the length of the head, and reaching about one third of the distance between its origin and the vent.

Upper surface and sides silvery, the former with bluish reflections; throat and abdomen white. Cheeks washed with gold; inside of mouth and inner edge of opercle orange; irides golden. Dorsals yellowish gray, with darker spots at the base; caudal greenish yellow, with the outer edges and the tips darker; anal silvery, the anterior rays clouded; pectorals gray, with a black spot in and behind the axilla; ventrals pink.

Described from several specimens obtained in the Sydney Market. The above is a rearrangement of my original description (Ogilby 2), with which are embodied a number of fugitive notes taken at various times.

Remarks:—The Teraglin is universally admitted to be one of the most delicious of the food-fishes of New South Wales, in this respect far outrivaling its relative the jewfish at any stage of the latter's existence. In connection with this Stead remarks—"It is looked upon as a fine edible fish, and when more is learnt in regard to its movements it will probably be numbered among our most important food-fishes." Roughley tells us that "the supply of this fish to the markets is considerably less constant than that of the Jewfish owing to its habit of dwelling in water too deep for the fishermen's nets. Still in spite of this there is a fairly big supply, the catches of the line fishermen being often forwarded for sale." It is a most voracious fish, and will greedily snatch at almost any ordinary fish bait, such as mullet or shark, while squid seems to be irresistible; but among its good qualities must be placed that it does not ascend rivers to the same extent that the jewfish does, and is not, therefore, so great a pest to the estuarine and fluvial nursery grounds.

Reproduction:—As regards this important phase of its life-history nothing seems to have been learnt since I wrote the following twenty-five years ago—"The difficulty of formulating any general rule as to the breeding season of our marine fishes, and especially of those which, like the present species and the jewfish, are confirmed wanderers, is well exemplified by the examination of several specimens recently obtained in the market, which led to the following results:—During the earlier part of September examples, forwarded for sale to the Sydney Market from Lake Macquarie, were found to be in an advanced stage of spawning, the ova being almost fully developed, whilst in others, taken in Port Jackson during the following November, the contents of the ovaries were not more than half developed." As with the jewfish the spawning grounds are quite unknown, but it is probable that the ova are pelagic and are shed in the open sea. "The whereabouts and manner of life of the young fishes are equally unknown, all we can be certain of being that they appear from seaward in large shoals during the late winter and the spring months, varying at this time from one to three feet in length, the smaller fishes usually preceding their more mature brethren."

Range:—So far as is known the Teraglin is confined to the coast of New South Wales.

Dimensions:—Attains a length of 900 mm., but the ordinary market size is 600 mm. and under.

SCLENA Artedi.

Sciæna (Artedi) Linnaeus, Syst. Nat. ed. 10, 1758, p. 289 (*umbra*); Day, Fish. India, pt. 2, 1876, p. 134; Ogilby, Edib. Fish. N. S. Wales, 1893, p. 72; Jordan & Thompson, Proc. U. S. Nat. Mus., xxxix, 1911, p. 244.

Johnius Bloch, Ichthyol., x, 1793, p. 107 (*caratta*); Cantor, Catal. Malay. Fish., 1850, p. 64.

Bola Buchanan, Fish. Ganges, 1822, p. 78 (*coitor*).

Corvina Cuvier, Règne Anim., ed. 2, ii, 1829, p. 173 (*noira*); Boulenger, Catal. Fr. Wat. Fish. Afr., iii, 1915, p. 115.

Argyrosomus de la Pèglaie, Compt. Rend., 1835, p. 534 (*aquila*).

Cheilotremma Tschudi, Faun. Peru., Fisch., 1845, p. 13 (*fasciatum*).

Rhinoscion Gill, Proc. Acad. Nat. Sci. Phila., 1861, p. 85 (*saturnus*).

Pseudosciæna Bleeker, Nederl. Tijds. Dierk., i, 1863 (*aquila*); fide Jordan & Thompson, *ibid.*; *id.*, Arch. Néerl. Sci. Nat., xi, 1876, p. 329.

Pseudotolithus Bleeker, Nat. Verh. Holl. Maatsch. Wet (2) xviii, p. 59 (*typus*).

Callaus Jordan, Rep. U. S. Fish. Comm., 1889, p. 395 (*deliciosus*).

Nibeæ Jordan & Thompson, *ibid.*, p. 246, subgenus (*mitsukurii*).

Othonias Jordan & Thompson, *ibid.*, subgenus (*manchurica*).

Pseudomycteris Ogilby, Proc. Roy. Soc. Queensl., xxi, 1908, p. 84²⁷ (*maccullochi*).

Body elongate-elliptical to subovate, more or less strongly compressed. Scales moderate or small, usually adherent. Snout variously formed, with conspicuous slits and pores; chin usually porigerous. Cleft of mouth moderate or rather small, low and usually oblique, rarely rising to the level of the eye.

²⁷ For notes on the synonymy see Jordan and Thompson, *ut supra*.

Jaws with bands of villiform teeth, the outer and inner rows more or less enlarged. Dorsal fins separated by a notch, the first of nine or ten flexible spines, the second with i 22 to 33 rays. Caudal fin varying with age. Anal short, with ii 6 to 9 rays, the second spine varying from weak to very strong. Pectoral pointed, with 16 to 19 rays. Gill-rakers in small number, short and stout. (*σκίανα*, the Greek name for a Mediterranean species.)

A large genus, composed of fishes very variable in size and appearance, inhabiting nearly all warm seas, and of considerable economic importance.

Key to the Australian Species.

- a*¹. Second anal spine short and weak.
*b*¹. Snout more or less pointed.
*c*¹. Preorbital and interorbital region narrow, the former about 2.5 in the eye-diameter, the latter about 5.25 in the length of the head 1. *antarctica*.
*c*². Preorbital and interorbital region wider, the former about 1.5 in the eye-diameter, the latter about 3.75 in the length of the head 2. *australis*.
- a*². Second anal spine strong.
*d*¹. Snout swollen; second anal spine rather short, about one-third of the length of the head 3. *novæ-hollandiæ*.
*d*². Snout not swollen; second anal spine long, about half the length of the head.
*e*¹. Body subovate, its depth more than one third of its length 4. *soldado*.
*e*². Body elliptical, its depth less than one third of its length.
*f*¹. Soft rays of dorsal 24 or 25 5. *albida*.
*f*². Soft rays of dorsal 31 6. *leptolepis*.

SCIÆNA HOLOLEPIDOTA ANTARCTICA Castelnau.

(Plate XXI.)

- Sciæna aquila* McCoy, Rep. Melb. Intern. Exhib., 1866, p. 317; Ogilby, Edib. Fish. N. S. Wales, 1893, p. 72, pl. xxii; Zietz, Trans. Roy. Soc. S. Austr., xxvi, 1901, p. 266.
Sciæna antarctica Castelnau, Proc. Zool. & Accl. Soc. Vic., i, 1872, p. 100; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 520; Woods, Fish & Fisher. N. S. Wales, 1882, p. 53, pl. xvi; Stead, Fish. Austr., 1906, p. 113, fig. 42; id., Edib. Fish. N. S. Wales, 1908, p. 66, pl. xxxvii; Ogilby, Commer. Fish. & Fisher. Queensl., 1916, p. 23; Roughley, Fish. Austr., 1916, p. 112, pl. xxxv.
Sciæna aquila? Castelnau, Proc. Linn. Soc. N. S. Wales, ii, 1878, p. 232; id., *ibid.*, iii, 1879, p. 381.
Corvina axillaris de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 538.
Sciæna neglecta Ramsay & Ogilby, Proc. Linn. Soc. N. S. Wales, xi, 1886, p. 941.

JEW FISH.

Kingfish (Melbourne and Adelaide); Jewfish (Sydney and Brisbane)²⁸; Silver Jew (young at Sydney); Mulloway (Aborigines of the Lower Murray).

Type localities:—Bass Strait (*S. antarctica*).
 Brisbane River (*C. axillaris*).
 Broken Bay (*S. neglecta*).

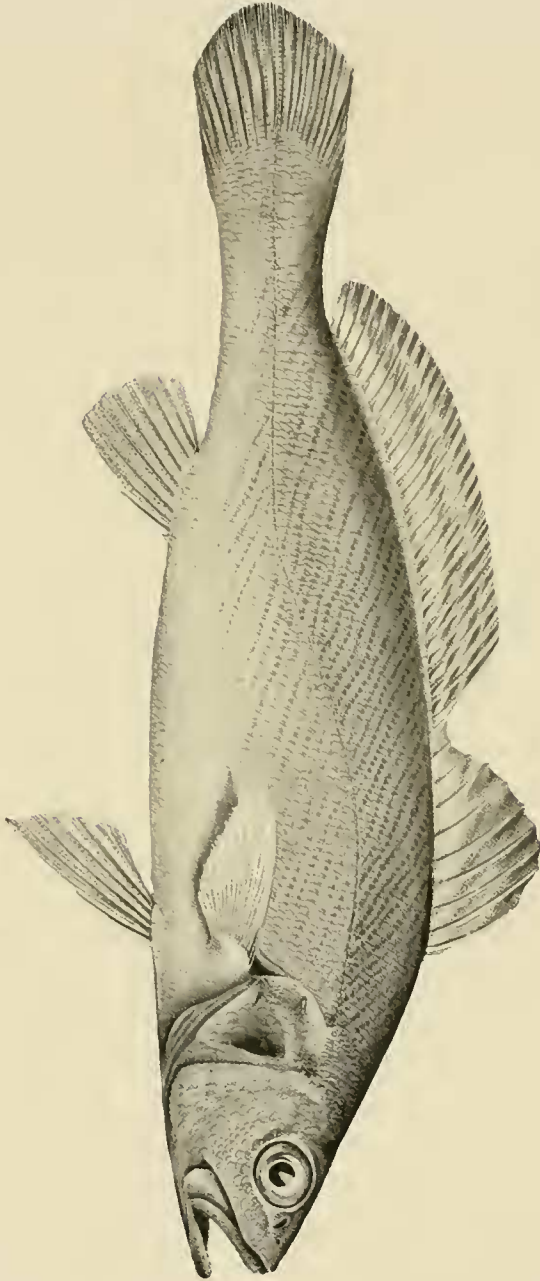
Body elliptical and compressed, moderately robust, the dorsal contour much more arched than the ventral, which is nearly linear from the isthmus to the anal fin, its width rather more than half its depth, which is 3.4 to 3.9 in its

²⁸ Sometimes erroneously written "dewfish."

