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LAST REPORT

ON

DREDGING AMONG THE SHETLAND ISLES.

BY

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AND

EDWARD WALLER.

- Molgula citrina*, Alder & Hancock. Low water, Lerwick, 1861.
- Cynthia coriacea*, Alder & Hancock. Dourie Voe, 1863.
- *grossularia*, Van Beneden. Common between tide-marks.
- *echinata*, Linn.; *Ascidia echinata*, Forbes & Hanley, vol. i. p. 35, pl. C. fig. 4. 5–40 fathoms, Middle Haaf and Bressay Sound, 1863. Parasitic on *Ascidia sordida*, 5–8 miles east of Balta, 40–50 fathoms, 1867.
- Clavelina lepadiformis*, Müller. One mile north of Whalsey Lighthouse, 1861.
- Polyclinum aurantium*, M.-Edwards. 3–5 fathoms, Out Skerries Harbour.
- *succineum*, Alder, Ann. Nat. Hist. 1863, vol. xi. p. 169. The type specimen was dredged in 1861, in 50 fathoms, on the Haddock-ground, 6 miles north of Whalsey Lighthouse.
- Amarœcium albicans*, M.-Edwards, Observ. sur les Ascidies Composées, p. 287, pl. i. fig. 3 b. Low water, Lerwick.
- —? An undetermined species, tide-marks, Balta Sound, 1863.
- Botryllus* and *Botrylloides*. About ten species observed, but not determined satisfactorily.
- Leptoclinum durum*, M.-Edwards = *Leptoclinum aureum* (misprint), Forbes & Hanley, vol. i. p. 17. Tide-marks, West Voe, Out Skerries, 1861.
- *punctatum*, Forbes. With the last.
- Didemnum gelatinosum*, M.-Edwards, Obs. Ascid. Compos. p. 295, pl. vii. fig. 5. Low water, spring tides, West Voe, Out Skerries; and in Out Skerries Harbour, on roots of *Laminariæ*.
- Parascidia Flemingii*, Alder, Ann. Nat. Hist. 1863, vol. xi. p. 172. *Sidnyum turbinatum*, Fleming. Low water, Lerwick. In Mr. Alder's opinion this is not the *Sidnyum turbinatum* of Savigny (Mém. Anim. sans Vertèbres, vol. ii. p. 238), nor the *Sidnyum turbinatum* of Forbes and Hanley, which he also considers distinct from Savigny's species, and proposes to name *Parascidia Forbesii*.
- Salpa runcinata*, Chamisso. Both sexual and asexual forms in vast numbers, in company with *Diphyes* and *Physophora*, 30–35 miles, N.N.W. of Burrafirth Lighthouse, July 17 and 18, 1867.
- Appendicularia flagellum*, Huxley. Some *Appendiculariæ* were taken by me in the towing-net in Balta Sound in 1863, which I believe belonged to this species; but the bottle in which they were preserved was unfortunately lost (I conclude left behind in Shetland), and thus also the accurate determination of the species.

Class POLYZOA.

For this class I have adopted, as far as it goes, the general arrangement of Mr. Busk, in 'A Monograph of the Fossil Polyzoa of the Crag, 1859.' This work having been published subsequently to the 'Catalogue of Marine Polyzoa in the collection of the British Museum, 1852,' gives us the author's maturer views. With respect to the species, if no reference to other works is given, they will be found described in the 'Catalogue;' but, as will be seen by the following Report, our knowledge of the animals of this class has been very materially extended since 1852. Herr F. A. Smitt has just published a valuable series of papers on the Polyzoa of the Scandinavian seas, entitled "Kritisk förteckning öfver Skandnaviens Hafs-Bryozoer" (Öfvers. af K. Vet.-Akad. Förhandl. 1865–67), but I am not prepared to acquiesce in his views as to the amount of variation to be observed in species of the class.

Suborder CHEILOSTOMATA.

