

ON NEW OR INSUFFICIENTLY DESCRIBED FISHES.

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The following paper contains the descriptions of 2 new genera and 24 new species of fishes and of 10 species which either have not previously been recorded from Australian Seas or of which the original descriptions were insufficient or erroneous. Of the 34 species described, all but 7 belong to the Queensland Fauna, the exceptions being

Dobo, Aru Iss.

Croker Is., N.T.

Sphyræna altipinnis

Hemipimelodus colcloughi

Chærodon vitta

Brachirus aspidos

Valenciennæa aruensis

Cynoglossus sindensis

Coryzichthys guttulatus

With the exception of 5, the types of the new species are in the A.F.A.Q.* Museum, these being *Xystodus banfieldi*, *Megaprotodon maculiceps*, *Brachirus salinarum*, and *B. breviceps* in the Queensland Museum, and *Spheroides squamicauda* in the collection of Mr. J. T. Jameson, of Woody Point.

The new genera here proposed are as follows :—

- i. XYSTODUS ; fam. *Synodontidæ*† ; type *X. banfieldi*.
- ii. CHILIAS ; fam. *Pteropsaridæ* ; type *Percis stricticeps* De Vis.

The new species are :—

1. CARCHARIAS SPENCERI ; fam. *Carchariidæ* ; Brisbane River.

* Amateur Fishermen's Association of Queensland.

† By Art. 4 of "The International Code of Zoological Nomenclature" we learn that "the name of a family is found by adding the ending *idæ* to the root of the name of its type genus." Plainly therefore the family name should be written as above, not *Synodontidæ*, as it is usually given. The same rule applies to all similar generic names ending in such Greek derivatives as *odus*, *stoma*, etc.

2. ANCHOVIA ÆSTUARIA ; fam. *Engraulidæ* ; Brisbane River.
3. XYSTODUS BANFIELDI ; fam. *Synodidæ* ; Dunk Island.
4. HEMIPIMELODUS COLCLOUGHII ; fam. *Siluridæ* ; Croker Island.
5. SPHYRÆNA ALTIPINNIS ; fam. *Sphyrænidæ* ; Aru Islands.
6. PRIOPIS OLIVACEUS ; fam. *Ambassidæ* ; Creeks round Brisbane.
7. PRIOPIS NIGRIPINNIS ; fam. *Ambassidæ* ; Creeks at Kilcoy.
8. CHÆRODON VITTA ; fam. *Labridæ* ; Aru Islands.
9. MEGAPROTODON MACULICEPS ; fam. *Chætodidæ* ; Moreton Bay.
10. TRIACANTHUS FALCANALIS ; fam. *Triacanthidæ* ; Moreton Bay.
11. SPHEROIDES SQUAMICAUDA ; fam. *Tetraodidæ* ; Moreton Bay.
12. DICOTYLICHTHYS MYERSI ; fam. *Diodidæ* ; Brisbane River.
13. CHILOMYCTERUS GRANDOCULIS ; fam. *Diodidæ* ; Moreton Bay.
14. VALENCIENNEA ARUENSIS ; fam. *Gobiidæ* ; Aru Islands.
15. RHINOGOBIUS LEFTWICHI ; fam. *Gobiidæ* ; Great Sandy Strait.
16. SCORPÆNOPSIS PALMERI ; fam. *Scorpænidæ* ; Moreton Bay.
17. SCORPÆNOPSIS MACROCHIR ; fam. *Scorpænidæ* ; Moreton Bay.
18. APISTUS BALNEARUM ; fam. *Scorpænidæ* ; Brisbane River.
19. EROSA FRATRUM ; fam. *Scorpænidæ* ; Moreton Bay.
20. EBISINUS PROCNE ; fam. *Dactylopteridæ* ; Moreton Bay.
21. BRACHIRUS SALINARUM ; fam. *Soleidæ* ; Kimberley, N.Q.
22. BRACHIRUS BREVICEPS ; fam. *Soleidæ* ; Rockhampton.
23. CORYZICHTHYS GUTTULATUS ; fam. *Batrachoididæ* ; Aru Islands.
24. CALLIONYMUS GROSSI ; fam. *Callionymidæ* ; Moreton Bay.

The redescribed species are :—

1. DECAPTERUS ? ECCLIPSIFER (De Vis) ; fam. *Carangidæ* ; insufficiently described.
2. BUTIS LONGICAUDA (De Vis) ; fam. *Gobiidæ* ; insufficiently described.

3. AMBLYGOBIUS GOBIOIDES (Ogilby) = *Gobius cristatus* Macleay; fam. *Gobiidæ*; description insufficient.
4. BRACHIRUS ASPILOS (Bleeker); fam. *Soleidæ*; new to Australia.
5. CYNOGLOSSUS SINDENSIS (Day); fam. *Soleidæ*; new to Australia.
6. CHILIAS STRICTICEPS (De Vis); fam. *Pteropsaridæ*; insufficiently described.
7. DACTYLOPUS DACTYLOPUS (Bennett); fam. *Callionymidæ*; new to Australia.
8. PETROSKIRTES FURTIVUS (De Vis); fam. *Blenniidæ*; descriptions insufficient.
9. PETROSKIRTES JAPONICUS (Bleeker); fam. *Blenniidæ*.
10. PETROSKIRTES ANOLIUS (Cuvier & Valenciennes); fam. *Blenniidæ*.

CARCHARIIDÆ.

CARCHARIAS SPENCERI sp. nov.

Depth of body 6·5, length of head 5·6, predorsal length 3·35, length of caudal 3·6 in length of body. Width of head 1·3, depth of head 1·55, length of snout (preoral length) 3, diameter of eye 11·5, width of interocular 1·6, of internasal 3, of mouth 2 in length of head.

Body robust; length of head 1·8 in that of the trunk. Snout short and blunt 1·8 in the space between the eye and the 1st gill-opening; inner angle of nostril nearer to the mouth than to the tip of the snout; ramal length of upper jaw 1·25, length of snout 1·5 in the width of the mouth. Tip of mandible rounded, extending forward to the vertical from the front margin of the eye; labial folds

short, the upper sometimes absent. Teeth $\frac{12-1-12 \text{ or } 13-1-13}{12-1-12}$

erect and fully serrated in both jaws; those of the upper jaw triangular and without a trace of notch on the outer edge, of the lower much narrower with a broad evenly convex serrated base; a small smooth symphysial tooth in each jaw. Space between eye and snout 1·4 in its distance from the 1st gill-opening; interocular region convex. Head and trunk as long as the tail.

First dorsal inserted a little nearer to the pectoral than to the ventral, its anterior border slightly convex with the outer angle obtusely pointed; posterior angle produced and acute, not nearly reaching to the vertical

from the ventral; base of fin rather more than its vertical height. Second dorsal small, inserted a little nearer to the origin of the 1st than to the tip of the tail. Anal originating somewhat behind the 2nd dorsal, its length 1.6 in its distance from the caudal, which is equal to that from the ventral. Caudal long with the upper angle obtusely pointed. Pectoral extending to below or beyond the end of the 1st dorsal, the anterior and posterior borders convex with more or less rounded angles, the outer border emarginate. Space between ventral and anal 1.75 in its distance from the pectoral.

Last gill-opening not much smaller than the 3rd, which is rather more than twice the eye-diameter.

Above ashy or lead blue, below white; tips of 2nd dorsal, caudal, and pectorals darker. (Named for my friend and colleague Adkins Robert Spencer, to whom I am indebted for the specimen above described).

Seas and estuaries of Eastern Australia, ascending rivers to, and it is said even beyond, the furthest limit of tidal influence, attaining a length of 2.5 mm. It is the common "blue shark" of the Brisbane River.

Described from a specimen 122 cm. long; the jaws of which are in the A.F.A.Q. collection; Cat. No. 290.

ENGRAULIDÆ.

ANCHOVIA ÆSTUARIA sp. nov.

D. 13 or 14; A. 31 to 34; P. 12; V. 7; Sc. 40 or 41—9 or 10. Depth of body 3.55, length of head 3.75, of maxillary 4, of anal fin 3.65, of caudal fin 3.75 in the length of the body. Length of snout 4.4, diameter of eye 4, width of interorbit 4, height of dorsal 1.4, depth of peduncle 2.4, length of pectoral 1.25, of ventral 2.35 in the length of the head.

Upper surface of head linear and oblique, with a well-marked fronto-occipital ridge, the nape anteriorly with a slight but distinct acclivity; snout vertically rounded in front and projecting beyond the lower jaw to a distance equaling three fourths of the diameter of the eye; inter-orbital region strongly convex. Premaxillary, maxillary, and mandible each with a series of minute teeth; tongue toothed. Maxillary extending slightly beyond the mandibular articulation. Scales thin and easily detached; ventral profile cultrate and rather strongly serrated.

Dorsal fin originating a little behind the ventral and one fifth nearer to the tip of the snout than to the root of the caudal, its length 1.55 in its height; outer border linear, the last ray not produced. Anterior rays of anal about thrice as long as the middle rays and 1.4 in the height of the dorsal. Middle caudal rays 2 in the lower and longer lobe. Pectoral fin long and pointed, extending to or slightly beyond the base of the ventral. Space between origin of ventral and tip of snout 1.45 in its distance from the root of the caudal.

Gill-rakers long and slender, 24 on the lower branch of the anterior arch, the longest 1.25 in the diameter of the eye. Vertebrae 42.

Pale green above; sides and belly silvery; usually a dusky shoulder spot. Longer dorsal rays and caudal lobes narrowly tipped with blackish.

Total length 150 millim.

Rivers of South-Eastern Queensland. Abundant in the Brisbane River, where it is taken commonly in the prawn nets, but is not used as food.

Described from numerous specimens measuring from 72 to 150 millimeters.

Allied to *A. nasuta* (Castelnau)* from the Norman River, Carpentaria, from which it may be distinguished by the following characters:—

Depth of body rather more than 3.00, length of head 4.50 in length of body; dorsal originating midway between tip of snout and base of caudal *nasuta*

Depth of body rather less than 3.50, length of head 3.75 in length of body; dorsal originating one fifth nearer to tip of snout than to base of caudal *æstuarial*

Type in the Museum of the A.F.A.Q.; Cat. No. 406.

SYNODIDÆ.

XYSTODUS† gen. nov.

Body depressed. No lateral line. Teeth in the jaws unequal and uniserial, consisting of long compressed widely separated sagittate fangs, having between each pair one or two much shorter obtusely pointed teeth; palatine teeth

* *Engraulus nasutus* Castelnau, Proc. Linn. Soc. N.S. Wales, iii, 1879, p. 51.

† ξυστόν, a spear; ὀδούς, a tooth.

of equal size, acicular and biserial, forming a long narrow band; hyoid bones with two series of strong teeth; a multiserial patch anteriorly on the tongue. Nostrils well separated, the anterior circular and cirriferous, the posterior an oblique slit below the level of the anterior. Eye rather small, the adipose lid rudimentary. Dorsal fin inserted midway between the tip of the snout and the root of the caudal; no adipose fin; anal fin similar to but longer than the dorsal; pectorals small and rounded; ventrals 8-rayed. Vent much nearer to the ventral than to the anal. Otherwise as in *Saurida*.

Coast of North Queensland (Dunk Island).

XYSTODUS BANFIELDI sp. nov.

D. 11; A. 14; P. 13; Sc. 51-13. Depth of body 7.2, length of head 3.6, of caudal fin 5.5 in length of body. Length of snout 4.25, diameter of eye 6.8, width of inter-orbit 8.5, cleft of mouth 1.6, height of dorsal 1.9, length of pectoral 2.25, of ventral 1.1 in length of head.

Body slender, a little wider than deep. Frontal groove smooth in front, profusely pierced by small pores behind, continuous with the occipital groove. Diameter of eye 1.6 in the length of the snout; adipose lid vestigial; inter-orbital region concave, its width 1.25 in the eye-diameter.

Dorsal fin nearly as high as long, the tip of the longest ray, when depressed, barely reaching to the base of the last. Anal fin originating midway between the root of the caudal and the origin of the ventral, about thrice as long as high, and one-fourth longer than the dorsal. Middle caudal rays 2.5 in the lower lobe; caudal peduncle as deep as wide, without trace of lateral ridge. Pectoral fin extends to above the end of the base of the ventral, which is inserted a little nearer to the anal than to the tip of the mandible and well in advance of the dorsal, the 6th ray longest, not reaching to the vent.

Lilac, each scale of the back with a dark median stripe, which is often forked distally and form together narrow longitudinal pencillings, of which there are about nine; a purplish lateral band about half a scale wide from the upper part of the opercle to the root of the caudal, dividing the lilac of the back from the yellowish white of the lower half of the body; anteriorly, to above the pectoral the band is black, and from its lower edge it throws

off twelve short subcruciform bars to enroach on the lighter color below; these bars are much larger and darker in front and gradually fade away behind. Head spotted with violet and with transverse dark-edged bands between the eyes and three similar bands directed forward and downward from the eye to and upon the premaxillary. Base and middle rays of caudal and base of pectoral yellow. (Named for Edward James Banfield, Honorary Government Ranger of Dunk Island and the neighboring islets, to whose acute observation Queensland science is greatly indebted for its knowledge of the biology of the district).

Described from a specimen in the Queensland Museum collected by Mr. Banfield, near Dunk Island, and measuring 142 millim.

SILURIDÆ.

HEMIPIMELODUS COLCLOUGHI sp. nov.

D. i 6, 0; A. 17; P. i 12. Depth of body 4.55, length of head 3.25, predorsal length 2.35, interdorsal space 3.4, upper caudal lobe 4.2 in length of body. Width of head 1.45, length of snout 2.5, diameter of eye 5.45, width of interorbit 2.9, length of maxillary barbel 1.25, of dorsal spine 1.65, of anal fin 2.25, of pectoral spine 1.8, of ventral fin 2 in length of head.

