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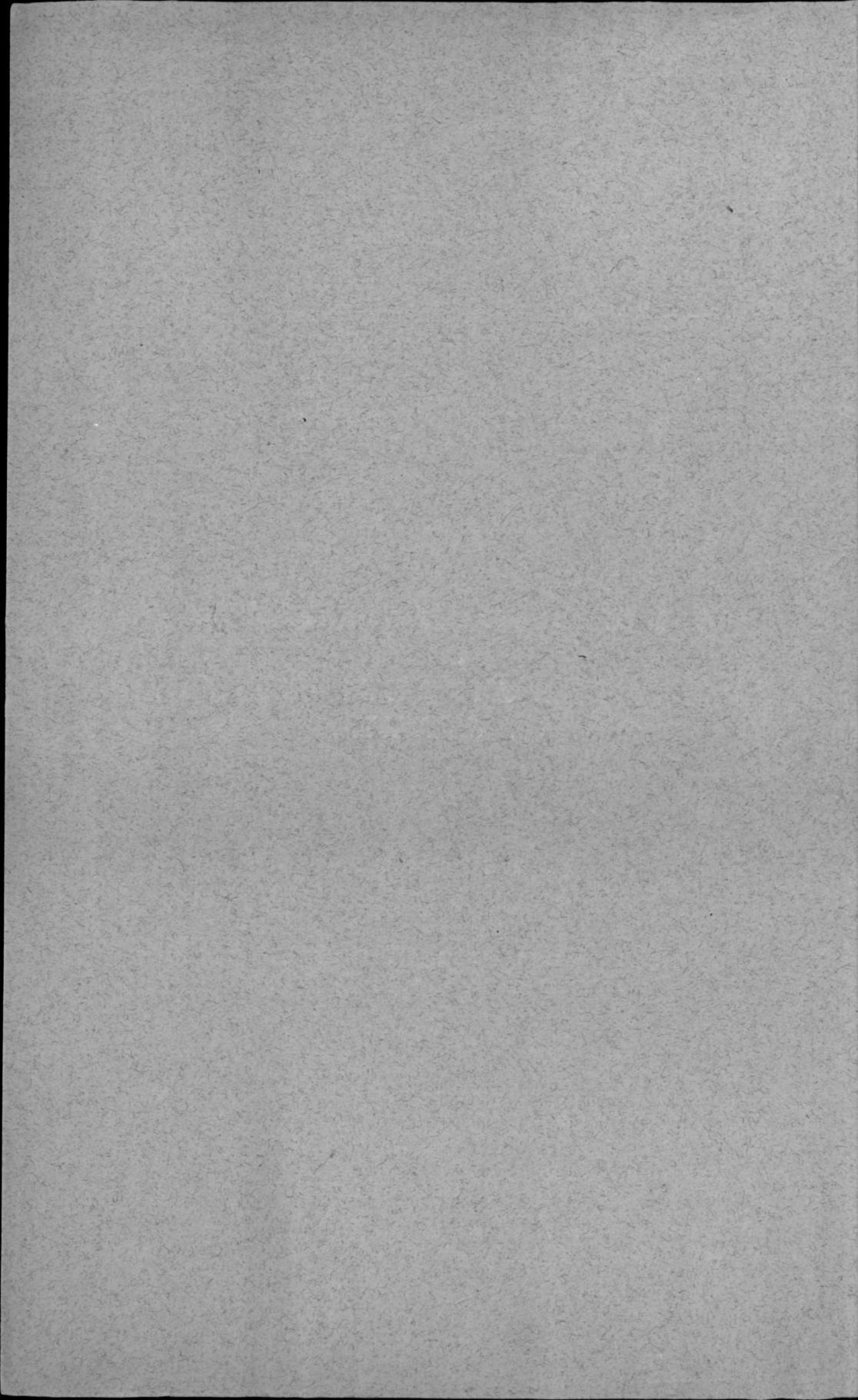
DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

**THE NUDIBRANCHIATE MOLLUSCS
OF
BALLYNAKILL AND BOFIN HARBOURS,
CO. GALWAY.**

BY

G. P. FARRAN, B.A.

(Appendix No. VIII, to Part II. of the Report on the Sea and Inland Fisheries
of Ireland for the Year 1901.)



THE MARINE FAUNA OF THE WEST COAST
OF IRELAND.