- Scrupocellaria scruposa* (Linn.). Attached to old shells of Mollusca and *Ditrupa*, and on *Celleporæ*, from 40–80 fathoms.
- *inermis*, Norman, Report Brit. Assoc. 1866 (1867), p. 203; Quart. Journ. Mic. Sci. vol. viii. N. S. p. 215, pl. v. figs. 1–3. Rare, 5–8 miles off Balta, in 40–50 fathoms.
- Cellularia Peachii*, Busk. Haddock-grounds and Outer Haaf, frequent.
- Menipea ternata* (Ellis & Sol.). On *Tubularia indivisa*, dredged in 70 fathoms.
- *Jeffreysii*, Norman, Quart. Journ. Mic. Sci. N. S. vol. viii. (1868), p. 213, pl. v. figs. 3–5. Only small fragments of this species, found among dredged sand, have as yet been observed, 1864.
- Canda reptans* (Pallas). “On coral, from 100 fathoms, Outer Haaf, Unst” (Peach, 1864).
- Salicornaria farciminoidea* (Ellis & Sol.). 40–70 fathoms.
- *sinuosa*, Hassall, Busk, Mon. Crag Polyzoa, p. 23, pl. xxi. fig. 5; Alder, Cat. Zooph. Northumberland and Durham, p. 61. In similar localities to the last.
- *Johnsoni*, Busk = *Nellia Johnsoni*, Busk, Quart. Journ. Mic. Sci. N. S. vol. vi. (1858) p. 125, pl. xix. fig. 2, = *Cellularia Johnsoni*, id. ibid. vol. vii. (1859) p. 65, pl. xxiii. figs. 4–5, = *Salicornaria Johnsoni*, id. ibid. vol. viii. (1860) p. 280. Middle Haaf, a much more delicate species than the last two.
- Caberea Ellisii* (Fleming). *Caberea Hookeri*, Busk, Cat. Marine Polyz. p. 39, pl. xxxvii. fig. 2, = *Caberea Ellisii*, Norman, Quart. Journ. Mic. Science, N. S. vol. viii. (1868) p. 217. Abundant, 40–70 fathoms.
- Bicellaria ciliata* (Linn.). “Very rare, 45 fathoms, Haddock-ground, Out Skerries” (Peach, 1864).
- *Alderi*, Busk, Quart. Journ. Mic. Science, N. S. vol. viii. (1860) p. 213, pl. xxviii. figs. 1–3; Smitt, Öfversigt af K. Vet.-Akad. Förh. 1867, p. 289, pl. xviii. figs. 4–8; Norman, Quart. Journ. Mic. Sci. vol. viii. (1868) p. 218, = *Bicellaria unispinosa*, M. Sars. Dredged in 40–100 fathoms, off Unst and Out Skerries. The locality in which I met with it most frequently was 5–10 miles east of Balta, in 40–70 fathoms, in company with amazing numbers of *Ascidia sordida*, with which the dredge came up time after time completely filled. It generally lives attached to Hydrozoa (*Tubularia*, &c.).
- Bugula avicularia* (Pallas). Not common.
- *purpuroincta*, Norman, Quart. Journ. Mic. Sci. N. S. vol. viii. (1868) p. 219, = *B. fastigiata*, Alder, Cat. Zoophytes Northumberland and Durham, p. 59. Scarce, 5–7 miles east of Balta, 40–50 fathoms.
- *Murrayana* (Bean).
- *flabellata* (J. V. Thompson). “15–50 fathoms, Dourie Voe and Haddock-ground, Out Skerries and Unst” (Peach, 1864). I do not remember myself having seen the species.
- Flustra foliacea*, Linn.
- *truncata*, Linn.
- *Barleei*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 123, pl. xxv. fig. 4, = *Flustra membranaceo-truncata*, Smitt, Öfvers. af K. Vet.-Akad. Förh. 1867, p. 358, pl. xx. figs. 1–5.

Very local, between Whalsey and Balta, and off Unst, in about 50 fathoms.

Carbasa papyrea (Pallas). From fishing-boats, Middle Haaf.