QUEENSLAND FISHES.

Phyllis F. Clarke, del.

SCIÆNA ANTARCTICA Castelnau.



length and equal to or somewhat less than the length of the head. Abdomen moderate, its length from ventral base to vent 3.28 to 3.37 in that of the body and 1.25 to 1.33 in the space between the vent and the root of the caudal. Caudal peduncle a little longer than deep, its least depth 2.8 to 3 in the length of the head. Head about one half deeper than wide, its upper profile linear or feebly concave, that of the nape gently rounded, its width 2 to 2.25 in its length, which is 3.25 to 3.4 in that of the body. Snout pointed, with scarcely a trace of anterior gibbosity, its profile moderately acclivous, its length 3.5 to 3.63 in that of the head. Diameter of eye one fourth to three fifths less than the length of the snout and 4.44 to 5.5 in that of the head. Preorbital narrow, its least width 2.5 to 2.75 in the eye-diameter. Interorbital region of moderate width and convex, equal to or a little less than the eye-diameter, and 5 to 5.33 in the length of the head. Nostrils approximate, the posterior much the larger and situated directly in front of the inferior moiety of the upper half of the eye. Upper jaw slightly overhanging; cleft of mouth oblique, rising to well above the lower border of the eye; maxillary smooth, extending to below or a little beyond the hinder border of the pupil, its length 2.4 to 2.5 in that of the head, the width of its undulous hinder border about half of the eye-diameter. Preopercle with the angle and hinder limbs sparsely serrated, the serræ disappearing with age; opercle with two flexible points; posttemporal feebly crenulate.

Upper jaw with a band of small teeth, triserial in front, narrowing to uniserial behind, and an outer row of strong, hooked, widely set, subulate teeth, of which the second anterior tooth on each side is the largest; lower jaw with a similar band, but the outer is enlarged anteriorly only, while laterally the inner row is similarly enlarged and subulate.

Scales of body small and finely ctenoid, in 85 to 90 series above the lateral line, in 11 or 12/1/19 to 21 below the spinous dorsal; scales of head, except those of the opercle and occiput cycloid; only the tip of the snout, preorbitals, and chin naked; on the body they are arranged in oblique rows both above and below the lateral line, except on the breast. A single series of scales forms a sheath at the base of the soft dorsal, and another series of smaller scales covers fully one half of the membrane between the rays; small scales cover the basal two thirds of the caudal, and the bases of the anal and pectoral fins are sparsely scaly. Lateral line forming a long gentle curve to below the middle of the soft dorsal, thence horizontal and extending to the tip of the caudal fin, the tube-bearing scales 51 to 54, the tubes, which do not quite reach to the border of the scale, each provided with several ascending and descending tubules of varying length. Tip of snout with a pair of median pores arranged longitudinally, and two lateral pores on each side; mandibular pores arranged in three pair, the anterior pair being the smallest and round, the others increasingly apart and slit-like.

Dorsal fins with x , i 27 or 28 rays, the first originating above the pectoral-base, the last spine partly united to but much shorter than that of the soft

dorsal; spines weak and flexible, the third or fourth the longest, 2 to 2.4 in the length of the head and 1.33 to 1.5 in the length of the base, which is 1.9 to 2.1 in that of the second dorsal, the rays of which, except the last two or three, are nearly equal in length, one ninth to one fourth lower than the longest spine, and 2.4 to 2.57 in the length of the head; length of its base 2.37 to 2.6 in that of the body: last ray, like that of the anal, divided nearly to its base. Caudal fin varying with age from obtusely cuneiform to truncate, its length 4.4 to 5.25 in that of the body. Anal with ii 7 rays, originating below the tenth dorsal ray, the spines short and weak, the second 3.5 to 4 in the length of the head and 1.67 to 1.9 in the first ray: base of anal 5 to 5.25 in that of the second dorsal. Pectoral pointed, with 17 rays, the fifth and sixth the longest, 1.4 to 1.55 in the length of the head, and extending to below the tenth dorsal spine. Ventral inserted a little behind the pectoral-base, its length a little more in the young to a little less in the adult than that fin, the first ray longest and terminating in a short filament, which disappears with age.

Gill-rakers short and moderately stout, 4 + 9 and some rudiments on the anterior arch, the longest about two fifths of the eye-diameter. Air-bladder with numerous fringed processes on either side. Eight pyloric caeca.

Steel-blue above in the young, becoming dark gray-blue or grayish brown in large examples, shading through the silver-gray of the sides to the pure white of the throat and abdomen; the young usually with narrow oblique bars directed obliquely upwards and backwards, and following the borders of each row of scales above the lateral line, and sometimes with a few horizontal series of obscure spots below it; a large blackish axillary blotch. Head rather less brilliantly tinted than the back, the sides suffused with gold; inside of mouth and inner border of opercles orange. Fins grayish or grayish brown, except the ventrals, which are white. (*Antarctica*, belonging to the south.)

Described from seven examples, measuring between 277 and 525 mm. in total length, all obtained in Moreton Bay and the Brisbane River.

Historical.—Our jewfish is the Australian representative of the European "maigre" (*Sciaena hololepidota*), an important food-fish of the Eastern Atlantic, which ranges northward to the southern shores of the British Isles and southward to the Cape of Good Hope, round which it passes, ascending the East African Coast to Natal, and branching off thence to Mauritius, from which Commerçon obtained the specimen, the description and figure of which were afterwards reproduced by Lacépède under the name of *Labrus hololepidotus*. With this species our fish is so closely allied that it does not seem advisable to consider it as of higher than subspecific rank, if even it be entitled to so much consideration. The first intimation, which I can find, of the presence of this noble fish in Australian waters comes, strangely enough, from Victoria, where it is only a rare and occasional visitor, Prof. McCoy having, under the name of *S. aquila*, placed on record the capture of an example in those seas in his "Notes on the Zoology of Victoria," published in the Reports of the Melbourne International Exhibition, 1866. Castellan, however, six years later separated the

Australian from the Atlantic fish giving to the former the name of *S. antarctica*, by which it is generally known at the present time, but it must be confessed that he does not give any very convincing reasons for his action. His decision was based on a single large specimen, fifty-seven inches long, captured in Bass Strait, where, he says, it seems to be an accidental visitor, appears exclusively in the colder months, and only of a very large size. Subsequently, influenced by McCoy, he reverts to the name *S. aquila*, and states that, during a six years' residence in Melbourne, he had only seen two examples, "both of enormous size, weighing about eighty pounds" apiece. And just here we come upon the first of the fascinating mysteries, which enshroud the history of the jewfishes in these waters; the others will disclose themselves in due course. In his paper last referred to Castelnau, writing in 1878 of a recent visit to Brisbane, states that he "was astonished to find that a *Sciæna* was amongst the most common fishes of Moreton Bay, and is considered the best edible fish of the country. It is called Dewfish, because of its beautiful silvery gray colour"; and further on he writes "It attains the weight of fifty pounds. During my stay in the months of June and July, numerous specimens of all sizes were caught every day; the great majority were of a foot long or even less." My first impression, on reading these lines, was that Castelnau, like so many others after him, had confounded the little Brisbane River "perch" (*S. australis*) with the young of the true jewfish, but after intimate conversations with several old Brisbane anglers with thirty to forty years' experience of the river, I am convinced that by so doing I would have made a serious mistake and that the small fishes, to which Castelnau refers, were in very truth the young of the large jewfish. Regarding this Mr. J. Trevethan, who is supported by all the older angling identities, kindly writes to me as follows:—"On the first appearance of these fishes in the upper reaches²⁹ they were of from one pound to six pounds in weight, and were to be caught in such large numbers that one could hardly get rid of them, even as gifts to friends, so common were they. I have known as many as sixty or seventy of these fishes to be creeled by a single angler in a very short space of time, by which you may judge what jewfishing was like in those days. Later on a second run of these fishes commenced, those composing it being of a much larger size, varying in weight from ten to over fifty lb." The largest jewfish Mr. Trevethan was at the catching of weighed fifty-seven lb. after it had been cleaned. As a further instance of their abundance before the great flood of 1893 he states that "even the prawners used to catch them in their nets up to thirty lb. weight, and were glad to get rid of them for a couple of shillings after carrying them from one restaurant to another before they could get a purchaser."

Uses:—As a foodfish this species is of considerable importance, although there is at present no regular fishery for it, most of those which appear in our shops being taken by hook. Up to 25 lb. weight it is an excellent table fish, but beyond that it becomes coarse and somewhat rank. However, as it

²⁹ Mr. Trevethan is alluding to the river reaches from the Dry Dock in Brisbane to above the railway bridge at Indooroopilly.

takes salt well, the larger examples might be preserved by that process, and if the fishery were developed on more business-like lines, they would in time take the place of the vastly inferior imported article, more especially because, as remarked by Mr. Welsby, they do "not become rancid and strong by long keeping as other varieties do."³⁰ An accessory product of the jewfish, which is totally neglected by our fishermen, is the large, fringed air-bladder; though these require but little care, beyond drying, in their preparation for the market, and are of considerable importance in the manufacture of isinglass, they are invariably thrown away as worthless in these States.

