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DURING THE YEARS

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NATURALIST TO THE EXPEDITION.

FISH,
BY
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resembling *maculatus*, or at least considered as one of its subspecies. But in my opinion, on the basis of our knowledge with respect to the "value of color markings" and from the general resemblance of the *A. Chiloensis* to all its nearest neighbors in the other species of this genus, I have not thought this very necessary.

This species was taken by Mr. Darwin at Chiloé. There are two specimens in his collection. The second differs from the one above described, only in having one eye, two in the first dorsal, and two rows of anal scales in each of the dorsal places. Independently of its having vanes and pinnules such as those mentioned, this species will not enter into any of Cuvier's sections of the genus *Myxodonta*, but combines in itself the characters of his first and third; the dorsal being separated by nearly three scales, the jaws being very nearly equal, the rays of the first dorsal not shorter than those of the second, and the dorsal being bearded.

PLATYMERALUS INDUS. JEN.

Body large, low, almost torus, spin dorsalis et caudalis frequentibus brevissimis squamis exceptis; cauda magna, nulli propinqua; dentes et labellulae parvi; maxillae albae; pinnae dorsales pinnae laterales magna irregulari nigro-fusca punctis et striis; dorsum nigrum, caudae et pectoralibus, maxilla facie parvis; caudae et pectoralibus fere omnes nigro-punctatis.

D. 7; A. 8-12; V. 18; C. 13; R. 1; P. 19; V. 18.

LONG, ONE 10.

Body without very much depressed, and rather longer than in most of the species of this genus. Its height being nearly twice its eye breadth, and nearly one-third of the snout length. Dorsals in the 7th of the posterior one-fourth of its entire length; dorsal of this point half its height, dorsal rounded laterally. Lower jaw longest. Rays according to structure as

"I have recently been attacked with vertigo in the Atlantic as well as the Pacific, and I agree with Dr. Hutton's ('Zool. Brit. Mus. Part 10, p. 19') in concluding it "of little importance as a generic character in the genus of fish." And the author has mentioned certain "rather recently analogous" fish of the Atlantic as resembling the *Platymeralus* species, which, he says, "combine the essential qualities very nearly in the genus fish, but differ from it in having pinnules both."

In its general structure it does not depart from the *A. complanatus* of the Pacific, but, according to the structure of the pectorals, and *A. maculipinna* of the Atlantic.

genus from *Aspidophorus*, or at least considered as one of its subgenera. But in the present uncertain state of our knowledge with respect to the exact value of this character,* and from the general resemblance of the *A. Chilensis* in all its principal characters to the other species of this genus,† I have not thought this step necessary.

This species was taken by Mr. Darwin at Chiloe. There are two specimens in the collection. The second differs from the one above described, only in having one ray less in the first dorsal, and two more carinated scales in each of the dorsal ridges. Independently of its having vomerine and palatine teeth as above noticed, this species will not enter into any of Cuvier's sections of the genus *Aspidophorus*, but combines in itself the characters of his first and third; the dorsals being separated by nearly three scales, the jaws being very nearly equal, the rays of the first dorsal not stouter than those of the second, and the throat being bearded.

PLATYCEPHALUS INOPS. Jen.

P. capite longo, laevi, ubique inermi, spinis duobus ad angulum preoperculi brevissimis aequalibus exceptis; oculis magnis, arcuè propinquantibus: dorso et lateribus fuscis; abdomine albedo; pinnâ dorsali primâ liturâ magnâ irregulari nigro-fuscâ posticè maculatâ; dorsali secundâ, caudali, et pectoralibus, maculis fuscis parvis; anali et ventralibus ferè omnino nigricantibus.

B. 7; D. 8—12; A. 12; C. 13, &c.; P. 19; V. 1/5.

LONG. unc. 16.

FORM.—Head very much depressed, and rather longer than in most of the species of this genus; its length being nearly twice its own breadth, and nearly one-third of the entire length. Breadth of the body at the pectorals one-seventh of the entire length: depth at that point half the breadth. Snout rounded horizontally. Lower jaw longest. Gape reaching to beneath the

* Cuvier seems to have attached much value to the character of teeth on the palate; but I agree with Dr. Richardson, (*Faun. Bor. Am.* Part iii. p. 19.) in considering it "of little importance as a generic character in some families of fish." And the author last mentioned notices an instance (exactly analogous to that of the *Aspidophorus Chilensis*) in the *Thymallus signifer*, which, he says, "resembles the common grayling very closely in its general form, but differs from it in having palatine teeth."

† In its general characters it does not depart from the *A. cataphractus* of the British seas, anything like so much as the *A. quadricornis*, and *A. monopterygius* do.

anterior margin of the orbit. A band of sharp velutine teeth in each jaw broadest above; a double semicircular patch of similar teeth on the front of the vomer, and a band all along each palatine as broad as that in the lower jaw. Branchial arches and pharyngeans rough with similar teeth. Tongue free, thin, flat, truncated at the apex with a double emargination in the middle, of equal breadth throughout, without teeth, the central portion cartilaginous with a broad membranous border all round. Eyes large, their diameter one-sixth the length of the head, approximating, with not half a diameter between, distant two diameters from the extremity of the lower jaw. The spines of the preopercle (which in some species are long and very unequal) very short and inconspicuous, of equal length, the lower one rounded off almost to nothing. Head smooth all over; presenting the usual ridges, which however are not very salient, but with hardly anything deserving the name of spines, excepting only a small flat spine terminating the opercle, and a minute but sharp one on the upper ridge of the scapula: none at the anterior angle of the first suborbital, or on the ridge of the orbit. Gill opening very large; the branchial membrane notched underneath for its whole length.

Pectorals broad and oval but short, contained nearly eight times in the entire length; the first two rays simple, the next ten branched, the last seven, which are rather stout, again simple. Ventrals separate by nearly the whole breadth of the body, attached beneath the middle of the pectorals, longer than these last fins by nearly one-third, and reaching very nearly but not quite to the vent, which is a little posterior to the middle of the entire length: the spine of the ventrals is one-third of the longest of the articulated rays which are the last or innermost. The first dorsal commences above the middle of the pectorals, and occupies between one-sixth and one-seventh of the entire length; its greatest height is about two-thirds of its own length; the first spine is very short, and detached, as in the other species; the second a little shorter than the third which is longest; the rest gradually decrease to the last, which is one-third the length of the second; this fin therefore is not so triangular as in many of this genus. A small space between the first and second dorsals. This last longer and rather lower than the former, contained four and a half times in the entire length; all the rays nearly even, with the exception of the first only, which is a little shorter than the second. Caudal square. The anal answers to the second dorsal, but begins, as well as terminates, a little backward.

The lateral line commences at the suprascapular, and gradually bends down till it reaches the middle of the depth which it keeps for the remainder of its course; it is perfectly smooth throughout. The scales cover all the body and a part of the head, but are not present between the eyes, or on the front of the snout, or on the jaws. They are small, oblong-oval, finely striated, with a fan of eleven or twelve deeper striae posteriorly, their free edges cut square, not ciliated.

COLOUR.—(*In spirits.*)—Back and sides nearly uniform deep brown; beneath white; the two colours separated by a well-defined line. First dorsal transparent, with a deep brown stain or blotch on the membrane, of an irregular form, and occupying more than the posterior half of the fin. Second dorsal uniformly, but rather obscurely, spotted throughout. Caudal with transverse rows of similar spots. Anal nearly uniform pale dusky, the spots hardly distinguishable from the ground. Ventrals the same. Pectorals with spots on the rays, but with the intervening membrane nearly transparent.

Habitat, King George's Sound, New Holland.

This species very closely approaches the *P. levigatus* of Cuvier and Valenciennes, with which it particularly agrees in the smoothness of its head, and large approximating eyes. The two spines, however, at the angle of the preopercle appear to be still smaller than in that species;* the fin-ray formula is a little different; and so also are the colours; the first dorsal being particularly characterized by a large irregular dark-coloured stain on its posterior portion, and the anal and ventrals being almost wholly dusky, instead of pale with spots on the rays only, as in the *P. levigatus*. Possibly it may be a mere variety. Mr. Darwin's specimen was obtained at King George's Sound.

FAMILY—SCORPÆNIDÆ.

SCORPÆNA HISTRIO. *Jen.*

PLATE VIII.

S. toto corpore cocineo, pinnis pallidioribus, maculis parvis irregularibus nigricantibus: capite magnâ ex parte alepidoto, lineis spinosis solitis armato: pinnâ dorsali spinis inæqualibus, tertiâ paulo longissimâ: capite et lateribus cirris cutaneis parvis ubique adornatis; quatuor palpebralis, præsertim duobus posterioribus, majoribus, palmatis.

B. 7; D. 12/9; A. 3/5; C. 13, &c.; P. 20; V. 1/5.

LONG. unc. 9.

FORM.—General form resembling that of the *S. Scrofa*. Depth at the pectorals just one-fourth of the entire length. Thickness a trifle more than two-thirds of the depth. Head more than one-third of the entire length. Eyes large and elevated, distant from the end of the snout rather more than one diameter; the space between very concave, twice as long as broad, with two whitish lines in the central furrow, diverging as they recede backwards towards the nape, but scarcely elevated into salient ridges. Mouth oblique, with the gape large and the lower jaw a little the longest; when closed, the end of the maxillary, which is broad and much dilated, reaches to a vertical line from the posterior part of the orbit. A broadish band of velutine teeth in each jaw as well as on the vomer and palatines. Tongue smooth. A small sharp triangular spine on each of the nasal bones, (in this specimen that on the left side is double or forked): upper margin of the orbit, which is much elevated, with three spines, one strong one at the anterior angle, and two, nearly as large, further back; beyond which, on the left orbit only, is a fourth smaller one. Space between the eyes bounded posteriorly by a raised arc

* Judging from the figure in the "Voyage de l'Astrolabe (Zoologie)," pl. 10. f. 4.

having the curvature inwards, with a spine on each side; this is followed by the depressed occiput, which forms a hollow; and on each side of this, at its posterior margin, or at the commencement of the nape, are two other strong spines: there are likewise two spines at the suprascapulars, and between these and the posterior margin of the orbit of the eye, on what may be called the temples, are two more; of these last, the first, which is small and close to the orbit, is double; the second, which is larger and situate a little above the upper angle of the preopercle, is, in this specimen, double on the right side and single on the left. The first suborbital has two spines on its anterior margin, the first directed forwards, and the second downwards; on its disk are two salient ridges, which are unarmed, and not very conspicuous. The second suborbital is entirely without spines, but elevated in the middle into a double smooth ridge or crest. Margin of the preopercle with six spines; the second longest; the first, as well as the two lowermost, small and inconspicuous. Opercle with two osseous diverging ridges terminating in spines: the scapular and clavicular bones likewise terminate each in a flattened spine. Lateral line and scales much as in *S. Scrofa*; the latter with their free edges perfectly smooth.

The cutaneous filaments and appendages on this species are as follows: three small ones at the extremity of the snout; one small but broad one at the upper margin of the anterior orifice of the nostril; two very conspicuous palmated ones on each orbit, especially the posterior one, which is largest, and very broad; two on the margin of the first suborbital; some small ones on the cheeks and maxillaries; six beneath the lower jaw, two being near the symphysis, and two on each ramus; a row on the margin of the preopercle, and very numerous small ones scattered about the nape and sides of the body, of which a row along the lateral line are rather more conspicuous than the others.