Upper profile of head linear and but little oblique; diameter of eye 2.2 in the snout, which is feebly rounded and one fourth wider than long; interorbital region gently convex, its width equal to that of the mouth. Pre-maxillary teeth in a continuous band, which is somewhat undulous posteriorly, pointed at the extremities, and nearly 4 times as long as wide; mandibular band divided mesially, of nearly equal width throughout, but narrowing rather abruptly to a point externally. Barbels slender, the maxillary extending to the origin of the pectoral fin; postmental barbel 1.5 in the maxillary barbel, inserted but little behind and outside the mental barbel, which scarcely reaches the gill-opening. Cranial shield mostly smooth, with a patch of small granules on either side, and a more crowded mesial patch posteriorly, from which two or three rapidly diminishing series extend forward along each side of the occipital groove. Nuchal shield sparsely granular anteriorly, with a well-marked median ridge, on either side of which is a lower and slightly divergent

ridge, its greatest width 1.4 in its length, which is 2.6 in its distance from the tip of the snout; outer border deeply, posterior feebly emarginate. Dorsal buckler moderate, saddle-shaped, smooth. Humeral process smooth and broadly triangular, terminating in an acute point, and extending along the proximal third of the pectoral spine.

Dorsal spine slender, serrated in front and behind, the sides striated; adipose fin moderate, inserted above the middle of the anal, one third higher than long, its base 1.65 in that of the rayed dorsal. Anal fin as high as long, with the outer border feebly emarginate. Least depth of caudal peduncle 2 in its length behind the adipose fin. Pectoral spine curved, similar to but more strongly serrated than that of the dorsal. Ventral fin obtusely pointed, not reaching to the anal. Vent a little nearer to the anal than to the ventral.

Gill-membranes meeting at a very obtuse angle, the free margin moderate; axillary pore minute.

Upper surface of body pale leaden blue, of head and nape brown, darkest on the latter; a bluish patch above the eye; checks, preorbitals, edges of mandibular rami, and humeral processes strongly tinged with yellow; lower surface of head lilac, of body bluish white. Dorsal fin pale blue, the basal portion and the spine gray; adipose fin with a narrow whitish border; lobes of caudal and bases of anal and ventrals yellow, the middle rays of the former and the tips of the two latter pale blue; pectorals pale blue, the spine gray. (Named for its discoverer, Mr. John Colclough).

Described from a specimen, measuring 202 millim., taken at Croker Island, N.T., and presented by its collector to the A.F.A.Q. Museum; Cat. No. 993.

SPHYRÆNIDÆ.

SPHYRÆNA ALTIPINNIS sp. nov.

D. v-i 9; P. 15: Sc. 13—128—24. Depth of body 7.15, of caudal peduncle 14.4, length of head, 3.2, of caudal fin 4.55, of pectoral 8.75, predorsal length 2.45 in length of body. Length of snout 2.15, diameter of eye 5.15, width of interorbit 6.85 in length of body.

Body robust, its width 1.4 in its depth. Depth of head subequal to the postorbital region; diameter of eye

2.4 in the snout; interorbital region feebly convex. Maxillary extending to below the anterior border of the eye, its distance from which is 3, its greatest width 2.2 in the eye-diameter; lower jaw without fleshy appendage. Premaxillary teeth about 54 on each ramus; posterior canine much the larger; 4 enlarged palatine teeth, the second the strongest; mandible with 9 lateral teeth, the canine sinistral. Opercle with a weak spine. Cheeks and opercles scaly; upper surface of head naked.

Dorsal fin originating well in advance of the tip of the appressed pectoral; dorsal spines flexible, the second the longest, 1.35 in the length of the snout; soft dorsal higher than the spinous, its last ray produced. Anal originating below the middle of, terminating well behind, and similar in size and shape to the soft dorsal. Middle caudal rays 3 in the upper and longer lobe; depth of peduncle one and one sixth time the diameter of the eye. Pectoral fin 1.25 in the length of the snout and extending well beyond the origin of the ventral. Ventral inserted below the origin of the spinous dorsal and midway between the tip of the mandible and the middle of the anal, its length 1.45 in the snout.

No elongate gill-raker.

Above purple, each of the scales with a light centre; sides silvery, crossed by fourteen vertical purple bars, the first behind the tip of the pectoral, the last above the end of the anal; lower surface pearly white; dorsal fins blackish; caudal grayish brown, darkest above; anal, ventrals, and pectorals gray, the anterior rays of the former and the outer rays of the two latter dusky.

Total length 405 millimeters.

Described from a single specimen obtained at the Aru Islands by Mr. John Colclough.

Type in the A.F.A.Q. Museum., Cat. No. 1066.

CARANGIDÆ.

DECAPTERUS ? ECCLIPSIFER (De Vis).*

D. viii, i 32 i; A. ii, i 28 i; P. 21 : Sc. 124; L.l. 86. Depth of body 4.30, length of head 3.65, height of soft dorsal 8.90, of anal 9.30, length of pectoral 3.75 in

* *Caranx ecclipsifer* De Vis, Proc. Linn. Soc. N.S. Wales, ix, 1884, p. 541: Cape York.

length of body. Length of snout 2.80 diameter of eye 3.15, width of interorbit 4.20, length of maxillary 2.66, of mandible 2.10, height of spinous dorsal 1.80, length of ventral 2.00 in length of head.

Body elongate-elliptical, somewhat compressed, its width 1.50 in its depth, the dorsal and ventral profiles about equally convex. Depth of head 1.50 in its length; snout pointed, longer than the eye-diameter, which considerably exceeds the feebly convex interorbital width; adipose lid greatly developed, extending well over the preorbital and opercular regions, and leaving uncovered only a narrow vertical slit, of which the pupil is the centre; cranio-nuchal ridge moderate, extending forward on the snout; lower jaw the longer; maxillary scarcely extending to the level of the eye, the width of its emarginate distal extremity 2.50 in the eye-diameter. A narrow band of fine teeth in the jaws; vomer, palate, pterygoids, and tongue smooth.

Scales smooth, in regular series; throat and breast scaly; occiput, posterior half of interorbit, inner half of opercle and subopercle, interopercle, and cheeks scaly; head elsewhere naked; soft dorsal and anal fins with a low basal scaly sheath. Lateral line straight to above the middle of the appressed pectoral, thence gently curved to below the anterior third of the soft dorsal, beyond which it is again straight; posterior portion 1.40 in the anterior, bearing 31 plates, which are well developed posteriorly, where each is armed with a strong sharp spine; anteriorly the line is continued in a wide loop over the nape, meeting its fellow immediately behind the nuchal ridge, and forming a definite boundary between the minute occipital and the larger body scales; the loop itself is bisected by a short supplementary line, which passes forward along the interorbit and backward over about 7 scales. Caudal peduncle without subsidiary keels.

Spinous dorsal originating behind the base of the pectoral, the 3rd spine longest, two fifths longer than the 2nd ray, which reaches, when depressed, to the base of the 9th ray; origin of soft dorsal above the vent. Detached anal spines strong and subequal, 2.25 in the eye-diameter, united basally by membrane to one another and to 3rd spine, which is inserted below the 6th dorsal ray; anal

fin one third longer than the abdomen, its anterior lobe about as high as the soft dorsal. Caudal fin forked, the middle rays shorter than the eye; caudal peduncle wider than deep. Pectoral fin slightly curved, extending to below the origin of the soft dorsal. Ventral small, reaching midway to the base of the 2nd anal spine.

Gill-rakers long and slender, 13+35, the longest 1.80 in the eye-diameter, but not quite so long as the middle fringes.

Above olive green, lightest on the head, below pearly white; a blackish opercular spot; base of pectoral dark; fins colorless.

Described from a Moreton Bay specimen, 230 millim. long, in the A.F.A.Q. Museum; Cat. No. 1134.

AMBASSIDÆ.

PRIOPIS OLIVACEUS sp. nov.

D. viii,* i 7; A. iii 8; P. 12: Sc. 23-15; L.l. 0 to 4. Depth of body 2.55, of caudal peduncle 6.6, length of head 2.85, of caudal fin 2.85 in length of body. Length of snout 4.1, diameter of eye 3, width of interorbit 4.35, longest dorsal spine 1.65, longest anal 2.15, length of pectoral 1.25, of ventral 1.4 in length of head.

Upper profile of head linear, the nape convex with an appreciable median ridge; interorbital region convex; maxillary scarcely extending to below the anterior border of the eye. Preopercle with 5 or 6 strong spines at and below the angle. Head scales as large as those of the body.

Procumbent dorsal spine well developed; spinous dorsal originating above the 4th body-scale, the 3rd spine longest and strongest, a little higher than the rayed dorsal; spine of soft dorsal 1.35 in the height of the spinous dorsal. Anal fin originating below the 12th body-scale; 3rd spine longest, as long as that of the soft dorsal, a little longer than the base of the fin, and 1.35 in the 1st ray, which is as high as that of the dorsal. Caudal fin deeply forked, the middle rays about half as long as the lobes. Third and 4th pectoral rays longest, extending to the 10th body-scale. Ventral shorter than the pectoral, the two outer rays longest, reaching to the vent, the spine as long as the 3rd anal spine.

Green above, yellowish white below; a black line,

* The procumbent spine included.

which is feebly curved anteriorly, from the upper angle of the opercle to the root of the caudal; the scales forming the series through which this line runs are profusely dotted with black, as also are the edges of all the scales above the line, and anteriorly the surface of the scales is similarly but more sparsely dotted; two or three series of body-scales below the line and the scales of the tail with a single marginal series of black dots. Upper surface of head and nape and the opercles so profusely dotted as almost to obscure the ground color; cheeks and lower surface of head less closely dotted. All the fins similarly marked, the dots being most crowded on the membrane of the second dorsal spine, the tips of the anterior anal rays, and the middle ventral rays.

Abundant in all creeks and waterholes in the Brisbane district. Description taken from a 50 millim. example in the A.F.A.Q. Museum, to which it was presented by Mr. W. E. Weatherill; Cat. No. 463.

PRIOPIS NIGRIPINNIS sp. nov.

D. vi, i 8; A. iii 8; P. 10; Sc. 25-12; L. 0 to 6. Depth of body 2.85, of caudal peduncle 7.9, length of head 2.9, of caudal fin 2.8 in length of body. Length of snout 3.8, diameter of eye 2.8, width of interorbit 4.05, longest dorsal spine 1.5, longest anal 1.95, length of pectoral 1.3, of ventral 1.45 in length of head.

Upper profile of head linear, the nape feebly convex and with a well defined median ridge; interorbital region convex; maxillary extending to below the anterior border of the eye. Preopercle with a few strong spines at the angle. Head scales as large as those of the body.

No procumbent dorsal spine; spinous dorsal fin originating above the 7th body scale, the 1st spine longest and strongest, somewhat higher than the rayed dorsal; spine of soft dorsal 1.3 in the height of the spinous dorsal. Anal fin originating below the 14th body-scale, the 3rd spine longest, as long as that of the soft dorsal, a trifle longer than the base of the fin, and equal to the 1st ray, which is higher than that of the dorsal. Caudal fin deeply forked, the middle rays about two fifths of the length of the lobes. Fourth pectoral ray longest, extending to the 11th body scale. Ventral a little shorter than the pectoral, the two

outer rays longest, reaching slightly beyond the vent, the spine as long as the 3rd anal spine.

Uniform violaceous brown, somewhat lighter below; edges of all the upper scales clouded with numerous black dots; lower scales and those of the head with scattered dots; a narrow black line from the tip of the appressed pectoral to the root of the caudal. Fins dusky; membrane of first dorsal spine densely powdered with blackish spots; tips of the anterior soft dorsal and anal rays black.

Inland creeks in the Moreton District. Description taken from a 45 millim. example in the A.F.A.Q. Museum, obtained in Kilecy Creek by Dr. T. Bancroft, and presented by him to the Association. Cat. No. 1342.

LABRIDÆ.

CHÆRODON VITTA sp. nov.

D. xiii 7; A. iii 10; P. 16: Sc. 3-27+2-10. Depth of body 2.9, of caudal peduncle 7.7, length of head 3.15, of middle caudal rays 5.9, of pectoral and ventral fins 4.5 in length of body. Length of snout 2.45, diameter of eye 4.1, width of interorbit 3.5, last dorsal spine 3.05, last anal spine 2.9 in length of head.

Dorsal profile of body evenly and gently rounded, not appreciably higher than the ventral profile, its highest point above the middle of the appressed pectoral. Head about one sixth longer than deep; upper profile of snout gently rounded and moderately declivous; eye moderate, its diameter rather less than the depth of the preorbital. Cleft of mouth extending to below the anterior nostril. Anterior canines large; lateral mandibular teeth without prominent tips; no posterior canine. Preopercle finely serrated. Cheeks with eight series of small subimbricate scales; some of the opercular scales larger than the breast-scales; scales at the base of the caudal angulated and but little enlarged.

Soft dorsal and anal fins low, rounded and subequal in height posteriorly, scarcely extending to the caudal fin, and with a low scaly sheath. Caudal fin emarginate. Fourth pectoral ray slightly longer than the third, reaching to below the tenth scale of the lateral line. Outer ventral ray the longest, extending to the vent.

Reddish brown, darkest above; two to four narrow, sometimes anastomosing, silvery lines on the cheeks and

preorbitals; a broad blackish band along the middle of the body from behind the eye to the caudal peduncle, separated by a short interspace from a large oval black spot in front of the root of the caudal; fins uniform pale rufous.

Total length (of type) 190 millim.

Aru Islands.

Type in the A.F.A.Q. Museum; Cat. No. 1394.

In company with the West Australian *C. rubescens* and the East Australian *C. macleayi* this Tuskfish forms a well-marked group, characterized by the smaller size, more slender habit, and uniform or nearly uniform coloration, which in the species mentioned is rufous brown in marked contrast to the more brilliant livery of the larger species. With these three should also be associated De Vis' *C. olivaceus*.

CHÆTODIDÆ.

MEGAPROTODON MACULICEPS sp. nov.

