

second and third. Second antennae with many-jointed flagellum. Maxillipeds six-jointed, ultimate joint oval, very much smaller than the penultimate. Uropods without a second ramus.

PARIDOTEA UNGULATA (Pallas).

1772. *Oniscus unguulatus*, Pallas, Spicil. Zool., Fasc. 9, p. 62, t. 4, f. 11.
 1818. *Idotea unguulata*, Lamarck, Hist. Anim. sans Vertèbres, v. 5, p. 160.
 1836? *Idotea Edwardsii*, Guérin-Méneville, Iconographie, Crust., p. 33 (without figure).
 1840. *Idotea Lalandii*, Milne-Edwards, Hist. Nat. Crust., v. 3, p. 132, t. 31, f. 7.
 1840. *Idotea affinis*, Milne-Edwards, Hist. Nat. Crust., v. 3, p. 133.
 1843. *Idotea Lalandii*, Krauss, Südafrik. Crust., p. 61.
 1843. *Idotea affinis*, Krauss, Südafrik. Crust., p. 61.
 1861. *Idotea nitida*, Heller, Verhandl. Zool.-bot. Vereins Wien, p. 497.
 1868. *Idotea nitida*, Heller, Reise der Novara, p. 131, t. 12, f. 1.
 1868. *Idotea affinis*, Heller, Reise der Novara, p. 130.
 1876. *Idotea affinis*, Miers, Catal. New Zealand Crust., p. 93.
 1879. *Idotea affinis*, Thomson, Trans. New Zealand Inst., v. 11, p. 232.
 1881. *Idotea unguulata*, Miers, J. Linn. Soc. London, v. 16, p. 52.

There is good reason to think that the above synonymy supplied by Miers in his careful discussion of this species is thoroughly trustworthy. Miers examined the types of *Idotea Lalandii* from the Cape in the Paris collection, so that Milne-Edwards evidently used a misleading expression in saying that the side-plates were of the same form as in *Idotea tricuspidata*, because in that species those of the second and third peraeon segments are as long as the segments. In describing the colour as blackish and figuring the animal as of a deep purplish black, Milne-Edwards may be supposed to have had in view an abnormally coloured specimen, since none of the other authors make mention of this funereal hue. Krauss gives the colour of *Idotea affinis* as yellowish green with blackish dots. Heller describes the same species as greyish green with the side-plates somewhat lighter, and for his *Idotea nitida* says that the colour of the body is grey, finely dotted with black, flecked with brownish red, the pleon somewhat darker; the legs, especially towards their end, with

a brownish red flush. The specimens in formalin sent me from the Cape correspond well with the colour description of *Idotea affinis* given by Krauss and Heller, the general effect being a dark appearance dorsally.

As the species has been carefully and accurately described by Mr. Miers, it is unnecessary to repeat what can be found in his important work on the Idoteidae. It may, however, be mentioned that the eyes are irregularly round and somewhat prominent, and that there is a rather conspicuous spine on the inner margin of the penultimate (sixth) joint of the peraeopods a little above the middle. In the large dredged specimens the fourth, fifth, and sixth joints of both gnathopods and first four peraeopods are thickly coated with hair on the inner margin, while in the longer fifth peraeopods the fifth and sixth joints are almost smooth, but in the smaller beach specimens sent me all the peraeopods have the joints in question comparatively smooth, and thus show the marginal spine of the sixth joint much more distinctly than is the case in the larger specimens.

No description appears to have been given of the mouth-organs of this species, but Milne-Edwards has supplied a figure of one of the mandibles and of the maxillipeds. The epistome, or that part of it distinguished by Dollfus as the mesepistome, has the usual conical prominence above or forward, and is produced below or backward so as to flank on either side the transversely oval labrum or upper lip. The two lobes of the lower lip are roughly rotundo-quadrate, converging below. The left mandible has a straight trunk, the cutting plate horny in appearance, divided into three or four broad teeth, the secondary plate having three strong teeth, the spine-row about five slender serrate spines; the molar is strong and prominent, with an accessory brush of setae; above the molar there is a process, near the point at which the palp might be expected, were it present. The right mandible has the trunk geniculate, the teeth of the cutting-plate more tooth-like, the secondary plate with about four slender teeth; there is also a marginal tuft of hairs to the rear of the molar, but these may be present though not observed, also on the other mandible. The first maxillae have six strongly plumose setae on the narrow inner plate and ten stout apical spines on the outer. The three plates of the second maxillae are approximately equal in breadth. In the maxillipeds the epipod is slightly narrowed distally, with a rounded apex turned in upon the first joint of the palp; the narrowly oblong plate which surmounts the long second joint of the stem has on and near the apex several spines and plumose spiniform setae, and also on the inner margin near

the base three spines standing out at right angles to the margin, the lowest one straight, the other two rather larger and apically knobbed or hooked; of the four-jointed palp the first joint is very short, the second not very long but distally very wide, overlapping the base of the next joint on the outer side with a narrow point, on the inner with a broad fringed lobe; the third joint is the longest, fringed on the inner margin, widening almost abruptly from the base, its distal margin truncate, much wider than the rounded oval, small, partially fringed, fourth joint.

