

ART. XXXVIII.—Notes on New Zealand Polychaeta (II).

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Fam. EUNICIDAE.

Eunice pycnobranchiata McIntosh, "Challenger" Reports, xii, 1885, p. 294.*Eunice antennata* Ehlers, Neuseeland. Annelid., ii, 1907, p. 12 (*nec E. antennata* Savigny).

AMONGST the Eunicids in the "Endeavour" collection from the Australian seas which was submitted to me for description were a good number of specimens of this species, and in comparing them with the species from our coasts it became evident that they are identical with the worm which Ehlers has recorded under the title "*E. antennata* Sav." from specimens sent to him by me, of which I retain duplicates. But this identification does not accord with Crossland's* investigation into the true *E. antennata* from the Red Sea, for the latter worm has golden acicular chaetae, and the gills meet almost across the back where fully developed; whereas in the New Zealand worms these chaetae are black, and the gills are small, as they are in McIntosh's species, with which it agrees in other respects. For a fuller discussion of the matter see my account† of the "Endeavour" *Polychaeta*, pp. 216 and 224.

When writing that report I had forgotten the fact that Ehlers had identified his *E. antennata* with Quatrefages' *E. gaimardi*. But of this I feel sceptical, for when I was engaged in working out the New Zealand Annelids, some twelve to fourteen years ago, I tabulated the characters given by Quatrefages to his two species from New Zealand—namely, *E. gaimardi* and *E. australis*—and compared these with our two common species of *Eunice*. I came to the conclusion at the time—which I see no reason now to alter—that it is impossible from the data given to identify either of our two common species with either of these two descriptions.

The only difference which may be regarded as of importance referred to by Quatrefages is the character of the jaws. In *E. gaimardi* the upper jaw—*i.e.*, forceps, or "*Zangen*" of Ehlers—is described as "*gracilis*" The large dental plate (his upper jaw) has 6 teeth, and the denticula—*i.e.*, "*Sageplatte*"—are undulations rather than teeth. On the other hand, he states that the upper jaw of *E. australis* is "robust," the dental plate has 10 teeth, and the denticula are dentate.

Ehlers (p. 31) says of *E. australis* that "der linke Zahn hat 5, der rechte 6, die unpaare Sageplatte, 10," &c., and describes the forceps as slender—"die Zangen schlanke"—which can scarcely be a translation of Quatrefages' words, "*maxillae superae robustae*" Ehlers' "slender forceps" would equally apply to those of *E. pycnobranchiata*.

* Proc. Zool. Soc., 1, 1904, p. 316.

† Biolog. Results of Fishing Experiments of F.I.S. "Endeavour," 1909-14, vol. iii. Commonwealth of Australia: Fisheries Department, 1915.

It seems to be mere guesswork to go further than to acknowledge that Quatrefages probably had before him our two common species; but to decide which of his two names apply to our two species, without a re-examination of the types, seems impossible. For instance, in *E. pycnobranchiata* the gills extend practically throughout the length of the body, while in the other species, which Ehlers identifies as *E. australis*, they are limited to some 20 to 30 segments. But Quatrefages says nothing as to the extent of the gilled region: he merely states that the gill commences on the 6th segment in the one and on the 7th in the other.

I fail to understand how Ehlers has managed to sift the two species from the brief diagnoses given. I am not aware whether any zoologist has re-examined Quatrefages' species in the Paris Museum, or whether Ehlers himself has had access to them. But, so far as the records go, it seems to me that in the meantime it would be better to adopt McIntosh's specific name for this species, as he gave a good account of it, accompanied by figures

As to the worm called by Ehlers *E. australis*, I must defer any remarks to some future article.

Localities.—Foveaux Strait, 17 fathoms, on the oyster-bed; Tasman Bay; Pegasus Bay; Timaru, 10–20 fathoms; Massacre Bay.

Distribution.—Bass Strait; Tasmanian waters; South Australia; New South Wales; in addition to New Zealand.

Fam. APHRODITIDAE.

Physalidonotus thomsoni sp. nov. Figs. 1–5.