Gemellaria loriculata (Linn.). Occasionally met with.

Atea sica (Couch). *Hippothoa sica*, Couch, Corn. Fauna, iii. p. 102, pl. xix. fig. 8, = *Atea recta*, Hincks, Cat. Zoophytes Devon and Cornwall, p. 35, pl. vii. fig. 3.

40–80 fathoms, on shells and stones, frequent.

Hippothoa catenularia (Jameson). Common on stones in 40–170 fathoms.

— *divaricata*, Lamx. 40–90 fathoms on shells, more rarely on stones.

— *expansa*, Norman, Quart. Journ. Mic. Sci. vol. viii. (1868) p. 216, pl. vi. figs. 1, 2. The type, and only known specimen, dredged in 100 fathoms off Unst in 1864.

Membranipora membranacea (Linn.).

— *pilosa* (Linn.).

— *coriacea* (Esper.). On underside of stones between tide-marks.

— *lineata* (Linn.), Alder, Cat. Zooph. Northumberland and Durham, p. 53, pl. viii. fig. 1. On roots of Fuci and Laminariæ.

— *spinifera* (Johnston), Alder, Cat. Zooph. Northumberland and Durham, p. 53, pl. viii. fig. 2. On stones, tide-marks.

— *Flemingii*, Busk. 15–100 fathoms.

— *craticula*, Alder, Catal. Zooph. Northumberland and Durham, p. 54, pl. viii. fig. 3. On a stone from shallow water, Hillswick, and roots of Laminariæ, Bressay Sound.

— *Dumerillii* (Audouin) = *Flustra Dumerillii*, Audouin, Savigny, Hist. l'Egypt, pl. x. fig. 12, = *Membranipora Pouilletii*, Alder, Cat. Zooph. Northumberland and Durham, p. 56, pl. viii. fig. 5; Quart. Journ. Mic. Sci. N. S. vol. v. (1857) p. 248 (but not *Flustra Pouilletii*, Audouin, Savigny Hist. l'Egypt, pl. ix. fig. 12). Occasional on *Cellepora cervicornis* and shells. A curious mistake has been made by Alder and Busk respecting this species, which is clearly that represented by Savigny's pl. x. fig. 12, viz. *Flustra Dumerillii*, instead of which the name of pl. ix. fig. 12 has been quoted *Flustra Pouilletii*, which bears not the slightest resemblance to the present form, being a *Lepralia* allied to *L. innominata*.

— *unicornis* (Fleming), Alder, Cat. Zooph. Northumberland and Durham, p. 56, pl. viii. fig. 6. "Tide-marks, Balta Sound" (Peach, 1864).

— *cornigera*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. 1860, p. 124, pl. xxv. fig. 2. A very interesting and very rare species; 100 fathoms, Outer Haaf.

— *imbellis*, Hincks, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 275, pl. xxx. fig. 1. Rare, 40–50 fathoms, 5–7 miles east of Balta.

— *rhynchota*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 125, pl. xxv. fig. 1 (called *M. minax* in text); Crag Polyzoa, p. 33, pl. iii. fig. 7. In 40–170 fathoms, common; the most abundant species in deep water, it encircles the dead shells of *Dentalium* and *Ditrupea* with its polyzoary.

— *Rossellii* (Audouin). On stones, Outer Haaf, 80–140 fathoms.

— *sacculata*, Norman, Ann. Nat. Hist. 3rd ser. vol. xiii. (1864) p. 88, pl. xi. fig. 3. Common, 40–170 fathoms, on stones and shells.

— *vulnerata*, Busk, Quart. Journ. Mic. Science, N. S. vol. viii. (1860) p. 124, pl. xxv. fig. 3. In 80–110 fathoms. This very distinct little species has a very peculiar habit; it is never found on any but the smallest stones. I do not remember to have ever seen it on a pebble larger than the little finger-nail; more generally it selects those that are not more than a fourth of that size.