The spines of the dorsal fin are moderately strong, and unequal; the first is rather more than half the length of the second, which itself is two-thirds of the third; this last is less than half, but more than two-fifths, of the depth of the body; from the third, the spines decrease very gradually to the eleventh, which is a little longer than the first; the twelfth is higher than the eleventh by one-third: soft portion of the fin rounded, and where most elevated just equalling in height the third or longest spine. Anal spines very unequal; the first not very stout, and less than half the length of the second, which is very strong indeed, as well as the longest of the three; the third is stouter than the first, but not nearly so stout as the second, though nearly equalling that spine in length: soft portion of this fin with its greatest elevation rather exceeding the second spine. Caudal slightly rounded. Pectorals rather more than one-fifth of the entire length; the ten lowermost rays simple; the nine immediately above these branched; the uppermost of all simple like the bottom ones, but slenderer as well as shorter than the others. Ventrals not above two-thirds the length of the pectorals; in other respects as in *S. Scrofa*.

A second specimen.—Smaller than the one above described, measuring seven inches and a half in length. The two diverging lines on the cranium between the eyes are rather more salient, and the left orbit is without the fourth spine; but in all other respects, including the fin-ray formula, the two specimens are exactly similar.

COLOUR.—“Whole body scarlet red, fins rather paler; with small irregularly-shaped light black spots.”—D.

Habitat, Chatham Island, Galapagos Archipelago.

This species differs more or less in the details of form, as well as colours, from all those which I can find described by authors. Most of the foreign species of this genus noticed by Cuvier and Valenciennes, come either from the eastern coast of America or the East Indies; and they do not appear to have received any from that part of the Pacific, whence the present one was obtained.

SEBASTES OCLATA. *Val.*?

Sebastes oculata, *Cuv. et Val. Hist. des Poiss. tom. ix. p. 344.*

FORM.—Greatest depth contained about three times and three quarters in the entire length.

Head about one-third of the same. Eyes large; the interocular space, equalling rather more than half their diameter, concave, with two longitudinal ridges running respectively parallel to the two superciliary ridges. Two spines on the upper part of the snout, in a line with the nostrils; one at the anterior part of the orbit; three at the posterior, passing off in a line towards the occiput, where there are two other moderately strong ones terminating the lateral occipital ridges; five very strong spines or teeth edging the rounded angle of the preopercle; two sharp ones at the posterior angle of the opercle, the upper one most developed; one at the scapula, and two at the suprascapular. There are either three orifices to each nostril, or else, adjoining the two usual openings, a large pore so manifest (at least in this specimen in its dried state) as easily to be mistaken for a third: this additional one is close to the nasal spine. Dorsal spines of only moderate strength: anal stronger, especially the second, which is very stout, as well as the longest of the three; the third, however, is more than half the length of the soft rays. Pectorals broad and rounded; their length contained about four times and a half in the entire length; first ray simple, the next eight branched, the nine lowermost simple again, and rather stouter than the others. The caudal appears to have been square. Scales small and ciliated, covering nearly the entire head, as well as body, but very thinly scattered on the extremity of the snout in advance of the nostrils.

D. 13/14; A. 3/6; C. 14, and 3 shorter ones; P. 18; V. 1/5.

Length 10 inches.

COLOUR.—“ Under surface, sides, branchial covering, and part of the fins, ‘tile and carmine red;’ dorsal scales pale yellowish dirty brown.”—D. In its present dried state, the colour is of a uniform brown.

Habitat, Valparaiso.

This species is probably the *S. oculata* of Valenciennes; but the depth rather exceeds, and in its recent state it must have still more exceeded, one-fourth

of the entire length, the proportion given in the "Histoire des Poissons." The spines on the opercle and suprascapular also can hardly be called "smaller," as there stated, than those on the orbit and occiput, at least the upper one on the opercle. There are also two soft rays less in the anal. It may be added further, that Mr. Darwin's notes make no mention of the four brilliant rose-coloured spots along the base of the dorsal fin, spoken of by Valenciennes.

The *S. oculata* was discovered by M. Gay at Valparaiso, where Mr. Darwin's specimen also was obtained. It is the only species of this genus on record brought hitherto from South America. It may be stated, however, that Mr. Darwin has a drawing of another species, made by Mr. P. King, found also at Valparaiso, differing from the above in having the spines on the head less developed, and apparently, in some of its characters, approaching the *S. variabilis*. This last is a species inhabiting the sea which separates N. America from Kamschatka.

AGRIOPUS HISPIDUS. Jen.

PLATE VII. FIG. 2. Twice nat. size.

Fig. 2 a. Nat. size.

Fig. 2 b. Portion of the hispid cuticle magnified.*

A. pallidè rubro-aurantius, dorso nigricante, pinnis nigro-maculatis: corpore hispido, altitudine tertiam partem longitudinis æquante; spinis nasalibus duabus parvis recurvis; vomere dentibus velutinis minutissimis instructo: pinnâ dorsali inæquali, anticè allevatâ, spinis quartâ et quintâ paulo longissimis, succedentibus gradatim diminutis, ultimâ radiis articulatis multò breviori.

D. 17/13; A. 1/8; C. 13, &c.; P. 9; V. 1/5.

LONG. unc. 1. lin. 9.

FORM.—General form resembling that of the *A. torvus*, but the depth much greater, equalling one-third of the entire length, or very nearly. Length of the head somewhat less than the depth of the body. The line of greatest depth passes through the insertion of the pectorals. The profile viewed apart from the superciliary ridges, which are sharp and prominent, falls in a straight but very oblique line from the commencement of the dorsal to the mouth. On each side of the median line of the snout, in advance of the eyes, is a small but sharp spine, directed upwards and backwards. There are also two minute spines on the first suborbital immediately above and behind the end of the maxillary; these are placed one over the other, the uppermost, which is the sharpest and most conspicuous, taking an upward direction like the

* Called by mistake in the plate "magnified scales."

nasal spines, the lowermost, which is blunt and not so obvious, a downward one. Mouth small, without any teeth that can be discerned even with a lens; but a decided roughness can be felt on the vomer, seeming to indicate the presence of minute teeth on that part. The superciliary ridges, already alluded to, are slightly granulated, and terminate behind in two sharp triangular points. The occipital ridges, a ridge on the posterior suborbital immediately beneath the eye, and an interrupted ridge on the temples and suprascapulars, are in like manner granulated, or rather obscurely crenated. The opercle and preopercle are marked with a few striae, but show neither granulations nor spines. Gill-opening very small. No scales on any part of the head and body; but the whole surface of the latter is hispid with minute bristly appendages to the cuticle, each springing from a minute papilla. There are also a number of fine lines traversing the cuticle in two directions, and forming a kind of net-work. The lateral line commences at the suprascapular, and terminates a little beyond the end of the dorsal, not reaching quite to the caudal; its course is nearly, but not exactly, parallel to the dorsal line, the distance between them being at first one-third, but towards the caudal between one-third and one-fourth of the depth.

Dorsal very much elevated anteriorly, but its height by no means uniform throughout; the first spine one-fourth shorter than the second; this again a little shorter than the third; and this last a very little shorter than the fourth and fifth, which are longest, and which equal three-fourths of the depth of the body; sixth and succeeding ones gradually decreasing, the ninth being about equal to the first, the twelfth about one-third shorter; the next four are scarcely shorter than the twelfth, and the seventeenth or last is a little higher than the sixteenth; then follows the soft portion of the fin, which is here again elevated, the soft rays being nearly double the length of the last spinous.* The anal answers in position to the first two-thirds of the soft dorsal, terminating before that fin, as in *A. torvus*: the fourth, fifth, and sixth soft rays are longest, and much longer than the soft rays of the dorsal; the spine is short and slender, and not much more than half the length of the first soft ray. The last ray of both dorsal and anal is divided quite to the root so as to appear as two. The caudal appears to have been rounded, but the ends of the rays are worn and broken. Pectorals long, equalling one-third of the entire length: they consist of nine rays, the three middle ones of which are longest; the three upper and the three lower ones are respectively equal; all the rays simple. Ventrals much shorter than the pectorals, and, though attached rather more behind, not reaching so far; their spine is rather stout, much more so than that of the anal, and about three-fourths the length of the first two soft rays, which are the longest in the fin.

COLOUR.—“Pale reddish orange, with black spots on the fins, and a dusky shade on the back.”—D.

A second specimen only differs from the above in having the teeth in the jaws more sensible to the touch, though still scarcely to be seen; and in the superciliary and occipital ridges being less granulated or crenated at the edges. The colours also are a little darker. The fin-ray formula is exactly the same in both specimens.

Habitat, Peninsula of Tres Montes, Archipelago of Chiloe.

This species approaches most nearly the *A. Peruvianus* of Cuvier and Valenciennes, with which it agrees in the great depth of the body, and in the

* This portion of the fin is not quite correctly represented in the plate, being made too low, in consequence of the rays having been broken at their extremities in the specimen figured.

presence of two nasal spines; but it differs in the roughness of the skin (that species being described as smooth), and in the greater inequality of the dorsal fin. Perhaps it may be the same as the species brought from the coast of Chili by Mr. Cuming, and briefly noticed by Mr. Bennett in the "Proceedings of the Zoological Society" (1832, p. 5.), but which this last gentleman did not venture to describe as new, from the circumstance of its general agreement with the *A. Peruvianus*. The principal deviation in Mr. Cuming's fish from the species just mentioned is stated to have occurred in the number of the fin-rays; those of the spinous portion of the dorsal fin being seventeen (one less than in the *A. Peruvianus*), while of the soft rays of the anal there were ten (three more than in the species referred to). Mr. Darwin's fish agrees with Mr. Cuming's in the number of the dorsal spines, but not in that of the soft rays of the anal, which is eight, being one more than in the *A. Peruvianus* and two less than in Mr. Cuming's; and it is observable that both the specimens obtained by Mr. Darwin agree in this particular. Mr. Bennett has not noticed any of the other characters of Mr. Cuming's fish.*

One of the most distinguishing peculiarities in the species here described is the existence of vomerine teeth, which though extremely minute are quite sensible to the touch. As these teeth are denied by Cuvier to the whole genus, we have here another instance, similar to that of the *Aspidophorus Chilensis* already mentioned, of the slight value of the character which their presence or absence affords. Possibly, however, they may disappear in the adult state. Both Mr. Darwin's specimens are small, neither equalling two inches; and if they are immature, which is probably the case, some of the other characters mentioned in the description, perhaps even the hispidity of the skin, may result from this circumstance. They must therefore be received with caution until larger specimens shall have been obtained.

* Since the above was printed, Mr. Waterhouse has been kind enough to show me in the museum of the Zoological Society the specimen which he believes to be the one procured by Mr. Cuming. Unless the characters are very much altered by age, it is decidedly distinct from the *A. hispidus* above described. The general form indeed is the same; but the skin is perfectly smooth, marked with vertical striæ; the granulated ridges on the head are less prominent, and the superciliary ridges without spines. The fin-ray formula is not quite as stated by Mr. Bennett, who appears, in his computation, to have mistaken the last dorsal spine for one of the soft rays of that fin, and also to have over-estimated the number of soft rays in the anal. The formula is really 18/12; A. 1/9, &c. I have no doubt of Mr. Cuming's fish being the true *A. Peruvianus*; whilst the one here characterized as new is probably the young of a nearly allied species. Mr. Cuming's specimen is six and a half inches long.

It may be advantageous to science to mention here, though not immediately connected with the present inquiry, that another species of *Agriopus* in the museum of the Zoological Society, which was seen by M. Valenciennes during his visit to this country, and referred by him in the "Histoire des Poissons" to the *A. serrucosus*, proves not to be that species, but the *A. spinifer* of Dr. Smith, recently described by him for the first time in his "Illustrations of the Zoology of South Africa."

FAMILY.—SCIENIDÆ.