D. xiv 18; A. iv. 15; Sc. 6-46-15; L. 36. Depth of body 1.75, length of head 3.15, of pectoral fin 3.4, of ventral 3.4 in length of body. Diameter of eye 2.4, width of interorbit 2.75, longest dorsal spine 1.35, longest anal 1.25, length of caudal 1.5, depth of peduncle 2.75 in length of head.

Upper profile of head moderately steep and undulous owing to a slight protuberance above the posterior half of the eye. Snout slightly produced and obtusely pointed, 1.25 in the eye-diameter; interorbital region convex; jaws equal; maxillary extending to below the anterior nostril. Preopercle serrated. Scales moderate, those on the middle of the trunk somewhat larger than the anterior scales and much larger than those on the tail, which rapidly decrease in size posteriorly: lateral line but little arched in front, not extending to the caudal peduncle.

Dorsal fin broadly anal narrowly rounded behind, the spinous portion of the former twice as long as the soft portion; 4th and 5th dorsal spines equal and longest, a little longer than the soft rays. Second anal spine longest and strongest, somewhat longer than the dorsal spines and one fourth longer than the rays, which are slightly shorter than those of the dorsal. Caudal fin feebly rounded. Pectoral pointed, the 4th ray longest, reaching

to the 12th body-scale. Ventral as long as the pectoral, extending to the vent.

Colors (after long immersion in alcohol). Pale rufous, with five rather wide dark longitudinal bands following the curvature of the back above the lateral line and twelve much narrower linear bars below; a large black elliptical spot covers the upper middle portion of the side from above the middle of the pectoral fin to below the anterior third of the soft dorsal; about two thirds of it are below the rest above the lateral line, and the two lower longitudinal bands and three upper bars are lost in it; a large oval black spot on the side of the tail, partly below the end of the soft dorsal and partly on the peduncle, across the upper edge of which it extends but does not reach the lower border. Ocular band running from a short distance in front of the dorsal through the eye to the interopercle, darkest superiorly, and somewhat interrupted by a lighter spot where it leaves the nape; opercle with several large dark brown spots. Soft dorsal and anal fins each with a narrow dark inframarginal band, which extends forward on the former to the posterior rays; caudal fin with a wide pale brown basal and a dark brown subarcuate median band.

Described from a Moreton Bay specimen, measuring 75 millimeters, in the collection of the Queensland Museum.

Closely allied to *Megaprotodon plebius**, from which it differs chiefly in the color markings. The lateral blotch bears a close resemblance to that of *Chætodon speculum*† as figured by Bleeker‡, but is more pointed at either end.

TRIACANTHIDÆ.

TRIACANTHUS FALCANALIS sp. nov.

D. v or vi—22 or 23; A. 18; P. 16. Depth of body 2.75, length of head 3.35, of snout 4.85, of first dorsal spine 3.55, of ventral spine 4.3, of pelvic bone 5, of soft dorsal 3.55, of anal 5.5, of caudal 3.85, of caudal peduncle 5.1 in length of body. Diameter of eye 3.85, width of inter-

**Chætodon plebeius* Gmelin, Syst. Nat., 1789, i, p. 1269. In Turton's translation, 1806, no mention is made of this species.

† *Chætodon speculum* (Kuhl & v. Hasselt) Cuvier & Valenciennes, Hist. Nat. Poiss, vii, 1831, p. 73.

‡ Atlas Ichth, pl. cccclxxv, fig. 3.

orbit 3.65, of gill-opening 4.6, height of soft dorsal 3.55, of anal 2.5 length of pectoral 2.3 in length of head.

Upper profile of snout linear, its length 1.45 in that of the head and 1.35 in the space between the eye and the soft dorsal. Distance of eye from gill-opening 1.15 in the diameter of the eye, which is 1.5 in its distance from the dorsal spine; interorbital region concave (nearly flat in large examples), without indication of a median ridge. Gill-opening entirely behind the eye, commencing in front of the lower third of the pectoral.

Dorsal spine feebly curved or straight, tapering to an acute point, inserted above the base of the pectoral, and entirely covered with coarse granules, which are somewhat more enlarged and pointed in front and behind, its distance from the soft dorsal 2.3 in that from the tip of the snout; soft dorsal with rounded outline, the highest part about the end of its first third, where it is 3.4 in its length. Anal fin much higher than the soft dorsal, below the eleventh or twelfth ray of which it originates and with which it is conterminous; its outline is deeply emarginate, the anterior rays being produced and falciform, 1.5 in the base of the fin, which is 1.55 in that of the soft dorsal. Caudal fin deeply forked, the middle rays 3.25 in that of the outer; caudal peduncle distally cylindrical. Base of pectoral fin 1.5 in the width of the gill-opening. Ventral spines reaching to or not quite to the vent. Pelvic bone tapering to a point behind.

Silvery, washed with bronze above; two large oval dark blotches on the back, one below each dorsal fin anteriorly; two similar blotches on the side, the one above the other behind the pectoral; base, lower half of membrane, and outer half of dorsal spine except the extreme tip blackish.

Total length 260 millim.

Coast of Southern Queensland. Brisbane River and Moreton Bay, common.

Described from six examples, measuring from 150 to 256 millimeters.

TETRAODIDÆ.

SPHEROIDES SQUAMICAUDA sp. nov.

SCALY-TAILED TOAD-FISH.

D. 9 ; A. 7 ; P. 15. Depth of body (at the vent) 4·2, length of head 3 in length of body. Diameter of eye 2·6, width of interocular region 6·25, height of dorsal 1·45, length of caudal 1·15, of pectoral 1·5 in length of head.

Body robust, evenly and gently rounded to above the middle of the pectoral fins, beyond which it slopes downward to the caudal. Anterior profile of head linear and slightly oblique, the mouth below the level of the eye ; length of head a little less than that of the trunk. Eye large, narrowly free below, its diameter about equal to the length of the snout ; interocular region narrow and concave, its width 2·4 in the eye. Nostrils pierced in a conspicuous rounded tentacle. A narrow band round the lips and an ovate gular patch naked ; rest of head and trunk closely studded with flexible spinules, which do not quite extend to the dorsal fin above nor to the vent below, but are continued backward on the upper side to below the origin of the dorsal where it meets the lateral line, the intervening border concave ; between the lateral line and the vent there is also a naked embayment stretching forward to the tips of the appressed pectoral rays ; tail spineless, with a low ridge on either side of the lateral line, each of which bears a series of unarmed squamiform processes. Lateral line forming a gentle curve to below the origin of the dorsal, thence straight to the caudal fin ; a linear connecting line across the nape, beyond which the main line curves gradually downward to behind the lower third of the eye where it trifurcates, the middle branch passing directly forward to the angle of the mouth, the others branching off at right angles, the upper eventually curving forward above the eye to between the nostrils, the lower ceasing in front of the inferior angle of the gill-opening. Sides of tail with a well-developed ridge. Width of gill-opening rather more than the base of the pectoral, and extending well above it, the inner flap not protruding, the outer with a flat tentacular process on its lower half.

Dorsal fin falcate, with the extreme tip rounded, its length 2·85 in its height. Anal rounded, originating

below the middle of the dorsal, than which it is much shorter and lower. Caudal fin elongate and rounded, as long as the peduncle. Outer edge of pectoral linear above rounded below.

Upper surface lilaceous with numerous small blackish spots; sides gray, profusely dotted with darker; a moderately wide dusky band separates the two colors on the tail running just below the lateral line; under surface immaculate white: fins colorless.

Total length 80 millim.

Coast of Southern Queensland.

Described from the single example known.

DIODONTIDÆ.

DICOTYLICHTHYS MYERSI sp. nov.

D. 12; A. 11; P. 20. Width of body 2·85, depth of body 2·85, length of head 2·70 in the length of the body. Length of snout 3·50, diameter of eye 3·05, width of inter-orbit 2·00, height of dorsal and anal fins 2·00, length of caudal 1·50, of pectoral 2·00 in the length of the head.

Snout linear, rest of head convex above; mouth below the level of the eye. Head much longer and a little deeper than wide, its length 1·30 in the trunk. Eye moderate, without free lid; interorbital region concave. Nasal tentacle bifurcate. Spines of head and lower surface erectile, of back and sides fixed, the abdominal and sub-caudal spines much smaller than the others, which are of about equal size throughout, the longest pair being on each side of the caudal peduncle and not so long as the diameter of the eye; no turbinal nor preorbital spines; frontal region with a conspicuous median spine, outside and behind which is a pair of rather smaller lateral spines; inside and behind these are yet another pair, the inner roots of which overlap one another; beyond these again are three other pairs similarly arranged, while the hinder border of the occiput is armed with a single spine corresponding to the frontal spine; two short, widely separated supraorbital spines, followed by a series of eight spines, the first three belonging to the temporal region, the last below the dorsal; cheeks and opercles with short sharp spines; caudal peduncle with two pairs, the bases of the upper far overlapping above. Gill-opening narrower than the base of the pectoral.

Vertical fins rounded, the length of the dorsal somewhat more than that of the anal, which is inserted almost wholly behind the dorsal, and about 2.50 in their respective heights; caudal fin rounded, the peduncle deeper than wide; pectoral undulous, the upper angle slightly produced, the lower broadly rounded, the width of its base more than the eye-diameter.

Uniform olive-brown, shading into lavender or dull white below; lower part of the sides and entire under surface of the body, with small black spots; a black vertical band below the eye, a second in front of the gill-opening, and a third below the tip of the appressed pectoral. Fins uniform gray.

Total length 290 millim.

Coast of South-Eastern Queensland.

Described from three Moreton Bay specimens, measuring from 200 to 290 millimeters.

Type in the A.F.A.Q. Museum, to which it was presented by Mr. Harry Myers, of Brisbane, after whom I have great pleasure in naming it.

This species is easily distinguishable from *D. punctulatus** by the small size of the abdominal spines, which are much shorter than those of the back and sides, and from *D. jaculiferus*† by the conspicuous mid-frontal spines, the absence of the elongate pectoral spines, and the formula of the vertical fins.

CHILOMYCTERUS GRANDOCULIS sp. nov.

D. 12; A. 11; P. 21. Width of body 2.25, depth of body, 2.50, length of head 2.60 in the length of the body. Length of snout 2.85, diameter of eye 2.20, width of inter-orbit 1.85, height of dorsal fin 1.80, of anal 1.95, length of caudal 1.35, of pectoral 1.80 in the length of the head.

Snout linear, rest of head convex; mouth below the level of the eye; head as wide as long and two fifths wider than deep, its length 1.30 in the trunk. Eye large, without free lid; interorbital region flat, the supraciliary edges slightly raised. Nasal tentacle compressed and simple. A short strong turbinal spine; a much smaller preorbital spine; frontal region with a single median spine, its point reduced to a blunt tubercle, or more rarely a pair

* Kaup, Arch. f. Nat., 1885, p. 230: Cape Seas and Mauritius.

† *Diodon jaculiferus* Cuvier, Mém. Mus., 1818, p. 130.

of similar spines arranged transversely ; three supraorbital spines, the last pair close together and well separated from the first, followed by a similarly arranged temporal series of three, the last above the base of the pectoral ; cheek-spines not piercing the skin ; a few small opercular spines : spines of body strong and fixed, those in front short, quickly increasing in length backward the tip of the appressed pectoral ; four spines in an irregular row behind the temporal series ; a single greatly produced movable spine behind the middle of the base of the pectoral, its length equaling the interorbital width ; a similar but somewhat shorter spine behind the lower angle of the pectoral ; middle series of abdominal spines short and blunt ; peduncle naked. Gill-opening much narrower than the base of the pectoral.

Vertical fins rounded, the length of the dorsal 2.20, that of the anal, which is inserted behind the dorsal, 2.85 in their respective heights : caudal fin rounded, the peduncle deeper than wide ; pectoral emarginate, the width of its base equal to the eye-diameter.

Dull violet or olive-green above, the tips of some of the spines darker, below white ; sides with three usually circular black spots, the first in front of the lower angle of the gill-opening, with often a smaller spot above it ; the second below or just behind the middle of the border of the appressed pectoral, sometimes with a smaller spot below and behind it ; the third midway between the origins of the vertical fins ; all these spots surround the base of a spine, and occasionally the third temporal spine is similarly favored. Fins pale brown, the caudal with a darker tip.

Total length 250 millim.

Coast of Southern Queensland (Brisbane River and Moreton Bay).

Four examples, measuring from 130 to 250 millimeters have been examined in the preparation of this article.

This species, the common "Porcupine-Fish" of the Moreton Bay Fishermen is easily distinguishable from all the other *Chilomycteri* not only by the size of the eyes, but especially by the two erectile dagger-like spines, which protect the pectoral region on each side.

Type in the collection of the A.F.A.Q., to which it was presented by Mr. Charles Sigley ; Cat. No. 41.

GOBIIDÆ.

VALENCIENNEA ARUENSIS sp. nov.

D. vi, i 12 ; A. i 12 ; P. 19 : Sc. 92-42. Depth of body 5.1, of caudal peduncle 9.1, length of head 3.5, of soft dorsal, 3.35, of caudal fin 3.5 in length of body. Length of snout 2.7, diameter of eye 5.1, width of interorbit 5.5, length of maxillary 2.6, longest dorsal spine 1.25, last dorsal ray 1.55 (♂) 1.9 (♀), length of pectoral 1.25, of ventral 1.8 in length of head.

Depth of head 1.65, width of head 1.4 in its length. Snout evenly rounded above, nearly twice as long as the diameter of the eye ; interorbital region flat ; maxillary extending to below the anterior border of the eye.

Spinous dorsal originating above the base of the pectoral, the 3rd spine produced ; last dorsal ray longest, extending well on the rudimentary caudal rays, 1.2 (♂) 1.6 (♀) in the 3rd spine. Anal fin originating midway between the root of the caudal and the vertical limb of the preopercle and below the 2nd ray of the soft dorsal, with which it is conterminous, the last ray much shorter than (♂) or as long as (♀) that of the dorsal. Caudal fin cuneate : caudal peduncle short and stout, as deep as long. Pectoral reaching to below the origin of the soft dorsal. Ventral extending more than half way to the vent, the 3rd or 4th ray longest.

