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NOTE ON *SCYLLARUS SCULPTUS*, LATREILLE.

BY THOMAS WHITELEGGE, Zoologist.

(Plate xxix.)

THE history of this beautiful, rare, and well-marked species of *Scyllarus* may be briefly given, as follows:—

It was figured by Latreille* with a bare name, which occurs on page 5, in the explanation of the plate of the undermentioned work. At a later date† the species is again referred to, the reference consisting of a line or two, stating that the figure on P. cccxx., represents *Scyllarus sculptus*. The next notice, as far as I can ascertain, is by M. Milne Edwards,‡ who gives a short detailed description, the letters C.M., placed at the end, signifying that the specimen was in the Paris Museum, but without data. I have failed to find any later mention of this highly interesting form, and it seems probable that the type until recently was the only specimen known.

In September, 1892, the writer and several other members of the Museum Staff, paid a visit to Port Stephens, and during the trip two examples were obtained from Mr. Jackson, one of the local residents. In October of the same year, the late Mr. T. Mulhall presented a specimen which was stated to have been obtained in Port Jackson. Since that date two other examples have been received, one from Port Jackson, and the other collected at Newcastle by Mr. J. Mitchell, who kindly presented it to the Trustees.

The first specimens were readily identified by the figure, with which they agree in most of the important characters. There are only two points of difference. The teeth forming the crenulate margin of the fifth joint of the second antenna are smaller and more numerous than represented in the figure; and the alternating bands of darker and lighter colour, indicated on the legs, are much less distinct, or wanting, in our examples. Notwithstanding these differences, I think that our specimens are identical with the individual figured, which was probably collected at or near Port Jackson by some of the early voyagers.

* Latreille—Encyclopédie Methodique (atlas), pt. 24, 1818, pl. cccxx., fig. 2.

† Latreille—Encyclopédie Methodique (text), x., 1825, p. 416.

‡ Milne Edwards—Hist. Nat. Crust., ii., 1837, p. 283.

Cancellus typus, M. Edw., affords another instance of a similar kind. This species was described* without a definite habitat, but a few years ago it was found in South Australia, and shortly afterwards also in Port Jackson.†

The habits and exact zone inhabited by this *Scyllarus* are unknown. It is, however, probable that it lives close in shore, at a considerable depth below the tide line, a region that has been little explored, having a distinct fauna which has yielded many new or rare forms, a few of which may be here noted :—

Tropidostethus rhotophilus, Ogilby, a small fish of the family Atherinidæ, is common all the year round, and lives in the surf, being rarely seen except in the white foaming water. Notwithstanding its abundance, it remained unnoticed until found by the writer in 1893.

Hemiscyllium modestum, Günther, commonly called the Blind Shark, inhabits the rocky recesses immediately below the tide line, and can only be obtained by fishing with a hook and line.

A rare zoophyte, belonging to the genus *Myriothela*, and differing little from *M. phrygia*, Fabr., lives on seaweeds in the same zone, and until recently it had not been observed in Australian waters.

The most remarkable example, however, is a small tubicolous Amphipod, which I refer without hesitation to the genus *Siphonocetes*. This genus, according to G. O. Sars, contains but three species—one arctic and two occurring on the coast of Norway. Early in the present year I found a number of examples of what I believe to be a fourth species, at Maroubra Bay, which had been washed up from a considerable depth during a heavy gale. The spot where the specimens were gathered has been my favourite collecting ground for many years, although I never met with the species before, and have since carefully searched the locality without avail. I am of opinion that this species lives in that intermediate zone which is out of reach from the shore at the lowest tides, and too rocky and inaccessible to the trawl or dredge. Occasionally at certain seasons, denizens of this region wander about the spring tide line, and may at such times be captured. As an instance, mention may be made of the rare and curious Isopod, *Amphoroidea australiensis*, Dana, a species of an olive-green colour like the plants upon which it feeds, and to which it clings so tenaciously that it can only be removed with difficulty. A single example was found on a loose piece of seaweed at Maroubra Bay in May, 1896. It was afterwards searched for in vain during my weekly visits, and was not met with again until December, 1898, when about fifty examples were obtained, and in January of the present year

* Milne-Edwards—Hist. Nat. Crust., ii., 1837, p. 243.