PART I.

THE NUDIBRANCHIATE MOLLUSCS OF BALLYNAKILL
AND BOFIN HARBOURS, CO. GALWAY.

BY

G. P. FARRAN, B.A.

PLATES XVIII. AND XIX.

INTRODUCTORY.

The following list of Nudibranchs has been compiled from the records of the Marine Laboratory since its inception in 1899. The species recorded have all been taken either at Inisbofin, where the Laboratory was stationed during the summer and autumn of 1899 and 1900, or at Ballynakill, where it has been for the remainder of the time.

A few of the species were identified by Mr. W. I. Beaumont in the spring of 1899, others have been recorded by the late Mr. M. F. Woodward and by Mr. E. W. L. Holt on various occasions, and for the remainder, mostly taken in 1901 and 1902, I am myself responsible.

This list contains 51 species of which six (*Lamellidoris depressa*, *L. sparsa*, *Cratena viridis*, *Galvina vittata*, *G. cingulata* and *Calma glaucoides*) do not seem to have yet been recorded from the Irish coast. Other points of interest are the occurrence of *Proctonotus mucronifer* in a second Irish locality, the abundance of a red variety of *Eolis glauca* in Bofin Harbour, and also the fact that several of the most remarkable finds recorded by Mr. Beaumont from Valencia Harbour (Proc. Royal Irish Acad. (3), V., 1900) have turned up again in Ballynakill. The number of species in the Valencia list is 48, and of these 37 have been found at Ballynakill or Bofin, notably a small red and white, yellow-bordered Doris, a *Lamellidoris* with a great resemblance to *L. pusilla*, *Cuthona Peachii*, and two species of *Lomanotus*.

The collecting grounds at Bofin are much smaller and less varied than at Ballynakill. They consist mainly of the harbour, which is a small inlet with an inner and an outer portion. The inner

harbour is shallow, with a bottom of sandy mud, and is left almost dry at low water. The outer harbour is more extensive, and is bounded on one side by a rocky shore, broken at intervals by sandy beaches, and on the other by a stony beach with a clay foundation. The bottom is sandy, and includes a large *zostera* bed.

Some dredging was also carried on outside the harbour in 12-15 fathoms where the bottom varies from clean sand to broken shells and slaty gravel.

There is a much greater variety of ground at Ballynakill* ; sand is found all along the main channel as far as Coastguard Bay, passing into mud in a few places ; the lesser bays have all soft muddy bottoms ; the bar at the entrance of Fahy Bay, where the Laboratory is moored, consists mainly of Lithothamnion and a deep depression off Coastguard Bay, referred to in the following notes as Coastguard deep, contains a thick though limited bed of dead shells, such as *Pecten maximus*, *Ostrea*, *Mya*, *Solen*, *Venus exoleta*, &c., with encrusting Polyzoa and sponges and numerous hydroids. This spot proved to be the richest in Nudibranchs in the whole harbour. There are several extensive *Zostera*-beds, some of which are exposed at low spring tides. On the shore rocks are numerous, but in most places are separated from low water mark by a strip of clean sand ; in a few instances, however, e.g., Black Rocks and Roeillaun, they rise directly out of the water. The north shore of Fahy Bay, covered with large stones from the breaking down of an earthen cliff, is very rich in animal life, while apparently similar ground in other parts of the harbour is rather barren.

LIST OF SPECIES.

***Archidoris tuberculata* (Cuv.).**

Common both at Ballynakill and Inisbofin between tide marks and in shallow water below tide marks. The orange and reddish brown varieties are perhaps the most plentiful at Ballynakill.

***Jorunna Johnstoni* (A. & H.).**

Occurs not uncommonly on the shore near low water mark at Ballynakill. First taken by Mr. W. I. Beaumont in March, 1899.

***Addisa testudinaria* (Risso).**

[*Platydoris planata* (A. & H.).]

Taken near the mouth of Ballynakill Harbour under stones at low water, March, 1901.

***Caldina repanda* (A. & H.).**

Met with occasionally near low water mark at Ballynakill.

* See Plate XIX.

Rostanga coccinea (A. & H.)

Found twice at Ballynakill. One under a stone near low water mark, in February, 1901, and again in February, 1902, on a red encrusting sponge on Roeillaun Rocks.

Acanthodoris pilosa (Müll.).