Width of gill-opening twice the diameter of the eye ; 7 gill-rakers on the lower branch of the anterior arch, the longest 2.5 in the eye.

Pale olive-green, the back with ten broad darker cross-bands, of which two are on the nape, two below the spinous dorsal, four below the soft dorsal, and two on the peduncle ; these bands are much darker, sometimes almost black, marginally than mesially, the middle portion being but little darker than the ground color ; sides of head and body with two chestnut stripes, the upper from the tip of the snout to the below middle of the soft dorsal, the lower from behind the eye to the upper third of the caudal, the former bisecting, the latter forming the lower border of the cross-bands ; below these again is a series of six dark spots, which are connected with one another inferiorly, so as to form a third rather obscure stripe between the base of the

pectoral and the lower third of the caudal, and transversely with the median stripe by narrow cross-bars, which may be interrupted or even absent. Head without spots; snout and opercles dull violaceous brown; two narrow silvery undulous bands from and above the corner of the mouth to the opercle, upon which the lower curves upward and forms a junction with the upper; they are also united by a narrow bar along the edge of the preopercle, and the upper bar is occasionally produced forward across the lip; there are sometimes two similar short bars in front of the eye. Spinous dorsal with a black terminal spot on the membrane of the third spine and with six narrow undulous bars running obliquely upward and backward from its base; anal with an indistinct infrabasal band; caudal colorless, or with several obscure cross-bands, or with small but distinct purple spots on its basal half inferiorly, and always with a wide terminal silver-edged violet band.

Described from 4 Aru Island specimens in the A.F.A.Q. Museum, the largest and type 120 millim.; Cat. No. 986.

BUTIS LONGICAUDA (De Vis).

D. vi, 9; A. 9; P. 18 or 19: Sc 29 or 30-10 or 11. Depth of body 4.7, of caudal peduncle 8.4, length of head 2.9, of caudal fin 4 in length of body. Depth of head 2.5, width of head 1.66, length of snout 2.66, diameter of eye 5.75, width of interorbit 4.25, length of maxillary 2.66, longest dorsal ray 2.2, longest anal 2, length of pectoral 1.45 in length of head.

Snout greatly depressed, more than twice the diameter of the eye; interorbital region flat, broader in the male than in the female or young*; supraciliary ridge crenulate; maxillary varying much with age and sex, extending nearly to or slightly beyond the anterior border of the eye.

Head almost wholly scaly, the scales on the upper surface small; lower surface of head, extremity of snout, nasal region, maxillaries, and a pair of narrow channels extending from the snout along the frontal region, inside the supraciliary ridges, to and beyond the postero-superior border of the eye, and thence to the upper angle of the

* In a fine male measuring 140 millim. the width of the interorbital region is 3.75 in the length of the head, in a female of 135 millim. the same measurement is 4.35.

opercle naked. Most of the scales of the body and opercles with from 1 to 4 subsidiary squamulæ.

Third dorsal spine longest a little shorter than the snout and 1.35 in the longest ray.* Anal fin originating below the 2nd dorsal ray and conterminous with the soft dorsal, its last ray in both sexes longest but not reaching to the caudal. Caudal fin rounded, the peduncle long, 2.2 times as long as deep.† Pectoral fin reaching to the origin of the 2nd dorsal. Ventral rather more than midway to the anal.

Dark chestnut brown or purple, uniform or with the scales of the lower sides and tail narrowly edged with yellow. Dorsal, anal, caudal, and ventral fins purple, the anterior borders and the tips of the dorsals, the upper border and tips of the upper rays of the caudal, and the tips of the anal and ventral rays crimson, fading into saffron or white after brief immersion in a preservative; occasionally the whole 2nd dorsal is crimson with the exception of a basal purple band ornamented with a few clear spots; caudal and sometimes the last anal rays also with clear spots, which may be large and few in number, but are more commonly small and crowded; pectorals uniform yellow, with a large black white-edged basal ocellus.

The "Crimson-tip Gudgeon" attains a length of 200 millim. and is one of the most common estuary fishes of our southern Queensland Rivers, and its presence may always be anticipated in any collection from the streams running into Moreton Bay. Personally I have examined specimens from the Tweed River, ‡ Nerang Creek, the Logan, Brisbane, and Pine Rivers, Nocs Creek, and the Mary River, and its range probably extends well beyond these limits. It may always be recognised by the crimson (white) tips to the fins and by the squamulæ which cover the anterior portion of the scales, and which are absent in all our other eleotrinis. The only substance found in the stomach of the specimen dissected was the head of a small

* In the male fish the last dorsal ray is the longest and is considerably produced beyond the others, in the female the 2nd or 3rd ray is the longest, 1.5 time the length of the last ray.

† The peduncle is more slender in the immature than in the adult.

‡ Thus adding another genus and species of eleotrin to the fauna of New South Wales.

fish, apparently some species of goby. These little fishes are said to be excellent eating.

Described from 5 recent examples from the Brisbane River, and 1 each from the Tweed and Mary Rivers and Noosa Creek, the measurements of the 8 specimens being from 75 to 140 millim. I have also examined De Vis' types from the Brisbane River, as also a specimen from the same source, to which is attached the Museum label "*Eleotris papa* De Vis"; and yet another, without locality, labeled "*Eleotris aporos*." From this species, which belongs to the allied genus *Ophiocara*, it may easily be distinguished by the small size of the occipital scales, which in *O. aporos* are as large as those of the body.

RHINOGOBIUS LEFTWICHII sp. nov.

D. vi, 10; A. 10; P. 16: Sc. 30 to 32-10. Depth of body 4.6, of caudal peduncle 8.85, length of head 3.5, of caudal fin 3.6 in length of body. Length of snout 2.95, diameter of eye 3.85, longest dorsal spine 1.5, length of anal 1.25, of pectoral 1.15, of ventral 1.2 in length of head.

Depth of head 1.5, width of head 1.45 in its length. Diameter of eye 1.3 in the length of the snout; width of concave interorbital region less than one third of the diameter of the eye; cleft of mouth reaching to below the posterior nostril.

Third dorsal spine longest, rather less than the space between its base and the preopercle; soft dorsal and anal fins but little lower than the spinous dorsal. Anal originating below the 3rd dorsal ray and conterminous with the soft dorsal. Base of pectoral 2.6 in its length. Ventral not reaching to the vent.

Pale yellowish brown, all the scales, except those along the ventral profile, edged with dark brown; in half grown examples there is a row of darker blotches along the middle of the sides, with sometimes a second row near the dorsal profile, the anterior spots often meeting across the nape. Upper surface of head and nape spotted and vermiculated with brown; an indistinct violaceous band curves downward from the eye to the angle of the mouth, behind which are two parrallel bands, which extend upon the base of the pectoral; opercles dull purplish. Fins hyaline, closely powdered with dusky dots; dorsals with a basal row of dark spots; last two dorsal and anal rays

with alternate darker and lighter bars, sometimes absent in the anal; caudal with a dark basal band. (Named for Mr. R. W. Leftwich, Junr., of Maryborough, to whom I am indebted for many kindnesses).

Described from 6 specimens in the A.F.A.Q. Museum, collected in Great Sandy Strait, and measuring from 58 to 75 millimeters; Cat. No. 1132.

This pretty little goby abounds in the pools left by the receding tide on the oyster banks in the Great Sandy Strait, and I have also seen specimens obtained in the vicinity of Woody Point, Moreton Bay. Along the edges of these pools when undisturbed they lie motionless, basking in the shallow water, but if alarmed by the approach of an enemy they dart away with great rapidity, and seek refuge in the deeper water below or within the bunches of oysters, adjusting their bodies with great nicety to the inequalities of the surface on which they have found a haven. Here their colors assimilate so closely with their surroundings that it requires a keen eye to locate their position even though one may have been but a few feet from them when they sought concealment; they are very quick in their movements, and even with a hand net it is most difficult to catch them. I have never observed one of these fishes to take refuge in a hole as is the usual habit of *Amblygobius gobioides*, which is equally common on the oyster beds. The stomach of the example dissected was packed with green weed regularly cut into lengths of about an inch, with which also was a shrimp-like crustacean of about the same size.

AMBLYGOBIUS GOBIOIDES (Ogilby).

D. vi 13; A. 12; P. 16. Depth of body 6.25, of caudal peduncle 9, length of head 4, of caudal fin 3.8 in length of body. Diameter of eye 5.5, length of pectoral 1.3 in length of head.

Depth of head 1.65, width of head 1.35 in its length. Diameter of eye 1.4 in the length of the snout; width of interorbital region less than half the eye-diameter; cleft of mouth reaching to below the anterior border of the eye.

Third dorsal spine longest about one fourth longer than the head, and as long as the distance between its base and the anterior border of the eye; second dorsal and anal fins low, their longest rays 2 in the 3rd spine.

Anal originating below the 2nd dorsal ray and conterminous with the soft dorsal, its base one fifth more than the head. Base of pectoral 2.6 in its length. Ventral fin 1.25 in the pectoral, reaching midway to the anal.

Purplish or reddish brown above, gradually fading into lilac below, the sides with from 40 to 50 alternate darker and lighter transverse bands, which in large examples are usually broken up into vertical bars. Upper surface and sides of head and nape with numerous round blackish spots. Fins vinous; anterior border of first dorsal white; sometimes a dark marginal spot between the fourth and fifth spines and some oblique dusky streaks basally; second dorsal with three series of dark spots; caudal sometimes with a few scattered spots. When newly caught, the lateral transverse bars are brilliant blue and gold. (*Gobioides*: a genus of Gobies to which this species bears some resemblance in its strengthened dentition and the obliquity of its mouth.)

Total length 120 millim.

Type in the Macleay Museum, Sydney University.

East Coast of Australia. I have seen and examined numerous specimens from Port Jackson, the Richmond River, various parts of Moreton Bay, and Great Sandy Strait, in all of which places it is abundant wherever suitable ground exists. It may therefore be safely predicted that its range, both southward and northward, extends well beyond the limits here given.

This species is essentially a "mud goby." In the Wide Bay District I had many admirable opportunities of observing its habits on the vast flats left bare by each recurring tide. The fish either excavates for itself a burrow in the mud or takes possession of the deserted burrow of a worm or crab, and enlarges it to suit its own convenience.* The burrow is invariably provided with two openings, which may be at the bottom of a small pool, but as often as not open upon the bare mud. Here, if one approaches cautiously, the little creature may be seen lying—regardless of or perhaps enjoying the fierce rays of a semi-tropical summer sun—close to the burrow, bent into the shape of a U with one of the sides shortened, its head turned to-

* When digging these fishes out I have never found any other animal occupying the burrow along with them.

wards the entrance, through which it disappears like a flash on any incautious movement of the spectator. If, however, perfect quiet be maintained the head will shortly be seen to emerge from the other entrance, intently scrutinizing its surroundings to ascertain whether the danger be past. When they take refuge at the bottom of their retreat it is not an easy matter to dig them out.

Described from five specimens collected in Great Sandy Strait by myself and a much larger example obtained at Woody Point by Mr. J. T. Jamison.

Gobius cristatus Macleay, Proc. Linn. Soc. N.S. Wales, v, 1880, p. 610 (20 May, 1881): Port Jackson.

Gobius gobioides Ogilby, Catal. Fish. N. S. Wales, 1886, p. 35. Substitute for *G. cristatus* Macleay, preoccupied—Stead, Eggs and Breed. Hab. Fish, 1907, p. 60.

SCORPÆNIDÆ.

SCORPÆNOPSIS PALMERI sp. nov.

D. xii 10; A. iii 5; P. 17 (1 + 5 + 11): Sc. 8-45 to 47-13*; L. lat. 22 or 23. Depth of body 3, of caudal peduncle 8.75, length of head 2.6, of caudal fin 4, of pectoral 3.55, of ventral 4 in length of body. Length of snout 2.85, diameter of eye 4.5, width of interorbit 6.55, length of maxillary 1.9, of longest dorsal spine 2.1, of longest anal 1.8 in length of head.

Snout long, its upper profile strongly convex, the preocular groove deep; lateral interorbital ridge low, not ending in a spine; an anterior median ridge, bisecting the preocular groove; lower jaw the longer, without symphysial protuberance; maxillary extending to below the middle of the eye, the width of its distal extremity equal to or a trifle more than that of the interorbit. Nasal, preocular, postocular (2), exoccipital, nuchal (2), tympanic, and parietal (3) spines present. Preorbital with a strong median hooked spine, from which radiate four smooth ridges, only the lower anterior of which terminates in a spine; the posterior ridge is continuous with that of the suborbital, which is armed with three strong spines; behind these, but separated from them by a groove, is a stout double preopercular spine, below which are four graduated ridges,

* Above first anal spine.

the two upper ending in more or less conspicuous spinous points; opercle with two strong spines at the end of divergent ridges, the upper spine the longer. Occipital groove deep and transversely oblong, bordered anteriorly by a sharp ridge, which is highest externally. Two or three small cirri on the head of the maxillary and a much larger fringed one behind the anterior nostril; supraorbital ridge sometimes with a small cirrus; a large fringed cirrus near the distal end of the preorbital and a series of six smaller ones round the chin, behind which are a still smaller pair on the median line; some well developed fringed cirri on the body, principally along the lateral line, which is without spinous plates anteriorly. Scales in fairly regular series; fins naked.

Length of soft portion of dorsal fin 1.9 in that of the spinous portion; first dorsal spine a trifle longer than the eleventh and 2.5 in the fourth, which is a little longer than the third or fifth; last spine 1.4 in the height of the soft dorsal, which is equal to that of the spinous. Second anal spine much stronger and longer than the third, as long as the anterior rays, and higher than the spinous dorsal. Caudal fin rounded. Pectoral extending to a little beyond the vertical from the vent, the width of its base 1.85 in the fifth and longest ray. Ventral reaching to the vent, which is an eye-diameter in front of the anal fin.