Of the specimens sent me from the Cape two were dredged in Table Bay, and measured respectively 48 and 51 mm., two from Woodstock Beach, Table Bay, measured 39 and 40 mm. The range of the species includes the Indian Ocean, New Zealand, South Australia, Auckland, Chili, Rio Janeiro, as well as the Cape of Good Hope.

FAM. : CYMOTHOIDAE.

1867. *Cymothoidae*, Bate and Westwood, British Sessile-eyed Crustacea, v. 2, p. 274.
 1880. *Cymothoidae*, Harger, U.S. Fish and Fisheries Report, Pt. 6 for 1878, p. 390.
 1890. *Cymothoidae*, Hansen, "Cirolanidae," Vidensk. Selsk., Ser. 6, Naturv. Afd., v. 3, pp. 316, 406.
 1893. *Cymothoidae*, Stebbing, History of Crustacea, p. 340.
 1897. *Cymothoidae*, Sars, Crustacea of Norway, v. 2, p. 67.
 1899. *Cymothoidae*, H. Richardson, Pr. U.S. Mus., v. 21, p. 828.

The genus *Cymothoa*, established by Fabricius in 1793, covered a very miscellaneous group of forms. In 1818 Leach (Dict. Sci. Nat., v. 12, p. 339) instituted the family Cymothoadae (see also Desmarest, Consid. gén Crustacés, p. 292, 1825). From this in 1840 Milne-Edwards (Hist. Nat. Crust., v. 3, p. 226) removed the Sphaeromidae and *Limnoria*, and established the Famille des Cymothoadiens, including three tribes, of which the first contained only the genus *Serolis*, the other two, the errant and the parasitic, corresponding respectively to the Ægidæ and the Cymothoidæ of Bate and Westwood. Carus in 1885 (Prodromus Faunae Mediterraneae, v. 1, p. 436) retains the family Cymothoidæ of Milne-Edwards, as Krauss had done in 1843, Krauss, however, calling it Cymothoidea. Dana in 1853, under a sub-tribe Cymothoidea, includes three families, Cymothoidæ, Ægidæ, Spheromidae. In their Monograph of the Cymothoae, 1879-1884, Schiödte and Meinert recognize four

families, Ægididae, Anilocridae, Saophridae and Cymothoidae, excluding from the group the genera which were subsequently included by Hansen in the families Cirolanidae, Corallanidae, Alcionidae and Barybrotidae. Hansen in 1890 makes the Cymothoid group consist of six families, the four just mentioned and the Ægididae and Cymothoidae, but it must be observed that the Cymothoidae of Hansen includes the Anilocridae and Saophridae as well as the Cymothoidae of Schiödte and Meinert. Thus it will be seen that the family Cymothoidae, with some variations in the spelling of the name, has also had a diversified career, being sometimes restricted and sometimes extended, so that nothing like general agreement has yet been reached as to its limits. Hansen distinguishes it from the Ægididae by the mandibles being without accessory plate and with the first joint of the palp inflated, and by the maxillipeds being always four-jointed, with the last joint rather long and narrow and sub-acute, and adds that the adolescent or adult animals of this family may be further distinguished from the Ægididae by the following characters:—both pairs of antennae having the peduncle in general scarcely or not defined from the flagellum; all the pleopods with bare rami; terminal segment with bare margin; uropods with margin of the rami bare at least in the female; the animals hermaphrodite.

GEN : ANILOCRA, Leach.

1818. *Anilocra*, Leach, Dict. Sci. Nat., v. 12, p. 350.
 1818. *Canolira*, Leach, Dict. Sci. Nat., v. 12, p. 350.
 1825. *Anilocra*, Desmarest, Consid. gén. Crust., p. 306.
 1829. *Canolira*, Latreille, Règne Animal, Cuvier, v. 4,
 p. 134.
 1840. *Anilocra*, Milne-Edwards, Hist. Nat. Crust., v. 3,
 p. 255.
 1853. *Anilocra*, Dana, U.S. Expl. Exp., Crust., v. 13, p. 747.
 1870. *Epichthys*, Herklots, Arch. Néerland., v. 5, p. 122.
 1881. *Anilocra*, Schiödte and Meinert, Mon. Cymothoarum,
 Naturh. Tidsskr., ser. 3, v. 13, p. 100.
 1893. *Anilocra*, Stebbing, History of Crustacea, p. 352.

From the other genera assigned by Schiödte and Meinert to their family Anilocridae, this genus is distinguished by the rounded or sub-truncate cuneiform front of the head, while the Anilocridae in general are distinguished from the Saophridae and Cymothoidae of the same authors by having the peduncle of the uropods produced into a long inner spine.

