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XLVIII.—*Preliminary Notice of new and remarkable Cephalopods from the South-west Coast of Ireland.* By A. L. MASSY, Department of Agriculture and Technical Instruction, Fisheries Branch, Dublin.

THE species mentioned below were all met with at 50 to 70 miles off the south-west coast of Ireland, and form part of a collection made by the Fisheries Cruiser 'Helga' during the years 1901 to 1907. A detailed report of the whole collection, with illustrations of the new species, is in preparation and will appear in the "Scientific Investigations" of the Fisheries Branch of the Department.

Family **Polypodidæ.**

Genus **POLYPUS**, J. G. Schneider.

Polypus profundicola, sp. n.

Head slightly narrower than body. Eyes large and prominent. A few slightly marked tubercles usually present round each eye. Skin otherwise smooth in all parts. Arms somewhat slender, largest at the base, tapering gradually to very fine points. Order 1, 2, 3, 4. Their length is on an average six times longer than the body. Ventral arms the slightest, the others not differing much in bulk. Suckers sessile with circular aperture, and radial grooves extending almost to the

margin. Suckers relatively small and placed rather far apart, especially in the distal half of umbrella region. The space here between two suckers frequently twice the diameter of either sucker. Suckers of extremities of arms perfect, not reduced to papillæ, and extending to within less than half a millimetre from tip of arm. Web much developed, extending nearly one quarter the length of arms. Least development between ventral arms. Web continued on arms in the form of large lateral crests. Radula formed of 7 series of teeth: 1 median, 4 lateral, and 2 marginal. Dental formula 3 2 2 1 2 2 3. Median row consisting of large acute teeth without lateral denticles. Inner lateral teeth much the smallest, broad at the base, terminating in short conical points. Outer lateral teeth broader and more elongated. Marginal teeth elongated and claw-like. Siphon moderately large. Organ of siphon consisting of a pair of heart-shaped folds, of which the thickened rims are continuous and distinctly projecting all round. Mantle bursiform. Pallial aperture not as large as head. Body soft. Lateral adductor muscles in form of flat bands placed rather close together, the anterior much the smallest, the posterior reaching their greatest width in the portion attached to the body. The two cartilaginous pieces in the dorsal mantle are long and rod-like; they are widest in the anterior portion. The ligula copulatoria* of the hectocotylized arm has from eight to nine laminae copulatoriae in the concave interior, in the median portion of which there is a flat-topped longitudinal ridge. Calamus brachialis moderately short. Sperm-canal smooth, shallow, and like a white band on surface of arm. General colour vinous, due to an immense number of small light and dark purple and dark red chromatophores distributed on a white ground. *Polypus profundicola* appears to be very nearly allied to *Octopus ergasticus*, Fischer, particularly in the form of the hectocotylized arm. The ligula copulatoria is, however, only crossed by 6 or 7 laminae in *O. ergasticus*. The hectocotylus is also larger in proportion in *P. profundicola*, and the arms are longer, and with smaller and more numerous suckers. The web is also more developed, forming large crests on the arms, and the siphon projects much less. The specimens examined consist of 7 males and 7 females, obtained in the trawl at 385-720 fath. The principal dimensions of a large male and female are given below.

* The terms used in describing the different parts of the modified arm are those suggested by P. and J. Fischer in "Diagnoses d'espèces nouvelles de Mollusques Céphalopodes recueillis dans le cours de l'Expédition scientifique du 'Talisman' (1883), Journ. de Conch. 1892, xxxii. p. 297.

Dimensions. ♂.

Total length	.....	mm.	582
End of body to mantle-margin	.....		103
" " eye	.....		111
Breadth of body	.....		70
" head	.....		62
Eye to edge of umbrella	.....		102
Diameter of largest sucker	.....		4
Length of arms * :—			
1st on right	471 mm.	1st on left	460
2nd	440 "	2nd	" mutilated.
3rd	264 " (hect.).	3rd	" ditto.
4th	370 "	4th	327

Approximate number of suckers, 1st arm on right, 254.