Occurs not infrequently at Ballynakill near low water mark, especially in the more rocky parts of the bay, and is occasionally dredged. The varieties of colour range from pepper and salt to pure white.

Lamellidoris bilamellata (Linn.).

Very abundant and spawning on the sides of the Laboratory along the water-line in the beginning of February, 1902, also on the south shore of Fahy Bay and on Roeillaun Rocks, and in smaller numbers in other parts of the harbour. It was much scarcer in the spring of 1901, and is hardly ever found in summer or autumn. The specimens met with spawning in the more exposed parts of the harbour were much smaller than those on the Laboratory or on the shores of the sheltered waters of Fahy Bay.

Lamellidoris depressa (A. & H.).

This species has been met with several times in October, 1902, amongst Polyzoa-covered shells in the afore-mentioned Coastguard deep, Ballynakill.

Lamellidoris (sp. ?)

A small *Lamellidoris* agreeing in most points with Alder and Hancock's figure of *L. pusilla* has been found several times in Coastguard deep in company with *L. depressa*. It differs, however, in possessing distinctly spiculose tubercles. This is evidently the same animal as that found by Mr. Beaumont at Valencia (*loc. cit.* p. 850).

Lamellidoris sparsa (A. & H.).

A single specimen was found on a Polyzoan-covered shell from Coastguard deep in October, 1902. It was of a rather redder colour than the specimen figured by Alder and Hancock, and only showed the clear area referred to by them behind the right rhinophore. The reticulated appearance of the under edge of the mantle, which A. and H. explain as being probably due to the ends of spicules appearing through, seems in reality to be caused by numerous granular spicules. The resting position assumed by the animal was almost circular; and when *in situ* on a dead shell it could with difficulty be distinguished from a small red Polyzoan colony, the resemblance in shape, colour and texture being complete.

Doris Beaumonti, n. sp.

Four specimens of a brilliantly coloured little *Doris*, which has already been met with by Mr. Beaumont at Port Erin and Valencia (*loc. cit.* p. 848), were taken at Ballynakill among dead shells in Coastguard deep in six to eight fathoms. The first was found in April, 1900, and was submitted to Mr. Beaumont, who stated it to be identical with his specimens. As it appears to be still undescribed, I suggest the name *D. Beaumonti* for it. The following is a description as far as it has been possible to make it out:—

Length=4.5 m.m. Back very high with edges of mantle elevated, slightly upturned in preserved specimens. Tail thick, extending far beyond the mantle, with well-marked keel. Head without tentacles, and not forming a distinct veil, but swollen on either side of the mouth. Rhinophores with six or seven lamellae. Branchial plumes Mr Beaumont states he believes to be retractile, but I have been unable to convince myself that this is the case. It is difficult, however, on account of the very small size of the animal to come to a satisfactory conclusion. They seem to be five or perhaps seven in number, and simply pinnate, the anterior three being larger than the rest. Back covered with rather distant long soft-looking tubercles, each supported by two or three central spicules which do not project. Extending to the edge of the cloak at intervals are long radial spicules, recalling somewhat in arrangement the ribs of an umbrella.

The ground colour is glistening white, intensified on the branchial and rhinophores and on the median line of the tail. On the back, but not reaching to the margin, is a regular network of reddish crimson, through the meshes of which the white tubercles project. In young specimens the crimson pigment is present in the form of scattered patches between the tubercles. Round the margin of the mantle at a little distance from the edge is a narrow band of lemon yellow. Radula of the type found in *Lamellidoris* and *Goniodoris*, with two large median denticles and two small lateral plates.

Goniodoris nodosa (Montagu).

Abundant and spawning on the Black Rocks, February, 1902, and frequently found in other parts. Small specimens (2.6 m.m.) plentiful in Coastguard Deep during October, 1902. No specimens have yet been met with larger than about 1.5 c.m. long, which is much below the size recorded from other places.

Goniodoris castanea (A. & H.).

Two specimens, spawning, on Roeillaun Rocks, February, 1902; one on Ross shore spawning, October, 1902. In both instances the spawn was attached to a piece of *Fucus* covered with *Botryllus*.

Idalia aspersa (A. & H.).

Bofin.—One specimen taken amongst weed fragments from clean gravel outside the mouth of the harbour, June, 1899. (E. W. L. H.).

Ancula cristata (Alder).