OFOLITHUS GUATUCUPA. *Cuv. et Val.*

Otolithus guatucupa, *Cuv. et Val. Hist. des Poiss. tom. v. p. 56. pl. 104.*

FORM.—Elongated, with the back only very slightly elevated beneath the first dorsal: in advance of that fin the dorsal line is nearly straight, and continuous with the profile. Greatest depth contained exactly four times and a half in the entire length. Head long, contained three and a half times in the same. Lower jaw projecting considerably beyond the upper, and ascending to meet it. Two strongly developed curved canines at the extremity of the upper jaw; the rest of the teeth in this jaw consist of a single row of fine card, nearly equal throughout: in the lower jaw there are no canines, but one similar row of card, rather stronger than those above, and not equal, the smallest being in front, and those at the sides becoming gradually larger as they extend backwards. No vestige of scales on the lower jaw, lips or maxillary; but the suborbital is covered with bright silvery scales. Eye full, and moderately sized; its diameter one-fifth the length of the head; its distance from the end of the upper jaw equalling the diameter. Margin of the preopercle with a few indistinct striae and obsolete denticulations. Opercle with two flat points not much developed. Lateral line very distinct, commencing at rather less than one-third of the depth, but curving gradually downwards to one-half; continued to nearly the extremity of the caudal; each scale marked with an elevated line, from which there proceed one or two small ramifications on each side.

First dorsal triangular, with the first spine very short, the fourth longest, the fifth and succeeding ones gradually decreasing, the last or tenth being shorter than the first. Second dorsal almost contiguous, its spine or first ray about equalling the first ray of the first dorsal: this fin is more than half as long again as the first, and the rays are nearly even. The anal commences further back than a point opposite the middle of the second dorsal; there are in reality two spines in this fin, but the first is so extremely minute as to be almost microscopic, and not seen, unless very carefully sought for; the second or principal spine is weak, and rather more than one-third the length of the soft rays. Caudal apparently square, but the rays being worn at the tips, its exact form cannot be determined. The second dorsal, as well as the anal and caudal, are partially covered with small scales, which, however, are not very obvious. Pectorals narrow and rather small, being scarcely more than half the length of the head. Ventrals placed a little further back, and rather shorter than the pectorals.

B. 7; D. 10—1/20; A. 1/8; C. 17; P. 16; V. 1/5.

Length 9 inc. 9 lines.

COLOUR.—“Silvery white, above iridescent with violet purple and blue.”—D. Mr. Darwin has not noticed the dark transverse lines, which descend from the back obliquely forwards, as repre-

sented in the 'Histoire des Poissons,' and of which there are evident traces, though apparently much effaced by the action of the spirit.

Habitat, Maldonado Bay, Rio Plata.

This species, which Cuvier and Valenciennes consider as the *Guatucupa* of Margrave, was obtained by Mr. Darwin at Maldonado. M. D'Orbigny had previously taken it at Monte Video. The only respects in which Mr. Darwin's specimen differs from D'Orbigny's, is in its having two more rays in the soft dorsal, and a slightly longer anal spine, judging from the figure in the 'Histoire des Poissons;' but I cannot imagine that they are distinct on these grounds only, so exactly do they agree in all their other characters.

CORVINA ADUSTA. *Agassiz.*

Corvina adusta, *Spix et Agass.* Pisces Brazil. p. 126. tab. 70.

FORM.—Greatest depth beneath the commencement of the first dorsal fin, and equalling one-fourth of the entire length. Back somewhat carinated, and moderately arched, forming one continuous curve with the profile, which falls with considerable obliquity. Ventral line nearly straight, and the abdomen much flattened in front of, and between the ventrals. Length of the head just equalling the depth of the body. Snout obtuse, with two small lobes at bottom, one on each side of the extremity, as in several other species of this genus. Mouth horizontal, at the bottom of the snout; when closed, the maxillary reaching a little beyond a vertical from the anterior margin of the orbit. Four pores beneath the symphysis; and seven, in two rows, round the extremity of the snout; those in the lower row large. Jaws nearly equal; the upper one perhaps a little the longest. Teeth forming a velutine band above and below; those above with an outer row of somewhat longer and stronger ones. Eyes rather small; their diameter about one-fifth the length of the head. Nostrils consisting of two round apertures in advance of the eye, the posterior one largest; the anterior with a raised margin. Preopercle a little less than rectangular, with the angle at bottom somewhat rounded: the ascending margin rectilinear, sloping rather in advance of a vertical, and distinctly toothed, the teeth becoming smaller upwards: at the angle are two stronger teeth or spines, the uppermost directed backwards and a little downwards, the lowermost downwards and a little backwards; between these two teeth there is an interval; the basal margin of the preopercle is quite smooth. Opercle terminating in two flat inconspicuous points.

Snout, cheeks, and gill covers, covered with scales of very unequal sizes: those serving as a boundary between the cheek and the preopercle, also a row above each orbit, a few at the upper angle of the opercle, some on the suprascapular lamina, and a row extending thence upwards and forwards to the occiput, much smaller than the others. Scales on the body of moderate size, arranged in oblique rows; about fifty-five in a longitudinal line, and nineteen or twenty in a vertical. One taken from above the lateral line, and nearly in the middle of the length, is oblong, approaching to circular, its surface marked with a number of concentric,

much crowded, curved lines, somewhat undulating behind, with a fan of about twelve deeper striae converging to a point considerably in advance of the centre of the scale; the free portion is also marked with several well-marked nearly parallel lines which terminate in denticles at the anterior margin. Those on the lateral line have the mucous tubes somewhat ramified, and are accompanied throughout its course by some minuter scales, similar to those on the head above pointed out. The lateral line is at one-third of the depth, till it arrives beneath the middle of the soft dorsal, where it falls to one-half.

First dorsal of a triangular form, separated from the soft portion by a deep notch; the first spine very small and inconspicuous; the second somewhat shorter than the third; fourth longest, nearly equalling half the depth; all the spines in this fin rather slender. The second dorsal commences with a spine somewhat longer than the last spine in the first dorsal, and not quite half the length of the first soft ray; soft rays nearly even throughout, and not equalling the highest point of the first dorsal. Anal short and somewhat rounded, commencing beneath the middle of the second dorsal, and double the height of that fin; its first spine very short and inconspicuous; second long and moderately stout, but shorter than the first soft ray by one-third; second soft ray the longest; third and succeeding ones gradually decreasing. Pectorals narrow and pointed, shorter than the head; first ray simple, the rest branched; third, fourth and fifth longest. Ventrals attached a trifle backward than the pectorals, which they do not equal in length; the spine much slenderer than that of the anal, and rather more than half the length of the first soft ray. Caudal squarish, but with the margin a little sinuous.

B. 7; D. 10—1/28; A. 2/8; C. 17; P. 17; V. 1/5.

Length 8 inches 6 lines.

COLOUR.—“Above inclining to coppery, with irregular transverse bars of brown; beautifully iridescent with violet.”—D. The bars alluded to by Mr. Darwin are some dark lines which, commencing at the upper part of the back, pass forwards and downwards in an oblique direction; they bend more and more downwards as they advance, and disappear a little below the middle. The whole fish has a metallic gloss, particularly about the cheeks and gill-covers, and very visible even in its present state.

A second specimen, exactly similar to the above, is nearly twelve inches in length.

Habitat, Maldonado and Monte Video.

I entertain no doubt of this species being the *C. adusta* of Agassiz, figured in Spix's Fishes of Brazil. It is not described by Cuvier and Valenciennes, but belongs to their second section of the genus, characterized by the small spines on the ascending margin, and especially at the angle of the preopercle. It seems to be particularly distinguished by the small scales on some parts of the head, and along the lateral line where they accompany the larger ones. These characters have not been overlooked by Agassiz. There are two specimens in the collection, the larger one taken at Monte Video, the smaller at Maldonado.

1. UMBRINA ARENATA. *Cuv. et Val.*

Umbrina arenata, *Cuv. et Val. Hist. des Poiss.* tom. v. p. 141.

FORM.—Rather elongated, with the back very little arched; the greatest depth contained about five times and a quarter in the entire length. Length of the head about equal to the depth of the body. Profile falling very gradually, and nearly in a straight line, in front of the dorsal. Snout very much projecting; the margin at bottom, above the upper jaw, divided into four lobes which are cut square at their extremities. Round the end of the snout, and immediately above the lobes, is a double row of pores, the lower ones large. Also four pores beneath the symphysis of the lower jaw. Barbule at the chin scarcely exceeding a line or a line and a half in length. A band of velutine teeth in each jaw, with an outer row in card; these last moderately strong, sharp, and rather wide apart, not above fourteen or sixteen in the row. Preopercle very obsolete denticulated. Opercle with two flat points not much developed.

First dorsal triangular; the first spine very small; the second, third and fourth elevated rather in a point, the third equalling two-thirds of the depth of the body or more. Second dorsal nearly twice the length of the first. Anal commencing opposite the sixth soft ray of that fin, short, and terminating considerably before it; the anal spine weak, and very little more than half the length of the soft rays. Caudal with the posterior margin sinuous, the upper part being slightly crescent-shaped, the lower portion rounded, and broader than the upper. Pectorals a very little shorter than the head. Ventrals attached a little behind the pectorals, and not passing beyond them. In the axilla of the pectorals is a small triangular membranous lamina: there is also a narrow pointed one in the axilla of the ventrals covered with scales. The scales on the body are thin, rather small, somewhat rhomboidal, with their free margins ciliated, and with a fan of twelve striæ behind.

B. 7; D. 10—1/25; A. 1/8; C. 17; P. 21; V. 1/5.

Length 9 inches 6 lines.

COLOUR.—“Body mottled with silver and green: dorsal and caudal fins lead-colour.”—D.

In spirits, the colour appears dusky brown, with darker mottlings and silvery reflections; paler beneath. The fins are dusky, but the basal half of the dorsal is darker than the upper. The pectorals are darker than the other fins, especially the inside; on the left pectoral, the dark colour is restricted to three broad transverse fasciæ. There are also on the pectorals and anal, and on most of the scales on the body, small blackish dots, as mentioned in the ‘*Histoire des Poissons*.’

A second specimen, smaller than the above, has the back rather more arched, the greatest depth being only five times in the length. The outer row of teeth in the upper jaw is not quite so conspicuous, the teeth being smaller and closer-set, and consequently more numerous. The soft dorsal and anal have fewer rays.

D. 10—1/22; A. 1/7; &c.

Length 7 inches 3 lines.

In all other respects similar to the specimen first described.

Habitat, Bahia Blanca, and Maldonado.

As Cuvier and Valenciennes have mentioned individuals of this species, which varied in the number of rays in the soft dorsal from twenty-two to twenty-four, I cannot but consider the two above described as specifically the same, though in the first these rays amount to as many as twenty-five. This, which is the larger specimen, was taken by Mr. Darwin at Bahia Blanca, where it is said to have been common. The other was obtained at Maldonado.

2. UMBRINA OPHICEPHALA. Jen.

U. elongata; rostro obtusissimo, tumido, haud ultrà fauces producto, margine inferiore quadrilobato, lobis intermediis rotundatis; fossulà longitudinali inter nares, profundè exarata; poris quatuor infrà symphysin; dentibus velutinis, serie externà in maxillà superiore aculeiformi; preoperculo obsoletè denticulato; operculo mucronibus duobus parvis instructo; spinis dorsalibus tertià et quartà longissimis, corporis altitudinem æquantibus; spinà anali gracili, radiis articulatis dimidio breviori.

D. 12—1/22; A. 1/9; C. 17; P. 20; V. 1/5.

LONG. unc. 6. lin. 5.