† See List of Invertebrate Fauna—Proc. Roy. Soc. N. S. W., xxiii., 1889, p. 232.

many more were secured by wading and pulling up the seaweeds from deep holes. The plants were carried up above high water-mark, and left for an hour or so to dry. The drying has the effect of loosening the hold of the Isopods, and they may be readily detached by shaking the plants.

The following is a complete description of *S. sculptus*:—

SCYLLARUS SCULPTUS, *Latreille*.

Scyllarus sculptus, Latr., Encyclopédie Methodique, pt. 24, 1818, pl. cccxx., fig. 2, and x., 1825, p. 416; Milne Edwards, Hist. Nat. Crust., ii., 1837, p. 283.

Adult male.—Carapace 90 mm. in length, the width of the front between the orbits 49 mm., that of the entire frontal margin (spines included) 81 mm., and that of the hinder margin 77 mm.; the greatest width is in a transverse line with the posterior cardiac region.

The rostriform process is slightly depressed, somewhat emarginate anteriorly, with obtuse lateral angles; its length is about 5 mm., its breadth anteriorly 6·5 mm., and its narrowest part is just above the base and measures 4 mm. It is bounded externally on each side by a transversely elongate C-shaped depression, into which the somital lobes are dove-tailed and appear to be fused with the carapace. Each lobe has about eight or nine rounded tubercles on the posterior border, a pair on the anterior externally, and a prominent wide based denticle about the middle; its sides slope away to the rostrum and to the external pair of tubercles. The length of the lobe is 5 mm., and its width 10 mm.

Lateral frontal margins deflexed, slightly curved, the inner extremity ending in a low tooth, the base of which is situated under the external portion of the somital lobe; the outer portion of the margin curves upwards and terminates at the rather prominent interno-orbital spine. The orbits are well defined; the cavity beneath the cornea is margined with long hairs. The inner portion of the superior border is elevated and bears three prominent spines and as many low tubercles; centrally there is a pair of tubercles bounded on each side by a sinus, and the outer portion has a series of four tubercles and a spine at the angle. Anterior to the latter is a wide sinus, and a large spine-like process which arises from a point near the insertion of the second antenna and forms the outer boundary of a large anterior orbital fissure; the inner side is limited by descending process of the front. The base of the fissure is occupied by a lobe a little higher than broad at the base, and uni- or bituberculate at the summit.

The upper surface of the carapace bears a few more or less acute spines, and is closely covered with flattened scale-like tubercles; each tubercle is fringed anteriorly with short stiff setæ,

posteriorly the setæ are few or wanting. The spines are disposed as follows: three equally spaced in a median line, the first situated at the base of the rostrum, the second and third on the gastric region. There is a spine immediately posterior to each orbit, and another on each side, situated at a short distance inwards behind the latter and in a line with it and the antero-lateral angle of the carapace. There are five or six submedian pairs; the first are seated on the gastric region and are rather widely separated, the remaining pairs are arranged in the form of a narrow V on the cardiac area, with a single median spine at their base; a few occur on the branchial region in a line with the inner orbital prominence, and about ten form a transverse series at a short distance from the hinder margin of the carapace.

Lateral margins of the carapace armed with fourteen or fifteen more or less compressed spines; of these, five are in advance of the cervical incision, the anterior one is large and prominent, the succeeding four gradually diminish in size as the well-marked cervical groove is approached, the latter is bounded posteriorly by a spine equal to or larger than that at the antero-lateral angle, the eight following are subequal in size and in distance apart, their outer borders are beset with tubercles. An irregular submarginal series of spiniform tubercles is situated on the posterior half of the carapace immediately above the lateral margin; these form one or two rows and are most pronounced posteriorly.

A sharply defined, deep, smoothish, transverse groove extends from side to side across the hinder part of the carapace, at a distance of about 7 mm. from the ciliated posterior margin; laterally the groove is nearly twice as wide as at the centre.

Pleon strongly sculptured, clothed with setiferous tubercles. The first segment is evenly convex above and below, and exhibits superiorly a well-marked transverse groove, situated much nearer the posterior than the concealed anterior margin, and it descends on each side to the coxal plate; the latter is small and bilobed. The anterior lobe is broad, rounded, and its margin is continued inwards to the end of the transverse groove; the posterior lobe is triangulate and acute, its point is directed outwards and downwards; the posterior margin is slightly crenate and oblique.