Dimensions. ♀.

Total length	.....	mm.	457
End of body to mantle-margin	.....		62
" " eye	.....		78
Breadth of body	.....		50
Eye to edge of umbrella	.....		105
Diameter of largest sucker, nearly	.....		4
Length of arms :—			
1st on right	377 mm.	1st on left	379
2nd	370 "	2nd	" 371
3rd	290 "	3rd	" 312
4th	238 "	4th	" 290

Approximate number of suckers, 1st arm on right, 218.

Polypus Normani, sp. n.

Head rather broader than body. Eyes large and prominent, circumference of aperture in the type 11 mm. A number of deep wrinkles extend across the surface between eyes, originating from dorsal side of eye-aperture. Surface otherwise smooth in all parts. Arms 4-sided and keeled, somewhat slender, largest at the base, tapering gradually to very fine points, and arranged in the order 1, 2, 3, 4. Arms about four times the length of body, the two dorsal pairs more bulky than the rest. Suckers sessile, large, and with the arrangement in the centre of arm noticed by M. Joubin in *O. levis* †. Each sucker with circular aperture and numerous radial

* The arms are measured from the mouth.

† "Entre les ventouses, sur la face orale des bras, on voit une crête peu saillante mais bien nette qui passe d'une ventouse de droite à celle immédiatement supérieure à gauche, puis de là revient à droite et ainsi de suite. L'ensemble de cette disposition a l'aspect d'un lacet reliant alternativement deux rangées de boutons." Campagnes Scientifiques du Prince de Monaco. Fascicule xvii. (1900): Céphalopodes provenant des campagnes de la Princesse Alice (1891-1897), par Louis Joubin.

grooves, the first two usually placed singly, remainder arranged in pairs, the seventh or eighth pair (about centre of web in type) usually the largest, gradually diminishing towards tip, where they are very small but not reduced to papillæ. In the type the suckers extend to within about 2 mm. of the extremity of each arm. Web much developed, extending about one quarter the length of the arms. Maximum development between the dorsal pairs, least development between the ventral arms. Web not continued on arms. Buccal membrane and mandibles apparently very small, almost concealed in the type by the basal suckers. Siphon moderately large, extending rather more than one third of the distance between pallial aperture and web between ventral arms. Mantle bursiform and somewhat pointed posteriorly, its aperture exactly the width of basal portion of head. Body firm. The calamus brachialis of the hectocotylized arm short and but little projecting; ligula copulatoria narrow and pointed, the deeply concave interior looking like a longitudinal groove, and crossed by nine slightly defined laminae copulatoriæ. Sperm-canal extending to umbrella-margin, quite shallow and like a narrow gradually widening white band, smooth except for a few faint grooves at a little distance from the calamus brachialis. The end of hectocotylized arm when viewed in profile much resembles that of *O. polyzenia**, except that the point of the calamus brachialis is not quite so acute. Colour much like that of *P. profundicola*, but of a warmer tone. Dorsal surface of body, head, and web the darkest; arms, inner and under surface much lighter, with patches of bluish grey on web between each arm on ventral side. The only specimen of this graceful-looking form was taken in the sprat-net on trawl at 707-710 fath.

Dimensions.

	mm.
Total length.....	206
End of body to mantle-margin	29
" " centre of eye	42
Breadth of body	30
" head	32
Centre of eye to lateral edge of umbrella ..	50
Length of calamus brachialis	1
" ligula copulatoria	3
Breadth of ligula copulatoria	2
Diameter of largest sucker.....	4
Siphon projects above mantle-margin	15
Diameter between eyes	26

* Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert,' 1881-2. Mollusca (by E. A. Smith), pl. iv. A³.

Length of arms:—

1st on right	157 mm.	1st on left	158
2nd	147	2nd	152
3rd	95	3rd	147
4th	133	4th	133

Approximate number of suckers, 1st arm on right, 144.