Food:—Nothing that it can master comes amiss to this cunning, powerful, and voracious prowler, for though the bulk of its food consists of other fishes, it also consumes large quantities of cephalopods, crustaceans, and the like. Being gregarious it is very destructive to spawning fishes, and especially to the sea mullet, rounding them up in shallow water, and when they are thus huddled together making savage and concerted assaults on the massed shoals, killing and maiming many more than they are able to consume, carried away apparently by the lust of slaughter for slaughter's sake. It follows its prey into the estuaries, and even ascends rivers far beyond the influence of the tide. Mr. Welsby records the occurrence of specimens from the basin at Ipswich.

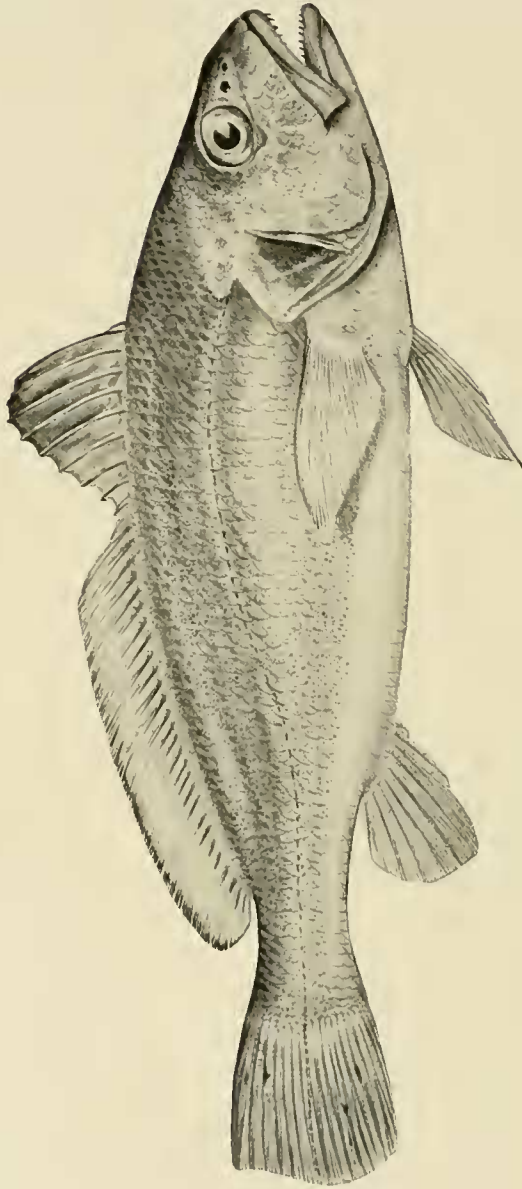
Range:—Shores and estuaries of Temperate Australia. On the Queensland Coast I do not know certainly of its occurrence further north than the Mary River, while during the six weeks' researches carried out by the Endeavour in our waters it only occurred on one occasion, when two large examples were taken by hook and line at the Wolf Rock. As we proceed further south it rapidly becomes more abundant and is, as has been shown, a common fish in the Moreton district. Regarding this Mr. Welsby writes—"Jewfish of large size come in from sea in attendance upon the schools of whiting in the months of September and October, and are caught both by the line and in nets up to 60 or 70 lb. in weight, but these extra large ones do not appear to go very far up the Bay." It is abundant everywhere along the coastline of New South Wales where, according to Stead (2) it "is, at present, one of our most important food-fishes, and it is likely in the future to be of still greater value, as the demand for it is constantly increasing, while our resources, as far as its supply is concerned, are but just tapped." Further south it is reported to be rare on the coasts of Tasmania and Victoria; possibly this may be due to the absence of large rivers, the estuaries of which it loves to frequent, for passing westward we learn from Zietz that it "is sometimes found in great numbers" in the Lower Murray, where it goes by the native name "mulloway." Fraser includes it in his list of West Australian Fishes, but nothing is known as to its distribution or abundance in that State.

Dimensions:—Attains a weight of 125 lb. with a length of over 6 ft., but the usual run of market fish is under 30 lb.

Illustration:—Taken from a young specimen, 275 mm. long, in the collection of the Queensland Museum; Reg. No. I. 2893.

³⁰ Schnappering, p. 80.

QUEENSLAND FISHES.



SOLENA AUSTRALIS (Günther). $\frac{2}{3}$ Nat. Size.

Phyllis F. Clarke, del.

SCIÆNA AUSTRALIS Günther.

(Plate XXII.)

Corvina australis Günther, Zool. Challenger, i. 1880, Shore Fish., p. 33.*Corvina canina* de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 538.

LESSER JEW FISH.

The "Perch" of the Brisbane fishermen; Little Jew-Perch.

Type localities:—Mary River at Tiaro (*C. australis*).Brisbane River (*C. canina*).

Body elliptical and compressed, somewhat robust, the dorsal contour rather more arched than the ventral, which is nearly linear from the isthmus to the anal fin, its width 1.62 to 1.77 in its depth, which is 3.25 to 3.5 in its length and equal to or a little less than the length of the head. Abdomen short, its length from ventral-base to vent one third of that of the body and a little less than the space between the vent and the root of the caudal. Caudal peduncle one third longer than deep, its least depth 3.22 to 3.43 in the length of the head. Head about one third deeper than wide, its fronto-occipital profile feebly concave, that of the nape as feebly convex, its width 1.7 to 1.88 in its length, which is 3.17 to 3.33 in that of the body. Snout pointed, its profile linear and moderately acclivous, forming with the frontal region a slight protuberance in front of the upper border of the eye, its length 3 to 3.25 in that of the head. Diameter of eye about two fifths less than the length of the snout and 4 to 4.67 in that of the head. Preorbital deep, its least width 1.33 to 1.55 in the eye-diameter. Interorbital region wide and convex, its width about one fifth more than the eye-diameter and 3.6 to 3.86 in the length of the head. Nostrils approximate, the posterior much the larger and situated directly in front of the middle of the eye. Upper jaw slightly projecting; cleft of mouth oblique, but not quite rising to the level of the eye; maxillary extending to below the middle of the eye, its length 2.33 to 2.44 in that of the head, the width of its obliquely truncate distal extremity five ninths of the eye-diameter. Preopercle armed with well-developed but slender spines; opercle with two short blunt points; posttemporal bordered with membranous areolæ.

Premaxillaries with a triserial band of minute teeth, and an outer row of about thirteen much larger subulate teeth, which decrease in size from the front; mandible with an outer row of small curved teeth and an inner row of about ten enlarged teeth, which are longest mesially and gradually decrease thence to the front and rear, but are nowhere so long or strong as the anterior premaxillary teeth; roof of mouth and tongue smooth.

Scales of body moderate and finely etenoid, in 54 to 56 series above the lateral line, in 9/16 to 18 below the spinous dorsal; scales of head cycloid; only the tip of the snout and the chin naked; on the body they are arranged in regular oblique rows both above and below the lateral line, except on the breast and

caudal peduncle. Two or three series of small elongate scales form a sheath at the base of the soft dorsal, the interradiial membrane of which is almost completely covered by more or less acuminate minute scales directed outwards; base of caudal scaly, smaller scales extending between the rays to about two thirds of the length of the fin; basal half of anal, pectorals, and ventrals scaly. Lateral line following the curvature of the back to about the middle of the soft dorsal, beyond which it runs straight to the extremity of the caudal fin; tube-bearing scales 48 to 50, the tubes, which do not extend to the border of the scale, each with an ascending and a descending tubule. An arcuate band of three open pores on the snout anteriorly; seven pores across the chin forming two transversely crescentic series, the three anterior small and rounded, the outer pair of the hinder series much the largest and round, the inner pair small and slit-like.

Dorsal fins with x, i 29 to 31 rays, the first originating above the tip of the bony opercle, the last spine basally united to and but little shorter than that of the soft dorsal; spines weak and flexible, the third the longest, scarcely longer than the fourth, 2.1 to 2.28 in the length of the head and 1.2 to 1.37 in the length of its base, which is about 2.2 in that of the second dorsal, the rays of which, except the last three, are of nearly even length, the postero-median ones somewhat the longest, about one third less than the third spine, and 2.8 to 3.1 in the length of the head, the last ray, like that of the anal, divided nearly to its base; base of soft dorsal 2.37 to 2.55 in the body-length. Caudal fin obtusely emarginate or rounded, its length 4.84 to 5.28 in that of the body. Anal with ii 7 rays, originating below the thirteenth dorsal ray, the spines short and weak, the second 3.67 to 4.1 in the length of the head and 1.6 to 1.8 in the first ray; base of anal 5 to 5.38 in that of the second dorsal. Pectoral pointed, with 17 rays, the sixth the longest, 1.33 to 1.5 in the length of the head, and extending to below the anterior dorsal ray. Ventral inserted below and behind the lower angle of the pectoral-base and about one ninth shorter than that fin, the first ray the longest and terminating in a short filament.

Gill-rakers short and slender, 6 or 7 + 12 or 13 with some rudiments on the anterior arch, the longest about three tenths of the eye-diameter. Lower pharyngeals separate, each with three very strong subulate teeth on its inner anterior angle. Air-bladder pointed posteriorly, with a few simple papilliform appendages on each side.

Silver-gray above, shading through the pure silver of the sides to the pearly white of the breast and belly; all the upper and lateral scales are densely powdered with dusky dots, which are so crowded in places as to form four broad longitudinal darker gray bands, two above and two below the lateral line; most of the scales of the breast and belly with a marginal series of from three to five copper-colored dots; nape purplish brown, forming a triangular blotch on each side. Upper surface of head dark brown, separated from the nuchal collar by a silvery band; sides and lower surface silvery; inside of mouth golden. Dorsal, caudal, and pectoral fins gray, the spinous dorsal so closely dotted as to obscure

the ground-color, becoming gradually darker from the base upwards, so that the outer third appears blackish; soft dorsal with the dots much less crowded, only a narrow marginal and a suprabasal band appearing blackish; tips of caudal rays blackish; a small dark spot in and behind the pectoral-axil; anal and ventrals white.