Bofin.—Two taken in surface townet with floating weed outside mouth of harbour, July, 1900. (M. F. W.)

Ballynakill.—Two colourless specimens, measuring 4 mm. and 6 mm. respectively, dredged in Coastguard deep; one with normal colouration, measuring 9 m.m., from the same spot, October, 1902.

Polycera quadrilineata (Müller).

Bofin, common. Three specimens taken outside the harbour in July, 1899, by Mr. Holt, which were more or less streaked and spotted with dark brown.

Ballynakill, common; especially on a sandy bottom. One specimen with black rhinophores was taken in February, 1902.

Polycera Lessoni (d'Orb.).

Var. *ocellata*, A. and H. Ballynakill, March, 1899. (W. I. B.).

A few very minute specimens (*ca.* 2 mm. long) taken in October, 1902, seemed to belong to the variety.

Triopa clavigera (Müll.).

A few specimens have been taken at various times at Ballynakill.

Ægirus punctilucens (d'Orb.).

Small specimens are fairly common in material dredged from a weedy bottom at Ballynakill. The blue spots are frequently absent from these, and in some cases the brown pigment also.

Pleurophyllidia Loveni (Bergh).

A single specimen dredged south of the Green Rocks in three to four fathoms, January, 1902. (E. W. L. H.).

Dendronotus frondosus (Ascanius).

One large specimen, *ca.* 2 cm. long, was dredged off Ross Point, Ballynakill, in three to four fathoms in May, 1902, and smaller ones have since been taken near the same spot.

Doto fragilis (Forbes).

Occurs occasionally in dredged material, but is never plentiful.

Doto pennatifida (Montagu).

This is the most plentiful *Doto* in Ballynakill, and it is seldom that a piece of *Antennularia* is found without one or more specimens upon it. A colour variety which occurs occasionally at Ballynakill, and seems fairly constant, has the body thickly marked with chocolate or purple brown pigment. The papillae are covered with small specks of pinkish brown, close enough to give them a pinkish tint. The tips of the tubercles on the papillae are marked with small clusters of opaque white spots. The hepatic contents are usually of a reddish colour.

Doto coronata (Gmel.).

Not common at Ballynakill, and seldom met with larger than about .5 cm. long. It does not seem to occur on Antennularia.

Lomanotus marmoratus (A. & H.).

This species has twice been taken in some numbers at Ballynakill, besides which solitary specimens are occasionally met with. In May, 1902, seven specimens were taken on Antennularia in three to four fathoms off Coastguard Bay. These were of a more greyish brown colour than the specimen figured by Alder and Hancock, but they all varied considerably in the shade and depth of colouration, the smaller specimens being paler than the large. The largest measured 2 cm. when extended. On November 1st, 1902, nine specimens were dredged on Antennularia near the same spot. The larger specimens were coloured as in the first lot, but some of the smaller were very pale, and in one which measured 6 m.m. the only pigment present was a little white, densest on the margins of the pleuropodial ridges. The rhinophoral sheath was dentate in all the above instances. The larger specimens often lashed their bodies to and fro, but never attempted to swim by that means.

Lomanotus portlandicus (W. Thompson).

I have followed Mr. Beaumont in ascribing to this species two large specimens of *Lomanotus* which were taken at Ballynakill in June, 1902. They were both obtained in one haul of a shrimp-trawl off Ross Point in one to two fathoms on a weedy bottom. They measured respectively 5.5 cm. and 4 cm., but seem to have been injured in the trawl and did not stretch themselves to their full extent. They were both of a rich clear reddish colour, paler on the sides and foot. The tips of the rhinophoral sheaths and the margins of the lateral folds were marked with opaque yellow, and the lowest portions of the folds had patches of opaque dirty white.

The white pigment was also thinly flecked over the sides, but not in sufficient quantity to produce any appreciable colour effect. The animals seemed soft and flabby in texture, perhaps on account of the injuries they had received. The rhinophores were lamellated and the pleuropodial folds continuous with the deeply cut rhinophoral sheaths.

Æolis papillosa (Linn.).

Found abundantly on Roeillaun Rocks, Ballynakill, in February, 1902, and occasionally in other parts of the harbour.

Common at Bofin. (E. W. L. H. and M. F. W.)

Æolis glauca (A. & H.).