Family Gonatidæ.

Genus GONATUS, Gray, 1849.

Gonatus Fabricii, Lichtenstein.

Nine specimens taken in the trawl at depths varying from 465–666 fath. All were examined without success for any trace of a hectocotylus. The largest specimen measured 275 mm. in length, and the smallest 118 mm. Not met with before in British-and-Irish waters.

Family Enoploteuthidæ.

Genus OCTOPODOTEUTHIS, Rüppell, 1884.

Octopodoteuthis sicula, Rüppell, 1884.

A specimen taken in the trawl at 550–570 fath. This individual agrees closely with Dr. Jatta's description. The tips of all the arms being mutilated, the sex cannot be determined without injury to the specimen. This species appears never to have been met with outside the Mediterranean before, or of such a size. It measures 117 mm. across the fins; from end of body to mantle-margin 107 mm.; from end of mantle-margin to bifurcation of first pair of arms 35 mm.

The siphon projects 17 mm. above the mantle-margin. No trace exists of the roots of the tentacles, which in this species are moulted or re-absorbed in youth.

Family Histioteuthidæ.

Genus HISTIOTEUTHIS, Orbigny.

Histioteuthis bonelliana, Férussac.

Two specimens. One with a total length of 31 mm. was taken in the triangle net at 70–80 fath. from the surface over soundings of about 800 fath. The other measures 129 mm. and was taken in the sprat-net on trawl at 775–795 fath. The smaller specimen possesses no trace of web between the arms, or of the black elongate swellings present in the larger specimen at the tips of all except the ventral arms.

Not previously recorded from British-and-Irish waters.

Family Cranchiidæ.

Genus *HELICOCRANCHIA*, gen. nov.

Body elongated, chalice-shaped, tapering gradually to a rounded point. Mantle-substance tough, smooth, pale, with many small chromatophores. Fins considerable, oval, pedunculate, attached to end of dorsal surface of body. Eyes sessile, large, in the form of a low cone. Arms rather long, with keel and lateral membrane moderately developed. Tentacles long and expanded into a club. Siphon extremely large.

Helicocranchia Pfefferi, sp. n.

Body broadest in the middle, tapering gradually, and rounded posteriorly. Breadth of body rather less than half the length of mantle. Surface smooth; colour creamy white; dorsal surface closely freckled with dull red oblong chromatophores arranged irregularly; ventral surface and sides with eight transverse rows of chromatophores, as well as a number of spots arranged in no particular order. Fins narrowly pedunculate, broadly pyriform in outline, somewhat fleshy, rather more than one fifth the length of the mantle, attached to dorsal surface close to (in type at 1 mm. from) posterior end of body. Mantle-margin depressed in middle line dorsally and there joined to siphon. Eyes sessile, large; their visual parts in the form of a low cone, of which the posterior face is occupied by a large bluntly conical process. Towards the posterior end of each eye is an oblong, soft, white papilla, possibly the olfactory papilla. Buccal membrane mutilated in the type, but apparently seven-angled. Siphon extremely large, extending about two thirds of the length of the ventral arms. The arms are about one third as long as the mantle. They are unequal, the apparent order of length being 3, 2, 1, 4 *, slender and tapering, with transparent keel moderately developed on distal two thirds of all, but least developed on dorsal arms. Lateral membrane moderate, extending entire length of arms. Margin usually straight. The arms appear to be quite free. The suckers are stalked and arranged in two rows until the distal third of arm is reached, when they suddenly become very minute, crowded, and arranged irregularly. These minute suckers are stalked and have a circular aperture; towards the extreme tip they appear to be imperfectly formed. The large suckers have a circular horny ring and about four rows

* Tips of ventral arms absent.