Gill-rakers $5 + 11$, all but the pair at the angle tubercular.

Pale brown blotched with blackish brown, the most pronounced markings being across the nape, between the middle of the spinous dorsal and the lateral line, and between the soft dorsal and the anal; in addition to these the ground color is profusely freckled with darker; a small whitish spot at the base of the last dorsal ray and a second sometimes at the root of the caudal; throat and abdomen pearly white: head somewhat darker than the back and sides, the blotches, however, being replaced by dark brown spots, the lower surface dirty white, anteriorly freckled or stained with yellowish brown, the mental cirri and a few scattered spots darker brown; a vertical black bar between the eye and the suborbital ridge; a silvery spot on and behind the interorbital region present or absent. Spinous dorsal blackish, with an irregular suprabasal and infra-

marginal silvery or lilac band, the spines with alternating bars of dark brown and pearly white; soft dorsal lilac, profusely freckled with rufous, the base, an obliquely oval anterior spot, and the last rays blackish: anal fin gray, spotted and freckled with dark brown; anteriorly with two pairs of broad alternate white and brown bands: caudal lilac, with a dusky base and a broad submarginal black band, the marginal band also freckled with black: pectoral gray, with two broad dark cross bands on the upper half, the lower half with ocellated violet dark-edged spots, the base fuscous spotted with lilac: outer half of ventrals with two black cross-bands or irregularly spotted and lined with black; an oval blackish spot on the base anteriorly.

Total length 200 millim.

Coast of Southern Queensland (Moreton Bay).

Described from two examples measuring respectively 165 (type) and 202 millimeters.

SCORPÆNOPSIS MACROCHIR sp. nov.

D. xii 10; A. iii 5; P. 16 (1 + 4 + 11): Sc. 6-41-14; L.l. 22. Depth of body 2.35, length of head 2.35, of caudal fin 4.15, of pectoral 2.7, of ventral 3.85 in length of body. Length of snout 3, diameter of eye 4.75, width of interorbit 3.9, length of maxillary 1.9, longest dorsal spine 2.85, longest anal 2 in length of head.

A deep naked pit below the anterior border of the eye; lateral interorbital ridge inconspicuous; no median ridge; lower jaw the longer, without symphysial protuberance; maxillary extending to below the hinder border of the eye, the width of its distal extremity 1.5 in that of the interorbit. Nasal, preocular, supraocular (2, the posterior large with a serrated upper edge), postocular (2 small and erect), exoccipital, nuchal (2), tympanic, and parietal (4, the last 3 united by a sharp continuous ridge) spines present. Preorbital with a small median spinous point, from which radiate three low ridges, one directed downward, one forward, and one backward, each terminating in a short stout spine; suborbital ridge with 3 strong spines; preopercle with 4 spines, the upper strongest and double; opercle with 2 widely divergent ridges, each terminating in a small spine. Occipital groove deep and transversely oblong, bordered anteriorly by a low arcuate ridge. Head and body without cirri, except a pair of small ones anteriorly on the

preopercle. Postocular region and upper half of opercle scaly; body scales rather irregularly arranged; fins naked, except the upper half of the base of the pectoral; lateral line without spinous plates anteriorly.

Length of soft dorsal fin 2.6 in that of the spinous; 1st dorsal spine 1.3 in the 11th, and 1.75 in the 4th, which scarcely exceeds the 3rd and 5th: last spine 1.25 in the height of the soft dorsal, which is less than that of the spinous. Second anal spine stronger and longer than the 3rd, scarcely as long as the anterior rays, and two fifths higher than the spinous dorsal. Caudal fin rounded. Pectoral very large, extending to above the 2nd anal spine, the width of its base 2.25 in the 5th and longest ray. Ventral reaching to the vent, which is an eye-diameter in front of the anal fin.

Gill-rakers 5 + 9, all but the last lower one tubercular.

Head and body uniform brown, the abdominal region tinged with yellow. Dorsal fin rather lighter than the body, the soft portion with an anterior and posterior median dusky spot; caudal with a broad submarginal dark and a narrow marginal yellowish band, the basal half pale brown; soft rays of anal similar to the caudal, the spines with strongly contrasted alternate blackish and yellow bars; base and terminal border of the pectoral blackish, the intervening portion and the free tips of the rays yellowish; ventral blackish with a yellow tip, the spine similar to those of the anal.

Described from a specimen, 124 millim. long, taken by Mr. James Palmer at Bulwer, and now in the A.F.A.Q. Museum; Cat. No. 1305.

APISTUS BALNEARUM sp. nov.

ATKINSON'S FORTESCUE.

D. xv. 9; A. iii. 6 or 7; P. 11 + 1: Sc. 7-60-? L.l. 25. Depth of body 3.35, length of head 2.4, of caudal fin 3, of pectoral 2.3, of ventral 2.85 in length of body. Length of snout 3.25, diameter of eye 5.5, width of inter-orbit 5.45, length of maxillary 2.5, longest dorsal spine 2.65, longest anal 2.7, detached pectoral ray 2.55 in length of head.

Posterior border of eye nearer to tip of snout than to end of opercular flap; maxillary scarcely reaching to

below anterior border of eye ; lower jaw broadly rounded, not fitting into the rostral notch ; tip of mandible with a small barbel, from either side of the base of which rises a much shorter one directed outwards ; beyond these on each side is a much longer barbel, nearly as long as the eye-diameter. Interorbital region as wide as the eye-diameter, with a short median and two longer and higher lateral ridges in addition to the low supraciliary ridges ; occiput with a pair of high sharp arcuate ridges, approaching mesially, and terminating in a spine ; preorbital anteriorly with two blunt points, posteriorly with a sharp curved spine ; suborbital ridge well developed, smooth but divided into continuous sections, commencing above the base of the preorbital spine and terminating in front of that of the upper preopercular spine ; preopercle with a long sharp spine at the angle, and 3 others, which grow increasingly shorter and blunter, below ; opercle with three low divergent ridges, the upper of which ends in a small spine at the base of the flap ; parietal ridge smooth divided mesially. Head and breast naked ; body-scales in regular series ; fins naked ; lateral line straight.

Length of soft portion of dorsal fin 2.4 in that of the spinous ; 1st dorsal spine equal to or longer than the 14th, which is 1.35 in the 7th and longest ; last spine 1.15 in the height of the soft rays, which exceed that of the spinous, and do not extend beyond the base of the caudal. Anal fin as high as the soft dorsal, the 1st spine much shorter than the 2nd, which almost equals the 3rd, and is 1.2 in the longest rays. Caudal fin rounded, the tips of the rays slightly protruding. Pectoral reaching to below the middle of the soft dorsal, the 2nd ray longest ; the 2 lower rays simple, the outer of these wholly detached, the inner separated from the branched rays by a broad membranous interspace. Ventrals extending to the base of the 3rd anal spine.

When alive or newly captured these fishes are everywhere black except the caudal and a marginal band of variable width on the soft dorsal and anal fins, which are pure white. Shortly after immersion in formalin solution the black commences to fade, and now, at the expiration of twelve months, the bodies have become pale olive green, only the upper surface and sides of the head and the tubular

scales of the lateral line retaining any semblance of the living colors. The basal portion of the dorsal and anal fins have also faded like the body, but the outer portion, the caudal, the pectorals and the ventrals remain as before.

I am inclined to think that the white fin-markings are a token of immaturity,* since in the largest of my specimens the marginal dorsal and anal bands are greatly reduced in width, and the purity of the caudal fin is marred by black lines and spots, which are more closely segregated near the base and tip.

Described from three examples, measuring from 36 to 40 millim., obtained in the Metropolitan Baths, Brisbane, during May, 1909, by Mr. Richard Atkinson, and kindly presented by him to the A.F.A.Q.; Cat. No. 1105-6.

EROSA FRATRUM sp. nov.

D. xiv. 7; A. iii. 6; P. 16: L.l. 10. Depth of body 2.25, length of head 2.15, of caudal fin 4.2, predorsal length 2.25 in length of body. Length of snout 3.2, diameter of eye 4.1, width of interorbit 2.25, length of maxillary 2.15, last dorsal spine 3.2, last anal 4.75, length of pectoral 1.55, of ventral 2.15 in length of head.

Head about as wide as deep. Upper profile of snout feebly complex and strongly declivous; diameter of eye 1.25 in the snout and 1.8 in the interorbital region, which is flat; maxillary extending to a little beyond the anterior border of the eye, the width of its distal extremity 2.7 in that of the interorbit. Bones of the head deeply pitted and ridged; preorbital with three blunt points on its anterior border; supraorbitals wider forming the lateral margins of a deep fossa, which contains the distal extremities of the premaxillary processes; they are united opposite the hinder half of the eyes by a much narrower bony bridge, which separates the frontal fossa from the occipital pit, which is bordered behind by a similar but lower ridge; parietal armature ending in 3 strong blunt processes, the middle much the largest; suborbital and preopercular regions very rough, the former with a conspicuous hump, behind which the bony area is greatly

* As is the case with *Euelaticthys niger* (Mertens) = *Diagramma crassispinum* Rüpp. = *D. affine* Gthr., in which the caudal fin remains pure white until the fish has attained a length of at least six inches.

expanded and fan-like; preopercular border with two series of blunt spines, the inner 3 the outer 5 in number; a similar spine behind the angle of the mouth; opercle with 2 high smooth edges, which do not terminate in spines; frontal and occipital pits, cheeks, a small temporal patch, and the upper angle of the opercle covered with smooth naked skin. Upper part of body with a few small papillæ.

Length of soft portion of dorsal fin 2.25 in that of the spinous; 1st dorsal spine lower than the 4 succeeding and equal to the middle spines, beyond which they again increase gradually in height to the last spine, which is the longest and 1.2 in the 5th ray, which extends when depressed well beyond the base of the caudal. Third anal spine longest, 1.5 in the middle rays, which just reach the caudal; the membrane of the last dorsal ray extends to the caudal, that of the anal not so far. Caudal small and rounded; depth of caudal peduncle equal to the eye-diameter. Pectoral fin wide, its basal width 1.4 in its length; 5th ray longest, reaching to the vertical from the vent, the lower rays unbranched. Middle ventral rays equal and longest, extending rather more than midway to the anal.

Uniform dark brown above, pale brown below. Upper surface and sides of head with some scattered pearly spots. Spinous dorsal pale brown with one or two lighter blotches; soft dorsal dark brown with an oblique lighter band directed downwards on its anterior half; anal and caudal yellowish brown with black cross-bars, which frequently branch and cross one another so as to form a lattice-work pattern, the latter also with a dusky base; pectoral with the basal half pale lavender, beyond which superiorly is a blackish blotch, its distal half golden crossed by three narrow black bars, the last of which is marginal; inferiorly the two inner bars anastomose like those of the caudal.* (Named for the Brothers Crouch, to whom I am indebted for this unique specimen.)

Described from a Moreton Bay example, 120 millim. in length, in the A.F.A.Q. Museum; Cat, No. 4.

* In life the upper surface is rufous brown, shading into pink below.

DACTYLOPTERIDÆ.

EBISINUS PROCNE sp. nov.

D. i, i, v, i, 8; A. 6; C. 3-7-3; P. 33 or 34; V. 5; Sc. 49-28. Depth of body 4.85, width of body 4.35, length of head 3.8, of nuchal spine 2.65, of pectoral fin 1.15 in length of body. Width of head 1.85, length of snout 2.75, diameter of eye 3.2, width of interorbit 2, length of maxillary 2.5, of preopercular spine 2 (*ad.*) to 1.35 (*juv.*),* longest dorsal spine 1.4, middle caudal rays 1.3, length of peduncle 1.25, of ventral fin 1.15 in length of head.

Depth of head 1.3 in its width. Snout subvertical and convex, one sixth longer than the eye-diameter; depth of interorbital region 4.85 in its width; maxillary extending to below the anterior border of the pupil. Preopercular spine reaching to above the base of the ventrals in the adult, considerably further in the young. Humeral processes produced to or nearly to the level of the spinous dorsal, the distance between their apices 1.3 in the depth of the intervening notch, which is narrowly rounded anteriorly. Lower edge of posterior part of body with three of the keeled scales enlarged and mobile, the first below the last dorsal rays, the others on the peduncle. Lateral line conspicuous, extending directly† backward to below the middle of the spinous dorsal, thence sweeping downward in a gentle curve to below the origin of the soft dorsal, and finally continuing to the base of the caudal below the 8th series of scaly keels.

Nuchal spine extending to a little behind the spinous dorsal; 2nd detached spine inserted midway between the nuchal spine and the 3rd ray of the spinous dorsal, to the base of which it reaches when depressed; its length is 3.9 in the nuchal spine and 1.4 in the second and longest dorsal spine, which is subequal to the height of the soft dorsal. Anal originating below the 3rd ray of the soft dorsal and much nearer to the root of the caudal than to the gill-opening. Caudal fin subtruncate with the outer rays produced. Width of peduncle immediately behind the dorsal fin 1.4 in its length. Pectoral fin reaching to the middle of the caudal, the tips of all the rays filamentous.

* In an example 100 millim. long.

† According to the figure given by Jordan and Richardson (Proc. U.S. Nat. Mus., xxxiii, 1908, p. 665) the lateral line is strongly curved upward behind the humeral process in *Ebisinus macracanthus*.

Upper surface pale violet with two broad darker cross bands descending on the sides to the ventral edge ; these bands are much more pronounced in the young, growing gradually fainter with advancing age and becoming in large examples merged in the darker tone of the ground color ; back prettily blotched and lined with deeper violet and purple ; under surface uniform pinkish white or fawn color. Upper surface and sides of head pale yellowish brown spotted with violet ; preopercular spine sandy yellow. Free nuchal spine black ; detached spine and 1st dorsal dusky ; 2nd dorsal and caudal hyaline, the rays with alternate dark and light bands ; anal and ventrals like the lower surface, the former with a dark basal blotch between the 4th and 6th rays ; pectorals violet, profusely spotted with purple, some of the terminal spots united to form transverse bars. (*πρόκνη*, a swallow.)