The genus was founded by Ehlers in 1904* for a large Polynoid which is fairly common on our shores, and described many years ago under the name of *Aphrodita squamosa* by Quatrefages, and later by T. W. Kirk as *Lepidonotus gurganteus* † Till recently the genus was represented only by this species, but Moore had described two worms under the generic name *Lepidonotus* from the coast of Japan which undoubtedly belong to Ehlers' genus, and the "Endeavour" collection contained four new species. The present species I name after Mr. George M. Thomson, who has done so much good work in natural history and for zoology in New Zealand, especially by the establishment of the Portobello Fish-hatchery. It serves also to recall the fact that his son Malcolm worked out the anatomy of *P. squamosus*. ‡

The new species was found some years ago by the late Mr. A. Hamilton in Dunedin Harbour, though under what circumstances—whether on shore or in a dredge—I do not know. For a long time I regarded it as the young of the common species, than which it is much smaller; but closer examination recently shows that it is quite distinct from it.

P. thomsoni is short and relatively broad, measuring 18 mm. in length by 10 mm. over the elytra and 12 mm. over the ventral chaetae. These are of the usual rich golden-brown colour.

The elytra are nearly white, with pale-brown star-like tubercles with 8–10 rays. The tops are flat or feebly convex. These tubercles are sparsely scattered over the exposed surface, more numerous and rather

* Ehlers, Neuseeland. Annelid., p. 9.

† For a fuller history see my report in "Endeavour" *Polychaeta*, p. 185.

‡ Proc. Zool. Soc., 1900, p. 974.

larger in the region of the areola, with an irregular row of rather smaller ones near the posterior and external margins, and between these two rows are a few intermediate in size (figs. 1 and 2). Seen under the microscope, the concealed area, which appears smooth to the naked eye, is found to be covered with rounded tubercles, constricted at their bases, and terminating in 2-3 points (fig. 3). The exposed surface also between

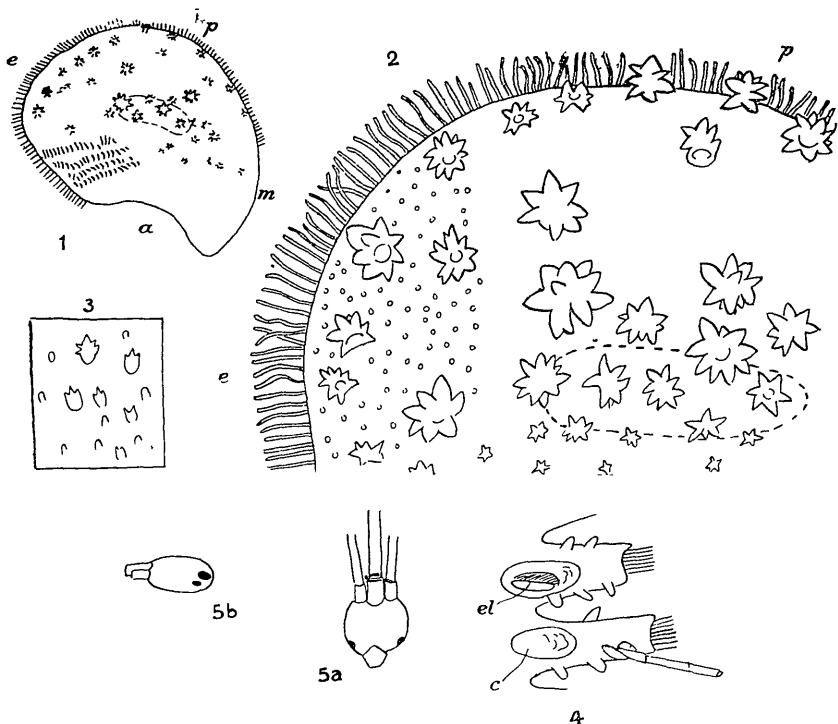


FIG. 1.—An elytron, enlarged, drawn under a dissecting-lens, freehand. *a*, the anterior margin, *e*, external; *m*, the mesial, or internal; *p*, posterior margin. Between the letters *a* and *e* are seen the rows of cylindrical hair-like papillae on surface.