Described from twelve examples, measuring 188 to 276 mm., taken in the upper reaches of the estuary of the Brisbane River by Mr. J. H. Hamson, and kindly given by him to me for the purposes of this paper.

Historical:—Our earliest description of this species comes from Dr. Günther who, in his Report on the Shore Fishes of the Challenger Expedition, shortly described two specimens taken in the neighborhood of Tiaro, a settlement on the upper reaches of the Mary River Estuary. Subsequently de Vis redescribed the fish as *Corvina canina*, the description, like that of Dr. Günther, being of little value as a means of identification. The life history of this little Jewfish is interesting in that it is surrounded by a cloud of mystery. None of the specimens which I have examined showed milt or ova in anything but the earliest stage of development, nor has inquiry from many of our local anglers, who have been catching the fish for years, elicited evidence contrary to my own experience; where and how the spawn is deposited or shed is, therefore, a matter of conjecture, some of our best known experts holding that the "perch," like the salmon, makes its way into the upper reaches of the river for the purpose of depositing its spawn, and this having been accomplished retires to recuperate in the deeper waters of the bay. A few even assert that having left the estuary, and gained the shallower fresh waters of the river sources, they remain there and spawn during the summer months, only dropping down into brackish water on the advent of autumn. I can not, however, find the slightest evidence in support of this view, even its advocates acknowledging that there is no reliable record of its capture under such conditions. The majority of our anglers, however, believe that, like its congener, *S. antarctica*, it merely resorts to the estuaries during the winter and spring months in search of the food which it finds there plentifully, and that, having gained by the latter part of its sojourn there the highest condition, it then retires to the deeper parts of Moreton Bay or even to the open sea for the purpose of spawning. With this view I am inclined to agree.³¹ Again in some years it is exceedingly abundant in all the rivers flowing into Moreton Bay, while in others, where the circumstances are to all appearances equally favorable, it only appears in limited numbers, or even in rare cases puts in no appearance. As to the causes which induce this remarkable variation from year to year no one has as yet given any adequate explanation. The following notes, referring to the Brisbane River, condensed from a letter kindly written for

³¹ Since writing the above I have received, through the kindness of Mr. R. Illidge, a young example, measuring 67 mm., taken at Bulimba; this goes far to prove that, like the majority of our edible fishes, this species spawns near the mouths of rivers, and the young, as with mullet, whiting, bream, etc., seek the shallow water at the edges of the estuaries for protection from their enemies.

me by Mr. J. H. Hamson, and fully endorsed by Mr. J. Trevethan, both perch-fishers of many years' experience, give practically all the definite information that is known about this species. Mr. Hamson writes:—

“With regard to the fish commonly called ‘perch,’ there appears to be some difference of opinion amongst anglers as to whether they make their first appearance for the season from the bay or from the upper reaches of the river. For the last two seasons I have caught the first examples early in March (this year on the 4th, in the Hamilton Reach), and the first good catches are usually made in the Newstead and Mowbray Park Reaches of the river, and gradually the fish travels higher up. On the 20th of last March, while fishing in the reach near the South Brisbane Cemetery, I was told by two old residents of the district that ‘the perch had not *got up* that far yet.’ They, of course, arrived later on, and are even now (Sept. 18) fairly plentiful in the upper reaches, for no later than yesterday a friend and I caught 86. It would be interesting to know where they go during the summer months; do they go out to sea again? or do they remain in the upper reaches? They evidently travel at times in large schools, and at times bite very freely, ‘doubles’ being a common occurrence. It is nothing unusual for a party of three or four anglers to return after a night’s fishing with a catch of about 200. One can never be quite sure at what time they will bite freely; sometimes they are at their best just before and after slack water; at other times the running tide seems to suit them best; while generally they feed more freely during the night.”

Finally there is another remarkable circumstance connected with these fishes which, were it not vouched for by numbers of our most reliable anglers, appears well-nigh incredible. It is that prior to the great flood of March, 1893, which overflowed all the low-lying lands along the banks of the Brisbane River, and caused great destruction of life and property, this little jewfish was unknown in the river, its place being taken by the “golden jew,” a fish of a bright yellow color, which now occurs only singly and at long intervals. Following the subsidence of the waters after the 1893 flood, the present species appeared.

Uses:—Opinions differ as to its value as a foodfish; personally I consider it as a well-flavored and pleasant addition to the menu of the breakfast table.

Food:—By common consent prawns are acknowledged to be the most favored bait for the perch, but they will also take a fish or fowl-gut bait.

Range:—This is one of those species of jewfishes which have a very limited range. I have notes of its capture at Nerang Creek, Southport Pier, Coomera and Logan Rivers, Cleveland Jetty, Brisbane River, Doughboy Creek, Sandgate Pier, Pine River, and Bribie Island, all in the Moreton Bay District and, as before mentioned, in the Mary River at Tiaro.

Dimensions:—Never or very rarely exceeds 300 mm.

Our illustration is taken from a specimen in the Queensland Museum. Reg. No. I. 2890.

SCIÆNA NOVÆ-HOLLANDIÆ Steindachner.

(Plate XXIII.)

Sciæna (Corvina) nova-hollandiæ Steindachner, Sitz. Akad. Wien, liii, 1866, i, p. 445, pl. v, fig. 2.

? *Johannius nova-hollandiæ* Bleeker, Verh. Akad. Amst., xiv, 1874, Sciæn., p. 44; id., Atlas Ichth., viii, 1876, pl. cclxxxvii, fig. 2.

Corvina comes de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 538.

Pseudomyxerus maccullochi Ogilby, Proc. Roy. Soc. Queensl., xxi, 1908, p. 96.

BOTTLENOSE JEWFISH.

Type localities:—Port Jackson, N.S.W. (*S. nova-hollandiæ*).

Brisbane River, S.Q. (*C. comes*).

Logan River, S.Q. (*P. maccullochi*).

Body elliptical and robust, the dorsal contour much more arched than the ventral, its width 1.7 in its depth, which is 3.28 in its length and a little more than the length of the head. Abdomen moderate, its length from ventral-base to vent 3.25 to 3.4 in that of the body and 1.28 in the space between the vent and the root of the caudal. Caudal peduncle a little longer than deep, its least depth 2.75 in the length of the head. Head two ninths deeper than wide, its upper profile and that of the nape linear and moderately acclivous, its width 1.6 to 1.75 in its length, which is 3.25 to 3.5 in that of the body. Snout obtusely rounded and conspicuously gibbous in front, projecting far beyond the jaws, its length 3.14 in that of the head. Diameter of eye two sevenths to two fifths less than the length of the snout and 4.33 in that of the head. Preorbital deep, its least width 1.1 to 1.28 in the eye-diameter. Interorbital region wide and convex, its width one fifth more than the eye-diameter and 3.60 in the length of the head. Upper jaw the longer; cleft of mouth but little oblique, not nearly reaching to the level of the eye; maxillary extending to below the middle of the eye, its length rather less than a third of the head. Preopercle and posttemporal entire, the former with a narrow crenulated membranous border; opercle with a single spinous point.

Jaws with narrow bands of villiform teeth, the outer premaxillary row enlarged.

Scales in 55 to 58 series above the lateral line, in $7\frac{1}{14}$ or 15 between the origin of the spinous dorsal and the vent; scales of head, except those of the snout, preorbitals, and mandible, ctenoid; vertical fins scaly almost to their tips. Lateral line with 46 to 48 tube-bearing body-scales, forming a long gentle curve to below the middle of the soft dorsal, the tube straight and not reaching to the border of the scale, each with an ascending and a descending tubule. Antero-inferior margin of snout bearing four broad papilliform processes, which separate and conceal a series of five pores; a single large open pore on the chin, followed on each side by a slit-like pore.

Dorsal fins with x, i 28 or 29 rays, the first originating above the pectoral-base; last spine of first dorsal basally united to and nearly as long as the spine of the second dorsal; second spine slightly longer than the third, 1.4 in the length of the head and 1.12 in its basal length, which is 2.14 in that of the second dorsal,

the rays of which, except the last two, are of nearly equal length, about two thirds of the second spine and 2.37 in the length of the head; length of base 2.3 in that of the body. Caudal fin euneate, 3.8 in the body-length. Anal fin with ii 7 rays, originating below the thirteenth dorsal ray; spines strong, the second 2.9 in the length of the head and 1.44 in the first ray; length of anal 3.88 in that of the second dorsal. Pectoral pointed, with 18 rays, its length 1.25 in that of the head; fourth ray longest, extending to below the ninth dorsal spine. Ventral fin inserted behind the pectoral, shorter than the pectoral, the outer ray terminating in a short filament, which extends to midway between its origin and the base of the fourth anal ray.