This species was taken abundantly at the mouth of the inner harbour, Bofin, by Mr. Holt in 1899 and 1900. The range of colour in these specimens was from typical through shades of reddish orange to uniform bright red. It would seem probable that Norman's species (*Æ. sanguinea*) is no more than an extreme colour variety of *Æ. glauca*.

Æ. glauca has twice been met with at Ballynakill.

Cuthona peachii (A. & H.).

Has been several times taken at Ballynakill in its usual habitat, viz., on a Hydractinia covered shell inhabited by *Eupagurus Bernhardus*, and has only twice been met with apart from the Hydroid. A large specimen (ca. 1.2 cm.), taken in December, 1901, was kept in confinement for a considerable length of time, and grew and flourished in spite of the death of its crab. In the beginning of January it deposited a small neat undulating coil of pink spawn on the shell, and later on other smaller coils. At the end of January two small specimens about 5 mm. long were noticed on the shell amongst the Hydractinia, and about a week later two more measuring ca. 2 mm. They grew rapidly, one of the first pair reaching about 1 cm. in March, after which they all died off. They used occasionally to make excursions round the vessel in which they were kept, returning again to the Hydroid.

Cuthona aurantiaca (A. & H.).

A few were taken on the bottom of the Laboratory when she was beached for caulking at Ballynakill in March, 1902.

Cratena viridis (Forbes).

One specimen dredged in Coastguard deep, Ballynakill, in October, and another in November, 1902.

Cratena amcena (A. & H.).

A few specimens have been dredged in Coastguard deep, Ballynakill, during 1902.

Cratena olivacea (A. & H.).

Occurs not uncommonly in dredged material at Ballynakill. One specimen, taken in October, 1902, had fawn-coloured hepatic caeca. All the Ballynakill animals belonged to the form with orange-coloured nuchal streaks.

Tergipes despectus (Johnston).

Plentiful on *Obelia geniculata* from Laminaria growing on the Laboratory a little below the water line, August, 1901. (M. F. W.)

Embletonia (sp. ?)

One specimen was dredged in Coastguard deep in June, 1902. It measured when extended 6 mm. Its body was very narrow,

with two distant anterior pairs of papillae, followed by nine alternate papillae, five on the right and four on the left. The papillae were rather elongate with abruptly truncated transparent tips and brownish-fawn hepatic caecae. The body was flecked with opaque white. Head as in Alder and Hancock's figure of *E. pulchra*. This may perhaps have been a specimen of *E. pulchra*, with which I am not acquainted, but the narrow body and slender truncated papillae do not agree with the description.

***Amphorina cœrulea* (Montagu).**

Frequently met with in dredgings from various parts of Ballynakill Harbour.

***Galvina exigua* (A. & H.).**

Two specimens taken spawning on the thermometer which hangs constantly over the side of the Laboratory, just below the surface, October, 1902.

***Galvina tricolor* (Forbes).**

A few were taken by Mr. Holt in March, 1900, on the bottom of an ice-hulk which was beached at Ballynakill, and I subsequently obtained two specimens, measuring 1.5 cm. and 2 cm. long, off Ross Point, on weedy ground in two to three fathoms.

***Galvina picta* (A. & H.).**

Has not yet been found at Ballynakill, but a few specimens taken by Mr. Holt at Bofin in 1899 from the bottom of a small boat seem, on re-examination, to belong to this species, as they agree closely in colouration, form of the papillae, and radula with Alder and Hancock's figures.

***Galvina Farrani* (A. & H.).**

Specimens with vivid orange spots on the body, ringed with pale blue, similar to those described by Mr. Garstang from Plymouth (Journal Mar. Biol. Assoc., 1890, n.s., Vol. I., p. 483), have been taken by means of a townet dragged through a *Zostera* bed at Ballynakill in July, 1902, and also on *Laminaria* from the sides of an ice-hulk.

***Galvina vittata* (A. & H.).**

Four specimens were taken at Ballynakill in March, 1902, on a clump of *Antennularia* just below low-water-mark. The smaller specimens were pale and faintly marked, as in Alder and Hancock's figure; the largest, which measured 1.9 cm. when extended, dif-

ferred in having the brown bands on the papillae broader than the white intervals and the lateral row of blotches very large and distinctly marked. Two small specimens were again taken on Antennularia from Coastguard deep in November, 1902.

Galvina cingulata (A. & H.).