FIG. 2.—A portion of the posterior and external margins (camera, $\times 10$). *e*, the external margin. The outline of the "areola," or area of attachment, is indicated by the dotted lines. The whole surface of the elytron is covered with small tubercles, which are shown only towards the external margin.

FIG. 3.—A portion of the anterior surface of an elytron ($\times 17$), showing the gradual development of the spinose tubercles from the simpler conical ones. This seems to be characteristic of the genus.

FIG. 4.—Two consecutive parapodia (enlarged), showing the arrangement of the papulae. *c*, cushion at the cirriferous segment; *el*, elytriphore.

FIG. 5.—The prostomium ($\times 4$) from above and from the side, merely to show the position of the eyes.

the large star-shaped tubercles is covered with numerous small rounded transparent smooth papillae. Further, the anterior region of the exposed surface a little anterior to the excavation of the margin is densely covered with long hair-like papillae resembling those of the marginal fringe.

The parapodial papulae, or gills, are few in number, and rather difficult to detect owing to the poor state of preservation of the worm, for the

cuticle readily separates from the underlying body-wall; but so far as I can make out from examination of several feet the arrangement is as follows (fig. 4): On the cirriferous feet there is 1 short rounded papula about midway along the anterior face; in one case I noted a second smaller papula near the base of the foot. On the posterior face there are 2 papulae, one close to the cushion, the second close to the base of the cirrus. On the elytriferous feet the anterior face carries 2 and the posterior 3 papulae, of which latter one springs from below the cushion, the second about midway along the foot, the third on the upper surface just behind the notopodial lobe.

The chaetae present no special features; they are quite like those of other species, except that one or two of the most ventral chaeta are smaller than the rest (which is no unusual thing), and present the same constriction below the bearded region that I have described and figured for *P. paucibranchiatus*.* (In the figure of this chaeta the constriction is exaggerated; it is to be remarked that it is less noticeable in glycerine mounts than in Canada balsam; and perhaps I have in my account laid too much stress on this feature.)

In the present species the long fringes of the "beard" are broken or worn away, as is the case in most of the specimens of *P. squamosa*. It is perhaps due to the fact that these worms normally live in rather deep water, and those that we find on the shore have been washed up, and so damaged.

The prostomium is about as broad as its length. Both pairs of eyes are very far back, and quite lateral in position (fig. 5). Only the posterior eye is visible from above, and only the upper edge of this. When the prostomium is viewed from the side, the two eyes are seen to be close together; the hinder and upper eye is larger than the anterior lower eye, as in *P. paucibranchiatus*.

The median tentacle is about 3 times the length of the prostomium, and the laterals about $2\frac{1}{2}$ times

Locality.—Otago Harbour.

Remarks.—In the structure of the head this species bears considerable resemblance to *P. paucibranchiatus*, as also in the general arrangement of the elytral tubercles. But in that species the supra-areolar tubercles are much more conspicuous, owing to their larger size and very definite linear arrangement; and the latter is true of the marginal tubercles.

The rays are narrower, more regular in size, and more sharply pointed. The upper surface of the tubercles when seen from above or in side view is studded with small rounded prominences

The new species differs entirely from the ordinary *P. squamosus* in the form and arrangement of these tubercles, which in that species are long and subcylindrical, and especially numerous on the external region.

The gills, however, the general form of the body, and the chaetae are different

As to the papulae, we are ignorant as to how far these are good specific characters—how far they may vary at different ages of one and the same individual, but so far as my studies have gone they seem to be fairly constant. Of the elytral tubercles it is known in other Polynoids that there may be a great range of variability, and it may turn out that this New Zealand worm is identical with *P. paucibranchiatus*.

* Benham, "Endeavour" *Polychaeta*, p 196.

Fam. AMPHINOMIDAE.

Chloeia inermis Quatrefages, Hist. Nat. des Annelées, 1865, vol. 1, p. 389.

Since the publication of this comprehensive work on the Annelids there has been no further record of the occurrence of this worm. Nevertheless, I have received several specimens from time to time, and wrote an account of it some years ago, which has not been published. It was, however, by an oversight, not included amongst the Polychaetes which I sent to Ehlers.