ANILOCRA CAPENSIS, Leach.

1818. *Anilocra capensis*, Leach, Dict. Sci. Nat., v. 12, p. 350.
 1825. *Anilocra capensis*, Desmarest, Consid. gén. Crust.,
 p. 306, t. 48, f. 1.
 1829. *Canolira du Cap*, Latreille, Règne Animal, Cuvier,
 v. 4, p. 134.
 1836? *Canolira capensis*, Guérin-Méneville, Iconographie,
 Crust., t. 29, f. 5.
 1840. *Anilocra capensis*, Milne-Edwards, Hist. Nat. Crust.,
 v. 3, p. 258.
 1843. *Anilocra capensis*, Krauss, Südafrik. Crust., p. 66.
 1881. *Anilocra capensis*, Schiödte and Meinert, Mon.
 Cymoth., Naturh. Tidsskr., Ser 3, v. 13, pp. 103, 146,
 t. 10 (17), f. 4.

From the other species of the genus this is distinguished by the following combination of characters, that the first antennae are straight, not geniculate, the first free joint of the limbs is not carinate; the inner branch of the uropods is much shorter than the outer; and the front of the head is strongly produced and roundly truncate. Of these four characters the first three are common to *A. physodes*, *A. frontalis*, and *A. plebeia*, and of these *A. frontalis* has the same frontal character in the adult male but not in the ovigerous female, and *A. physodes* has the front in the ovigerous female rounded truncate but not strongly produced. The latter species and *A. capensis* attain a very much greater size than the other two, In *A. capensis* the eyes are sub-oval, while in *A. physodes* they are described as sub-pentagonal.

According to Leach's original description, the terminal segment abruptly narrows beyond its middle, and is feebly rounded and almost carinate. Schiödte and Meinert speak of the body as being slightly twisted to the right or the left. The specimen sent me is symmetrical, and has the terminal segment feebly carinate, apically well rounded, with no abrupt narrowing. The length is 53 m.m. Leach describes the colour as brown with an inclination to olive-green or grey, and testaceous or whitish hind margins to the segments.

Habitat. Simon's Bay, Cape of Good Hope. Specimens are recorded from Java and Teneriffe.

GEN.: MEINERTIA, Stebbing.

1883. *Ceratothoa* (not Dana, 1853), Schiödte and Meinert,
 Mon. Cymothoarum, Naturhistorisk Tidsskrift, Ser.
 3, v. 13, pp. 289, 322.
 1893. *Meinertia*, Stebbing, History of Crustacea, p. 354.

Schiödte and Meinert distinguished a new genus *Glossobius* in 1883 from another new genus *Emetha* and Dana's *Ceratothoa* by the character that in *Glossobius* the fingers are unequal, those of the third pair being the largest, whereas in the other genera the fingers are equal or sub-equal. But in this arrangement the only two species which Dana had assigned to his *Ceratothoa* were transferred to *Glossobius*, so that obviously *Glossobius* is a synonym of *Ceratothoa*, Dana, and the eleven species assigned by Schiödte and Meinert to their *Ceratothoa*, together with *Ceratothoa deplanata*, Bovallius, 1885, will be properly grouped under the generic name *Meinertia*. The *Ceratothoa lineata* of Miers, 1876, does not appear to be noticed in the Danish Monograph. It was founded on "a single specimen, probably young," which in the opinion of the author himself "ought perhaps to be referred to the genus *Cymothoa*" For the present, therefore, it may be left out of account.

MEINERTIA IMBRICATA (J. C. Fabricius).

1787. *Oniscus imbricatus*, Fabricius, Mantissa Insectorum, v. 1, p. 241.
 1793. *Cymothoa imbricata*, Fabricius, Entom. Syst., v. 2, p. 503.
 1798. *Cymothoa imbricata*, Fabricius, Supplementum, p. 304.
 1818. *Cymothoa Banksii*, Leach, Dict. Sci. Nat., v. 12, p. 353.
 1835. *Cymothoa trigonocephala*, Milne-Edwards, Ann. Sci. Nat., Ser. 2, v. 3, t. 14, f. 1, 2.
 1836? *Cymothoa trigonocephala*, Guérin-Ménéville, Iconographie, Crust., t. 29, f. 2.
 1839? *Cymothoa trigonocephala*, Milne-Edwards, Règne Animal, Ed. illust., Crust., t. 65, f. 2.
 1840. *Cymothoa Banksii*, Milne-Edwards, Hist. Nat. Crust., v. 3, p. 273.
 1876. *Ceratothoa Banksii*, Miers, Catal. Crust., New Zealand, p. 105.
 1883. *Ceratothoa Banksii*, Schiödte and Meinert, Mon. Cymoth., Naturh. Tidsskr., Ser. 3, v. 13, p. 340, t. 14 (21), f. 6-21.
 1884. *Ceratothoa imbricata*, Miers, Zool. Coll. H. M. S. "Alert," p. 300.
 1890. *Ceratothoa Banksii*, Hansen, Cirolanidae, p. 68 (304), t. 10, f. 4.
 1893. *Meinertia imbricatus*, Stebbing, History of Crustacea, p. 354.