- Alysidota Alderi*, Busk, Quart. Journ. Mic. Science, N. S. vol. iv. (1856) p. 311, pl. ix. figs. 6, 7, = *Lepralia Barleei*, id. ibid. vol. viii. (1860) p. 143, pl. xxvi. figs. 1, 2. Common, 50–170 fathoms. In its chain-like form it is the *Alysidota Alderi*, and when living in groups Busk's *Lepralia Barleei*. The two varieties are occasionally found passing into each other. The type specimens of both are in my collection.
- Lepralia Brongniartii* (Aud.). 40–100 fathoms, frequent.
- *reticulata*, Macg. Rare, 80 fathoms.
- *crystallina*, Norman, Report Brit. Assoc. 1866 (1867), p. 204. On shells and stones, 80–140 fathoms.
- *auriculata*, Hassall. To 100 fathoms.
- *concinna*, Busk. 40–170 fathoms.
- *bella*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 144, pl. xxvii. fig. 2. A fine species, abundant on large stones on the Outer Haaf, to 170 fathoms.
- *sinuosa*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 125, pl. xxiv. figs. 2 & 3. On stone and shell, Outer Haaf.
- *verrucosa* (Esper.). Tide-marks and shallow water.
- *cruenta*, Norman, Ann. Nat. Hist. 3rd ser. vol. xiii. 1864, p. 88. Rare, 80–100 fathoms.
- *spinifera*, Johnst., Busk, Cat. Marine Polyzoa, p. 69, pl. lxxvi. figs. 2, 3 (but not the other figures referred to at p. 69). On stones and roots of *Laminariæ*, tide-marks and shallow water, Balta Sound, Hillswick, and Lerwick.
- *unicornis*, Johnst., = *L. ansata*, Busk, Crag Polyzoa, p. 45, pl. vii. fig. 2. Mr. Busk appears to me to have transposed the names of this and the following species. What I consider to be the true *unicornis* is the species evidently referred to by that name in the 'Catalogues' of Alder and Hincks. It is common between tide-marks.
- *ansata*, Johnston, = *L. unicornis*, Busk, Crag Polyzoa, p. 45, pl. v. fig. 4. This species is distinguished from the last by its short and very broad cells, and by the much smaller size of its ovicells. It is a deep-water form, and is extremely abundant in the Shetland seas, in 40–170 fathoms. Whether this is really a distinct species from *L. unicornis* is perhaps doubtful.
- *trispinosa*, Johnston. Found down to 170 fathoms. A pretty variety coating a *Ditrupe*, has the punctures round the margin more conspicuous than usual, an avicularium on the front of the cell in the centre, with its mandible pointing directly downwards, and the ovicell cleft with wedge-shaped openings, which radiate from the sides towards the centre.
- *coccinea*, Abildgaard. Abundant between tide-marks and in shallow water.
- *Ballii*, Johnston. On shells, 30–50 fathoms.
- *linearis*, Hassall. Common down to 170 fathoms.
- Var. 1. *hastata*, Hincks, Cat. Zoophytes Devon and Cornwall, pp. 46 and 63, pl. xii. fig. 4. On *Cellepora cervicornis*, off the Island of Balta.
- Var. 2. *crucifera*. With the usual avicularia on each side of the cells, and with a central, suboral process rising from the cell in the form of a very long, gradually tapering, rugose, perpendicular spine, which is more than equal the length of the entire cell, and in its most perfect state gives off a branch at nearly right angles at rather more than half its height, so that the whole process is in the form of a cross or trident.

On a shell dredged in 40–50 fathoms off Unst. A very remarkable form.

Lepralia ciliata (Linn.). Tide-marks to 90 fathoms.

— *Hyndmanni*, Johnst. 80–110 fathoms.

— *Woodiana*, Busk, Crag Polyzoa, p. 42, pl. vii. figs. 1 & 3; Hincks, Cat. Zoophytes Devon and Cornwall, p. 42. Very abundant in deep water, 80–170 fathoms.