of papillæ. The latter when they cross the edge look like teeth. The tips of the ventral arms being absent in the type, it is not possible to say if the small suckers are present on these arms also. The suckers on all the arms are placed furthest apart on the proximal portion, gradually becoming placed closer together and reaching their maximum size just before the commencement of the distal third, where they are abruptly succeeded by the tiny suckers. The large suckers of the dorsal arms are smaller in proportion than those of the other arms. The tentacles are long, slender, and round. When bent back they extend rather more than three quarters of the length of the mantle. The stem is thickest at its base, whence it narrows gradually but considerably, again expanding into a club furnished with moderate swimming-crest and lateral membrane. The suckers of the club are in four rows, of which the two median are perhaps slightly the largest. About 60 suckers are present on each club, all with circular horny ring, with about four rows of papillæ. About 16 pairs of minute suckers occur on the inner surface of the stem, placed close together near the club, becoming gradually more distant. Apparently none are modified into fixing-pads. There are none on the proximal portion of the stem, which is quite smooth in the type for the last 10 mm. Organ of siphon consisting of two quadrangular folds on sides and a median dorsal organ; the latter is composed of a thin plate occupied by an anterior and two lateral tubercles. From the anterior tubercle on pressure a needle-like process appeared, in the type extending a length of 1 mm. Similar processes claw-like in shape are situated in each of the lateral tubercles. The specimen was taken in the trawl at 350 fath.

Dimensions.

		mm.
Total length.....		80
End of body to mantle-margin dorsally		39
" " top of eye		41
Breadth of body		18
" head between eyes		3
" " across eyes		10
Length of fin		7
Breadth of fin		7
" (diameter) of peduncle of fin		2
Length of arms:—		
1st on right	11 mm.	1st on left 11
2nd "	13 "	2nd " 13
3rd "	14 "	3rd " 14
4th "	9 "	4th " 8
Length of tentacle		37

The arms were measured from the mouth, but the arm-measurements must be considered only approximate, as, with the exception of the first and third arms on the left, the extreme tips are missing.

XLIX.—*On the Geographical Races of the Lesser Horseshoe Bat* (*Rhinolophus hipposiderus*). By KNUD ANDERSEN.

IN a paper published two years ago in the 'Proceedings of the Zoological Society of London' (1905, ii. pp. 139–144) I pointed out the existence of three geographical races of the Lesser Horseshoe Bat, viz. a small southern form (*Rh. h. minimus*), distributed, broadly speaking, over the Mediterranean Subregion, south-eastwards to Sennaar and Keren; a large northern form (*Rh. h. hipposiderus*), ranging, broadly speaking, from the extreme N.W. Himalayas (Gilgit), through N.W. Persia and Armenia, over the whole of Central Europe N. of the Balkans and the Alps; thirdly, a form (*Rh. h. minutus*) apparently confined to England, Wales, and Ireland. The southern differs from the northern form, I wrote, in being in every respect smaller—in some respects, as it seems, absolutely smaller, in others at least on an average; I found the length of the forearm to be the most convenient means for a ready discrimination: in *minimus* 34·7–38 mm., in *hipposiderus* 39–41·7. As to the characters of the English form, they have no bearing on the subject-matter of this paper, and are therefore left entirely out of consideration here. My conclusions were based on an examination of ninety-five adult specimens, mostly from the collection of the British Museum, and obtained in localities dotted over practically the whole area occupied by the species.

Since I wrote that paper several other specimens, partly material added to the British Museum collection, partly examples sent for inspection and identification by correspondents here and abroad, have passed through my hands. Every specimen has agreed precisely with the characters pointed out by me, with the exception of three, *all of which are from a place in which I had already predicted* that both forms or intermediate individuals would most probably be found.*

* "I have some reason to believe that in certain border districts (*e. g.* S.W. Switzerland . . .) the two forms occur together, perhaps side by side, but intermediate examples I have never seen. They will probably be found." (Proc. Zool. Soc. 1905, ii. p. 141.)



Massy, Anne L. 1907. "Preliminary notice of new and remarkable cephalopods from the South-west Coast of Ireland." *The Annals and magazine of natural history; zoology, botany, and geology* 20, 377–384.

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