Schiödte and Meinert divide the genus into three groups, respectively with the peraeon carinate, flattened or convex. The last group is sub-divided into those with the front angles of the first segment carinate, and those with the angles not

carinate. Of the latter some have the front of the head acute or sub-acute, but two, *Gaudichaudii* and *imbricata* have the front obtuse. *M. Gaudichaudii* in the ovigerous female has the sides of the head broadly rounded, the eyes sub-rotund, the inner ramus of the uropods falcate. *M. imbricata* of that sex and condition has the sides of the head emarginate, the eyes rhomboidal, the inner ramus often a little flexuous. From *M. trigonocephala* (of Schiödte and Meinert), in which the front of the head is sub-acute, *M. imbricata* is further distinguished by having the front margin of the first pereon segment nearly straight instead of conspicuously bisinuate. But Miers, who carefully investigated the synonymy, thinks it not improbable that the original *C. trigonocephala*, Leach, ought to be regarded as a synonym of *M. imbricata*, and definitely includes in the synonymy as well the species which Heller names *Ceratothoa Banksii* (Reise der Novara, Crust., p. 148) as that which on the same page Heller describes as *C. trigonocephala*.

The female attains a length of 57 mm.

The species is recorded from the Indian Ocean, Java, New Zealand, Australia and the Cape.

Specimens sent me from the Cape were "from mouth of fish, Kalk Bay," with the note that the species is "a crustacean common in the mouth and gill cavity of the fish here."

The discussion of the mouth-organs of this species in Hansen's "Cirrolanidae" will be found especially valuable.

COPEPODA PARASITICA.

GEN. : SPHYRION, Cuvier.

1830. "Les Sphyrions," Cuvier, Le Règne Animal, v. 3, p. 257.
- 1829-43. *Sphyrion*, Guérin-Méneville, Iconographie du Règne Animal, Zoophytes, p. 11.
1840. *Sphyrion*, Milne-Edwards, Hist. Nat. des Crustacés, v. 3, p. 525.
1845. *Lestes*, Krøyer, Danmarks Fiske, v. 2, p. 517.
1861. *Sphyrion*, Steenstrup and Lütken, Kong. Danske Vid. Selsk. Skrifter, Ser. 5, v. 5. Snyltekrebs og Lernaer, p. 347 (7), 432 (92).
1864. *Lesteira*, Krøyer, Naturhistorisk Tidsskrift, Ser. 3, v. 2, pt. 3, p. 402.
1868. *Lesteira*, Heller, Reise der Novara, Crust., p. 228.
1890. *Lesteira*, G. M. Thomson, Trans. New Zealand Institute, v. 22, p. 370.
1899. *Sphyrion*, Bassett-Smith, Pr. Zool. Soc. London, pp. 441, 488.

In adult female cephalothorax transversely expanded, connected by a very narrow, smooth, cylindrical "neck" with a large and smooth, somewhat bulb-like genital segment, which carries behind two large clusters of tubules and two long and narrow ovisacs; the mouth very small, and apart from its obscure constituents no appendages present on the head or trunk. Male unknown. Young with eight pairs of appendages.

The generic name is obviously derived from *σφύριον*, a little hammer. Cuvier, founding the genus upon the "*Chondracanthe lisse*" of Quoy and Gaimard, defines *Sphyrion* as having "la tête élargie des deux côtés, comme un marteau, de petits crochets à la bouche, un cou mince, suivi d'un corps déprimé et en forme de coeur, qui, outre les deux longs cordons, porte de chaque côté un gros faisceau de poils." There is little fault to be found with this definition, except that the word "poils" is inappropriate to the blunt-ended, often bifid and trifid, branchlets, which in two great bunches are appended to the genital segment, probably with a branchial function.

SPHYRION LAEVIGATUM, Guérin-Méneville.

PLATE 4.

1824. *Chondracanthe lisse*, Quoy et Gaimard, in Freycinet's Voyage autour du Monde, Zoologie, Atlas, pl. 86, fig. 10.
1830. *Sphyrion lisse*, Cuvier, Le Règne Animal, Zoophytes (Intestinaux cavitaires), vol. 3, p. 257.
- 1829-43. *Sphyrion laevigatus*, Guérin-Méneville, Iconographie du Règne Animal, Zoophytes, p. 11, pl. 9, fig. 4.
1840. *Sphyrion laevigatus*, Milne-Edwards, Hist. nat. des Crustacés, vol. 3, p. 526.
- 1836-49. "*Sphyrion levigatus*, Cuv." Le Règne Animal, Edit. illustrée, Zoophytes (Intestinaux, Cavitaires), p. 62, 63, pl. 32, fig. 4, 4a.
1869. *Sphyrion laevis*, Steenstrup, Oversigt Vidensk. selsk. Kjöbenhavn, p. 202, pl. 2, fig. 4a, 4b.
1890. *Lesteira kroyeri*, G. M. Thomson, Trans. New Zealand Institute, vol. 22, p. 370, pl. 28, f. 4, 4a.
1899. *Sphyrion laevigatum*, Bassett-Smith, Pr. Zool. Soc. London, p. 489.