— *discoidea*, Busk, Quart. Journ. Mic. Sci. N. S. vol. vii. (1859) p. 66, pl. xxii. figs. 7, 8; id. *ibid.* vol. viii. (1860) p. 144, pl. xxvii. figs. 4, 5; Hincks, *ibid.* vol. viii. p. 276, pl. xxx. fig. 4. "Shetland, Barlee" (Busk).

— *nitida* (Fabr.). Tide-marks and shallow water.

— *annulata* (Fabr.). Roots of Laminariæ and stones, shallow water.

— *Peachii*, Johnst. To 170 fathoms.

— *ventricosa*, Hassall. 15–170 fathoms.

— *laqueata*, Norman, Ann. Nat. Hist. 3rd ser. vol. xiii. (1864) p. 85, pl. x. fig. 5. 80–170 fathoms, frequent.

— *abyssicola*, n. sp. Polyzoary irregular, in patches of considerable size. Cells irregularly arranged, pointing this way and that, not in quincunx, widest in the middle, tapering thence above and below, moderately convex; surface dull, minutely granular, no raised lines or rows of perforations separating the cells: mouth small, terminal; lower lip advanced, encroaching on the mouth, convex, pouting, a denticle within the mouth, wide; little raised, and so deeply seated that it cannot be seen unless carefully looked for; upper lip free, bearing two spines (which, however, are very rarely present). Ovicell globose, tumid, wider in the centre than the top of the cell, with a little transverse rib (caused by the upper lip) just over the mouth; surface minutely granular as the cells; these minute granulations appear to be centrally punctate. The form of the ovicells and mouth in the fertile cells remind one forcibly of a helmet with the vizor raised. An inhabitant of the deepest water, having been only found in 140–170 fathoms to the N.N.W. of Unst.

This species comes very near to *L. microstoma*, but is, I think distinct. The cells are very much larger, the mouth less tubular and raised, the ovicells less thrown back off the mouth; and there is a deeply seated denticle in the mouth, which does not seem to be the case in *L. microstoma*.

— *polita*, Norman, Ann. Nat. Hist. 3rd ser. vol. xiii. (1864) p. 87, pl. xi. fig. 1. 70–170 fathoms.

— *microstoma*, Norman, Ann. Nat. Hist. 3rd ser. vol. xiii. (1864) p. 87, pl. xi. fig. 2. 20–25 miles N. and N. by W. of Unst. 80–140 fathoms.

— *innominata*, Couch. Scarce, down to 170 fathoms.

— *punctata*, Hassall. Tide-marks, common.

— *ringens*, Busk, Quart. Journ. Mic. Sci. N. S. vol. iv. (1856) p. 308, pl. ix. figs. 3–5. 80–170 fathoms.

— *bispinosa*, Johnst. On stones and shells, 50–170 fathoms. Differing from Guernsey specimens in the much larger size of the cells.

— *umbonata*, Busk, Quart. Journ. Mic. Sc. N. S. vol. viii. (1860) p. 143, pl. xxvii. fig. 1. "On stone, Shetland, Barlee" (Busk).

— *collaris*, Norman, Report Brit. Assoc. 1866 (1867), p. 204. Scarce, 80–100 fathoms.

— *Pallasiana* (Möll.) = *L. canthariformis*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 143, pl. xxvi. figs. 3, 4. Common between tide-

marks. *L. canthariformis*, Busk, seems to be nothing else than this species with the cells a little more erect than usual.

Lepralia pertusa (Esper). On shells, especially Ditrupæ, and stones, 40–100 fathoms.

— *labrosa*, Busk. Scarce, 40 fathoms.

— *simplex*, Johnst. “45 fathoms, Haddock-ground, Unst, Peach, 1864” (*vide* Alder in litt.).

— *Malusii* (Audouin). Tide-marks to 50 fathoms.