The second to sixth segments bear raised arborescent markings; all, except the last named, have a median carina. Each segment is transversely grooved and somewhat depressed anteriorly; the groove is bounded by a raised crenated line, which is just visible on the first three, but cannot be seen on those succeeding without bending the pleon downwards. The inner process of each coxal plate is limited by a well defined smooth groove, which extends from the anterior depression to the articular condyle.

The inferior surface of the second segment is much less curved than the first; the convexity diminishes to the fifth, which is

almost straight; all except the sixth and seventh have a prominent transverse denticulated ridge, which is directed backwards; it is centrally situated in the first and second. In the succeeding three the posterior margin to which the connecting membrane is attached is very short, and is overlapped by the denticulate ridge. In the female this ridge is present, but it is smooth and much less distinct in all except the first segment.

The inferior surface of the sixth segment is flat, punctate, smooth, with a slight longitudinal median groove, it is imperfectly calcified, and scarcely higher than the bounding membrane. In length it exceeds the two preceding, and is equal to the third; the latter is shorter than the second or first, which are twice as long as the fourth.

Superiorly the segments, except the first and seventh, are subequal in length. Their width gradually diminishes; the first measures 54 mm. across between the joints, and the fifth 35 mm.

The surface ornamentation consists of groups of arborescent patterns, and flat subimbricated scales; the latter occur chiefly on the upper and on the lower posterior regions of the coxal plates. The former are present on the second to the fifth segments and disposed as follows: a narrow median group which forms the longitudinal keel; on the second the keel commences about the middle and is continued to near the posterior margin, where it becomes transverse and extends nearly the whole width of the segment. There are two prominent groups, one on each side of the keel, but separated from it by a longitudinal row of two or more rounded tubercles.

On the remaining somites the dendritic sculpture becomes a little less distinct, but the keel is longer, and on the fifth it equals the segment.

The coxal plate of the second segment is very large and bilobed. It bears a Y-shaped impression on its surface, and from twelve to fourteen spines or tubercles along its margin. The front portion of the margin is transverse, the outer is obliquely directed backwards and downwards, and terminates in a large triangular tooth. The margin of the posterior lobe has five rather large denticles, and is slightly curved forwards towards its extremity.

The plates on the next four segments agree in having the anterior margin elongate, straight, almost smooth, and slightly crenate, and the posterior more or less curved and dentate like the second. The outer border, however, differs in each. In the third it is obliquely truncated and obscurely bi- or tridentate, the posterior denticle being rather large. The fourth is truncate and may be regarded as one broad lobe or tooth. The fifth and sixth are triangulate, the latter somewhat elongate.

The sixth segment has superiorly a faint longitudinal mesial groove, and two pairs of submedian tubercles; the anterior pair are separated by the groove, the posterior pair are much wider apart and nearer the hinder margin; the latter bear about eight tubercles, four on each side of a short central ridge.

The uropods and telson have the basal third calcified. The superior distal margin of the outer ramus has eight small denticles, and that of the inner ramus two or three situated on the outer fourth.

The telson is marked by four smooth pit-like depressions, the anterior pair are wide apart and seated on the base, the posterior pair are large, submedian, and occupy the distal half of the calcified part. The membranous laminae of the uropods and telson have numerous radiating ribs, which exhibit repeated dichotomous branching; the ribs on both surfaces of the telson and on the outer halves of the rami are closely granulose.

The pleopoda are biramous; the first pair are wanting in both male and female. The second pair in the former are foliaceous and have the rami equal in length; the outer one is broad at the base, and the inner one rather narrow. In the succeeding pairs the outer ramus is similar in shape to that of the second, but the rami decrease in size on each somite; the inner ramus is represented by a short obtuse conical stump. It is interesting to note that the inner ramus of the fourth segment on the left side—in the male example under notice—is considerably developed, it is equal to the outer in length but is very narrow and styliform; a small stylamblys occurs at its base.

The second pair of pleopoda in the female are very large, and consist of foliaceous plates with strongly ciliated margins. The inner ramus is rather broader than the outer, and carries a single stylamblys tipped with long setae, to which the ova are attached. In the following pairs the lamina of the outer rami is much smaller than those of the second; the inner ramus is narrow, elongate, and three-jointed; a foliate plate arises from the outer base of the second joint. The margins of the joints and lamina are more or less fringed with long plumose hairs to which the bundles of ova are cemented.