The soft cephalothorax which is wholly embedded in the tissues of the host is in this species distinguished by its great width, being not as in *Sphyrion lumpi* (Kröyer) narrower, but much wider than the genital segment. It is also very nodulose and somewhat variably so, the extremities in Thomson's New Zealand specimen being simply rounded.

but in that of the Cape forming three nodules. On the front margin of the upper side are two very prominent bosses, one of which in the Cape specimen has a subsidiary nodulè at its base. On the hind margin of this same side are two much smaller bosses, much closer together. Between the front points there is a shallow quadrilobate process, and just below this projects the minute mouth, consisting presumably of upper and lower lips and rudimentary mandibles. Of anything like antennae I see no trace either in Thomson's figure or in the Cape specimen.

From the middle of the under side of the great cephalothoracic expansion starts the smooth narrow chitinous "neck," which has a smaller relative length than in *Sphyrion lumpi*, but which cannot perhaps be depended upon as affording a specific character by its dimensions, there being in my opinion reason to suppose that it varies with the age and size of the specimen, becoming relatively smaller as the specimen grows larger.

In Quoy and Gaimard's figure this section of the animal is very elongate, but very short in the figure given by Guérin-Méneville.

The genital segment, which also has a firm smooth integument, is broader than long, and longer than thick. The upper and lateral margins are curved, the hinder is almost straight, with a slight median projection, explained as the rudimentary tail part. On either side of the latter are bunches of vesicles, which in the Cape specimen together exceed the size of the genital segment itself. The ovisacs are long and narrow, containing several rows of minute eggs.

The Cape specimen is rather less than two inches long, 47 mm., the head 30 mm. wide. Thomson's New Zealand specimen "taken from the abdomen of a ling (*Genypterus blacodes*)" was about 70 mm. long, with the head 59 mm. wide. In both specimens the neck measured 12 mm. Krøyer's *Sphyrion lumpi* was found burrowing in the tail fin of a *Cyclopterus lumpus* from Iceland. It was two inches long. The difference in the proportional sizes of its parts, the much less nodulose head, the very "elongate neck," and the northern habitat, make it at least possible that it may be a distinct species.

In 1871 (Tr. Linn. Soc. London, v. 27, p. 501, t. 59, fig. 12), a third species was described by Dr. R. O. Cunningham, M.D., F.L.S., under the name *Sphyrion Kingi*. The specimens were taken from the gills of fish, on the East Coast of Patagonia. The head is very distinctly nodulose and the "neck" extremely short. But it is still an open question whether either this or Krøyer's species should be upheld as specifically distinct from *laevigatum*.

It may be noted that Quoy and Gaimard and Cuvier only give the specific name "*lisse*" in French, Guérin-Méneville being the first to give the the Latin *laevigatus*, so that to him the name of the species must be attributed. Milne-Edwards in 1840 refers to the part of the "Iconographie" here in question, thus showing that that work antedates his own.

CIRRIPEDIA.

FAM. : BALANIDAE.

GEN. : TUBICINELLA, Lamarck.

1802. *Tubicinella*, Lamarck, Annales du Museum, vol. 1.
 1824. *Coronula*, de Blainville, Dict. Sciences Nat., vol. 32.
 1854. *Tubicinella*, Darwin, Monograph of the Cirripedia (Ray Soc.), vol. 2, p. 430.

"Compartments six, of equal size; shell sub-cylindrical, wider at the top than at the basis, belted by several large transverse ridges" (Darwin).

TUBICINELLA TRACHEALIS (Shaw).

1802. *Tubicinella major et minor*, Lamarck, Ann. Mus., vol. 1, pl. 30, f. 1-2.
 1806? *Lepas trachealis*, Shaw, Nat. Miscell. (1789-1813), vol. 17, pl. 726.
 1815. *Lepas tracheaeformis*, Wood, General Conchology, pl. 4, f. 1-3.
 1818. *Tubicinella balaenarum*, Lamarck, Anim. sans Vertèbres.
 1824. *Tubicinella Lamarckii*, Leach, Encycl. Brit., Suppl., v. 3, pl. 57.
 1824. *Coronula tubicinella*, de Blainville, Dict. Sciences Nat., vol. 32, pl. 117, f. 5.
 1825. *Tubicinella trachealis*, Gray, Annals of Philosophy, vol. 10.
 1836? *Tubicinella balaenarum*, Guérin-Méneville, Iconographie du Règne Animal, Mollusques, p. 58, pl. 38, f. 14.
 1854. *Tubicinella trachealis*, Darwin, Mon. Cirripedia, vol. 2, p. 431, pl. 17, f. 3a-c.
 1873. *Tubicinella trachealis*, Steenstrup (in Lütken), Vidensk. Selsk. Skr., Ser. 5, Naturv. Afd., vol. 10, No. 3, p. 244 (16).