Coast of Eastern Australia, not uncommon.

Described from five specimens, 100 to 390 millim. long, taken in Moreton Bay ; type in the A.F.A.Q. Museum ; Cat. No. 248.

This species differs greatly from *Ebisinus macracanthus*,* from which it may always be distinguished by the want of the pectoral ocellus.

SOLEIDÆ.

BRACHIRUS SALINARUM sp. nov.

D. 66 ; A. 53 : Sc. 84. Depth of body 2.90, length of head 5.00 in the length of the body. Length of snout 3.00, diameter of eye 8.00, length of right pectoral 2.50 in the length of the body.

Snout projecting well in front of the mouth ; upper eye fully one half its diameter before the front of the lower ; width of interorbital region one sixth more than the diameter of the eye. Scales on both sides finely ctenoid ; no enlarged nuchal scales ; lips and under surfaces of snout and interopercle profusely papillose.

* Jordan and Richardson (*loc. cit.*) wrongly name this species *Ebisinus cheiropthalmus*, the synonymy being as follows :—

Dactylopterus macracanthus Bleeker, Nat. Tijds. Ned. Ind., vii, 1854, p. 449 : Celebes.

Dactylopterus cheiropthalmus Bleeker, *ibid.*, p. 494, Banda.

The month's mentioned by those authors refer to the date of writing not of publication, and have, therefore, no scientific value.

Left pectoral nearly as long as the right; ventrals symmetrical, separate from the anal.

The color is now bright green above and below, but there are a few small patches of dark violaceous gray on the eyed side, which may be the true color of the fish in its natural state: outer half of right pectoral black.

Total length of type to base of caudal 123 millim.

Salt pans at Kimberley, North Queensland.

Type in the Queensland Museum; two mutilated specimens, the caudals and ends of the dorsal and anal fins being broken off.

BRACHIRUS BREVICEPS sp. nov.

D. 72; A. 56; Sc. 75. Depth of body 3.00, length of head 5.50 in the length of the body. Length of snout 3.50, diameter of eye 7.00, length of last dorsal and anal rays 1.15, of caudal fin 1.00, of right pectoral 6.00 in the length of the head.

Snout projecting well in front of the mouth; upper eye about one third of its diameter before the front of the lower; width of interorbital region equal to the diameter of the eye. Scales on both sides ctenoid; no enlarged nuchal scales; lips smooth; a few minute hair-like cirri on the edges of the snout and chin.

Last rays of dorsal and anal fins nearly reaching to the end of the caudal; caudal fin rounded; left pectoral 1.25 in the right; right ventral well separated from the anal; left ventral atrophied.

The specimen appears to have been of a light reddish brown or fawn color, possibly with some lighter spots.

Total length of type 157 millim.

Coast of Queensland at Rockhampton.

Type in the Queensland Museum; a single specimen in bad condition.

BRACHIRUS ASPILOS (Bleeker).

D. 67; A. 52; Sc. 105. Depth of body 2.25, length of head 4.80 in the length of the body. Length of snout 3.00, diameter of eye 7.00, length of last dorsal and anal rays 1.60, of caudal fin 1.50, of right pectoral 2.60 in the length of the head.

Snout projecting well in front of the mouth; upper eye about one third of its diameter before the front of the

lower; width of interorbital region 1.30 in the diameter of the eye. Scales on the right side ctenoid, on the left side cycloid; no enlarged nuchal scales; many of the scales on the colored side with an elongate cutaneous appendage, some of which may be longer than the eye; lips and entire lower surface of head profusely papillose.

Last rays of the dorsal and anal fins nearly reaching to the end of the caudal; caudal fin broadly rounded; left pectoral 1.60 in the right; ventrals asymmetrical, the left much the smaller, separate from the anal.

Uniform blackish; dorsal, caudal, and anal fins narrowly, right ventral broadly tipped with yellow; right pectoral black.

Total length 360 millim.

Malay Archipelago, from Singapore eastward to North Australia.

Described from a specimen measuring 230 millimeters, and taken at Croker Island, Northern Territory, by Mr. John Colclough, who presented it to the A.F.A.Q. Museum; Cat. No. 1029. The body of this example is much mutilated as if by repeated stabs of a knife or spear.

Synaptura aspilos Bleeker, Nat. Tijds. Ned. Ind., iii, 1852, p. 74: Singapore—id., Verh. Batav. Gen., xxiv, 1852, Pleuron., p. 29—Günther, B. M. Catal. Fish., iv, 1862, p. 482.

Synaptura marmorata Bleeker, Nat. Tijds. Ned. Ind., v., 1853, p. 90: Solor—Günther, *ibid.*

Synaptura heterolepis Bleeker, Act. Soc. Sci. Ind. Neerl., i, 1856, Amboina, p. 65—Günther, *ibid.*

Brachirus heterolepis Bleeker, Atlas Ichth., vi, 18, p. 20, pl. ccxxxvi, fig. 2 (juv.) and ccxxxviii (ad): Timor; Batchian; Ceram.

NOTE.—*Synaptura cinerea* (De Vis) is identical with *S. nigra* Macleay. This species rarely shows a few small cutaneous appendages on the back.

CYNOGLOSSUS SINDENSIS Day.

Cynoglossus sindensis Day, Fish, India, 1877, p. 434: *Sind.*—Jordan and Richardson, Bull. Bur. Fish., xxvii, 1907, p. 281: Manila.

D. 108; A. 84; C. 12; V. 4; Sc. 102; L. tr. 7-9-24 = 50. Depth of body 3.75; length of head 4.65 in

length of body. Length of snout 2.80, diameter of eye 9.00, length of caudal fin 2.25 in length of head.

Head as deep as long; cleft of mouth extending to below the hinder border of the lower eye, its angle midway between the tip of the snout and the margin of the opercle lips smooth; rostral hook reaching well beyond the maxillary symphysis. Lower nostril tubular, situated close in front of the inferior border of the lower eye; upper nostril an open longitudinal slit between the eyes. Eyes equal, the upper about half a diameter in advance of the lower; interocular region 1.75 in the eye-diameter.

Scales of colored side ctenoid, those of the head and along the bases of the vertical fins more strongly so than elsewhere; scales of blind side smooth; postocular scales not or scarcely smaller than those of the body. Two lateral lines on each side, the lower straight, along the middle of the body, forking in front of the caudal fin, along which both branches extend; the upper following the curvature of the back almost to the base of the caudal on the colored, not nearly so far on the blind side: both lines extend forward on the head nearly to the end of the snout, where they meet at a rounded angle, thence passing downward to the level of the mouth, where it bends inward and again divides, one branch being continued on to the rostral hook, the other curving abruptly upward and ceasing in front of the interorbital region: the two main lines are also united by a transverse line above the opercle, and a short distance beyond this branch a second subsidiary branch disconnects from the lower line and extends downward to the upper angle of the preopercle, from whence it bends abruptly backward to the border of the opercle, along the outer edge of which it passes to within a short distance of the ventral profile, where it recurves forward to the lower limb of the preopercle, and from thence, forming a rectangle, sweeps downward and forward to the lower lip.

Dorsal fin originating on the snout in front of the upper eye. Caudal fin pointed. Ventral higher than long, not continuous with the anal.

Blue-gray, shading into pale brown posteriorly; opercular region darkest; edges of body above and below yellowish. Dorsal, anal, and ventral fins pale blue tipped with gray; caudal pale brown.

Total length 210 millim.

From the coast of Sind to the Philippines and Northern Australia.

Described from a specimen, 195 millim. long, taken by Mr. John Colclough at Croker Island, Northern Territory, and presented by him to the A.F.A.Q. Museum; Cat. No. 994.

Of the 46 species of *Cynoglossus*, the descriptions of which I have been able to consult,* six only are provided with a pair of lateral lines on each side. These are as follows :—

a. Scales ctenoid on both sides.

1. *kaupii* Bleeker, Act. Soc. Sci. Ind. Neerl., viii, 1860, Sumatra 8, p. 73.

aa. Scales ctenoid on the eyed, cycloid on the blind side.

2. *diplasios* Jordan & Evermann, Proc. U. S. Nat. Mus., xxv, 1902, p. 367: Formosa—Interlinear scales 14.
3. *bilineatus* Lacepede,† Hist. Nat. Poiss., iv., 1802, pp. 659 and 663: Indian Seas—Interlinear scales 14 or 15.
4. *dispar* Day, Fish. India, pt. 3, 1877, p. 434: Bombay—Interlinear scales 18 or 19.
5. *sindensis* Day, ibid.: Sind—Interlinear scales 19 or 20.

aaa. Scales cycloid on both sides.

6. *dubius* Day, Journ. Linn., Soc., xi., p. 525.

* Eleven species are described in works not available to me. Of these a South African species has been named *C. brachycephalus* by Dr. Gilchrist, but this name, having been previously utilized by Bleeker for a Sumatran species, is inadmissible, and may appropriately be altered to *C. gilchristi*, after its discoverer.

† Lacépède's name was altered by Bleeker to *quadrilineatus*, presumably to avoid confusion with *Plagusia bilineata*, and his example has been followed by Günther, Day, and others; this course, however, is not only unnecessary but absolutely subversive of the code of zoological nomenclature, since Lacépède described the fish which is here called *C. bilineatus* as *Achirus bilineatus*, and, there being no other species of that name, his specific name passes unquestionably on to the *Cynoglossus*.

PTEROPSARIDÆ.

CHILIAS* gen. nov.

Body elongate and fusiform. Scales with longitudinal striae. Tubes of lateral line short and simple, occupying the basal half of the exposed surface of the scale. Head depressed; cleft of mouth small; lips very thick and wide. Lower jaw without villiform teeth, with two strong hooked canines at the outer angle on either side. Eyes superior, close together. Dorsal fin continuous, with 5 spines, the 4th longest: ventrals inserted below the base of the pectorals. Otherwise as in *Parapercis*.

Coast of Southern Queensland.

Type *Percis stricticeps* De Vis.

The most notable characters in this proposed new genus are the depressed head, approximate orbits, and position of the ventrals.

Up to the present time only three species of pteropsarids have been captured in the seas of Queensland, but it can only be a matter of time before four other species are recorded; they are as follows:—

1. PARAPERCIS NEBULOSA (Quoy and Gaimard), Voy. Uranie, Zool., 1824, p. 349 = *Percis emeryana* Richardson, 1842 = *Percis coxii* Ramsay, 1883 = *P. concinna* De Vis, 1884. Coasts of intertropical and juxtatropical Australia, ranging southward at least as far as Port Jackson.
2. PARAPERCIS CYLINDRICA (Bloch), Ausl. Fisch., vi, 1792, p. 42, pl. ccxcix, fig. 1. China Seas to North-Eastern Queensland (Murray Island, Torres Straits and Dunk Island),† and Lord Howe Island.
3. *Parapercis hexophthalma* (Ehrenberg) Cuvier and Valenciennes, Hist. Nat. Poiss., iii, 1829, p. 271. Red Sea to the Louisiade Archipelago.
4. *Parapercis tetracantha*‡ (Lacépède), Poiss., iii, 1802,

* χῆλος, lip, with the affix *ias*, ; in allusion to the abnormal development of the lips.

† Since writing the above, I have received a fine specimen from Moreton Bay.

‡ The name is misleading since the species has, as is usual in the genus, 5 spines in the 1st dorsal fin; nevertheless Lacépède's failure to enumerate the spines correctly does not confer on any subsequent author, any more than on himself, authority to change the name; much less does it permit of the use of the same name for a distinct species.

pp. 473 and 488 = *Percis cancellata* Cuvier and Valenciennes, *ibid.*, p. 268. East Indian and Louisiade Archipelagos.

5. *Parapercis clathrata*; nom. subst. for *Percis tetracanthus* Lacépède, *ibid.*, iv. 1803, pp. 285 and 302: inadmissible on account of the preceding species.

6. *Parapercis ocularis* Waite, *Mem. Austr. Mus.*, ii, 1899, p. 109, pl. xxiv: Coast of New South Wales in from 30 to 84 fathoms.

7. CHILIAS STRICTICEPS (De Vis), *Proc. Linn. Soc.*, N.S. Wales, ix, 1884, p. 545. Southern Queensland (Southport; Peel Island and Bulwer, Moreton Bay).

CHILIAS STRICTICEPS (De Vis).

D. v 21; A i 18; P. 17: Sc. 6-62-13. Depth of body 6.1, of caudal peduncle 11.4, length of head 3.4 in length of body. Length of snout 2.65, diameter of eye 5, width of interorbit 3, height of soft dorsal 2.35, of anal 2.65, length of middle caudal rays 1.8, of pectoral fin 1.45 in length of head.

Snout broadly rounded, its upper profile flat; upper lip very wide, more than half the eye-diameter; maxillary not extending to the vertical from the eye; lower jaw bluntly pointed, much longer than the upper. Upper jaw with a broad band of villiform teeth and an outer series of strong conical teeth; a patch of conical teeth on the head of the vomer. Eye superior, well elevated above the surface of the head, its diameter rather more than the width of the preorbital; interorbital region flat. Preopercle entire; opercular spine small and sharp; tip of subopercle serrated.

Spinous dorsal originating a little behind the base of the pectoral; 4th spine longest, as long as the eye; 1st spine minute; membrane of last spine fully attached to the 1st ray; last ray not differentiated. Anal originating below the 5th dorsal ray. Caudal rounded, the upper rays slightly produced. Pectoral extending to above the origin of the anal. Ventral a little shorter than the pectoral; 4th ray longest, reaching to the anal.