Taken on Fahy Bar, Ballynakill, in March, 1899 (W. I. B.), and also in March, 1901, in the same place.

Coryphella Landsburgii (A. & H.).

Has often been dredged in various parts of Ballynakill Harbour.

Favorinus albus (A. & H.).

Three taken in Bofin Harbour in October, 1900.*

In Ballynakill two were taken in shallow water in Fahy Bay, November 1901; and one was dredged near the mouth of the harbour on a muddy bottom, February, 1902.

Facelina Drummondi (W. Thompson).

Two were dredged near the mouth of Ballynakill Harbour off Freghillaun, January, 1902.

Facelina coronata (Forbes).

In the scrapings of a small boat, Bofin, July, 1899 (E. W. L. H.). Common about stones and rocks near low water at Ballynakill.

Calma glaucoides (A. & H.).

About 60 specimens found at Ballynakill spawning on a patch of eggs of *Gobius niger* in July, 1901; and in July, 1902, the majority of the patches of eggs found had large numbers of the Eolid crawling over them and spawning.

Proctonotus mucronifer (A. & H.).

Three specimens have been dredged at Ballynakill. They were all found amongst dead shells from Coastguard deep in six to eight fathoms. The first, taken in September, 1902, measured 1.3 cm. The second, which measured 9 cm., was kept for a short time, and adopted a curious attitude when at rest. The body of the animal was contracted till it became circular, the papillae being bent

* Also found in the summer of the same year spawning on decaying Algae in the old lobster pond at Bofin. (E. W. L. H.).

so as to radiate horizontally outwards and the rhinospheres laid back along the body. The appearance presented was that of a small expanded Actinian, rather like one which has occasionally been met with on shells from the same grounds (*Sagartia prolifera*?). The dark patch in the centre of the animal's body and the dark brown hepatic caeca, much larger than in Alder and Hancock's figure, increased the resemblance.

The third specimen was small.

The discovery of this species on the West of Ireland is a considerable extension of its distribution, as the only other records that I am aware of are Alder and Hancock's original one from Malahide in 1844, Prof. Haddon's from the same place in 1886 (Proc. Royal Irish Acad. (2) IV., p. 530), and Prof. Herdman's from Lamlash Bay, Arran, in 1880 (Proc. Royal Physical Soc. Edinburgh, Vol. VI.).

Hermæa bifida (Montagu).

First taken at Ballynakill in May, 1899, amongst red algae (E. W. L. H.), and has occurred a few times since in similar situations.

Hermæa dendritica (A. & H.).

Two were taken on *Codium tomentosum* from the Black rocks, Ballynakill, in February, 1902.

Elysia viridis (Montagu).

Small specimens from .5 to 1.5 cm. are frequent in dredgings, but large specimens are very scarce. *E. viridis* was much more abundant in the early spring of 1899 than at any season in subsequent years.

EXPLANATION OF PLATES.

PLATE XVIII.

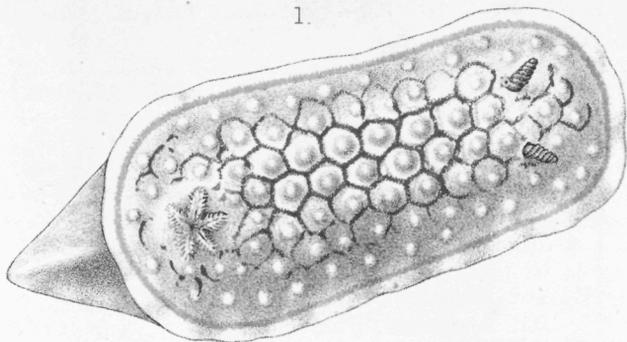
Doris Beaumonti, n. sp.

Fig. 1. Dorsal view,	× 19
2. Ventral view of head,	× 27
3. Row of denticles from radula,	× 430
4. Lateral view of median denticles,	× 430

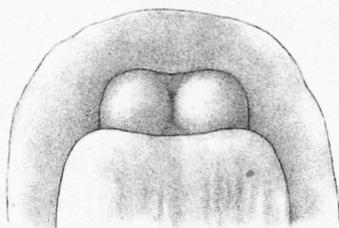
PLATE XIX.

Chart of Ballynakill Harbour.