Darwin, from whose work I have taken most of the synonymy, rightly observes that Lamarck's alternative name for a single species cannot be retained, and that Shaw's *trachealis*, being next in priority, ought to be adopted.

The skin of the whale with a large group of these cirripedes burrowing into it to the depth of an inch and three-quarters presents an extraordinary spectacle. In some cases the

cavities seem to be enlarged at the top by the efforts of a crowd of *Cyamus pacificus* which are seen to be nestling round the cirripedes. According to Darwin's explanation the burrowing is rather apparent than real, the pressure of the group of cirripedes merely pressing inwards the skin of the whale, and the epidermis as it forms being pushed upwards between the nearly approximate shells. The young *Tubicinella*, though nearly cylindrical like the adult, has a very much smaller aperture, and, as the growth takes place at the base of the shell, the problem was how to account for the widening of the aperture at the top. The solution is that the upper margin suffers a gradual disintegration. For this the structure of the shell is adapted, and specimens which by reason of their broken edges might be thought to be damaged and imperfect, are really in a condition essential to the growth of the animal. Darwin says that probably "the rapid downward growth of the shell, besides indenting the whale's skin, at the same time slowly pushes the whole shell out of the skin; and thus continually exposes the summit to the wear and breakage which seems to be necessary for its existence." It seems strange that the same rapidity of downward growth should have the two opposite effects of pushing the shell in and pushing it out. One would think it sufficient that the growth of the cirripede shell should keep pace with the formation of the upward pushing epidermis of the whale. Darwin thinks that the slightly greater width of the *Tubicinella* shell above than below is, on his view, beautifully explained, namely, "for the sake of facilitating the protrusion of the shell; for the ordinary conical shape of sessile cirripedes, with the apex upwards, would have rendered the pushing out of an imbedded shell almost impossible; on the other hand, we can see that the likewise very peculiar, concentric, prominent belts may be necessary to prevent too easy protrusion." But it is difficult to see why a slightly conical shell would have found any special difficulty in pushing out of the thinly surrounding walls of the whale's epidermis. At worst the shape could only have served the retarding purpose which Darwin attributes to the concentric belts. When a *Tubicinella* is taken out of the whale's skin, these belts are found to have left a pretty sharp impression, as sometimes the surface markings of a fossil are imprinted on the matrix. The epidermis pushing between the nearly contiguous shells will naturally take the impress of their projections, but the shells pushing through the epidermis would obliterate the stamp.

The specimens sent me were from a Right Whale taken in False Bay.

EXPLANATION OF PLATES.

PLATE 1.

PALINURUS GILCHRISTI, n. sp.

Dorsal view of a specimen, natural size, with detached flagellum of second antenna at the side.

PLATE 2.

CALLIANASSA KRAUSSI, n. sp.

n.s. Dorsal view of a specimen, natural size. The parts are figured from a rather smaller specimen; all to the same degree of magnification, except the still more enlarged border of the mandible and setae of the pleopod.

a.s. First antenna. a.i. Second antenna, showing only the first few joints of the flagellum. With these are shown the eyes and frontal margin.

mdb. Mandible.

mx. 2. Second maxilla.

mxp. 3. Third or outer maxilliped, with a portion of a branchia attached.

plp. 4. Extremity of outer ramus of fourth pleopod.

urp. The uropod on one side of the caudal fan.

T. The telson.

PLATE 3.

prp. 1-5. The trunk-limbs, without the branchiæ, much less highly magnified than the figures on the preceding plate, except the separate terminal portions of prp. 3-5. The lower prp. 1. is the left cheliped, the upper is the large right cheliped. The apex of prp. 5 is more enlarged than the other figures.

PLATE 4.