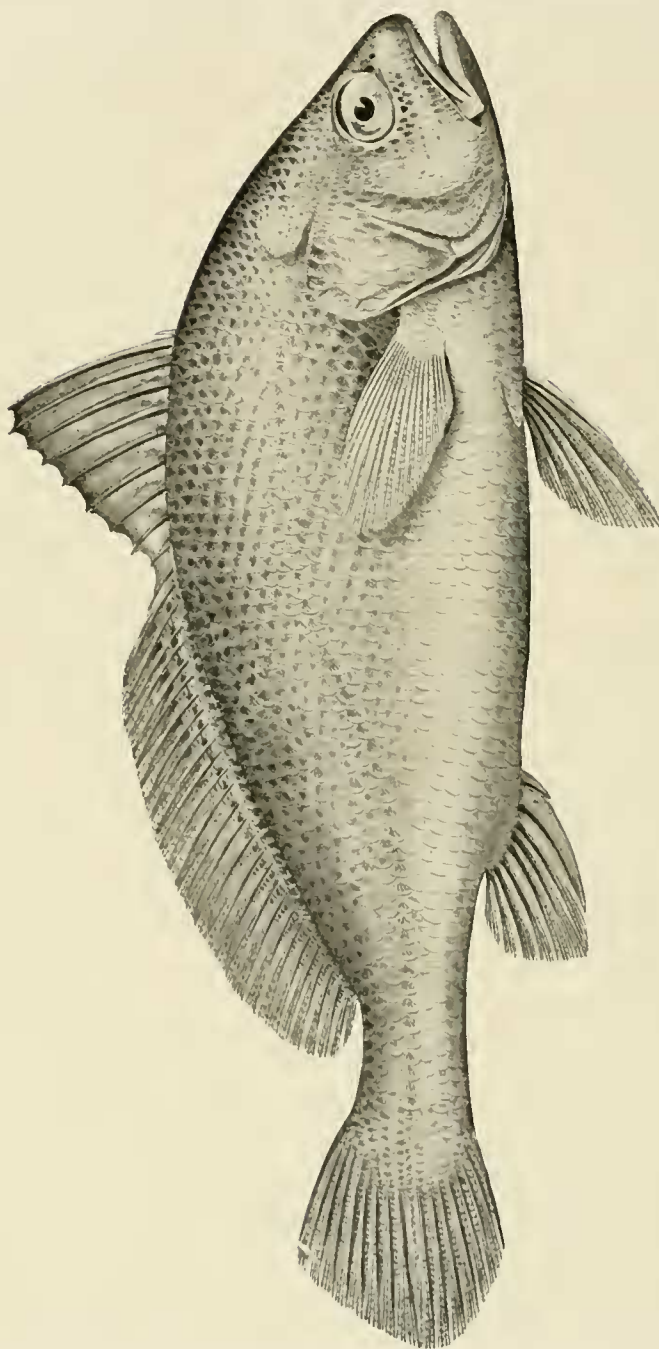
Gill-rakers short and spinulose, 5 + 10 on the anterior arch, the longest about one sixth of the eye-diameter.

Silvery, everywhere so clouded with brown dots as to quite obscure the ground color. Vertical fins darker than the body, except the base of the spinous dorsal, which is dull blue.

Described from two examples, the type of *Corvina comcs* de Vis, a stuffed specimen in fair condition, measuring 200 mm., not 150 as stated by its describer, and the type of *Pseudomycterus maccullochi*, 285 mm. long, caught by Mr. C. E. Harris in September 1906, and presented by him to the Amateur Fishermen's Association, through the courtesy of which it is now deposited in the type collection of the Queensland Museum. Reg. Nos. I. 949 and I. 1535. With regard to the latter supposititious genus and species McCulloch informs me (*in lit.*) that "there is an outer row of enlarged teeth between the fleshy lip and the villiform band in the upper jaw; it is so well hidden, however, that it may have escaped your notice." This is in fact what actually occurred, and as the supposed want of these teeth constituted the chief reason for the formation of the genus *Pseudomycterus*, it follows that the establishment of their presence obviates the necessity for the genus, and automatically refers the species to *Sciæna* proper. Nor could the matter rest there, for this necessitated an inquiry into the status of the species, and a careful comparison with the other Queensland sciænids quickly made it evident that *Pseudomycterus maccullochi* could not be specifically separated from *Corvina comcs*. As I had already associated that species with *Sciæna nova-hollandia*, I am now in a position, through the kindness of Mr. McCulloch, to clear up the somewhat tangled synonymy of Steindachner's species. In dealing with that species I have been severely handicapped by my inability to consult Steindachner's description, but in consideration of the locality whenc his holotype came, and the more or less accurate resemblance of Bleeker's figure to the Brisbane fish, I think it may safely be concluded that the above identifications are substantially correct. There are, however, some conflicting characters which may properly be pointed out here. Günther,³² for instance, gives the number of soft dorsal rays in Steindachner's fish as 25 only, whereas Bleeker (figure), de Vis, and I show respectively 29, 28, and 29. Again our fish differs markedly in some respects from Bleeker's figure, which portrays a much more slender species, having a depth of body 3.75 in its length, and a shorter snout, its length being

³² Zool. Rec., iii, 1866, p. 143.

QUEENSLAND FISHES.



SCIAENUS SOLDADO (Lacépède); lectotype of *C. argentea* Macleay. $\frac{1}{2}$ Nat. Size.

Phyllis F. Clarke, del.

but one fourth of that of the head. The Australian Museum is fortunate in possessing a second specimen of this interesting and evidently scarce scienid, of which McCulloch writes as follows:—"A nice little specimen, registered as having been collected by yourself in the Brisbane River in 1886, is *Pseudomyxerus maccullochi*. I had almost identified it with *Corvina comis* de Vis." This example was taken by hook at the rocks below Thorn street, Kangaroo Point. Many old Brisbane anglers consider that this is, to the best of their belief, the species which was known to them many years ago as the "golden perch," and which disappeared so mysteriously after the great flood of 1893. McCulloch's identification of my 1886 fish with *P. maccullochi* lends color to this suggestion.

Our illustration is drawn from the holotype of *P. maccullochi*.

SCIÆNA SOLDADO (Lacépède).

(Plate XXIV.)

Holocentrus soldado Lacépède. Hist. Nat. Poiss., iv, 1802, pp. 344, 390.

Tella Katchlee Russell. Fish. Vizag., ii, 1803, p. 13, pl. cxvii.

*Corvina*³³ *miles* Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 94; *idd.*, *ibid.*, ix, 1833, p. 479; Bleeker, Verh. Batav. Gen., xxiii, 1850, Scien., p. 17; Jerdon, Madras Journ. Lit. & Sci., 1851, p. 131; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 300; Macleay, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 23.

Sciæna argentea (Kuhl & van Hasselt) Cuvier & Valenciennes, *ibid.*, p. 95.

Corvina soldado Cantor, Catal. Malay. Fish., 1850, p. 70.

Corvina wolffii Bleeker, Nat. Tijds. Nederl. Ind., ii, 1851, p. 66.

Corvina sampitensis Bleeker, *ibid.*, iii, 1852, p. 421.

Corvina celebica Bleeker, *ibid.*, vii, 1854, p. 244.

Corvina dorsalis Peters, Arch. f. Nat., 1855, i, p. 242.

Johnius miles Bleeker, *ibid.*, xviii, 1859, p. 364.

Johnius celebicus Bleeker, Act. Soc. Sci. Indo-Neerl., viii, 1860, Borneo, p. 12.

Pseudosciæna miles Bleeker, Verh. Akad. Amst., xiv, 1874, Scien. p. 23; Atlas Ichth., viii, 1876, pl. cccxxxv, fig. 3.

Sciæna miles Day, Fish. India, pt. 2, 1876, p. 185, pl. xliii, fig. 5; Klunzinger, Sitz. Akad. Wien, lxxx, 1880, i, p. 372.

Sciæna mülleri Steindachner, Denk. Akad. Wien, xli, 1879, i, p. 1; Klunzinger, *ibid.*

Corvina argentea Macleay, *ibid.*, viii, 1883, p. 204.

SILVER JEW FISH.

Type localities:—Pondicherry (*C. miles*).

Java (*S. argentea* K. & v. II.).

Banjermassin, Borneo (*C. wolffii*).

Sampit, Borneo (*C. sampitensis*).

Macassar, Celebes (*C. celebicus*).

Quilnane (*C. dorsalis*).

South Australia (*C. mülleri*).

Lower Burdekin (*C. argentea* Mel.).

Body deep and strongly compressed, the dorsal contour much more arched than the ventral, which is nearly linear from the isthmus to the anal fin, its width

³³ *Sciæna miles* in letterpress by *lapsus calami*.

2.75 in its depth, which is 2.88 to 3 in its length and a little more than the length of the head. Abdomen moderate, its length from ventral base to vent 3.37 in that of the body and 1.28 in the space between the vent and the root of the caudal. Caudal peduncle scarcely longer than deep, its least depth 3 to 3.22 in the length of the head. Head about one half deeper than wide, its fronto-occipital profile linear and rather strongly acclivous, that of the nape evenly rounded, its width a little less than half its length, which is 3.25 to 3.5 in that of the body. Snout but little gibbous in front, its upper profile feebly concave, its length 4 to 4.3 in that of the head. Diameter of eye equal to or a little less than the length of the snout and 4.5 to 4.67 in that of the head. Preorbital moderate, its least width 1.63 in the eye-diameter. Interorbital region narrow and slightly convex, its width five sixths of the eye-diameter and 5.6 in the length of the head. Nostrils approximate, the posterior the larger and situated directly in front of the eye. Jaws equal; cleft of mouth slightly curved and but little oblique, not nearly rising to the level of the eye. Maxillary extending to below the posterior fourth of the eye, its length 2.33 in that of the head, the width of its obliquely truncate hinder border about three fourths of the eye-diameter. Angle and vertical limb of preopercle with a few small remote denticles, the latter directed forwards and upwards; opercle with two spinous points.

Premaxillaries with an outer row of strong, curved teeth, which decrease in size from the symphysis backwards, and a narrow band of villiform teeth, broadest posteriorly; mandibular teeth in two series, the inner row somewhat enlarged, but smaller than those of the outer premaxillary row; roof of mouth and tongue toothless.