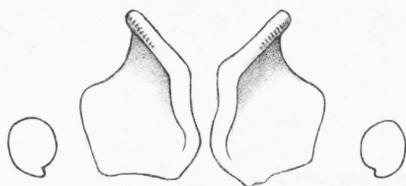
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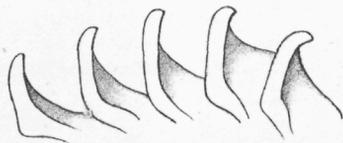
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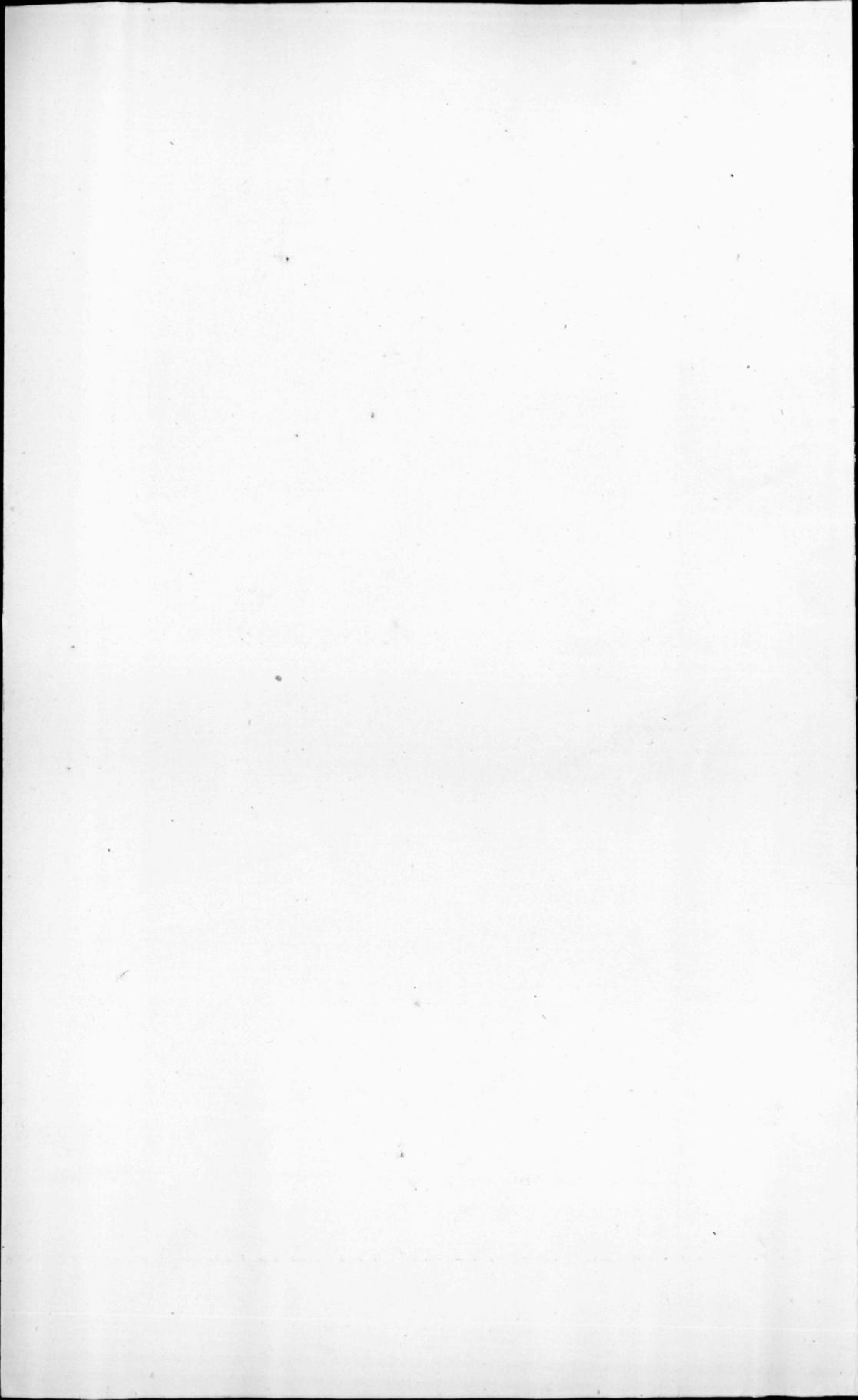