FORM.—Very much elongated; the greatest depth just one-sixth of the entire length; the head one-fifth. Dorsal line nearly straight. Profile falling very slightly till it reaches the nostrils, when it suddenly becomes vertical. Snout in consequence short, and very blunt, and not projecting beyond the jaws; with a deep broad channel down the middle, extending from between the nostrils to near the mouth: on each side of this channel, the snout is very protuberant. The lower margin of the snout is divided into four lobes, the central pair of which are rounded: above each of the exterior lobes is one large pore, and an odd one in the middle. There are also four pores beneath the symphysis, and a short barbule, as in the last species. The eye has a diameter about one-fifth the length of the head, and is distant one diameter from the end of the snout. The nostrils, which are immediately in advance of the eye, consist of two round apertures, one before the other, the posterior one double the size of the anterior. Upper jaw a very little longer than the lower. A band of velutine teeth in each jaw; with an outer row above of moderately strong card, rather curving inwards and backwards, and closer-set than those of the *U. arenata*, amounting to twenty-eight or thirty in number: there are also some smaller card teeth behind this outer row passing insensibly into the velutine. Preopercle very obsoletely denticulated. Opercle with two flat points not very obvious.

First dorsal triangular, and moderately high in the point; third and fourth spines longest, about equalling the depth of the body; first spine very small: all the spines rather slender. Second dorsal about half as long again as the first, but the rays are too much broken to judge

of their relative lengths. Anal spine very slender, and about half the length of the soft rays. The caudal is injured, but appears to have been of nearly the same form as in the *U. arenata*. The pectorals are about three-fourths the length of the head, but the ends of the rays are worn. The ventrals are of the same length as the pectorals in their present state: they are placed rather backward than in the *U. arenata*, being attached beneath the first third of the pectorals: there is a pointed scale in their axilla, of about the same relative size as in that species. The scales on the body are rather smaller, ciliated on their free edges, with a fan of eleven or twelve striæ behind. There are rows of small scales on the caudal, but none apparent on the other fins.

COLOUR.—Mr. Darwin did not notice the colours of this species in its recent state. *In spirits*, it appears of a nearly uniform dusky brown, but paler on the abdomen, with traces of silvery reflections about the head. The fins are dark, but the anal paler at the base than at the tips of the rays.

Habitat, Coquimbo, Chile.

This species may be at once distinguished from all those described in the 'Histoire des Poissons,' by its very elongated form. The head also has a peculiar character about it, and is not unlike that of some serpents. It appears to be the first species of this genus brought from the Pacific, the other foreign ones being all found either in the Indian seas, or on the Atlantic side of America. There are two specimens in the collection, exactly similar, and both obtained by Mr. Darwin at Coquimbo. They are, however, both in very bad condition; so much so, indeed, that I should have hesitated about describing them as new, had they not presented several obvious peculiarities.

GENUS—PRIONODES.* *Jen.*

Serrani formam quam maximè gerens. Pinna dorsalis unica, per totam longitudinem subæqualis. Membrana branchialis septem-radiata. Nec fovea, nec pori, infrà symphysin. Dentés maxillares velutini, serie externâ cæteris fortiori, paucis, hic illic sparsis, subcaninis; palatini nulli. Preoperculum denticulatum. Operculum mucronibus tribus posticè armatum. Spina analis secunda fortis. Squamæ corporis ciliatæ; minutissimæ inter radios pinnarum verticalium, in seriebus dispositæ.

I am called upon either to establish this new genus among the *Sciænidæ*, or to break down one of the essential distinctions set by Cuvier between this family

* *Serræ figuram habens. Α πριον.*

and the *Percidæ*. The form is so completely that of a *Serranus*,—which it resembles especially in its dorsal fin, head, maxillary teeth, form and armature of the pieces of the gill cover, and in the arrangement of the scales on the body,—that at first sight no one would hesitate to refer it to that group; but *the vomer and palatines are without teeth*.* In this respect, indeed, I consider it an important discovery; as it affords another striking instance of the uncertainty of this character, in cases in which others, which have been generally made subordinate to it, remain constant. It is probable that the time will come, when it will be found necessary to revise some portion of the *Percidæ* and *Sciænidæ* with reference to a more correct valuation of this character. For the present, however, I refrain from interfering with the Cuvierian arrangement; and the only alternative is to consider this as a new form among the *Sciænidæ*, where it must be placed along with those genera possessing one dorsal fin, and having seven rays in the branchiostegous membrane. Such are *Hæmulon*, *Pristipoma*, and *Diagramma*; from all which, however, it is at once distinguished by the absence of pores at the symphysis and on the lower jaw, and by the much more developed spines on the opercle, and from *Pristipoma* by its having, further, scales on the vertical fins. On the whole, it seems to approach nearest to *Hæmulon*; but the crown and snout are more free from scales than in that genus, and the scales on the body are not set in oblique rows, as is the case in so many of the true *Sciænidæ*. The head also has no cavernous appearance about it. This new form is from the Galapagos Archipelago.

PRIONODES FASCIATUS. *Jen.*

PLATE IX. Fig. 1.

P. pallidè flavescenti-fuscus, fasciis transversis plurimis suprâ rubescenti-nigris infrâ miniatis; pinnis verticalibus maculis parvis ocellatis: vertice, rostro, et maxillis, nudis; preoperculo margine ascendenti denticulato, basali lævi; operculo mucrone intermedio forti; spinis dorsalibus ad apices laciniis investitis; pinnâ caudali subæquali.

B. 7; D. 10/12; A. 3/7; C. 17; P. 18; V. 1/5.

LONG. unc. 7. lin. 3.

FORM.—Oval, compressed; the back not much arched, forming one continuous curve with the profile, which falls gently from the nape; ventral line less convex than the dorsal. Greatest

* With the exception of a small rough oblong spot, near the posterior extremity of the left palatine.

depth equalling one-fourth of the entire length; head about one-third; thickness rather less than two-thirds of the depth. Mouth rather wide, with the lower jaw longest. The maxillary dilates at its posterior extremity; it reaches to nearly beneath the middle of the orbit, and does not retire beneath the suborbital. In each jaw a band of velutine teeth; above there is an outer row of longer ones in card, and one or two in front on each side still longer resembling small canines; in the lower jaw there are also a few longer ones, of the same character as these last, interspersed at intervals. Tongue free at its extremity, and, as well as the vomer and palatines, without teeth. Eyes rather high in the cheek; their diameter about one-sixth that of the head. The nostrils consist of two small round orifices a little in advance of the eyes, the anterior one covered by a membranous flap. Margin of the suborbital entire. Preopercle finely denticulated on its ascending margin, which is vertical and slightly convex; but the denticulations almost disappear at the angle, and are not visible at all on the basal margin. Opercle triangular, with three flat spines, the middle one longest, beyond which the membrane projects in the form of an angular process to the distance of three lines. Small scales on the cheeks and preopercle; but none on the crown, snout, first suborbital, maxillary, or lower jaw; scales on the opercle larger, equalling those of the body in size. Gill-opening large, with the branchial membrane deeply notched in the middle.

Lateral line following the curvature of the back at one-fourth of the depth. Scales on the body moderately large: one taken from the middle of the side above the lateral line is of a somewhat oblong form, with the free edge rounded and finely ciliated; the basal portion with fourteen slightly converging striae, which form at the hinder margin as many, but not very distinct, crenations.

The dorsal commences above the terminating lobe of the opercle, and reaches to within a short space of the caudal: height of the spinous portion, which, with the exception of the first two spines, is nearly even throughout, about one-third of the depth; soft portion rather higher, with the last two rays but one longest, and forming a point backwards; all the soft rays branched. Anal commencing in a line with the soft portion of the dorsal, and terminating a little before that fin; three spines, the second one-third longer than the first, and a little longer than the third, and much the strongest of all; the soft portion of the anal is similar to that of the dorsal, and terminates in like manner in a point behind. Space between the anal and caudal a little less than one-sixth of the entire length. The caudal appears to have been nearly even, or perhaps slightly rounded, but the rays are worn. Rows of very minute scales, not very obvious, between the rays of all the vertical fins. Pectorals slightly rounded; more than half the length of the head; all the rays with the exception of the first two and the last, branched. Ventrals attached beneath, or perhaps a very little in advance of the pectorals; pointed, with the second soft ray longest. No lengthened scale or process of any kind in the axilla of either ventrals or pectorals; neither are the former fastened to the abdomen by a membrane half their own length, as is the case in many of the *Serrani*.

COLOUR.—“Pale yellowish brown, with numerous transverse bars, of which the upper part is reddish black, the lower vermilion red; gill-covers, head, and fins, tinted with the same.”—D.

Mr. Darwin has not noticed some small round black spots surrounded by a white border, and having an ocellated appearance, which are very evident on the upper half of the soft portion of the dorsal: there is a faint indication of similar spots on the anal and caudal.

Habitat, Chatham Island, Galapagos Archipelago.

Mr. Darwin obtained one specimen only of this new genus at Chatham Island in the Galapagos Archipelago. It is probably not full-sized.

PRISTIPOMA CANTHARINUM. *Jen.*

PLATE X.

P. cæruleo-argenteum, operculo nigro-marginato: pinna dorsali subæquali, spinis ultimis radiis articulatis paulo brevioribus; anali spinâ secundâ forti, longitudinaliter striatâ, radiis articulatis duodecim: prooperculo rectangulato, margine adscendenti, leviter denticulato, basali integro: vertice, buccis, et ossibus opercularibus, squamatis; rostro ultrâ nares, suborbitalibus, et maxillis, nudis; squamis corporis ciliatis: pinna caudali furcatâ.

B. 7; D. 12/15; A. 3/12; C. 17, et 4 breviores; P. 20; V. 1/5.

LONG. unc. 10. lin. 11.

FORM.—Form oblong-oval, much resembling that of the *Cantharus griseus*. Body compressed, with the dorsal line slightly curved; the profile descending from the nape more obliquely, and in a very regular manner. Greatest depth beneath the commencement of the first dorsal, contained not quite three times and three quarters in the entire length: head rather less than one-fourth of the length. Mouth protractile, but not wide, the commissure not extending to a vertical from the anterior angle of the eye; when closed, the maxillary retires beneath the suborbital, and only just the extremity remains visible. Jaws equal; in each a narrow band of velutine teeth, the outer row somewhat longer than the others, particularly above, where they approach to card. Tongue, palatines, and vomer smooth. Eyes moderate; their diameter rather less than one-fifth of the length of the head; rather nearer the extremity of the snout than the posterior margin of the opercle; the distance between them equalling twice their diameter. Two small pores and a fossule beneath the symphysis of the lower jaw, the latter very distinct. Preopercle rectangular, the angle somewhat rounded; the ascending margin nearly straight and finely denticulated, but the denticulations hardly continued to the angle, and not appearing at all on the basal margin. Opercle with two small flat points, but very indistinct and almost lost in the membrane. Suborbitals large, with their lower margins entire. Crown, cheeks, and pieces of the gill-cover, covered with small scales; but not the snout in advance of the nostrils and eyes, nor suborbitals, nor lower jaw. Suprascapulars marked by a large scale, the margin of which is nearly entire.

Lateral line following the curvature of the back at one-third of the depth; each scale marked with an elevated line without ramifications. A scale taken from above the lateral line is of a somewhat rhomboidal form; the free portion very finely striated, with the margin finely

ciliated; the concealed portion with eight or nine deeper and more distinct striae, not meeting in the centre to form a fan, and with the basal margin crenated. The scales on the cheeks and opercle are smaller than those on the body, and almost smooth.