Scales of body etenoid, in 62 to 65 series above the lateral line, in 8/1/16 below the spinous dorsal; scales of head, except those of the occiput, eyeloid; they are very unequal in size, minute ones being intermingled with the others on the cheeks, occiput and opercular lobes; head almost entirely scaly, only the tip of the snout and the chin naked; on the body they are arranged in oblique rows both above and below the lateral line, except on the caudal peduncle and the breast, and are largest on the middle of the sides. A single row of scales forms a sheath at the base of the soft dorsal and several series of small scales cover about a third of the membrane between the rays; scales cover the membrane of the caudal fin and are present between the rays at the bases of the anal and pectoral fins. Lateral line almost concurrent with the back from the shoulder to above the anal fin, thence horizontal and extending to the tip of the tail, the tube-bearing body-scales 49 to 51. Tip of snout with a round median pore, on each side of which is a partly concealed slit-like pore; chin with a transversely oval pore, at some distance behind which is a median circular pore.

Dorsal fins with x, i 28 to 32 rays, the first originating above the pectoral-base, its last spine united to but not so long as that of the soft dorsal; third spine longest, 1.7 to 1.87 in the length of the head, and 1.17 in that of its base, which is 2 to 2.22 in that of the second dorsal, the rays of which increase slightly in length to about the twentieth, which is 1.5 in the third spine and 2.3 in the

length of the head; length of its base 2.1 to 2.25 in that of the body. Caudal fin bluntly cuneate, the eighth lowest ray the longest, 4.8 to 4.9 in the body-length. Anal with ii 7 rays, originating below the fourteenth or fifteenth dorsal ray, the spines strong and finely striated, the second 2.1 to 2.2 in the length of the head and 1.25 in the first ray; length of anal 3.7 in that of the second dorsal. Pectoral obtusely pointed, with 16 rays, the fifth and sixth the longest, 1.55 in the length of the head, and extending to below the last dorsal spine. Ventral inserted a little behind the pectoral-base, and somewhat longer than that fin, the first ray longest, with or without a short filamentary appendage.

Gill-rakers 6 + 8 with some rudiments on the lower branch, the longest two fifths of the eye-diameter.

Coloration, after long immersion in preservatives, almost uniformly silvery, with gray stripes extending obliquely upwards and backwards along the middle of each series of scales on the upper anterior portion of the body. Anterior dorsal dusky, with microscopic brown dots; soft dorsal somewhat lighter, with a dark spot before each ray, forming a horizontal row just above the scaly sheath, above which is a second but less definite row. (*Soldado*, the Spanish term for a soldier.)

Described from two specimens, one measuring 320 mm. taken at Dunk Island by Mr. Kendal Broadbent, and acquired from him by the Trustees of the Queensland Museum; Reg. No. I. 2901. The second from a 338 mm. example captured in the Lower Burdekin, which belongs to the Australian Museum, and has been chosen as the lectotype from seven specimens, which are cotypes of *Corvina argentea* Macleay.

Variation:—The six other cotypes, measuring 188 to 310 mm. in length, exhibit some slight variation, the depth being a little less in the smaller specimens than in the larger ones.

Synonymy:—Mr. McCulloch, who has kindly compared the specimens, obtained from various sources, in the collection of the Australian Museum, writes to me as follows—" *Corvina argentea* Macleay is evidently synonymous with *Sciana soldado* (Lacépède); a comparison of one of the smaller specimens of Macleay's cotypes with an Indian example of *S. miles* (= *S. soldado*) of about the same size, from Dr. Francis Day's collection, reveals no appreciable difference between them. *S. mülleri* Steindachner is said to differ from *S. soldado* principally in having the second anal spine somewhat shorter in relation to the following rays, in the relative lengths of the dorsal spines, and in having the tip of the first ventral ray filiform. All these differences are trivial and are not consistently maintained either in our specimens or in the descriptions and figures of *S. soldado*. It seems probable that *S. mülleri* is not distinct from Lacépède's species, though it should be noted that Klunzinger, with both forms before him, maintained them as distinct." With Mr. McCulloch's conclusions I am thoroughly in accord.

Historical:—Our first acquaintance with this fine species comes through Lacépède, who tells us that the specimen from which his description was taken was a part of the collection, which he euphemistically describes as having been given by the Stadholder of Holland to France, and which undoubtedly came from somewhere in the Dutch East Indies. He also mentions a second specimen as having come from Cayenne, the capital of French Guiana; this is of course a mistake. Russell and Sommerat obtained it on the Coromandel Coast of India, at Vizagapatam and Pondicherry respectively, while Valenciennes reports that Messrs. Kuhl and van Hasselt sent a Javanese example to the Museum of the Low Countries, and that Dussumier found it abundant at Bombay. Cantor states that "small individuals occur at Pinang at all seasons; larger ones but rarely." Bleeker received specimens from Celebes, Bali, Borneo, Java, Banca, Pinang, and Bengal, and records that, like many of its congeners, it freely enters rivers. Peters added the width of the Indian Ocean to its range by obtaining specimens at Quilimane, an important centre on the western shore of the Mozambique Channel. Günther added Ceylon and Tenasserim to the list of recorded localities. Its first occurrence in Australia is contained in Steindachner's description of a South Australian scianid by the name of *S. mülleri*, which form was subsequently reported from the Queensland Coast by Klunzinger. Macleay next redescribed it, under the untenable name of *Corvina argentea*, from examples collected by Morton in the estuary of the Burdekin River, where, he states, "it is an abundant and valuable fish." Finally the Queensland Museum possesses a specimen collected many years ago by Mr. Kendal Broadbent at Dunk Island, and a second, which probably belongs here, is labeled "Moreton Bay (*v. infra*)."

Uses:—Dussumier reported that at Bombay it was considered "a good fish," while in regard to Pinang Cantor repeats his usual formula "eaten by the natives," but adds that "the few air-vessels procurable are valued as good isinglass."

Range:—From the East Coast of Africa through the Seas of India and Malaysia to South Australia and the Coast of Queensland.

Dimensions:—Attains a length of at least 600 mm.

Illustration:—Taken from the lectotype above referred to.

The following differences, some at least of which can hardly be called trivial, occur between the Moreton Bay example above mentioned and my description of *Sciæna soldado*. Nevertheless, although it is a slightly smaller (300 mm.) and much deeper fish than either of the two utilized in preparing that description, I look upon it as merely a somewhat abnormal example of the same species.

Depth of body 2.7 in its length and one fourth more than the length of the head. Abdomen short, its length from ventral-base to vent 3.8 in the length of the body and 1.5 in the space between the vent and the root of the caudal. Caudal peduncle a little deeper than long, its least depth 2.77 in the length of the head.

Fronto-occipital profile much more strongly acclivous. Snout 3.75 in the length of the head. Diameter of eye one fourth less than the length of the snout. Interorbital region somewhat wider, seven eighths of the eye-diameter and 5.33 in the length of the head. Maxillary extending to a little beyond the posterior border of the eye. Dorsal fin originating in advance of the pectoral-base; second spine longest, 1.6 in the length of the head. Second anal spine 1.87 in the length of the head and subequal to the first ray; base of anal 4.44 in that of the soft dorsal. Pectoral longer, 1.28 in the length of the head, extending to below the first dorsal ray. Outer ventral ray with filiform tip.

Locality:—Moreton Bay.

SCIÆNA ALBIDA (Cuvier & Valenciennes).

? *Bola coibor* Buchanan, Fish. Ganges, 1822, pp. 78, 368.

Corvina albida Cuvier & Valenciennes, Hist. Nat. Poiss., v, 1830, p. 93; Bélanger, Voy. Ind.-Orient., Zool., 1834, p. 355; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 304; Day, Fish. Malab., 1865, p. 54; Castelnau, Proc. Linn. Soc. N. S. Wales, iii, 1878, p. 47; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 521.

Johnius anci Blyth, Proc. Asiat. Soc. Bengal, 1860, p. 141. Not of Bloch.

Pseudosciæna albida Bleeker, Nederl. Tijds. Dierk., i, 1863, p. 145.

Corvina neilli Day, *ibid.*, p. 55; *id.*, Proc. Zool. Soc. London, 1869, p. 300.

Sciæna albida Day, Fish. India, pt. 2, 1876, p. 188, pl. xlv, figs. 4 & 6.

INDIAN JEWFISH.

Type localities:—Estuary of the Ganges (*B. coibor*).

Pondicherry (*C. albida*).

Cochin, Malabar Coast (*C. neilli*).

Body slenderly subovate and compressed, the dorsal contour much more arched than the ventral, which is almost level from the isthmus to the anal fin, its depth rather less than one third of its length and subequal to or rather more than the length of the head. Abdomen moderate, its length from ventral-base to vent 3.4 in that of the body and 1.33 in the space between the vent and the root of the caudal. Caudal peduncle about as deep as long, its least depth one third of the head. Head about one half deeper than wide, its upper profile linear or feebly emarginate, that of the nape gently rounded, its width one half its length, which is 3 to 3.5 in that of the body. Snout slightly gibbous in front, its profile moderately acclivous. Diameter of eye as much as to one fourth less than the length of the snout and from one fourth in the immature to one seventh in the adult in the length of the head. Preorbital narrow, its width about three sevenths of the eye-diameter. Interorbital region very slightly convex. Nostrils approximate, the posterior much the larger, and situated directly in front of the eye. Jaws equal or the upper slightly the longer; cleft of mouth but little oblique, not nearly rising to the level of the eye; maxillary extending to below the last third

or even the hinder border of the eye; a bluntish knob below the symphysis of the lower jaw. Preopercle with some serrations in the young, becoming indistinct in the adult; opercular spines feeble.

Jaws with a band of villiform teeth, the outer row in the premaxillaries and the inner row in the mandibles enlarged.