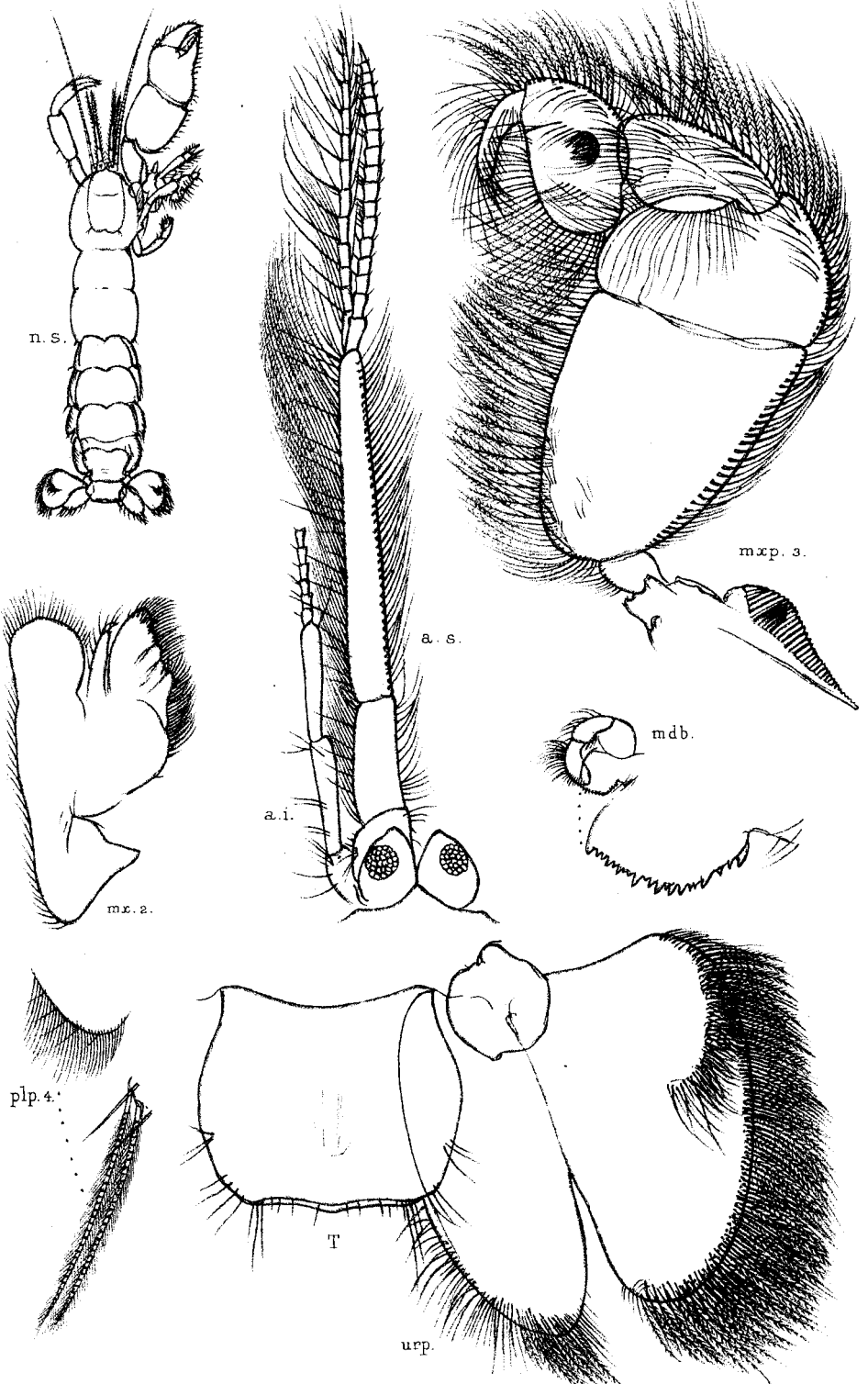
SPHYRION LAEVIGATUM, Guérin-Méneville.