— *minuta*, n. sp. Cells minute, arranged in remarkably regular lines, diverging from a centre; the parts about the mouth raised in a pustular manner; mouth horseshoe-shaped, the central portion of the lower lip encroaching on the aperture, sometimes in a rounded, at others in a more denticulate and bifid form; surface granulated, margins between cells areolated; ovicells subimmersed, granular, imperforate. In very small roundish patches on stone. Shetland, very rare, and Guernsey (A. M. N.); Wick (Mr. Peach).

— *tubulosa*, n. sp. Cells shortly ovate, hyaline, smooth, glistening, punctate; mouth produced into a very long tube, which stands upright from the polyzoary, aperture round, peristome thin and simple; on the cell just below the origin of the tube a conspicuous pore. A remarkable form, wholly unlike any other species; found on a stone dredged in a few fathoms water at Hillswick.

— *monodon*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 213, pl. xxix. figs. 3, 4. Common, in 80–170 fathoms.

— *granifera*, Johnst. Underside of stones, tide-marks.

Celleporella hyalina (Linn.), Gray, List of British Radiated Animals in Brit. Mus. pp. 128 & 149. On rocks and weeds.

— *lepralioides*, Norman, Quart. Journ. Mic. Sci. vol. viii. (1868) p. 222, pl. vii. figs. 4, 5. On stones, 80–140 fathoms.

— *pygmaea*, n. sp. Cells cylindrical, semierect, immersed through a considerable part of their height; peristome raised, simple, unattached all round, more elevated at the sides of the cylindrical aperture; surface nearly smooth and imperforate. Ovicells galeate, depressed in front, imperforate. No avicularia. A minute species, presenting very little character, but manifestly distinct from its allies. Occurs in little round patches, which are seldom more than a tenth of an inch in diameter; the largest patch seen not a fifth of an inch; on stones from very deep water, in 80–170 fathoms, where it is not uncommon.

Cellepora pumicosa, Linn.

— *avicularia*, Hincks, Cat. Zooph. Devon and Cornwall, p. 48, pl. xii. fig. 6. In “nodulous rolls” on Tubularia, Sertulariæ, &c.

— *Hassallii* (Johnst.). Rocks, and roots of Laminariæ.

— *ramulosa*, Linn. 40–170 fathoms.

— *dichotoma*, Hincks, Cat. Zooph. Devon and Cornwall, p. 49, pl. xii. figs. 7, 8; Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 96, pl. ii. figs. 2–4. Living attached to Sertularian Hydrozoa, in 40–70 fathoms.

— *attenuata*, Alder, Quart. Journ. Mic. Sci. vol. iv. p. 97 (1864), pl. ii. figs. 5–8. Local, 80–110 fathoms, 20–25 miles N.N.E. of Unst.

— *cervicornis* (Ellis and Sol.). 40–170 fathoms. The Shetland forms are much less massive than that of the Devon and Cornish coast. Sometimes they are a great deal branched, the branches interlacing and crossing each other in all directions, and more or less flattened. A rarer form has but few branches, and those very long, simple (*i. e.* not dico-

tomously dividing), and round. Placed side by side with Cornish specimens this looks very different, but the microscopic characters appear to be identical.

Palmicellaria elegans, Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 100, pl. ii. figs. 1-4. A beautiful little species, 80-110 fathoms, eighteen to twenty-five miles N. and N.N.W. of Burrafirth Lighthouse.

Tessaradoma gracile (Sars) = *Pustulipora gracilis*, Sars, Reise Lof. Finm. 1850, p. 26, = *Quadracellaria gracilis*, Sars, Beskr. Norske Polyz. p. 15; Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 101, pl. ii. figs. 9-12, = *Onchopora borealis*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 213, pl. xxviii. figs. 6, 7, = *Anarthropora borealis*, Smitt, Öfvers. af K. Vet.-Akad. Förh. 1867, Bihang, p. 8, pl. xxiv. figs. 25-29. Rather local, but not rare on the Outer Haaf. It is necessary that the generic name *Quadracellaria*, which is preoccupied, should be changed. Smitt has instituted a genus *Anarthropora* to receive *Lepralia monodon* and the present species! Such a union, in my opinion, cannot stand. Leaving, therefore, *L. monodon* as the type of Smitt's genus, I propose the name *Tessaradoma*, the characters of which will be those given by Alder, *l. c.* I have not adopted the genus *Anarthropora* for *L. monodon* in this Report, because an entire rearrangement of the Membraniporidae is required, and until that entire rearrangement is carried out (and this I hope shortly to do), I have thought it better not to partially dismember the genus *Lepralia*.