Scales of body moderate and etenoid, in 55 to 60 series above the lateral line, in $7\frac{1}{18}$ behind the spinous dorsal; scales of head cycloid. Fine scales cover the bases of the soft dorsal and anal fins; caudal fin wholly scaly in the adult. Lateral line forming a long gentle curve to above the anal fin, the tube-bearing scales about 52, the tubes arborescent posteriorly. Three pores across the front of the snout; the free edge of the skin of the snout with five orifices and a slight lateral lobe; chin with a large open median pore, and two more on the side of either ramus. A short barbel between the median pore and the anterior lateral one and a very minute one at the posterior pore.

Dorsal fins with ix or x, i 24 or 25 rays, the first originating above the pectoral-base, its last spine united to but not so long as that of the soft dorsal; spines weak and flexible, the third the longest, 1.75 to 2 in the length of the head, and 1.33 in that of its base, which is 1.67 in that of the second dorsal, the rays of which increase in length to about the fifteenth, which is 1.25 in the third spine and 2.4 in the length of the head; length of its base 2.67 in that of the body. Caudal fin cuneate in the young, rounded in the adult, one sixth to one seventh in the body-length. Anal with ii 7 rays, originating below the eighth or ninth dorsal ray, the spines strong, the second about half the length of the head and nearly as long as the first ray; length of anal 3.25 in that of the second dorsal. Pectoral pointed, with 18 rays, the fifth the longest, 1.38 in the length of the head, and extending to below the origin of the soft dorsal. Ventral inserted below the pectoral-base, and a little shorter than that fin, the outer ray the longest, terminating in a short filament, which disappears with age.

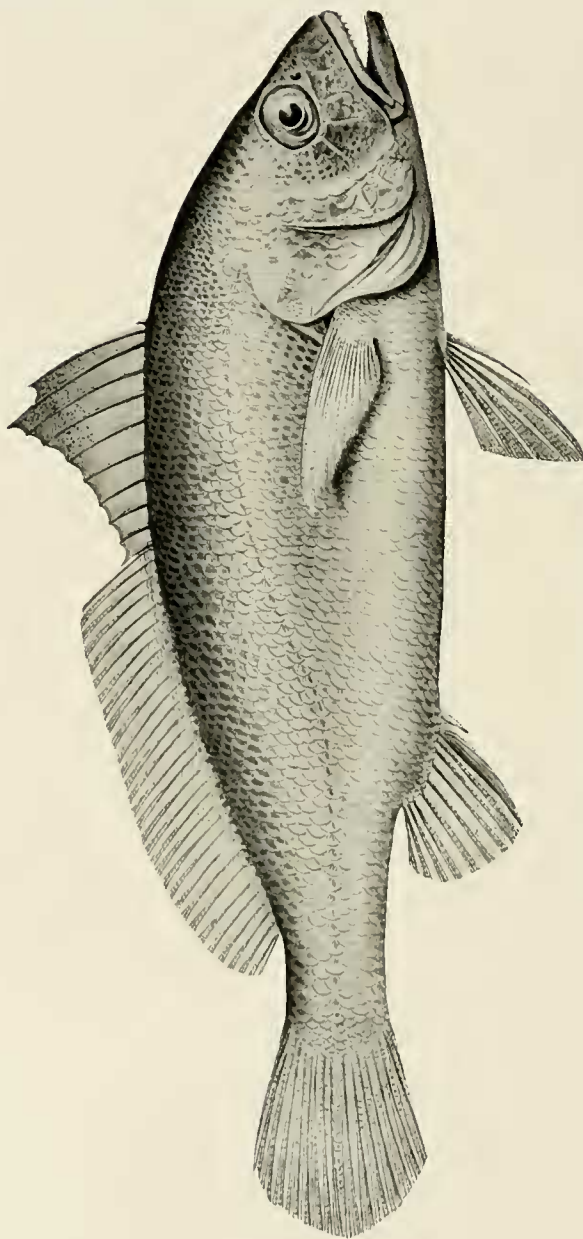
Pyloric appendages five.

Silvery, with a light streak along each row of scales. A dark bluish spot on the opercles, most distinct in the young. First dorsal with a black interspinous membrane in the young, which is gradually reduced to a dark outer border in the adult; outer third of the second dorsal stained with gray; caudal, anal, and ventral fins yellowish. (*Albida*, white.)

The above description is mostly a rearrangement, extracted from Day's description and figures, but should suffice to identify the species, should it be rediscovered by our northern observers.

Historical:—Large and abundant as it is on the coasts of Hindoostan the life history of this fish is pitiably meagre. If Day be correct as to the identity of *Bola coibor* with *Sciæna albida* the earliest notice of this fine species came from the pen of Dr. Francis Buchanan in his history of the fishes found in the Ganges and its tributary streams, and it was not until eight years later that it received from Valenciennes the name by which it has since been generally known.

QUEENSLAND FISHES.



SCLÆNA LEPTOLEPIS Ogilby; holotype. $\frac{1}{2}$ Nat. Size.

Phyllis F. Clarke, del.

His specimens were sent to the Paris Museum by Leschenault from Pondicherry and Bélanger from Malabar, and it is from the former that we learn that the fishery is continuous throughout the year in the roadstead of Pondicherry. Günther later added China to its range and thereafter nothing is heard of it until Castelnau claimed to have obtained a twenty-inch example from the Norman River through the agency of his friend, Mr. Gulliver. Day, in the "Fishes of Malabar," redescribed it as *Corvina neilli*, but subsequently satisfied himself that his fish was inseparable from *S. albida*.

Uses:—According to Leschenault the inhabitants of Pondicherry considered this fish to be "good to eat"; Day, however, says that it is "not in much esteem for the table." Possibly French cookery may bridge the gulf.

Range:—Seas of India and China; North Coast of Queensland.

Dimensions:—Attains a length of at least 900 mm.

Remarks:—If it were not for the difference in the number of dorsal rays I would be inclined to think that the Norman River fish was *S. soldado* not *S. albida*.

SCIÆNA LEPTOLEPIS sp. nov.

(Plate XXV.)

SHARP-NOSED JEW FISH.

Type locality:—Croker Island, N.T.

Body elliptical and strongly compressed, moderately robust, the dorsal contour much more arched than the anal, which is nearly linear from the isthmus to the anal fin, its width rather more than half its depth, which is 3.3 in its length and slightly more than the length of the head. Abdomen short, its length from ventral-base to vent 3.5 in the length of the body and 1.33 in the space between the vent and the root of the caudal. Caudal peduncle about as long as deep, its least depth 3.2 in the length of the head. Head one half deeper than wide, its upper profile linear with a feeble emargination in front of the upper border of the eye, that of the nape gently rounded, its width 2.12 in its length, which is 3.2 in that of the body. Snout with scarcely a trace of anterior gibbosity, its profile moderately acclivous, its length 3.6 in that of the head. Diameter of eye one fifth less than the length of the snout and 4.33 in that of the head. Preorbital moderate, its least width 1.77 in the eye-diameter. Interorbital region narrow and convex, its width three eighths less than the eye-diameter and one sixth of the length of the head. Nostrils approximate, the posterior the larger, situated directly in front of the eye. Jaws equal; cleft of mouth oblique, but not rising to the level of the eye; maxillary extending to below the middle of the eye, its length 2.37 in that of the head, the width of its obliquely truncate hinder border five eighths of the eye-diameter. Preopercle finely crenulated, with a few small and widely separated spines at the angle; opercle with two flexible points.

Upper jaw with a single series of conical teeth on each ramus, leaving a wide naked interspace in front, the second front tooth on either side being the

largest, behind which the others are symmetrically graded; lower jaw with a similar series of conical teeth, but the largest are on the middle of the side, from which they gradually decrease in size before and behind; outside of this row is a second series, posteriorly very small, but evenly increasing towards the front, so that at the symphysis they are fully as long and strong as those of the inner series; roof of mouth and tongue smooth.

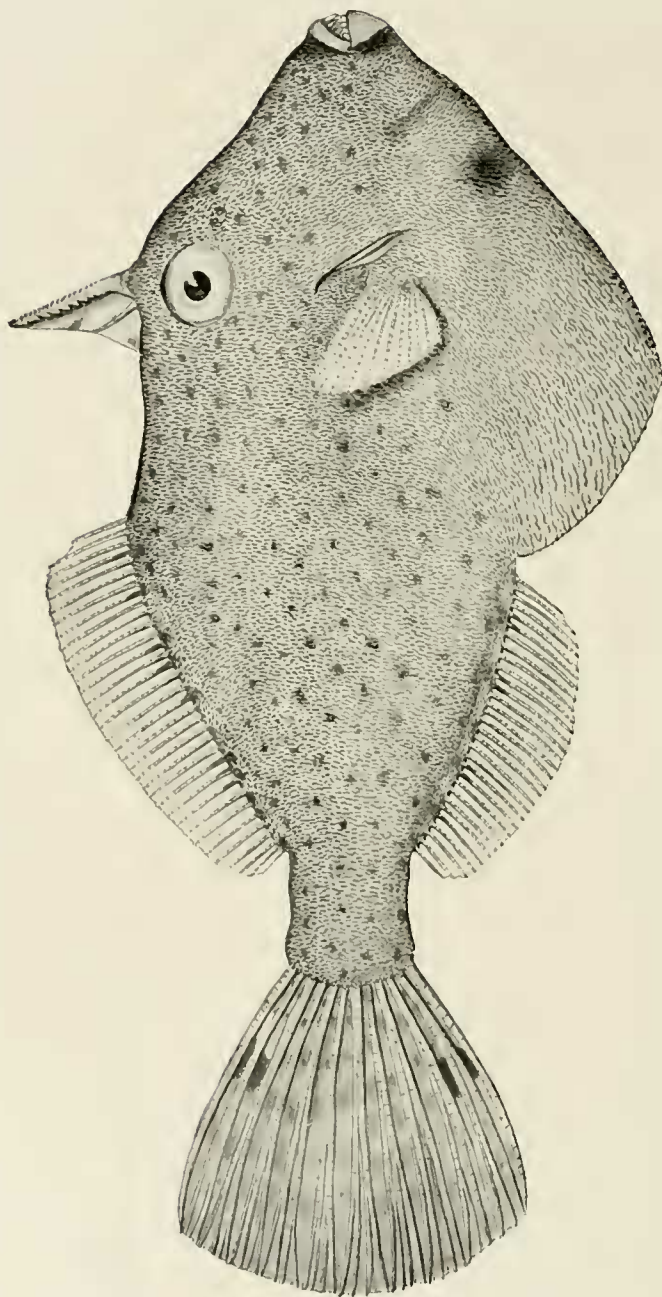
Scales small, thin, and delicate, feebly ctenoid, in 82 series above the lateral line, in 11 $\frac{1}{19}$ below the spinous dorsal; scales of head, except those of the opercle and occiput, cycloid, only the tip of the snout and the chin naked; on the body they are arranged in oblique rows, except on the caudal peduncle and breast. Ctenoid scales in two series form a basal sheath for the soft dorsal, the interradiial membrane of which is scaly on its lower moiety; proximal two thirds of caudal scaly; anal, pectorals, and ventrals with scaly bases. Lateral line forming a long gentle curve to below the middle of the soft dorsal, the tube-bearing scales 49, the tubes, which do not reach the border of the scale, each being provided with an ascending and a descending tubule. Tip of snout pierced by eight pores; a large median one in front followed by a crescentic series of three smaller ones, the inferior edge having on either side a pair of slit-like pores, each overhung by a narrow flap; mandibular pores five; a median transversely oblong one, followed by two paired longitudinal slits.