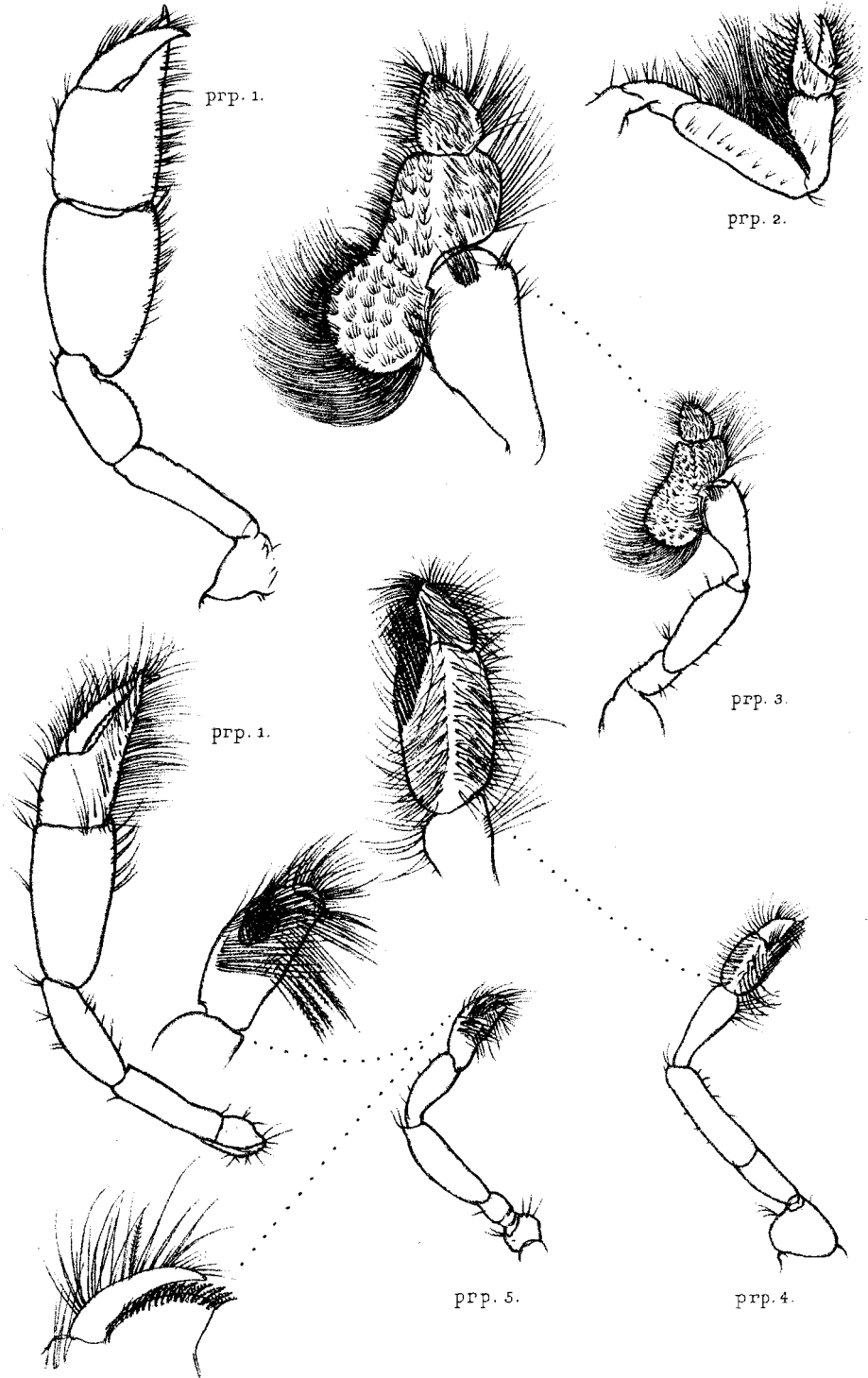
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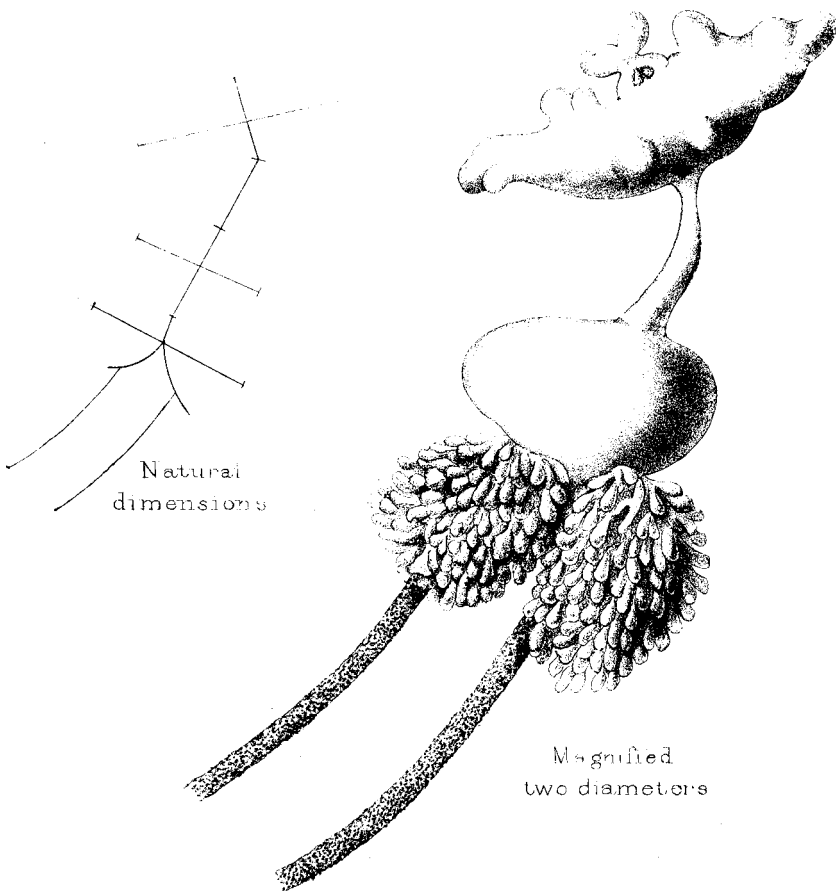
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THRS. del.

West, Newman sculp.

SPHYRION LAEVIGATUM, (Quoy & Gaimard.)