The dorsal fin commences in a line with the posterior margin of the opercle, and extends nearly the whole length of the back, rising from a groove as in the *Sparida*: its height on the whole tolerably uniform throughout: spinous portion occupying more than half the fin; the anterior spines gradually increasing in length to the fourth,* which equals rather more than one-third of the depth; the succeeding ones nearly even, very gradually decreasing to the last, which is about two-thirds the length of the fourth; all the spines moderately stout: soft portion of the fin even, and rather higher than the last spine. Anal commencing in a line with the third soft ray of the dorsal, and terminating opposite to that fin: the first spine short, but strong; second and third spines equal in length, being about two-thirds the length of the soft rays, but the second much stouter than the third; the second spine is also distinguished from the others by having its surface longitudinally striated: soft rays nearly even, and resembling those of the dorsal. Caudal forked, with the upper lobe a trifle longer than the lower; the basal half covered with minute scales. Pectorals narrow and pointed, about two-thirds the length of the head, with a small fold of loose skin in their axillæ. Ventrals placed a little further back than the pectorals, and somewhat shorter; a long pointed scale in their axillæ, nearly one-third their length.

COLOUR.—“Bluish silvery.”—D.—The colour, as it appears in spirit, is nearly uniform bluish gray, and very similar to that of the *Cantharus griseus*. The gill-cover has a dusky edging posteriorly.

Second specimen.—Smaller than the above, and not quite so deep in the body; the greatest depth contained a trifle more than four times in the entire length; the nape in consequence less elevated, and the profile less oblique. Eyes relatively a little larger, their diameter rather more than one-fifth the length of the head. Preopercle with the posterior margin not so rectilinear, approaching to concave; the angle at bottom projecting in consequence a little backwards; the denticulations not quite so distinct and regular. One ray more in the soft dorsal.

D. 12/16; A. 3/12; C. 17, &c.; P. 19; V. 1/5.

LONG. unc. 9. lin. 2.

COLOUR.—“Silvery; above, shaded with brown and iridescent with blue; fins and iris sometimes edged with blackish brown. Flap of the gill-cover edged with black.”—D.

Habitat, Galapagos Archipelago.

This species, which is undoubtedly new, may be known from most of those described by Cuvier and Valenciennes by its greater number of soft rays in the anal fin. The only ones which equal it in this respect are the *P. Conceptionis* and

* The third spine is broken, and may have been as long as the fourth.

the *P. fasciatum*; from the former of which it may be distinguished by its greater depth and nearly even dorsal, from the latter by its plain colour free from all conspicuous bands and markings. The dorsal notch is scarcely observable, the eleventh and twelfth spines being nearly equal, and but little shorter than the first soft ray. Its analogy to the genus *Cantharus* among the *Sparidae*, which it resembles as well in colour as in general form, is very striking. There are two specimens in the collection; the one described first above having been taken at Chatham Island, the other at Charles Island, in the Galapagos Archipelago.

1. *LATILUS JUGULARIS*. Val.

Latilus jugularis, Cuv. et Val. Hist. des Poiss. tom. ix. p. 369. pl. 279.

FORM.—Elongated, with the dorsal line slightly curved, the ventral nearly straight. Greatest depth contained five times and one-third in the entire length. Head, which much exceeds the depth, four times in the same. Profile very convex above the eyes, whence it falls obliquely to the lips. Snout thick and rounded, resembling that of the *Red Mullet*: mouth protractile, horizontal, placed at the bottom of the snout, the commissure just reaching to a vertical from the anterior part of the orbit. Jaws equal or very nearly so; the lower one perhaps a very little the longest. Maxillary not widening at its posterior extremity. A band of velutine teeth in each jaw, narrowing at the sides as it extends backwards; with an outer row of longer and stronger ones: in the lower jaw, the velutine band does not extend beyond the middle of the sides, the carding teeth being all that are visible. Tongue and palate smooth. Eyes high in the cheeks; large, and of an oval form; their vertical diameter three-fourths of their longitudinal; this last equalling one-fourth the length of the head. Nostrils consisting of two round apertures, the posterior one largest, the anterior covered by a membranous flap. Preopercle with the denticles far apart, and not very obvious, unless the skin be dissected off; the ascending margin rectilinear and vertical; the angle rounded. Bony part of the opercle terminating in a flat point, above which are two other smaller points not so well developed; all the points concealed in the membrane, and scarcely visible from without: beneath the principal point, the membrane is prolonged backwards in the form of a broad flattened bristly point three lines in length. Crown, gill-covers and cheeks, scaly, but not the jaws; snout scaly, except very near the lips. Gill-opening large.

Lateral line at first at one-third of the depth, but falling gradually to one-half. Scales rather small; one taken from immediately above the lateral line of an oblong form, the length being twice the breadth, with its free margin finely ciliated, crenated behind with a fan of nine striæ; on scales taken from other parts the number of striæ in the fan are more numerous.

One long dorsal fin of nearly uniform height throughout, equalling about half the depth; only four slender spines, gradually increasing in length from the first which is very short; the fourth about three-fourths the length of the first soft ray; soft rays increasing likewise very gradually to the fourth, which with the next five or six are highest; the membrane of the fin very

delicate; all the soft rays branched. Vent in a vertical line with the ninth soft ray of the dorsal. Anal commencing immediately behind it, and answering to that portion of the dorsal to which it is opposite, terminating at the same distance from the caudal; only two slender spines, the first very short; the first soft ray simple, the rest branched. Space between these two fins and the caudal barely one-eighth of the entire length. Caudal nearly even. Pectorals moderately long and narrow, equalling nearly the length of the head; rays branched; fourth, fifth, and sixth longest. Ventrals a little in advance of the pectorals, nearly equalling them in length; of a pointed form, with the third and fourth soft rays longest. In the axilla of the pectorals a vertical scaly membranaceous lamina.

B. 6; D. 4/28; A. 2/22; C. 17; P. 20; V. 1/5.

Length 11 inc. 5 lines.

COLOUR.—(*In spirits*.) Dusky olive on the back and upper part of the sides, yellowish (probably silvery in the recent state) beneath, with faint indications of five or six dark transverse bands, similar to those in the *common perch*. Inside of the ventrals blue.

Second specimen.—Smaller than the above, measuring six inches and a half in length, but differing from it in no respect, as regards form, excepting in having the profile not so oblique, and the snout in consequence not so obtuse; the jaws also are exactly equal. Fin-ray formula the same.

COLOUR.—“Beneath brilliant white; head and back clouded with purplish and carmine red; longitudinal and transverse irregular bands of the same.”—D. The bands in this specimen amount to eight in number, and are much more conspicuous than in the larger one above described.

Habitat, Valparaiso, Chile.

The smaller of the two specimens above described was taken by Mr. Darwin at Valparaiso. The number attached to the larger one has been lost, but it was probably taken at the same place, where it had been previously discovered both by M. D'Orbigny and M. Gay. The specimen described by Valenciennes has one soft ray more in the dorsal, and one less in the anal, than either of the above; but in all other respects they tally exactly. As observed in the “*Histoire des Poissons*,” this species has many points of resemblance to *Percis* and *Pinguipes*.

2. LATILUS PRINCEPS. *Jen.*

PLATE XI.

L. elongatus; corporis altitudine capitis longitudinem æquant; dentibus velutinis, serie externâ fortiori, aculeiformi; preoperculo margine adscendenti recto, leviter

denticulato, basali levi; operculo mucrone unico; rostro, ossibus suborbitalibus, maxillis, limbo preoperculi, et interoperculo, nudis; buccis et cranio squamatis, squamis in vertice spatium angulatum inter oculos occupantibus; pinnis dorsali analique prælongis; spinis analibus parvis, gracilibus, primâ minutissimâ; ventralibus accuratè thoracicis; caudali emarginatâ.

B. 5?; D. 8/26; A. 2.26; C. 15, &c.; P. 18 vel 19; V. 1.5.

LONG. unc. 20. lin. 6.

FORM.—Elongated; the greatest depth equalling the length of the head, and each contained rather more than four times and a half in the entire length. Snout short and rather obtuse, the profile bending downwards in a curve before the eyes. Mouth nearly horizontal, at the bottom of the snout; when closed, the maxillary, which is not widened at its posterior extremity, and which is very similar in form to that of the last species, reaches nearly, but not quite, to a vertical from the anterior part of the orbit. Lower margin of the suborbital entire. Teeth forming a velutine band in each jaw, widest in front, with a row of stronger ones externally: none on the tongue, vomer, or palatines. Eyes large, and high in the cheeks; their diameter one-fifth the length of the head. Preopercle with the angle at bottom rounded; the ascending margin straight, and nearly but not quite vertical, forming with the basal rather more than a right angle; the former finely denticulated, but not the latter. Opercle terminating in one flat point, not projecting beyond the membrane. The branchiostegous rays appear to be but five in number, but, the skin being dry, there may possibly be a sixth overlooked. Cranium, cheeks, and opercle scaly; but not the snout or jaws, or limb of the preopercle, or interopercle: the scales on the crown are separated from the naked skin of the snout by a well-defined line, which forms an advancing angle between the eyes.

Lateral line straight, and continued to the base of the caudal; its course parallel to the back at between one-fourth and one-third of the depth. Scales on the body rather small, oblong, longer than broad, with their free extremities dotted and finely ciliated; the concealed portion striated finely at the sides, and more deeply at the base; but all the central portion, including an oblong area of the same form as the entire scale, without striae, being only very minutely roughened or punctured.

One long dorsal, low, and of nearly uniform height throughout, commencing about in a line with the insertion of the pectorals, and reaching very nearly to the caudal: eight spines, rather slender, and very gradually increasing in length, the last being just twice the length of the first and equalling the distance from the base of the fin to the lateral line: the soft rays which follow are nearly even with the last of the spinous till the twenty-fourth, which is slightly prolonged in a point, and which is followed by two others shorter than the rest; the ends of the rays are rather worn, but they appear to have been all branched. Anal also long, commencing at about the middle of the entire length, or in a line with the sixth soft ray of the dorsal, and terminating opposite to that fin, to the last half of which, or rather more than half, it exactly answers; only two spines, which are so slender and minute, especially the first,

and so closely united to each other as well as to the first soft ray, as to be scarcely obvious except upon dissection; all the soft rays, except the first, branched. Space between the anal and caudal not a tenth part of the whole length. Caudal slightly notched, or hollowed out, with rows of scales between the rays. Pectorals pointed, about three-fourths the length of the head, with the seventh and eighth rays longest; rows of scales at the base between the rays: in their axillæ a somewhat projecting vertical scale or lamina, as in the last species. Ventrals immediately beneath the pectorals, also pointed, but shorter.

COLOUR.—“Above, and the fins, obscure greenish; sides obscure coppery, passing on the belly into salmon-colour. Pectorals edged with dull blue. Iris yellowish brown: pupil black-blue.”—D.—The skin has dried to a nearly uniform brown.

Habitat, Chatham Island, Galapagos Archipelago.

I feel but little hesitation in referring this species, which is one of the many new ones obtained by Mr. Darwin in the Galapagos Archipelago, to the genus *Latilus*. The absence of vomerine and palatine teeth requires it to be placed, according to Cuvier's views, among the *Sciænidæ*; in which family, there is no other group besides *Latilus*, to which it makes any approach. It agrees with that genus in its general form, and in many of its particularities; it has the same form of snout, mouth, maxillary, and dentition; the same scaly lamina in the axilla of the pectorals; the same long undivided dorsal and anal fins, with only two very small anal spines, so closely united to the first soft ray as to be easily overlooked. But it may be at once distinguished from the *L. argentatus* and the *L. doliatus*, the only two species described by Cuvier and Valenciennes in the body of their work, by its much more numerous soft rays in the dorsal and anal fins. From the *L. jugularis* last described, which resembles it in this respect, it differs in its thoracic ventrals, shorter head, naked snout and suborbital, and notched caudal: the profile also falls less obliquely. There is only one specimen in the collection, a dried skin and rather injured.

HELIASES CRUSMA. Val.