So far as our knowledge went, it was confined to New Zealand waters, in which it is evidently by no means uncommon. But amongst the "Endeavour" worms I find a specimen from the South Cape of Tasmania.* A brief account of the species may be given, though it is unnecessary to describe it in detail, for McIntosh has given an excellent account, with figures, of a typical species, *C. flava* Pallas, in the "Challenger" Report on the Polychaetes, p. 8, pl. iii.

The genus may readily be recognized by its general form. Its body is spindle-shaped, blunter anteriorly than posteriorly. The belly is very convex, and curves upwards to meet the narrow and flat back. It is fringed on either side by two series of long, glassy, brittle, white or lemon-coloured chaetae, which are directed outwards and backwards, and the upper bundles partially upwards also. Along the inner, or dorsal, side of the upper bundles is the series of pinnate gills, which commence in the 5th segment, although on the 4th there may be a small and simple gill.

The body-colour is yellowish-brown or pale buff, after long preservation, with a white narrow band along the mid-dorsal surface. This is bordered on each side by a narrow yellow line, and extends along the whole length of the body. In one specimen the buff colour of the back gives way to a pale-violet tint on the hinder segments.

The caruncle, typical of the family, is attached to the first two segments, but its free pointed end overhangs the next two; it is pale yellow in colour.

As in some other species, the dorsal cirri, as well as the prostomial and peristomial tentacles, are dark-maroon-coloured or violet, even after years of preservation in alcohol. The ventral cirri are white.

The chaetae of this species are exceptional in structure, in that they are without the serrations usual in the genus, and without the fork near the tip. It was, no doubt, from this simplicity in structure that Quatrefages named the species "*inermis*"—the bristles are unarmed with outgrowths.

The majority of the chaetae in the dorsal bundles, both of the mid-body and of the anterior segments, are perfectly smooth, without any trace of serration or of forking (fig. 7); but one or two, which are longer and finer than the rest, exhibit a minute step-like trace of a subapical spur.

The ventral chaetae are much thinner than the dorsals, and are of three sizes—(a) the stoutest, few in number, are perfectly smooth; (b) the majority, about half the thickness of the dorsals, have a minute obsolescent spur (figs. 8, 9), and (c) extremely fine ones, with a similar spur.

I guarded myself against overlooking this small spur in the dorsals, as I recognized, of course, that so small a feature might, if it lay above or below the main stem, be invisible under a low power, but I was unable, even by focussing carefully with a high power, to observe any sign of its presence in the majority of the chaetae.

* Benham, *loc. cit.*, p. 206

It occurred to me that possibly in the young condition some evidence of the typical serrations and fork might exist; but the examination of the smallest, and therefore youngest, of the worms (one which measures 14 mm.) shows no trace of any serration. But in the mid-body most of the dorsals do present an obsolescent spur, resembling that of the ventral chaetae of the adult (fig. 10); but it is situated rather farther from the apex. In a few this was totally absent; in a few others—two or three in the bundle—a definite fork is present (fig. 11).