Basal joint of first antenna tuberculate, twice as long as broad, the inner distal angle terminating in a prominent denticle; second joint stout, smooth, compressed, nearly twice as long as the first, and equal to the third; fourth shorter than the latter, about twice as long as the outer flagellum.

Outer antennae a little shorter than the inner. The basal joint is very large; the inferior distal margin is denticulate, it carries

about eighteen denticles, including the larger ones situated at the inner and outer angles. Second joint twice as broad as long; the superior distal margin bears five spines; of these, two are situated on the outer fourth, one about the middle and two on a produced lobe, which projects in front of the basal joint of the first antennæ and partly conceals the lower third of the second joint.

Third joint greatly expanded, somewhat cordiform in outline; the outer margin is neatly curved, and bears six teeth, each of which is minutely denticulated. The distal margin is oblique, and has four or five large teeth; the inner border is tridentate, the denticles occur on a projecting lobe similar to, but larger, than that on the inner angle of the preceding joint.

Fourth joint as broad as long, the inner border with three spines and the distal margin with two or more; the outer distal angle is produced on the lower surface, but not on the upper.

Fifth joint nearly one-fourth broader than long; its outline is semi-elliptical; the margin is shortly ciliate, the inner third is acutely dentate, the rest crenate, the surfaces are minutely hairy punctate; the upper surfaces of all the preceding joints are more or less scaly or tuberculate.

First pair of legs stout; the inferior surfaces of the first three joints are beset with elevated tubercles, with dark brown tips; the merus is somewhat compressed, the inner surface is smooth and adapted to the carapace, the outer is slightly depressed longitudinally; near the upper border the latter is subcarinate, smooth, and shortly setose; the inner lower border is similar to the upper, but is less elevated and only half its length; the outer aspect of the lower border is marked by a series of ten subspiniform scales; the distal margin has four or five obscure spines. Carpus half as long as the merus, with a strongly marked groove on the outer surface near the rounded upper border.

Propodus tapering, its greatest depth equal to half the length, its diameter equalling the depth at the distal extremity, the upper and lower borders are rounded. Tarsus curved, as long as its supporting joint, upper surface somewhat flattened, internal aspect grooved, the lower with two tufts of setæ near the base; the distal half is horny, the corneous and calcareous portions overlap at their junction, the latter at the sides and the former above and below.

Second pair of legs the longest, their length without the tarsus equal to the first and also to the third; fourth and fifth shorter, the latter nearly equal to the first without the tarsus.

The merus joint of the second pair is one-fourth longer than that of the first and of the fourth, about one-eighth longer than the third, and nearly twice the length of that of the fifth; it

exhibits—like the first and those succeeding—a shallow longitudinal depression near the upper border. The carpal joints are subequal, and each has a well-marked longitudinal groove on the external surface. The propodal joints also exhibit a shallow groove externally, and a line of short setæ indicating another less distinct groove on the inner surface. The length of the joint varies slightly; the second measures 37 mm., the third and fourth 28 mm., and the fifth 32 mm.

The tarsal joints of the last three pairs are shorter and more curved than the first or second.

The basos of the fifth legs have the superior distal angles produced, the anterior bears a triangular tooth, and the posterior a crest-like lobe directed outwards and tipped with from three to five denticles; the lobe measures 6.5 mm. in length, and 5 mm. in height.

The ground colour is greyish-yellow, in parts almost obliterated by crimson tints; central area of fifth joints of the outer antennæ and the margins of the third joints wholly of this tint; the lateral borders and the posterior margins of the carapace, and pleon also, red. Meral joints of legs with a central transverse crimson band, extremities of legs purple or blue. Membrane of telson and uropods yellow, mottled with purple. Inferior surface of antennæ yellow dotted with red. The legs red, dotted with yellow.

Total length of body, 300 mm.

EXPLANATION OF PLATE XIX.

Drey of Ring-tailed Opossum (*Pseudochirus peregrinus*, Bodd.)
[From a Photograph by H. Barnes, Junr., Australian Museum]

Presented by Mr. J. M. Cantle.