Heliases Crusma, *Cuv. et Val. Hist. des Poiss. tom. ix. p. 377.*

FORM.—Oval, very much compressed. Back considerably elevated, particularly at the nape, whence the profile descends very obliquely, and, with the exception of a slight concavity before the eyes, in nearly a straight line. Greatest depth at the commencement of the dorsal, equalling nearly half the entire length, caudal excluded. Head contained four and a half times in the same. Snout short: mouth small, a little protractile: lower jaw rather the longest. A narrow

band of velatine teeth in each jaw, with the outer row in fine card; these last longest and strongest in front. Eyes large; their diameter nearly one-third the length of the head. Sub-orbitals forming a narrow curved band beneath the eyes, and covered by a row of scales. Nostrils with only a single, small, round aperture. Preopercle with the ascending margin vertical, not quite rectilinear, inclining slightly inwards towards the angle, which is rounded. Opercle, taken together with the subopercle, very regularly curved, the margin describing nearly a semicircle, with one flat point to terminate the ossous portion; its height double its length.

The whole of this fish, including every part of the head, except the lips and maxillary, is covered with scales, which extend on to the vertical fins as in *Glyphisodon*: those on the fins and upper part of the head and snout are very small, but those on the gill-covers and body very large: about twenty-six or twenty-seven in a longitudinal line from the gill to the base of the caudal, and fourteen or fifteen in a vertical line: one taken from about the middle of the side is oblong, the breadth exceeding the length, with the anterior margin rounded, and the free portion finely dotted and very minutely ciliated, the concealed portion cut square, with a fan of eight or ten striæ not meeting at the centre, and terminating at the basal margin in as many crenations. The lateral line commences at one-fourth of the depth, but, from the fall of the dorsal line posteriorly, the distance between these two lines diminishes as the former advances: the lateral line terminates beneath the soft portion of the dorsal fin altogether.

Fins almost exactly similar to those of the *Glyphisodon saxatilis* and *Heliases insolatus*, as described and figured in the "Histoire des Poissons." The fourth and fifth spines in the dorsal longest, equalling one-fourth of the depth; of the soft rays the third, fourth, and fifth are longest. First anal spine only one-third the length of the second, which is itself rather shorter than the soft rays; and these last appear longer than in the *H. insolatus*. Caudal more forked than crescent-shaped, the depth of the fork equalling nearly half the length of the fin, which is itself one-fourth the entire length of the fish. Axillary scales of the pectorals and ventrals as in *H. insolatus*.

B. 6; D. 13/12; A. 2/12; C. 15, & 4 short; P. 21; V. 1/5.

Length 8 inches.

COLOUR.—"Above lead-colour, beneath paler."—D. In spirits, it appears of a deep brownish olive on the back and upper part of the sides, passing into dull golden yellow on the lower part of the sides and abdomen, where, however, the scales are still faintly edged with the former colour. Fins dark.

Habitat, Valparaiso, Chile.

This species, as M. Valenciennes observes, is so extremely similar to the *H. insolatus*, that at first sight, it would hardly be distinguished from it. The only differences appear to consist in the form of the caudal, which is forked, not crescent-shaped as in the species just mentioned, and in the greater length of

the soft rays of the anal. In the figure of *H. insolatus* in the "Histoire des Poissons," these rays are represented of the same length as the second spine, whereas in the present species they rather exceed it, giving a greater depth to the entire fin. The teeth also would seem to be more developed in the *H. Crusma*, especially those in front, which are longer than the others. According to Valenciennes, the outer row hardly exceeds the inner ones in the *H. insolatus*. The geographical position of the two species is however widely different. The *H. insolatus* is a native of the Caribbean Seas; whereas the *H. Crusma* has only been obtained on the coast of Chile and off the island of Juan Fernandez. M. Gay first obtained it at Valparaiso, where also Mr. Darwin's specimen was procured; in whose notes it is stated, that it gets to a much larger size than the one here described.

FAMILY—SPARIDÆ.

CHRYSOPHRYS TAURINA. Jen.

PLATE XII.

C. albida, quatuor fasciis interruptis nigro-fuscis; pinnis dorsali, caudali, et ventralibus, clarè cœruleo-marginatis: dentibus anticis conicis, in maxillâ superiore octo, in inferiore decem minoribus; molaribus suprâ seriebus tribus, intermediâ minori, infrâ duâbus dispositis; preoperculo et operculo, utroque quatuor squamarum seriebus tecto; limbo preoperculi nudo.

D. 12/12; A. 3/10; C. 17, &c.; P. 15; V. 1.5.

LONG. unc. 14.

FORM.—General form not very dissimilar to that of the *C. Aurata*. Greatest depth contained about three times and a half in the entire length. Depth and length of the head equal, each about one-fourth of the entire length. Profile very oblique. Eyes high, and moderately large, distant two diameters from the end of the snout. Preopercle with the angle at bottom very much in advance, giving an obliquity to the ascending margin; the limb not very broad, and naked; in front of the limb are about four rows of scales smaller than those on the body: the same number of rows of scales on the opercle. Jaws equal, with eight conical incisors in front of the upper one, and ten in front of the lower;* those above longer than those below, and more

* There are actually nine, but one appears to have been lost.

regularly and closely set : behind the incisors above and below is a patch of fine card : then follow the molars, which are in three very regular rows above and two below ; of the three rows above the inner and outer ones are much the strongest, containing each about eight teeth ; those in the outer row are slightly pointed, and not very unequal in size, but the inner series enlarge very rapidly as they extend backwards, the last two or three being of considerable size ; all round or nearly so, there being no large oval one at the back, as in the *C. Aurata* and some other species ; the middle series above consists of teeth much smaller than the others, and more numerous : the two rows below are not very dissimilar to the inner and outer rows above. Suborbital broad, and naked, covering a large portion of the cheek.

Scales on the body of a moderate size ; too much injured and displaced in this specimen to admit of the exact number being counted in a longitudinal row ; those on the lateral line, however, are all perfect and present to within five rays of the end of the dorsal, and up to that point they amount to thirty-one. The fins, so far as can be judged from their present state, are on the whole very similar to those of the other species ; but the dorsal and anal spines, especially the second anal spine, appear rather stronger than those of the *C. Aurata*. Pectorals long and narrow, contained about three times and three quarters in the entire length.

COLOUR.—“White, with four dark brown much interrupted bands, giving a mottled appearance ; head coloured with the same ; top of the head, ridge of the back, edges of the dorsal, caudal and ventral fins, tinted with fine azure blue.”—D.

Habitat, Chatham Island, Galapagos Archipelago.

Mr. Darwin's collection contains a single specimen of a species of *Chryso-phrys* from the Galapagos Archipelago, not in a sufficiently good state of preservation to admit of a very detailed description being given of it, but, nevertheless, evidently distinct from any that I can find recorded by authors. It appears to belong to Cuvier's second section of this genus characterized by the absence of any large *oval* molar behind the others, though the last two or three in the inner series above are of considerable size. It differs, however, from all those described in the “*Histoire des Poissons*,” in having the conical incisors more numerous, and but three rows of molars in the upper jaw. The specimen also is of sufficient size to lead to the belief, that it would not have acquired any additional ones by further growth. The *C. aculeata* resembles it, indeed, in this last character, but independently of other differences, this species is said to have a reclined spine before the dorsal fin which is not present in the one here described.

Out of twenty-two species of this genus described in the “*Histoire des Poissons*,” only one is from the Pacific Ocean, whence the present species was brought. The greater number are from the Atlantic and Indian Oceans.

FAMILY—MÆNIDÆ.

1. GERRES GULA. *Cuv. et Val.?*

Gerres Gula, *Cuv. et Val. Hist. des Poiss. tom. vi. p. 349.*

FORM.—Greatest depth one-fourth of the entire length. Back but little elevated. Space between the eyes flat, with a fovea in the middle, which is prolonged in a channel nearly to the extremity of the snout. Length of the head exceeding its depth by one-fourth, and contained about three times and three quarters in the entire length. So much of the maxillary as is visible is of an oval form, its length being twice its breadth at its posterior extremity. Suborbital with the lower margin very indistinctly notched, and not denticulated. Eyes very large, their diameter contained twice and three quarters in the length of the head. The two orifices of the nostrils of nearly equal size. No denticulations on any of the pieces of the gill-cover. A narrow band of very minute velatine teeth in each jaw, those above hardly visible to the eye, but sensible to the touch: none on the vomer, palatines, or tongue.

Dorsal with the first spine extremely short; the second has a small piece broken off at the tip, but appears to have been about the same length as the third, which last equals two-thirds of the depth of the body; the fourth and fifth are a little shorter than the third; the succeeding ones gradually decreasing, as in the other species of this genus: all the spines are moderately slender, the anterior ones slightly arcuate, with scarcely any appreciable difference in the degree of stoutness in the first four. Anal with the first spine extremely short; the second obviously stouter than any of the dorsal spines, but much shorter, being only half the length of the second dorsal spine, or one-third the depth of the body; the third spine is a trifle longer than the second, but much slenderer. Caudal deeply forked; the lobes worn at the tips in this specimen, but their length, when perfect, probably about one-fourth, or somewhat less, of the entire length of the fish. Pectorals narrow and pointed, a little shorter than the head, and contained four and a half times in the entire length; fifth ray longest. Ventrals a little behind the pectorals, but not more than two-thirds their length, or scarcely so much; the spine a little shorter than the soft rays, and of about the same degree of stoutness as the dorsal spines. Elongated scale in the axillæ of the ventrals about three-fourths the length of the spine, of a narrow lanceolate form, ending in a very fine point.

D. 9/10; A. 3/7; C. 17, &c.; P. 14; V. 1/5.

Length 3 inc. 6 lines.

COLOR.—Not noticed in the recent state. In spirits, it appears of a uniform silvery, with the back and upper part of the sides inclining to dusky olive: no bands or any particular markings: fins pale.

Habitat, Rio de Janeiro.

The species of this genus are numerous, and extremely similar to each other. Many of them appear to rest on characters taken simply from the relative lengths and degrees of stoutness of the dorsal and anal spines. This renders it extremely difficult to identify single specimens. Perhaps I am wrong in referring the one described above to the *G. Gula* of Cuvier and Valenciennes; but it makes so near an approach to that species, that I hardly dare characterize it as distinct. It cannot be the *G. Aprion* of those authors, which is closely allied to the *G. Gula*, and is found on the same coasts, since its teeth are so very much finer: the caudal also is not scaled. It is small, but Cuvier and Valenciennes state that none of their specimens of the *G. Gula* exceed five inches. Mr. Darwin took it in a salt-water lake, Lagoa de Boacica, at Rio de Janeiro.

2. GERRES OYENA. *Cuv. et Val.?*

Gerres Oyena, Cuv. et Val. Hist. des Poiss. tom. vi. p. 355.

Smaris Oyena, Rüppell, Atlas zu der Reise im Nörd. Afr. Zoologie; p. 11. tab. 3. fig. 2.

FORM.—Greatest depth contained rather more than three and a half times in the entire length: the dorsal curve very regular. Profile above the eyes a little concave. Length of the head exceeding its depth. Maxillary as in the species last described. Suborbital with its lower margin distinctly but not very deeply notched; not denticulated. Diameter of the eye less than one-third the length of the head. Posterior orifice of the nostrils twice the size of the anterior one. No denticulations on any part of the head or gill-cover. A narrow band of velutine teeth in each jaw, of about the same length and degree of fineness above and below; but none on the palate or tongue.