Lilac, clouded above with brown, so as to form about seven broad blotches indistinctly separated by lighter interspaces; a lilaceous band bordered below by a dark

brown bar and crossed at regular intervals by eight similar bars from the base of the pectoral to the caudal ; lower half of the sides with nine vertical brown bands, as wide as the interspaces and gradually fading into the lemon yellow of the lower surface ; each of these bands is divided mesially by a narrow black bar, which is continued across the interspaces by dusky spots. Nape and upper surface of the head lilac spotted with brown ; a violaceous bar from the middle of the eye, through the nostrils to the edge of the snout, which is spotted throughout with lilac ; middle of snout with five spots arranged like an arrowhead, the shaft being formed by two spots on the interorbital region ; a vertical violet bar preceded by a triangular spot below the eye ; lips with broad violet bars, those of the lower continued across the chin by a pair of large violet spots ; opercles brown-spotted ; subopercular and branchiostegal regions crossed by two wide violet bands ; a series of six violet spots across the throat immediately behind the gill-openings. Dorsal and anal fins hyaline ; spinous dorsal with the base dark brown and with a few smoky brown spots on the membrane above ; soft dorsal with three small black spots between each ray ; anal with a much larger black basal spot similarly placed ; base of caudal dark brown ; rest of fin partly pale brown partly hyaline, black-spotted, the middle rays tipped with black ; pectorals and ventrals lilac, the former with a violaceous base (*strictus* constricted ; *ceps*, head).

Type in the Queensland Museum.

Length to 180 millim.

Moreton Bay District, Queensland.

Described from a fine example, captured off Peel Island by Mr. T. Welsby, and now in the collection of the A.F.A.Q. ; Cat. No. 870.

Percis stricticeps, De Vis, Proc. Linn. Soc. N.S. Wales, ix, 1884, p. 545.

BATRACHOIDIDÆ.

CORYZICHTHYS GUTTULATUS sp. nov.

D. iii, 20 or 21 ; A. 15 or 16. Length of head 2·8, of caudal fin 4·5, of pectoral 5·2 in length of body. Diameter of eye 3·9, width of interorbit 7, length of ventral 1·85 in length of head.

Head as wide as long. Snout short 1.35, interorbital width 1.75 in the eye-diameter. Teeth as in *C. diemensis*, but without the enlarged ones on the vomer. Two opercular and two subopercular spines, the upper in each being much the larger. Skin of head and body, except the throat and abdomen, covered with more or less reticulated folds. Tentacles moderately developed, those surrounding the jaws simple or bifid in front, much longer and fringed behind; a series of broad simple or fringed tentacles round the edges of the opercular bones; 3 well developed, usually fringed, supraciliary tentacles, the middle the largest; a small fringed frontonasal tentacle; 6 longitudinal series of small tentacles on the occiput, extending backward to below the 1st dorsal; tentacles of the lateral lines very small or absent.

Caudal and pectoral fins rounded; outer ventral ray scarcely longer than the pectoral.

Brown above, more or less blotched with lighter posteriorly, the lighter parts profusely dotted; tail with two broad dark transverse bands more or less freckled with lighter; lower surface light yellowish brown closely dappled with dark brown. Dorsal, anal, and caudal fins dark brown, variously streaked with lighter; pectorals brown with darker dots; ventrals brown edged with lighter spots.

Described from three Aru Island examples, 110 to 160 millim. long, in the A.F.A.Q. Museum; Cat. No. 991.

CALLIONYMIDÆ.

CALLIONYMUS GROSSI sp. nov.

D. iv, 9; A. 8; P. 17. Depth of body 9.6, width of body 5.5, length of head 4.5, of 1st dorsal spine 1.7, of caudal fin 2.66 to 3.5, of pectoral 4.25, of ventral 3.45 in length of body. Depth of head 2.2, width of head 1.15, diameter of eye 3, length of snout 2.6, of preopercular spine 2.5, of last dorsal ray 1.1, of last anal 1.5 in length of head.

Body gently rounded above, its greatest depth below the anterior dorsal rays. Snout about as wide as deep, pointed, its depth 1.15 in its length; eyes close together directed upward, prominent, 1.2 in the snout, and 2.6 in the width of the head. Preopercular spine straight, the

inner edge with 7 to 9 subequal antrorse serrulae,* the outer with a strong denticle directed forward near its base. Occiput covered with smooth skin. Lateral line median and conspicuous.

Origin of spinous dorsal somewhat nearer to soft dorsal than to tip of snout; spinous dorsal high, the first spine terminating in a filament, which extends to the last ray of the soft dorsal; the other spines not filamentous, the membrane of the last, which equals the last ray, not quite reaching the soft dorsal, the base of which is somewhat longer than its distance from the tip of the snout; last ray longest, extending slightly beyond or not quite to the base of the caudal. Anal originating below the 2nd dorsal ray, its base less than its distance from the tip of the mandible; last ray not nearly reaching so far back as that of the soft dorsal. Caudal peduncle distally fusiform, its least depth 1.3 in the eye-diameter. Pectoral inserted below the posterior half of the spinous dorsal, the middle rays longest, extending to below the 3rd or 4th dorsal ray. Ventral reaching beyond or not quite to the origin of the anal.

Gill-openings superior, opposite to the origin of the dorsal, further apart than the outer borders of the eyes, and midway between the eye and the pectoral fin.

Golden brown above, dull yellow below, the throat and ventral region silvery; back and sides above the lateral line with numerous lilac annuli about as large as the gill-opening, and often crowded together so as to form clusters of considerable size; some of the annuli have a blackish central dot; a broad dusky band across the peduncle; an irregular series of dark brown spots along the middle of the side just below the lateral line. Upper eyelids and occiput blackish. Spinous dorsal violet, with oblique wavy lilac dark-edged cross-bands, the anterior spine and its filament blackish; soft dorsal and anal yellowish gray, the former with three series of oblong violet spots, the membrane of the last ray of the latter clouded; upper

* The armature of the preopercular spine is so imperceptibly graduated between a single strong recurved spinule and fine serrulae that I cannot see my way, in the absence of additional characters, to admit *Calliurichthys* Jordan & Fowler (Proc. U.S. Nat. Mus., xxv, 1903, p. 941) as a valid genus or even a well marked subgenus.

portion of caudal yellow spotted with brown, lower portion violet with a paler margin; pectorals dull yellow, immaculate; ventrals yellowish, the ground color almost wholly obscured by violet dots, among which are scattered numerous white dark-edged ocelli, and, near the tip, a few blackish spots. A second specimen (? ♀) differs in being of a general darker coloration above, the clear golden brown being replaced by violaceous brown, which color extends further down the sides, somewhat obscuring the lateral series of spots and terminating inferiorly in 12 or 13 short blunt processes, which encroach upon the pure white of the under parts. The fins correspond in general pattern with those of the larger example, but the cross-bands on the spinous dorsal are indistinct, and the pectorals are gray, their rays alternately banded with gray and lilac. (Named for my friend and colleague, the late Major George Gross, one of the leading conchologists of Queensland.)

Described from two Moreton Bay specimens, measuring respectively 128 and 112 millim., in the collection of the A.F.A.Q.; Cat. No. 958.

CALLIONYMIDÆ.

DACTYLOPUS, Gill.

Body subcylindrical. Lateral line single, superior, straight. Head triangular, not depressed, the snout moderate and anteriorly declivous. Mouth small and subinferior; upper jaw the longer; lower lip expanded to form a small lobe on each side. Teeth long, slender, and slightly recurved anteriorly, shorter, stouter and hooked laterally. Eyes well separated, superolateral. Preopercular spine well developed, strongly armed above and below. Spinous dorsal originating well in advance of the gill-opening, the last spine without membrane; soft dorsal high, all the rays except the first branched; caudal fin graduated above, rounded below; pectoral fin angular, with 18 rays, the two outer above and below simple: ventral much longer than the pectoral, with $i\ 1+4$ rays, the last the longest, the spine and the outer ray free. Branchial foramen moderate, lateral.

From the Molucca Seas to the East Coast of Australia. Monotypic.

There is a remarkable resemblance in some of the generic characters between *Dactylopus* and the rare Japanese

Callionymus altivelis Schlegel. In both the branchial foramen is lateral and below the first dorsal, the last dorsal spine is unattached by membrane to the back, and the soft dorsal is very high and has all the rays except the first branched. *Dactylopus*, however, differs materially in the increased armature of the preopercular spine and in the presence of a free ventral ray.

Dactylopus Gill, Proc. Acad. Nat. Sci. Phila., 1859, p. 130 (*bennetti*=*dactylopus*).

Vulsus Günther, B.M. Catal. Fish., iii, 1861, p. 15 (*dactylopus*).

DACTYLOPUS DACTYLOPUS (Cuvier & Valenciennes).

D. iv,—8; A. 7; P. 18. Depth of body 6.20, width of body 4.50, length of head 3.50, of first dorsal spine 1.15 to 1.50, of caudal fin 2.15 to 2.60, of ventral 2.00 to 2.50 in length of body. Depth of head 1.70, width of head 1.15, diameter of eye 3.60, interorbital width 8.85, length of snout 2.90, of preopercular spine 3.30, of last dorsal ray 1.05, of last anal ray 1.20 in length of head.

Body rounded above, its greatest depth below the anterior dorsal rays. Snout as wide as deep, obtusely pointed, its depth 1.25 in its length. Eyes separated by a deep concavity, the supraorbital ridges high and sharp, extending forward on the snout, the diameter 1.30 in the snout and 3.00 in the width of the head. Maxillary extending to below the anterior border of the eye. Preopercular spine strong and acute, its distal extremity slightly curved inward; outer border with four graduated barbs, the anterior median, very strong, and directed forward, the posterior reduced to a mere tubercle rising from the base of the curve; inner border with three curved subequal antrorse barbs. Occiput with a pair of raised bony bucklers, covered with reticulated sculpture, and separated by a smooth fossa, which is a continuation of the interorbital groove. Gill-openings lateral, opposite the middle of the spinous dorsal, as far apart as the head in front of the hinder margin of the eye, and about twice as far from the eye as from the pectoral fin. Lateral line well defined in front, less so behind, terminating well above the middle of the base of the caudal.

Origin of spinous dorsal a little nearer to the soft dorsal than to the tip of the snout; spinous dorsal high,

the three anterior spines terminating in long slender filaments, which extend backward to well beyond the base of the caudal (♂) or to the peduncle (♀); last spine without membrane, much shorter than the rays; interdorsal space as long as the spinous dorsal: soft dorsal high, the rays but little graduated to the last, which reaches to or slightly beyond the base of the caudal; base of soft dorsal equal to its distance from the anterior border of the eye. Anal originating below the membrane of the third dorsal ray, similar to and nearly as high as the second dorsal, its base about half its distance from the tip of the mandible, its last ray reaching as far back as that of the soft dorsal. Caudal fin with rounded tip; caudal peduncle distally compressed, its least depth equaling the eye. Pectoral fin inserted below the end of the spinous dorsal, the middle rays the longest, extending to below the fourth dorsal ray. Free ventral ray as long as the head without the snout, much longer than the succeeding ray; continuous rays graduated, the last very large, reaching beyond the pectoral, its membrane attached superiorly to the base of the eighth pectoral ray.

Olive-or violet-brown above, with six large blackish blotches across the back, the interspaces with darker freckles and sometimes with blue black-edged ocelli of variable size; sides with a similar number of somewhat stellate blotches, more or less corresponding to the spaces between the dorsal blotches, the interspaces chestnut or violet, with or without golden or pearly spots and reticulated lines; lower surface white, faintly tinged with bluish; under surface of head pale brown. Iris silvery, with an inner golden rim. Spinous dorsal and its filaments blackish, the membrane of the second ray with numerous small pearly spots on its outer half, that of the third with a wide lighter marginal band; second dorsal lilac, the ground color well nigh obliterated by crowded oblique purplish bars: base of anal rufous brown, deepening to purple at the margin: caudal fin golden, the rays brown, speckled with pale blue; posterior margin with wavy blue transverse streaks, the rest of the fin except the two lower rays which are smoky brown, with elongate blue lines, which are oblique above and horizontal below; pectorals hyaline, the basal half of the upper and middle rays with alternate lilac and

rufous rings ; free ventral ray with alternating rings of gold and purple, the united rays blackish or dark olive-green, with one or two large pearly basal spots.

In the female the membrane of the spinous dorsal is golden brown, with darker marblings and irregular light blue spots and short bands ; basal two thirds of soft dorsal with elongate dark brown blue-edged spots between the rays, the marginal third more faintly banded but profusely freckled with blue : inner third of anal golden brown with elongate pearly spots, the rest of the fin smoky, with dark blue black-edged spots and lines.

Total length 156 millim.

From the Molucca Seas to South-Eastern Queensland (Stradbroke Island and Wynnum).

Described from a fine Moreton Bay example in the A.F.A.Q. Museum ; Cat. No. 684.

Callionymus dactylopus (Bennett) Cuvier and Valenciennes, Hist. Nat. Poiss., xii, 1837, p. 310—Bleeker, Nat. Tijds. Ned. Ind., iii, 1852, p. 559 : Amboina.

Dactylopus bennetti Gill, Proc. Acad. Nat. Sci. Phila., 1859, p. 130. Name only.

Vulsus dactylopus Günther, B.M. Catal. Fish., iii, 1861, p. 152 : Amboina ; Celebes.

Dactylopus dactylopus Ogilby, Ann. Queensl. Mus., No. 9, 1908, p. 38 : Moreton Bay.

Note.—*Callionymus achates* De Vis (Proc. Linn. Soc. N.S. Wales), is founded on a female of *C. calauropomus*.

BLENNIIDÆ.

PETROSKIRTES FURTIVUS (De Vis).

D. xii, 21 or 22 ; A. i 23 to 25 ; C. 13 ; P. 13 ; V. 2. Depth of body 5·6, length of head 5, of anal fin 2, of middle caudal rays 5·75, of pectoral fin 5·1, of ventral 5·1 in length of body. Length of snout 3·75, diameter of eye 3·85, width of interorbit 9·5, longest dorsal ray 1·35, longest anal 1·85, depth of peduncle 2·3 in length of head.

Head obtusely rounded in front, its width 1·5, its depth 1·15 in its length ; snout short and blunt ; upper jaw the longer ; interorbital region convex ; cleft of mouth extending to below the anterior border of the eye.