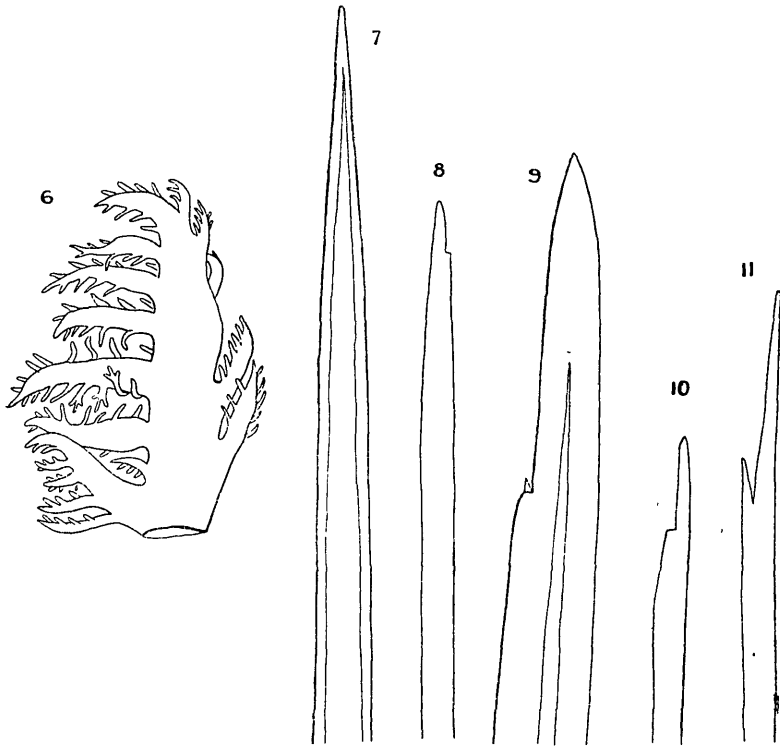


FIG. 6.—A gill (camera outline, $\times 10$).

FIG. 7.—One of the chaetae from a dorsal bundle of an adult worm ($\times 45$).

FIG. 8.—One of the chaetae from a ventral bundle of an adult worm ($\times 45$).

FIG. 9.—The tip of a ventral chaeta ($\times 180$).

FIG. 10.—A dorsal chaeta from the mid-body of a very young specimen, with a "step" below the apex ($\times 45$).

FIG. 11.—Another dorsal chaeta from the same bundle, showing the bifurcation more usually present in the genus, but in this species only occasionally present, and only in the young stages ($\times 45$).

The origin of the shorter limb of the fork is farther removed from the apex than is the step-like trace of spur in the other chaetae, suggesting that the tips of the latter are worn away, reducing the tip of the main axis as well as the shorter limb of the fork, for these forked chaeta appear to be newly formed young bristles; but in the adult I see no indication in the interior of the chaetae of any cavity leading into the short spur

whereas in the young forked chaeta the shorter limb is hollow, so possibly the suggested explanation is not the true one. In the anterior segments of this young worm I find no forks

The gill is "bipinnate," consisting of a relatively stout axis, bearing about 6 pinnæ along each side, each pinna carrying a double series of slender pinnules (fig. 6). The number of the pinnæ and the size of the gill decrease at each end of the animal.

The dimensions of the worm vary from 14 mm. by 4 mm. with 24 segments in the specimen (e) to 57 mm. by 12 mm. with 34 segments in specimen (h). The more usual size, however, of the above individuals is 40-45 mm. by 10 mm. with 30-33 segments.

I have examined specimens from the following localities: (a) D'Urville Island, Cook Strait, coll. Captain F. W. Hutton. (b) Wellington (2 individuals); coll. Captain F. W. Hutton. (c) Lyall Bay, Wellington; coll. Miss Mestayer. (d) Orepuki, Southland, coll. G. E. Howes. (e) Off Otago Heads, 100 fathoms; coll. W. B. Benham. (f) Stewart Island, coll. E. Waite. (g) Stewart Island; coll. W. Traill. (h) Chatham Island; coll. Miss S. Shand.

Remarks.—It seems to me probable that Baird's species, *C. spectabilis*, is identical with this. Baird* himself notes that it resembles both the above and Grube's *C. egena*. Quatrefages suggested that his species was identical with Grube's *C. egena*.† It would be better to drop this latter name entirely. It was found, according to Quatrefages, in a bottle without any indication of its locality. The diagnosis as quoted by him seems to me insufficient to settle its identity, the only important feature being the simplicity of the chaetae.

C. pinnata Moore,‡ from the south coast of California, has also non-serrate chaetae, with an obsolescent spur, but a few of the chaetae show minute traces of serrations. The worm is altogether smaller, but in many respects seems related to the present species

Fam. NEREIDAE

Cheilonereis peristomialis Benham, "Endeavour" *Polychaeta*.§

I obtained the first specimens of this peculiar Nereid in 1899, from trawlings from the s.s. "Plucky," and I wrote an account of it at the time, which has not been published. The worms were found in the upper whorls of a large Gastropod (? *Neptunea*) inhabited by a hermit crab. Since that date, however, a closely allied species has been described from the Pacific coast of North America by Harrington and others||, under the name *Nereis cyclurus*. The New Zealand species turned up in the "Endeavour" collection

The striking feature of the new genus is the great development of the peristomium, the ventral and lateral portions of which are much pleated,

* Baird, Journ. Linn Soc., x, 1868, p. 234.