The dorsal commences in an exact vertical line with the insertion of the ventrals: the anterior spines are a little arcuate; the first, as in the other species of this genus, is extremely short; the second and third in this specimen are broken at their extremities so that their exact length cannot be ascertained, but the portion of the second remaining (and of this spine apparently only a very small piece is gone) nearly equals half the depth of the body; length of the fourth spine which is perfect not quite equalling two-fifths of the depth; fifth, sixth, and seventh spines gradually decreasing; eighth and ninth scarcely shorter than the seventh: the second spine is much compressed, and though obviously stronger than any of those which follow, not nearly so stout as in many other species; its breadth is not more than one-twelfth of its length. Anal commencing in a line with the fourth soft ray of the dorsal; the second spine compressed similarly to the second dorsal spine, and of about the same degree of stoutness, but its length one-third less, being just equal to one-third the depth of the body; the third spine scarcely shorter than the second, but much slenderer; the soft rays gradually decreasing from the first, which is a little shorter than the third spine, to the last but one, the last itself slightly prolonged

to form a point backwards. Caudal forked nearly to its base; the lobes much elongated; the upper one, which is a trifle longer than the lower, contained rather more than three times and a half in the entire length. Pectorals narrow and pointed, a little shorter than the head, and contained not quite four times and a half in the entire length; fifth and sixth rays longest. Ventrals attached a little behind the pectorals, and not much more than half their length; the spine about three-fourths the length of the soft rays, and scarcely stouter than the third spine in the anal: the axillary elongated scale three-fourths the length of the spine. The scales on the body of this species are not materially different from those of the *G. Plumieri* described in the "Histoire des Poissons."

B. 6; D. 9/10; A. 3/7; C. 17, &c.; P. 16; V. 1/5.

Length 7 inches.

COLOUR.—"White, silvery."—D. The fins are yellowish; the membranes here and there dotted with black: the lobes of the caudal are bordered internally with dusky. I see no trace of the interrupted longitudinal bands spoken of by Cuvier and Valenciennes, neither is there any allusion to them in Mr. Darwin's notes taken from the recent fish.

Habitat, Keeling Island, Indian Ocean.

I do not feel confident as to this species being, any more than the last, identical with that to which I have referred it. It requires an inspection of a large number of specimens in order to ascertain the true value of characters. The present one agrees with what is stated of the *G. Oyena* by Cuvier and Valenciennes, excepting that the second anal spine, which they represent as shorter than the second dorsal spine by one-half, is here shorter by one-third only: also, as mentioned above, there is no appearance of any longitudinal bands. There is no other species in the "Histoire des Poissons," to which it approaches more closely. But comparing it with Rüppell's figure, if this last be scrupulously exact, there are a few other differences besides those already alluded to. Thus the first anal spine in Mr. Darwin's specimen appears shorter in relation to the second, and this last stouter as well as longer. Also the soft rays of this fin gradually decrease, giving a sloping direction to the margin, whereas in Rüppell's figure, all the rays are nearly of the same length, and made equal to the second and third spines. The caudal lobes, likewise, appear longer in Mr. Darwin's specimen. It must be left for others to determine whether these discrepancies are indicative of a specific difference or not. As regards the geographic range of the *G. Oyena*, I know not that there is any thing in this respect to render its identity with the species here described improbable. It inhabits the Red Sea; and is also said to be common at the Mauritius;—whence it may very possibly

extend as far eastward as the Keeling Islands, where Mr. Darwin's specimen was obtained.

The *Sparus erythrurus* of Bloch (pl. 261) is so extremely unlike the present species both in form and colours, that, except on the authority of MM. Cuvier and Valenciennes, who state that they had seen Bloch's original specimen, no one could have suspected that the figure had been intended for it.

FAMILY—CHÆTODONTIDÆ.

CHÆTODON SETIFER. *Bloch.*

Chætodon setifer, *Bloch*, Ichth. pl. 425. fig. 1.

————— *Cuv. et Val.* Hist. des Poiss. tom. vii. p. 58.

FORM.—This species is one of those characterized by a prolongation of a portion of the soft dorsal fin. In the present specimen it is the sixth soft ray which is thus prolonged. The total length of this ray, measured from the root, is half the entire length of the fish; and that portion of it which exceeds the adjoining rays is rather more than half. Although the propepercle can hardly be called denticulated, yet there are some faint traces of rudimentary denticulations at the lower angle. The general form, in all other respects, agrees with the descriptions of Cuvier and other authors.

D. 13;24; A. 3;21; C. 17, and 6 short; P. 16, the first short; V. 1/5.

Length 6 inc. 3 lines.

COLOUR.—“Body pale, with narrow dark straight lines which form network: across the eye a black band: posterior half of the body bright orange: upper part of the prolongation of the dorsal fin edged with black, and a round patch of the same.”—D. The black ocellus extends from the fifth to the thirteenth ray of the soft dorsal. There is no trace of the four red or yellow streaks said by Cuvier and Valenciennes to cross the forehead from eye to eye; but probably they are effaced by the action of the spirit.

A second specimen only differs from the above in being smaller, measuring in length not quite five inches; in having the fifth (instead of sixth) ray in the soft dorsal prolonged; and in the ocellus extending from the fifth to the tenth ray only. In the last two respects it agrees better with the description in the ‘Histoire des Poissons.’ The filamentous ray terminates in an extremely fine hair, which leads me to think that the extreme portion of this ray in the first specimen has been broken off.

Habitat, Keeling Island, Indian Ocean.

Mr. Darwin's collection contains two individuals of this species procured on coral reefs at the Keeling Islands. As according to his notes made from the recent fish, the posterior half of the body is bright orange, Bloch's figure may not be so much overcoloured as is supposed by Cuvier and Valenciennes, who state that he has represented of a bright red, what ought to be silvery grey and yellow ochre. Perhaps the colours may depend in some measure on the season. Mr. Darwin's specimens were obtained in the month of April.

GENUS—STEGASTES.* *Jen.*

Corpus oblongo-ovale, compressum. Caput obtusum. Os parvum, haud protractile. Dentes maxillares omnes incisores, parvi, æquales, contigui, uniseriati; palatini velutini, minuti. Ossa suborbitalia denticulata. Preoperculum margine adscendenti levissimè denticulato. Operculum inerme. Membrana branchialis quatuor-radiata. Pinnæ verticales squamis confertis serè omnino obtectæ: dorsalis unica, subæqualis, membranâ ad apices spinarum parum laciniatâ: ventrales radio primo molli elongato. Linea lateralis sub terminationem dorsalis interrupta. Squamæ rostri et verticis parvæ; operculi et corporis magnæ, obliquè dispositæ; omnes levissimè ciliate.

This apparently new form will enter into none of the genera established by Cuvier and Valenciennes. The palatine teeth serve to detach it from the *Scionidae*, while this character, taken in connexion with the compressed body, and the extreme scaliness of the vertical fins, require that it should be arranged with the *Chetodontide*, or at least have a place in that large group to which Cuvier has given the name of *Squamipennes*. It belongs to the second tribe in that family characterized by cutting teeth; and it would seem most nearly allied to *Pimblepterus*, but it does not approach that genus very closely, and may at once be distinguished from it, by the teeth being without spurs behind, and the dorsal and anal fins being more scaly. From *Dipterodon*, the only other genus in that tribe, it may be known by its undivided dorsal, independently of other marked differences.

But though this genus requires to be arranged with the *Chetodontide* on the grounds above mentioned, in all its other characters it comes much nearer that portion of the *Scionidæ* which have the lateral line terminating beneath the end of the dorsal fin; especially *Pomacentrus*, which it resembles in the general form

* Στεγαστης, tector.

of the head and body, denticulated suborbital and preopercle, unarmed opercle, four-rayed branchiostegous membrane, and in the size and mode of arrangement of the scales on the body. I am not aware that any species of *Pomacentrus* have the dorsal and anal fins so completely covered with scales: but, according to Cuvier and Valenciennes, there is a species of *Glyphisodon*,* to which genus *Pomacentrus* is closely allied, which has these fins almost as entirely scaled, as in the true *Squamipinnati*; and if so, there is nothing but the palatine teeth which of necessity demands the separation of this new genus from the *Scienidæ*. These teeth can be distinctly felt upon the vomer, but I am not quite sure from the small size of the fish, and its mouth also being small, whether they exist on the palatines as well. It may be added that this genus shews further itself an affinity to *Glyphisodon*, in the filamentous prolongation of the first soft ray in the ventrals. This character is not, I believe, found in *Pomacentrus*.

In which ever family it is placed, it forms a beautiful connecting link between the two. It is from the Cape Verde Islands.

STEGASTES IMBRICATUS. *Jen.*

PLATE IX. fig. 2.

FORM.—Oblong-oval; the body much compressed. Greatest depth rather more than one-third of the entire length; head one-fourth of the same. Snout short and obtuse; the profile rising very obliquely, and forming with the dorsal line one continuous curve. The back is sharp, and appears more elevated than it really is, in consequence of the dorsal fin being thickly coated with scales, and scarcely distinguishable from the body. Ventral line less convex than the dorsal; the edge of the abdomen somewhat carinated between the ventral and anal fins, but in advance of the former rounded. The upper and under profile meet at the mouth at a right angle. Mouth small, and scarcely at all protractile. Jaws equal; each with a single row of cutting teeth, which are small, though rather larger below than above, even and closely set, forming a compact series; no secondary teeth behind; vomer rough with minute velutine teeth. When the mouth is closed, no portion of the maxillary is concealed by the suborbital. Eyes round, moderately large, their diameter rather less than one-third the length of the head, placed high in the cheeks, and nearer the end of the snout than the posterior angle of the opercle, the distance from the former being rather less than one diameter. The nostrils consist of a single minute round aperture, about half-way between the eye and the anterior margin of the suborbital. The suborbital has its margin entire as far as the end of the maxillary, at which point it curves backwards and upwards to form a narrow band beneath the eye, and the lower margin of this band is denticulated. The preopercle is likewise denticulated; but the denticulations, which are principally confined to the ascending margin, are not very obvious, and more

* *G. chrysurus*, Cuv. et Val.

readily felt than seen: the angle at bottom is rounded, and rather exceeds a right angle; a vertical from the angle would form a tangent to the posterior edge of the orbit: the ascending margin is not quite straight, bending slightly inwards a little below the middle. The opercle terminates posteriorly in a very obtuse angle, and shows some indication of two very minute flattened points, which, however, do not project beyond the membrane: from the lowermost of these points the margin of the subopercle passes obliquely forwards to form a continuous curve with that of the interopercle, which is tolerably well developed. Gill-opening of moderate size: the branchial membrane, which apparently has only four rays, has a shallow notch in front, and passes continuously from one side to the other, without being attached to the isthmus.

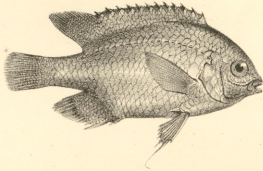
The lateral line commences at the upper angle of the opercle, and, inclining upwards, runs parallel, not to the dorsal line which can hardly be distinguished, but to the upper edge of the dorsal fin, its distance from which is contained about three times and a half in the entire depth; it terminates a little before the termination of that fin. Cranium, snout, cheeks, pieces of the opercle, the body, and all the vertical fins, covered with finely ciliated scales; those on the crown and snout small, but those on the opercle and body large; the latter arranged in oblique rows; about twenty-seven in a longitudinal line from the gill to the caudal, and about fourteen in a vertical one from the dorsal to the ventral line: a scale taken from the row beneath the lateral line, and about the middle of the body, is of an oblong form, its breadth exceeding its length, with the free edge dotted and finely ciliated, the basal margin rather deeply crenated, the crenations separated by seven striae, which are carried on for only a short way, and do not converge to a fan. The scales on the dorsal and anal fins are small and closely compacted; those on the former arranged obliquely, but the line of obliquity is in the opposite direction to what it is on the body.