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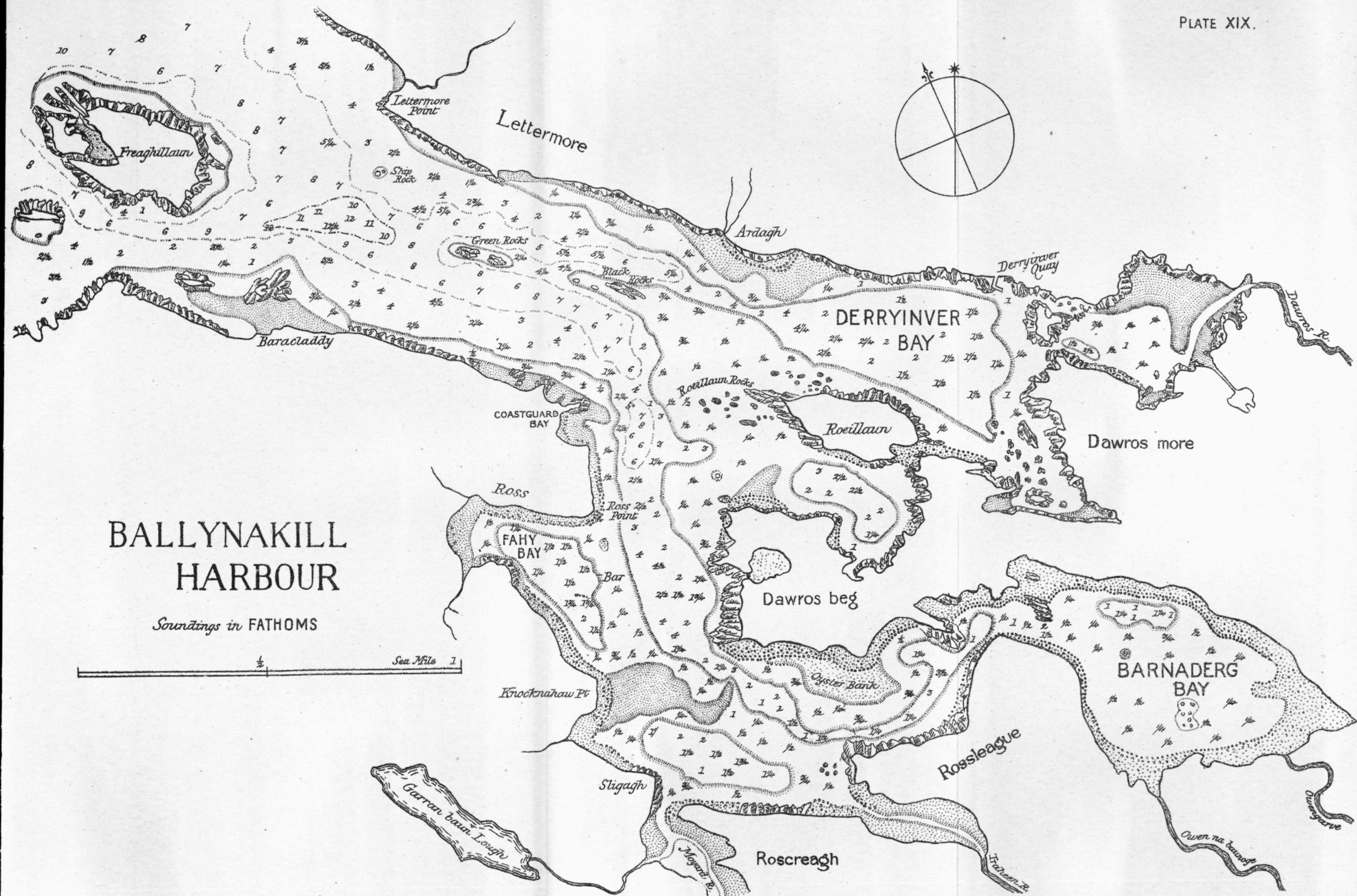


G. P. F. del.
G. M. Woodward lith.

West, Newman imp.

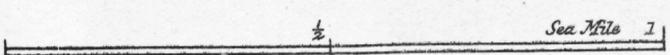
Doris Beaumonti. n.sp.





BALLYNAKILL HARBOUR

Soundings in FATHOMS



BALLYVAUGHAN
HARBOR