† Grube, Beschreib. Neu od wenig bekannt: Ann., p. 91, 1855.

‡ Proc. Acad. Nat. Sci. Philadelphia, 1911, p. 239.

§ The second part of my account of the "Endeavour" worms has not yet (April, 1916) been published by the Commonwealth Fisheries Department.

|| Harrington, Trans. N. Y. Acad. Sci., vol. xvi, 1898, p. 214; H. P. Johnston, Proc. Boston Soc. Nat. Hist., vol. xxix, 1901, p. 400; Moore, Proc. Acad. Nat. Sci. Philadelphia, 1908, p. 343, and in same, 1911, p. 246.

and form, when fully expanded, a large hood or collar, which nearly reaches to the tip of the palps, and hides the base of the everted pharynx.

My friend Mr. T. D. Adams, whom I consulted as to a suitable prefix to *Nereis* which would indicate this peculiarity, suggested the Greek word *cheilos*, a lip. This great lip is not the only feature which marks it out from other species of *Nereis*. It is accompanied by peculiarities in the form of the parapodia and in the possession of rather exceptional chaetae in the ventral bundle of the posterior feet, as has been recently pointed out by L. N. G. Ramsay,* which I had already noted in my MS. account. It seems to me that these features warrant the creation of a new generic name to mark it off from the various other genera into which the old genus *Nereis*, *sensu lato*, has been divided.

In my account of the "Endeavour" specimen I have described the species fully, and have indicated the similarity to and differences from the *Cheilonereis cyclurus* of the eastern shores of the Pacific. At the time I wrote the account of the "Endeavour" specimens I had not seen Ramsay's paper. He, like myself, would unite *N. shishidoi* Izuka † with *N. cyclurus*.

It will suffice here to note the general coloration of the living worm. The ground-tint is a light chocolate-brown, with a pinkish tint, due no doubt to the blood-vessels in the body-wall; but each segment is traversed near its anterior margin by a narrow cross-bar of white, which extends outwards on to the upper surface of the foot. The head, its appendages, the cirri, and the lobes of the parapodia are brown. But in the mature epitokous female, filled with eggs, the colour is very different. It is slaty-blue, owing to the blue eggs, which fill the cavity of the body and of the parapodia, and so distend the body-wall that its brown pigmentation is obscured by the blue eggs seen through it. In alcohol this blue colour of the eggs changes to brown, while in formalin it turns yellow.

The size of the worm when alive is about 8 in.—*i.e.*, 200 mm.—which shrinks to 175 mm. when preserved. Its breadth in this state is greatest at the 8th segment, where it measures 10 mm., or, including the feet, 17 mm. From this point backwards it decreases in diameter.

The body is flat; the parapodia are relatively large and high, and are remarkable for the great size of the lamelliform expansions not only of the various lobes, but also of the whole upper surface of the foot, so that the dorsal cirrus is carried upwards and outwards in a notch in a lamella which is higher than the rest of the foot, and which increases relatively towards the hinder end.

Fam. STERNASPIDAE.

Sternaspis scutata Ranzani.

S. thalassemoides Otto; ? *S. princeps* Selenka.

Hitherto the only specimens of *Sternaspis* ‡ which have been recorded from the sea around New Zealand are the two individuals described by Selenka under the title *S. princeps*, from Station 179 of the "Challenger" Expedition, which is situated due east of East Cape; they were obtained from a depth of 700 fathoms. To this species I allude later on.

* Proc. Zool. Soc., 1914, p. 237.

† Izuka, Journ. Coll. Sci. Imp. Univ. Tokyo, vol. xxx, 1912, p. 177.

‡ A figure of this peculiar Annelid may be seen in the Cambridge Natural History Museum.

During the present year I received from Dr. Chilton two specimens of *Sternaspis scutata* which were obtained during the cruise of the G.S.S. "Hinemoa," off the Akitio River, on the east coast of the North Island, in from 20 to 36 fathoms; and some years ago Mr Suter was good enough to give me several specimens which he had obtained off Akaroa in 6 fathoms of water.* These are, no doubt, the same species, though, as will be seen, they differ a good deal in size; and that they belong to the common species from the European and American waters there can be as little doubt. The Akitio specimens are the larger: one measures 15 mm in length, with a breadth near the hinder end ("abdominal breadth") of 7 mm., the breadth near the anterior end, in the region of the rows of chaetae, is 5 mm. The worms are a good deal contracted, so that these measurements are below those of the living individual.