Dorsal fins with x, i 31 rays, the first originating above the pectoral-base, the last spine partly united to but considerably shorter than that of the soft dorsal; spines weak and flexible, the third the longest, conspicuously longer than the fourth, 1.83 in the length of the head, and 1.22 in that of its base, which is 1.9 in that of the second dorsal, the rays of which increase gradually to about the fifteenth, which is 1.5 in the length of the third spine and 2.77 in the length of the head; last ray, like that of the anal, divided nearly to its base; length of soft dorsal 2.5 in that of the body. Caudal fin emuncate, 4.55 in the body-length. Anal with ii 7 rays, originating below the twelfth dorsal ray; spines strong and pungent, the second long and fluted, half as long as the head, and scarcely shorter than the first ray; length of anal 4.3 in that of the second dorsal. Pectoral pointed, with 17 rays, the fifth and sixth the longest, 1.6 in the length of the head, and extending to below the anterior dorsal ray. Ventral originating below the lower angle of the pectoral-base and as long as that fin, the outer ray the longest and terminating in a short filament.

Gill-rakers short and slender, 6 + 10 with some rudiments on the anterior arch, the longest two fifths of the eye-diameter.

Silvery, darkest above, the sides and belly deeply washed with gold, as also is the base of the ventrals, the edge of the preopercle, and the exposed portion of the maxillary. Spinous dorsal dark-edged, the interspinous membrane profusely powdered with rufous brown; the powdering of the soft dorsal and caudal confined to a strip along each ray. (*λεπτός*, thin; *λεπίς*, a scale.)

QUEENSLAND FISHES.



CANTHERINES MAYNARDI Ogilby.

F. A. McNeill, del.

Described from a specimen, measuring 211 mm., netted at Croker Island, N.T., by Mr. John Colclough. Reg. No. I. 1534.

Note:—Although this species has not as yet been recorded from Queensland waters I consider it advisable to introduce it here, so as to make this review comprise all the known Australian species.

PART XIV.—BALISTIDÆ (No. 1).

CANTHERINES MAYNARDI Ogilby.

(Plate XXVI.)

Cantherines maynardi Ogilby, Proc. Roy. Soc. Queensl., xxviii, 1916, p. 114.

BROWN-SPOTTED LEATHERJACKET.

Body ovate, with the interdorsal profile emarginate, its depth above the pelvic spine 2, between the origins of the dorsal and anal fins 2.4, in its length; caudal peduncle rather slender, its least depth less than the width of the gill-opening. Head bluntly triangular, its length 3.6 in that of the body. Snout with an anterior protuberance, behind which it is feebly concave to above the nostrils. Eye midway between the tip of the snout and the 4th dorsal ray, and one and a half time nearer to the dorsal spine than to the gill-opening, its diameter 3.8 in the length of the snout and equal to the convex interorbital width. Gill-opening exceptionally oblique, commencing slightly in advance of the nostrils and before the middle of the pectoral-base, and terminating below the middle of the eye, its width three fourths more than the eye-diameter, the inner flap but little protruding.

Skin covered with soft granules, which appear velvety to the touch, but contain a retrorse spinule; caudal peduncle without differentiated spines (? ♀); sides with a few short thread-like cirri, arranged in more or less regular longitudinal series.

Dorsal spine inserted above the last quarter of the eye, armed anteriorly with two rows of close-set blunt tubercles, posteriorly with two more remote rows of short blunt spines, its length 1.6 in that of the head;³⁴ 2nd dorsal spine weak. Soft dorsal with 35 rays, its outline feebly rounded, its height 4.3 in its length, which equals the distance between its origin and that of the anal. Caudal rounded and greatly developed, its length slightly more than that of the head. Anal fin with 32 rays, originating below the ninth dorsal ray and terminating a little behind the soft dorsal, than which it is one fourth shorter and a trifle higher. Pectoral fin inserted below the anterior half of the eye,

³⁴ The spine appears to have been injured at some time as, in addition to the bifurcation of the tip, there is a prominent tumor near the base.

rounded, with 12 rays, the second the longest, a little more than the width of the gill-opening. Ventral spine small and rough, not projecting beyond the ventral flap, which is moderately developed.

Stone-gray, the head and body, except the throat and ventral flap, with numerous small round brown spots; outer edge of throat, in advance of the gill-opening, with a much larger blackish spot, which is connected with its fellow by a brown band; above the spot are two concentric semicircles of pale blue. Soft dorsal and anal gray, each ray with an inconspicuous darker intra-basal spot; caudal profusely brown-spotted. (I have much pleasure in naming this species after my friend Mr. Lewis Holden Maynard, of Bundaberg, in recognition of his keen interest in the biology of our State.)

Described from a fine specimen, measuring 317 millim. in total length (244 to root of caudal), captured at Cowan-Cowan, Moreton Bay, by Mr. James Palmer, and presented by him to the Queensland Museum. Reg. No. I. 2643.

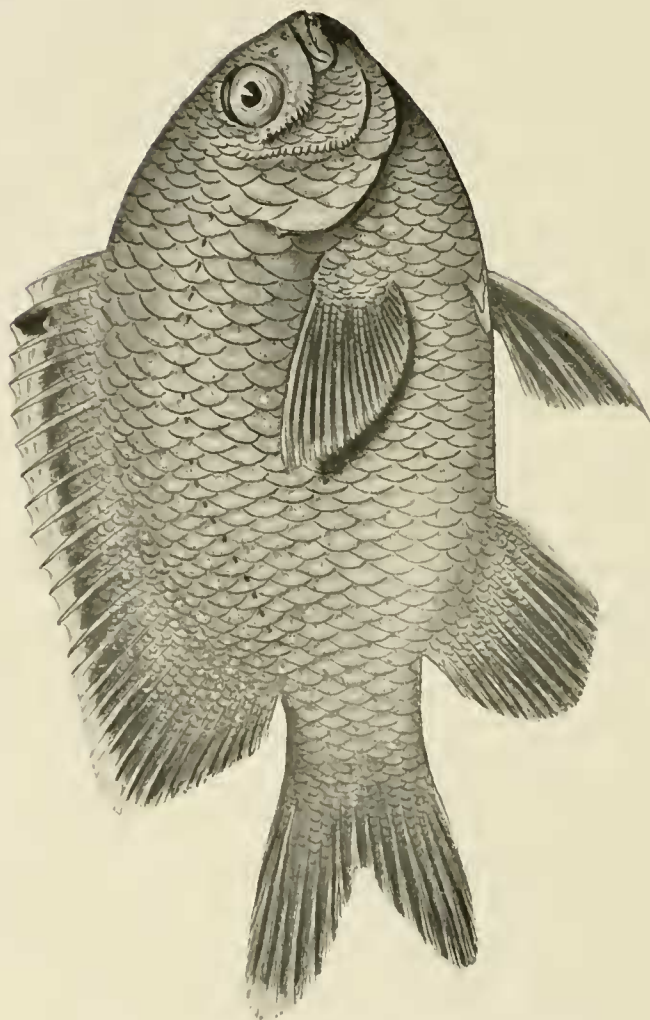
The nearest ally of this species is Bleeker's *Cantherines macrurus*,³⁵ from which, however, it differs in numerous minor characters.

In my notes on the fishes trawled on the Queensland Coast by the Endeavour, I find the following entry:—"Leatherjacket. *Cantherines* sp. (spotted)." Possibly this refers to the species under consideration. Seven examples were trawled at three stations, namely—Off Jenny Lind Buoy, Port Curtis, one; outside fairway buoy, Hervey Bay, five; off Hummocky Island, one.

On drawing Mr. McCulloch's attention to these examples, he kindly compared them with my original description, and decided that they were identical. It is from one of these Endeavour fishes that Mr. McNeill's excellent drawing was made.

³⁵ *Monacanthus macrurus* Bleeker, Nat. Tijds. Nederl. Ind., xii, 1856, p. 226; Nias: *Pseudomonacanthus macrurus* Atlas Ichth., v, p. 134, pl. cxxviii, fig. 2.

QUEENSLAND FISHES.



POMACENTRUS APICALIS. De Vis.

F. A. McNeill, del.