Dentition—I. $\frac{24}{24}$; C. $\frac{2}{2}$; upper canine strongly hooked,

about half the length of the lower. Lateral line consisting of 2 short tubes.

Dorsal fin originating slightly in advance of the gill-opening, the rays gradually increasing in length to the middle of the soft portion, the longest articulated ray 1.25 time the height of the last spinous ray; membrane of last ray reaching to the base of the caudal fin. Anal originating below the 11th dorsal spine. Caudal fin rounded, the 3rd to 5th and 9th to 11th rays in the male terminating in a filament. Pectoral fin rounded, the 8th and 9th rays longest, not reaching to the vertical from the vent. Ventral fin long, the inner ray as long as the pectoral.

Gill-opening directed forward from above the base of the pectoral, its width 5 in the head. Vertebrae $11 + 31 = 42$.

Yellow closely powdered with dusky dots; a broad dark blue band from the eye to the gill-opening, continued along the middle of the body as a much paler and rather ill defined band, which becomes forked below the middle of the soft dorsal, the lower branch being usually broken up into a series of spots, and both being continued well on to the caudal fin; behind the pectoral fin the lateral band throws off 6 or 7 conspicuously darker offshoots, which are directed downward and slightly backward; a row of blue spots along the base of the dorsal fin; abdominal region sometimes crossed by a few narrow dark lines. Head pale olivaceous brown, the cheeks with 2 or 3 darker vertical bars; lower portion of the opercular, the branchiostegal, and the jugular regions closely spotted with blue. Teeth tipped with tawny yellow. Dorsal fin violet, the spinous portion the darker and with two series of pale spots, the soft portion with several narrow dark lines commencing at the base and running obliquely backward; free tips of soft dorsal and anal rays white; an oblong blackish inframarginal spot on the 4 middle rays of the soft dorsal in the adult; anal lilac; pectoral and ventral pale yellow, the former with a few small round spots on or near the base.

Female.*—Differs in having the lateral band more

* The female bears a remarkable resemblance to the Japanese *Petroskirtes elegans* as figured by Jordan and Snyder (Proc. U.S. Nat. Mus., xvv, 1903, p. 454, fig. 6).

indistinct and ceasing altogether before the middle of the tail, the posterior half of which is adorned with numerous small blue spots; the dark band behind the eye is usually broken up in two oval or lunate spots; all the fins are uniform gray except the spinous dorsal, which has a basal series of dusky spots.

This pretty little blenny is an inhabitant of the East Coast of Australia from Port Jackson to the Wide Bay District, beyond which points it has not yet been traced though it doubtless occurs. It is exceedingly abundant on all the rocky sections of the foreshores and islands of Moreton Bay, where it is one of the most common objects of the rock-pool fauna. In the Great Sandy Strait I found it scarce, the environment probably being unsuitable to its habits.

Described from 10 specimens, 45 to 85 millim. long, in the A.F.A.Q. Museum; Cat. Nos. 71 and 1145.

Petroscirtes fasciolatus Macleay, Proc. Linn. Soc. N.S. Wales, vi, 1881, p. 8: Port Jackson (male). Not *Omobranchus fasciolatus* Ehrenberg = *Blennechis fasciolatus* Valenciennes, 1836.

Salarias furtivus De Vis,* Proc. Linn. Soc. N.S. Wales, iv, 1884, p. 697: St. Helena, Moreton Bay.

Petroscirtes macleayi Ogilby, Catal. Fish. N.S. Wales, p. 38, 1886. Substitute for *P. fasciolatus* Macleay preoccupied.

PETROSKIRTES JAPONICUS Bleeker.

D. xii 22; A. i 22; C. 13; P. 13; V. 2. Depth of body 6.25, length of head 5.35, of anal fin 2.1, of caudal 6.2, of pectoral 5.4 in length of body. Length of snout 3, diameter of eye 4.25, width of interorbit 9.25, longest dorsal ray 1.45, of ventral 9.35, longest anal 2.05, depth of peduncle 2.15 in length of head.

Head rounded in front, its width 1.5, its depth 1.25 in its length; no nasal nor orbital tentacles; male with a low cutaneous occipital crest; cheeks swollen. Snout short and blunt; upper jaw the longer; both lips posteriorly with pendent flaps; eye small; interorbital region convex;

*The author cannot, without demur, admit the accuracy of some of Mr. De Vis' earlier descriptions, and finds himself compelled to class most of the species of *Salarias* described by Mr. De Vis, as belonging to the genus *Petroskirtes*.

cleft of mouth extending to below the anterior border of the eye. Dentition—I. $\frac{28 \text{ to } 36^*}{30 \text{ to } 38}$; C. $\frac{2}{2}$; lower canines much the longer. Lateral line incomplete, consisting of about 6 tubes, and ceasing nearly above the tip of the appressed pectoral.

Dorsal fin originating above the base of the pectoral, the rays increasing in length to the 3rd, beyond which they are subequal; longest articulated rays behind the middle of the soft fin and 1.5 time the height of the last spinous ray; membrane of last dorsal ray extending slightly beyond the base of the caudal. Anal fin originating below the 2nd dorsal ray. Caudal fin rounded. Pectoral rounded, the 8th ray longest, not nearly reaching to the vertical from the vent. Ventral short, the inner ray slightly the longer.

Gill-opening in front of and above the base of the pectoral, its width 5.5 in the head. Vertebrae $11 + 29 = 40$.

Olive-green, darkest anteriorly, the lower surface tinged with yellow; trunk with 3 to 5 horizontal bars, which disappear above the vent; the upper, however, is continued as a series of distant spots to below the middle of the soft dorsal, and along the middle of the tail there is a series of spots or vertical bars extending to the caudal fin. Head with 3 faint vertical bands, which meet across the under surface, where they show distinctly on the lighter ground. Fins violaceous, the tips of the anal rays white.

This blenny has been recorded from the coasts of Eastern Australia and Southern Japan, and attains a length of 110 millim. The remarks under the preceding species apply with equal force to this, which is not, however, so numerous. I obtained one specimen only in Great Sandy Strait, and one, an exceptionally fine example, at Woody Point, Moreton Bay.

Described from 6 specimens measuring from 62 to 110 millim., among these being Mr. De Vis.' types. Cat. Nos. in A.F.A.Q., 907 and 1123.

Petroskirtes japonicus Bleeker, Versl. en Med. Kon. Akad. Wetens., iii, 1869, p. 246, c. fig. : Jedo Bay, S.E. Japan.

* The incisors increase in number with the age of the fish; Jordan and Snyder give "26 to 28" as the formula of *P. dasson*, Bleeker "36 to 40" as that of *P. japonicus*.

Salarias helenæ De Vis, Proc. Linn. Soc. N.S. Wales, ix, 1884, p. 697: St. Helena, Moreton Bay.

Aspidontus dasson Jordan and Snyder, Proc. U.S. Nat. Mus., xxv, 1903, p. 456, fig. 8: Wakanoura and Shima, S. Japan.

Aspidontus japonicus idd., ibid., p. 458.

PETROSKIRTES ANOLIUS (Cuvier and Valenciennes).

D. xii 17 or 18*; A. i 20 or 21; C. 13; P. 13; V. 2. Depth of body 4.85, length of head 4.66, longest dorsal ray 2.8, length of anal fin 1.9, of caudal 4.65, of pectoral 4.6, of ventral 4.5 in length of body. Length of snout 3.75, diameter of eye 4, width of interorbit 8, longest anal ray 2, depth of peduncle 2.65 in length of head.

Head subvertical in front, its width 2, its depth (without crest) 1.20 in its length; no nasal nor orbital tentacles; an elevated rounded cutaneous crest extends from before the upper border of the eye nearly to the dorsal fin, its height equal to the eye-diameter; cheeks not swollen. Snout short and somewhat pointed; jaws subequal; lower lip posteriorly lobate; eyes small; interorbital region convex; cleft of mouth extending to below the posterior border of the eye. Dentition—I. $\frac{2\frac{1}{4}}{2}$; C. $\frac{2}{2}$; lower canines much the larger. Lateral line curved upward anteriorly, consisting of from 8 to 10 tubes, and ceasing below or before the last spinous dorsal ray.

Dorsal fin originating a little in advance of the base of the pectoral, the spinous rays subequal in length, the soft gradually increasing in length to the 6th; 7th to 13th rays produced and filamentous, about 4 times as long as the last spinous ray; membrane of last ray scarcely extending to the base of the caudal. Anal fin originating below the 11th dorsal spine. Caudal rounded. Pectoral rounded, the 9th ray longest. Ventral well developed, the inner ray the longer.

Gill-opening in front of and above the base of the pectoral, its width about 6 in the head.

* In his description of *P. wilsoni* Macleay gives the dorsal fin formula as "26" (i.e. xii, 14); of the score or so of specimens which I have examined from different localities none showed a greater variation than that given above; it would therefore be well for one of my Sydney co-workers to recount the dorsal rays in the type.

Head and body chestnut brown or olive-green, the latter with numerous indistinct darker angulated transverse bars, which cease below the middle of the soft dorsal; rest of tail with 3 darker longitudinal bars and some scattered black spots. Head sometimes with one or two vertical silvery streaks and a dusky cheek-spot. Dorsal fin brownish olive, darkest anteriorly, the spinous portion with 3 or 4 oblique darker bars, the soft immaculate; anal fin orange brown, each ray with a basal, median, and terminal sky-blue spot; caudal orange; pectoral greenish olive with a large round dusky spot on its muscular base; ventrals sky-blue. After immersion in formalin solution for some time these fishes become uniform blackish brown. (*Anolius*; a genus of American lizards, the head of which suggests a resemblance*).

The "Crested Blenny" or "Oyster Blenny," as it may with propriety be called, is a resident of the coasts of New South Wales and Southern Queensland, and grows to a length of 70 millim.

The life history of this little creature, so far as it has been determined, is both curious and interesting. Apparently they mate at a very early age, since in no other way can we account for their presence in places which it is impossible for them either to enter or leave in their adult state. Having paired, the young couple immediately proceed to the choice of a residence; this almost invariably takes the form of a dead oyster-shell, between the valves of which they are able at this stage easily to insert their slim and delicate bodies. In the safe seclusion of this retreat they live out their peaceful lives, undisturbed by the strenuous and ceaseless war of Nature, which rages ever around and above them. Here they are dependent for food upon such small animals as may find their way between the valves of their prison and such flotsam as the tide may drift therein. Here too they breed, the female attaching her eggs by means of some glutinous substance to the upper wall of the shell, and it is remarkable that in all the cases which have come under my notice the ova were deposited not in a single mass but in scattered groups of some half-dozen eggs each; this arrangement may

* "Il relève sa petite tête comme ses petits sauriens nommés anolis dans nos îles." (Cuvier & Valenciennes, loc. cit.).

possibly be selected in order to ensure a freer play of water on each egg. The young, on their emergence from the ova are quickly driven out from the parents' domicile to make their own way in the great world beyond. On one occasion only have I known of a specimen having been discovered otherwise than in an oyster-shell; this individual, which was in a greatly contorted condition, had when young insinuated itself into a rock-crevice so small that, as it increased in size, its body was compelled to adapt itself to the form of its cell, of which it was in fact an animated cast; notwithstanding this disability the fish was in perfect condition, not seemingly having suffered any inconvenience from the distortion of its body. This little blenny has contracted a curious habit, possibly due to inherited instinct consequent on the restricted nature of its normal home environment; when kept alive in a tumbler or even in a basin, it never willingly moves forward in the usual manner of its class, but invariably retrogrades, pushing itself backward by means of its pectoral and ventral fins.

Described from 3 Moreton Bay and one Great Sandy Strait specimens, measuring from 52 to 70 millim., in the collection of the A.F.A.Q.; Cat. Noo. 871 and 1237.

Blennechis anolius Cuvier and Valenciennes, Hist. Nat.

Poiss., xi, 1836, p. 288: Port Jackson.

Petroscirtes anolis Günther, B.M. Catal. Fish., iii, 1861, p. 238.

Petroscirtes cristiceps Macleay, Proc. Linn. Soc. N.S. Wales, vi, 1881: Port Jackson.

Petroscirtes wilsoni id., ibid, ix, 1884, p. 171: Port Jackson.

Note.—The Güntherian genus *Petroscirtes* has very properly been broken up in sections by various authors, and with the object of facilitating the identification of species may with advantage be still further subdivided as follows:—

a. Canine teeth in both jaws.

b. Dorsal fin free or just touching the caudal

.. .. . i PETROSKIRTES*

c. Anterior dorsal rays produced (*Petroskirtes*).

c¹. Anterior dorsal rays not produced.

* *Petroskirtes* Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 110 (*mitratus*).

d. Soft dorsal rays subequal; occiput smooth or nearly so (*Aspidontus**).

*d*¹. Some of the soft dorsal rays filamentous; occiput with an elevated crest (*Cyneichthys*†).

*b*¹. Dorsal fin more or less continuous with the caudal

.. .. ii. ENCHELYURUS‡

*a*¹. Canine teeth in the lower jaw only; mouth inferior

.. .. iii. MACRURRHYNCHUS§

*a*². No canine teeth.

e. Mouth terminal RUNULA||

*e*¹. Mouth inferior RUNULOPS¶

* *Aspidontus* Quoy & Gaimard

† *Cyneichthys*; nom. nov.; (*anolius*). κυνέη, a helmet; ἰχθύς, a fish.

‡ *Enchelyurus* Peters, Mon. Akad. Berlin, 1868, p. 268 (*flavipes*).

§ *Macrurrhynchus* Ogilby, Proc. Linn. Soc. N.S. Wales, xxi, 1896, p. 136 (*maroubrae*).

|| *Runula* Jordan.

¶ *Runulops*; nom. nov.; founded on two South American species described by Jenyns.



Ogilby, J. Douglas. 1911. "On New or Insufficiently Described Fishes." *The Proceedings of the Royal Society of Queensland* 23(1), 1–55.

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