The characteristic posterior ventral "shield" is of very dark colour—in one, a vandyke brown, in the other, of a deep purple-brown. It measures 5.5 mm. from side to side, with a length of 3.25 mm. at the side, while the median line is 2.5 mm. This shield is fringed externally and posteriorly by 15 or 16 bundles of long bristles; it is difficult to make out whether the former or latter number is correct, for at the hinder corners the bundles are so close together that under a lens it is difficult to distinguish them. The anterior rows of strong chaetae contain 11 in each row.

The specimens from Akaroa are much smaller: the largest is only 10 mm. in length by 4 mm. across the abdomen. The shield is brick-red, is 4 mm. from side to side, and 2.25 mm. in length.

The anterior rows contain 9 or 10 chaetae, the ventral ones being slenderer and paler, indicating that they are young. There are 17 bundles of bristles at the margin of the shield in one individual, and 15 in a second, of the same dimensions.

Both in the Akitio and Akaroa specimen, as in the Naples specimen, the skin of the body is rough, being covered with groups of minute sand-grains, which are visible only when a piece of the skin is mounted and examined under a microscope. The fact that these grains are in groups seems to indicate the presence of glands in the skin, to the secretion from which the grains have adhered.

I have, fortunately, some specimens of the European species, obtained some years ago from the biological station at Naples (under the name *S. thalassemoides*, which by most authorities is now replaced by Ranzani's earlier name), so that I was able to make a comparison of the external features between them and our New Zealand specimens. They vary in size from 13 mm. to 21 mm. in length, with an abdominal breadth of 4.5 mm. to 9 mm., and anterior diameter of 4 mm. and 6 mm. respectively. The dimensions of the shield vary in proportion.

I wished to ascertain whether there are any points of specific difference between this and the New Zealand specimens, but can find none. For instance, not only does the size of the shield vary, as one would expect, with the size of the animal—that is, with age—but the number of chaetae in the anterior rows around the margin of the shield vary likewise. Thus in the smaller specimens the rows of chaetae contain 9, in the larger

* Mr Suter wrote me that he had sent some of these to Professor Ehlers, of Göttingen, who has, however, not published anything about them.

I count 10 and 11; the posterior bundles in the smaller are 17 pairs, in the larger 19 pairs. The skin, too, exhibits the same groups of sand-grains.

From time to time in various parts of the world, even in the European seas, specimens of *Sternaspis* of larger or smaller size, or with different-coloured shield, &c., have been made into distinct species, but sooner or later, as more careful examination has been made, and as our knowledge of variation and the factors in geographical distribution have progressed, many of these have been absorbed into the type species. So it has been on the American coast, both east and west. It is, indeed, becoming doubtful what are the specific characters of the genus. Even the discovery by Sluiter of a specimen provided with a bifid proboscis (*S. spinosa*) has led some authors, such as Selenka, to suggest that this feature is present in all species, but that owing to its fragility and sensitiveness it drops off when the animal is preserved, or even when it dies.

So far, then, as externals go, it appears that size of body and shield, the colour of the latter, the number of chaetae in the anterior rows and around the margin of the shield, are mere matters of age. For that reason I refer these specimens from New Zealand waters to the type species of the genus.

What about *S. princeps* Selenka? The account* is very brief, but he prefaces it with the words (on p. 5), "It does not seem to be beyond question whether this form . . . can be regarded as really the representative of a new species." Certainly his few lines describing it (on p. 6) do not carry conviction as to its specific separation from *S. scutata*.