The dorsal fin commences in a line with the posterior angle of the opercle, and occupies a space equalling half the entire length: the height of the spinous portion is nearly uniform, but slightly increases backwards; between the tips of the spines, the membrane is a little jagged: the soft portion is scarcely more than one-third the spinous in length, but is somewhat higher, terminating upwards in an acute angle; the longest of the soft rays is about half the depth of the body, the dorsal fin itself not included. The anal answers to the soft portion of the dorsal, which it exactly resembles; it has two spines in front, the first of which is very short, and scarcely more than one-third the length of the second, which itself is shorter than the soft rays; the second spine is stouter than any of the dorsal spines. These two fins terminate in the same vertical line. The caudal appears to have been square, but the rays are worn at the tips, so that its exact form cannot be ascertained; it is coated with scales for four-fifths of its length from the base. Between the dorsal and the caudal fins is a space equalling not quite one-third the depth of the body. Pectorals attached a little behind the opercle, and a little below the middle; slightly pointed; about the length of the head or rather shorter; the first ray only half the length of the second; fourth and fifth longest; all the rays, with the exception of the first two and the last two or three, branched. Ventrals attached a little further back than the pectorals; the first soft ray prolonged into a filament reaching to the commencement of the anal; the spine is about half the length of the filamentous ray, and about two-thirds that of the second soft ray. Between these fins is an oval lanceolate scale about one-third their length; and in their axillae another elongated one, narrower and more pointed than the former, and rather exceeding it in length.

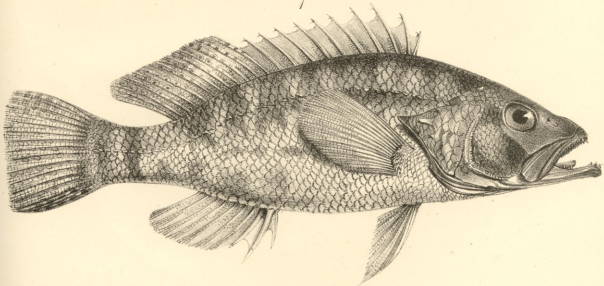


*Fig. 1. *Thalassoma forsteri* }
2. *Thalassoma subdorsale* } *Thalassoma**

2

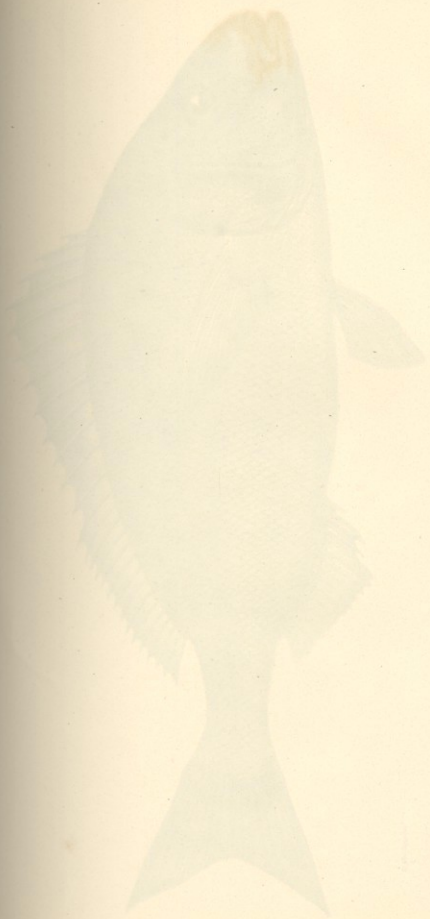


1

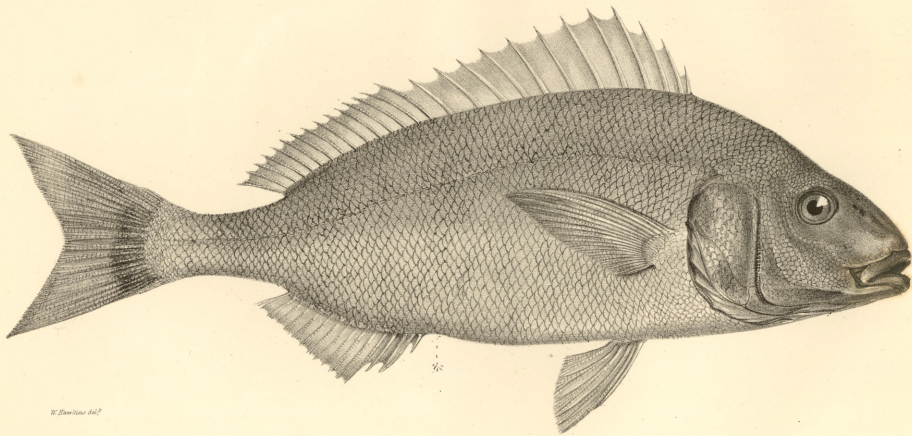


W. Hamilton del.

Fig. 1 *Pronodes fasciatus* } Nat. size.
2 *Stegastes imbricatus*



14

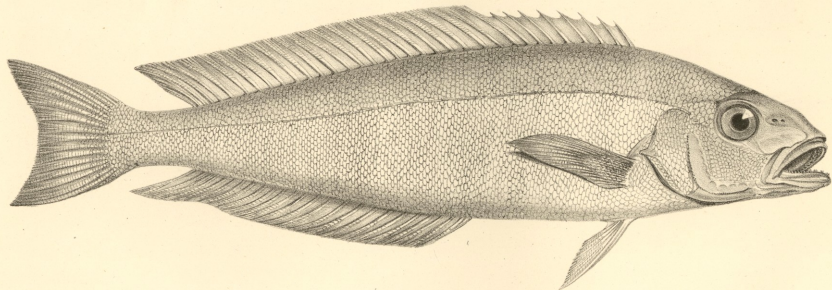


W. Sawkins del.

Pristipoma cantharinum. Nat. Size

12

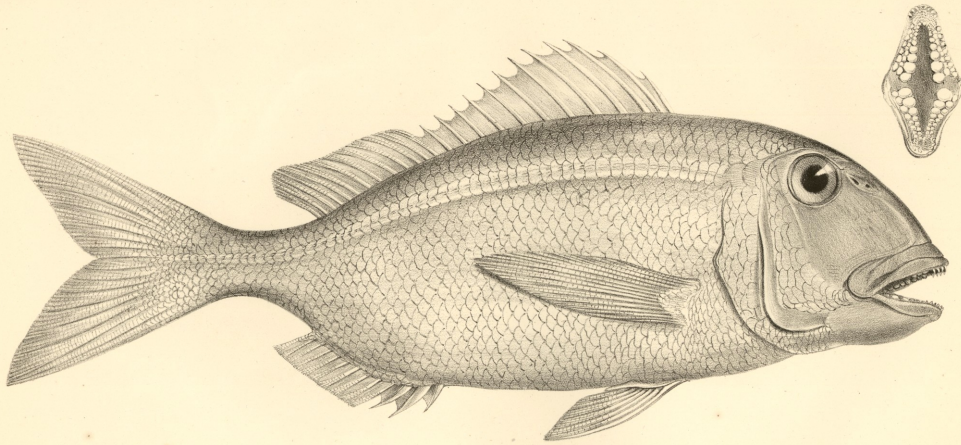




W. Swainson del.

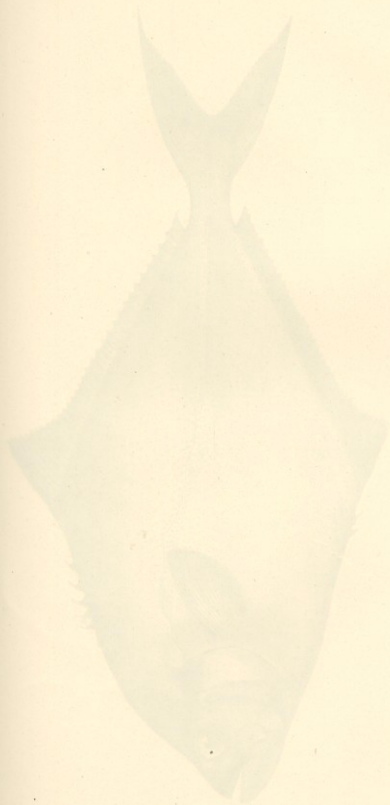
Lutulus princeps. ♀. Nat. size.

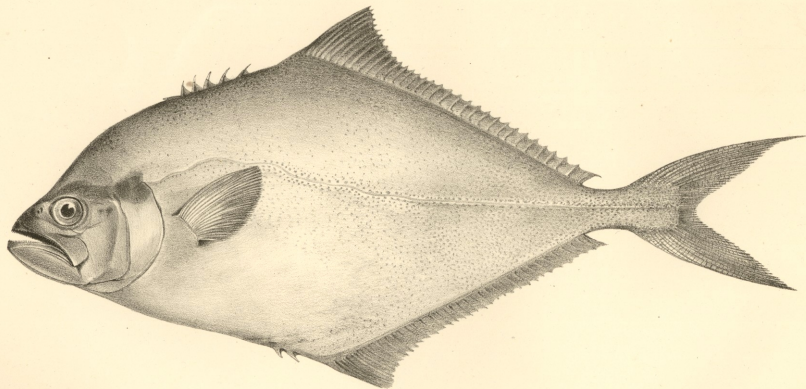




H. Swinhoe del.

Chrysophrys laurina 3/4 Nat. Size

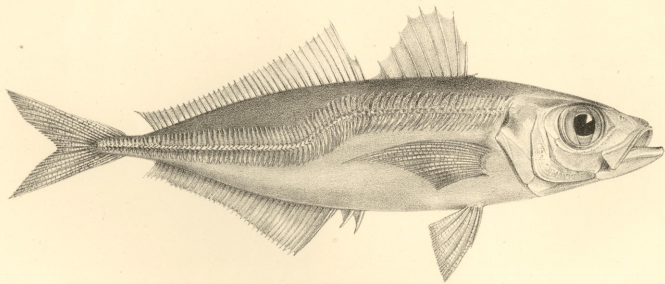




W. Hamilton del.

Paropsis signata *Nac. Sars.*



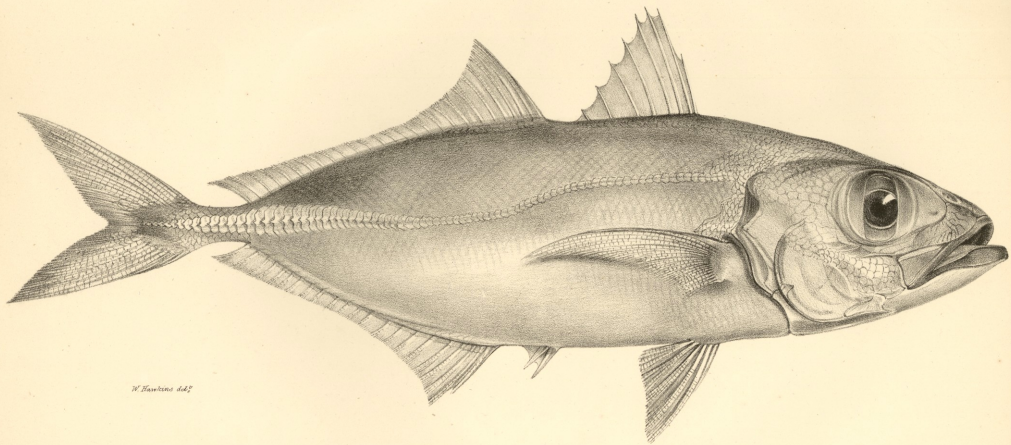


W. Swainson del.

Caranx dedoivis. Nat. Size.



Callinectes sapidus



H. Swinhoe del.

Caranx tornus *Macleay*

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