Only two individuals were obtained, and no measurements are given; but his figure (of the larger) is said to be three times the natural size, which makes the worm, therefore, 30 mm. in length by 12 mm. in abdominal breadth. As it was "imperfectly preserved," it may be that these dimensions are greater than in life. His account, short as it is, is vague in one or two points. His first sentence—"Along the middle of the ventral surface there runs a shallow furrow"—really applies, as the context shows, not to the body of the worm, but to the shield. Now, this furrow is always present; it is a line of division between the two halves of the shield. Further, he notes the existence of "an oblique ridge," separating the shield into an anterior larger and a posterior smaller triangular area. This, also, is present in the Naples specimens as in our own. It may be remarked in passing that this feature is not shown in his figure (pl. i, fig. 1). There are "about 40 bundles" of bristles around the margin of the shield—that is, about 20 on each side. In the larger Naples specimens I find at least 19 bundles. So that this is no specific character.

There is only one other statement. "The whole body is studded with fine scattered chitinous setae, each having at its base a number of smaller chitinous pieces grouped together into wart-like protuberances." If this is really the case, it would be diagnostic of the species. Unfortunately, I have neither Vejdovsky's† nor Rietsch's‡ memoirs available here, so that I am unaware whether this histological feature has been described; but my examination of the skin of the Naples specimens does not support it. Has Selenka confused the sand-grains under a hand-lens?

* Selenka, "Challenger" Report, vol. xii, 1885, *Gephyrea*.

† Vejdovsky, Denksch. d. Wien. Akad. Math. Naturw. cl., vol. xliii, 1882.

‡ Rietsch, Ann. Sci. Nat., 6th ser., Zool., vol. xiii, 1882.

In the light of our knowledge of the structure of the worm it would be surprising to find such "chitinous setae" springing haphazard from the skin. At that date (1885) *Sternaspis* was included among the *Gephyrea*, and in the Sipunculids there are tufts of "chitinous setae" scattered over the skin: it would not be anything unusual for them to occur. But we now recognize that *Sternaspis* is a Chaetopod, and their occurrence can scarcely be accepted from a mere inspection, as one may gather was the case with this worm.

Weighing all the facts, I think it would not be unreasonable to suggest that *S. princeps* is nothing but a large specimen of *S. scutata*.

It may be useful to summarize in the following tabular form the facts recorded in this paper (measurements in millimetres):—

Specimen.	Size.	Shield.	Anterior Chaetae	Shield Chaetae	Colour of Shield.
Akaroa .	10 × 4	4 × 2.25	9-10	15-17 pairs	Brick-red.
Akitio .	15 × 7.5	5.5 × 3.25	11	15-16 pairs	{ Dark brown.
Naples ..	13 × 4.5 to 21 × 13	4 × 2.5 to 7 × 3.25	9-11	17-19 pairs	{ Purple-brown.
<i>S. princeps</i> .	30 × 12	20 pairs .	{ Pale brown to dark brown. ..

ART. XXXIX.—Notes on the Marine Crayfish of New Zealand.

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[Read before the Philosophical Institute of Canterbury, 3rd November, 1915.]

Plate XXXIX

THESE notes are intended to bring together the various scattered references to the marine crayfishes of New Zealand, and thus to have definitely recorded in the "Transactions of the New Zealand Institute" the correct names and complete descriptions of these forms. Descriptions of the larval stages, so far as they are at present known, have also been included.

There are only two species of New Zealand marine crayfish, both belonging to the same genus. They were first assigned to the genus *Palinurus*, to which the English crayfish belongs, but T. Jeffrey Parker (1883, p. 190) pointed out that the genus, as then understood, could be divided into three subgenera, which he named *Jasus*, *Palinurus*, and *Panularius*, the New Zealand species belonging to the first-named, which was distinguished chiefly by the absence of the stridulating organ. The full text of Parker's paper was published in the following year (Parker, 1884, p. 304). Parker subsequently claimed priority for the name *Jasus* as a generic name over *Palinosytus*, described by Spence Bate (1888, p. 85), and quoted by Stebbing (1893, p. 197), and so the generic name *Jasus* now stands for the New Zealand crayfishes.

Of the two species of *Jasus* known from New Zealand, the first is the common crayfish *Jasus lalandi* (M.-Edw.) sold in the shops, and the other, *J. hugelii* (Heller), is the Sydney crayfish, which is only met with occasionally in New Zealand seas, and then only on the northern coasts.