Hemeschara struma, Norman, Quart. Journ. Mic. Sci. vol. viii. (1868) p. 221, pl. vii. figs. 6-8. In 100 fathoms, about twenty-five miles north of Unst, attaching itself to stones and the branches of *C. cervicornis*, and running out into free expansions.

Eschara Landsborovii (Johnst.), Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 105, pl. iv. figs. 1-3. Very rare; the Lepralian state on a stone from 170 fathoms.

— *lævis* (Fleming), Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 102, pl. iii. figs. 8-11. Scarce, in about 100-170 fathoms, 20-25 miles N. and N.N.E. of Unst.

— *Skenei* (Ellis and Sol.) = *Cellepora Skenei*, Busk, Marine Polyzoa, p. 88, pl. cxxii. 40-70 fathoms, 5-10 miles east of Balta; also Out Skerries Haaf.

— *lorea*, Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 104, pl. iii. figs. 5-7. 80-100 fathoms, 20-25 miles north of Burrafirth Lighthouse. Certainly distinct from the last, with which it is united by Smitt.

Retipora Beaniana, King. Occasionally on the Unst Haaf, down to 170 fathoms; abundant on the Out Skerries Haaf, but not so large as on the Northumberland coast.

Suborder CYCLOSTOMATA.

Crisia eburnea (Linn.). On Hydrozoa on haddock-grounds.

Var. *producta*, Smitt, Öfvers. af K. Vet.-Akad. Förh. 1865, p. 116, pl. xvi. figs. 4-6. On stones, 100-170 fathoms.

— *denticulata* (Lamk.). On Zoophytes, Haddock-ground.

— *aculeata*, Hassall. "Tide-marks to Haddock-ground" (Peach, 1864); "Shetland, Barlee" (*vide* Alder in litt.).

Crisidia cornuta (Linn.). On rocks between tide-marks.

Hornera borealis, Busk, Alder, Quart. Journ. Mic. Sci. vol. iv. (1864) p. 108, pl. iv. figs. 1-6. 80-170 fathoms, Outer Haaf.

Hornera violacea, Sars, Geol. og Zool. Jagtt. Reise Trondhj. St. Somm. 1862 (1863), p. 30; Smitt, Öfvers. af K. Vet.-Akad. Förh. 1866, p. 404, pl. vi. figs. 2-9.

In general form like the last, but the back, instead of being striated, is granulated; the branches at their extremities with a rib-like elevation down the centre, the front having the cells more crowded and much more produced than in *borealis*; ovicells elongated, in the axils of the branches, generally (in my specimens) with one part on the front, but coming round the branch, the greater part lies on the back of the polyzoary, with a very slight longitudinal riblet, otherwise smooth, and closely punctate. Colour white with a violet tinge. In about 50 fathoms, about seven miles E.S.E. from Balta, rare. Now first added to our fauna.

Idmonea Atlantica, Forbes. Outer Haaf, 70-140 fathoms.

— *serpens* (Linn.) = *Tubulipora serpens*, Johnst. On Sertulariæ, &c., common.

Pustulipora deflexa (Couch). "Shetland, Peach, 1864" (*vide* Alder in litt.).

— *orchadensis*, Busk, Quart. Journ. Mic. Sci. N. S. vol. viii. (1860) p. 214, pl. xxix. figs. 1, 2. "Shetland, Barlee" (Busk). The collection of the late Mr. Barlee, which was bequeathed by him to myself, does not contain any Polyzoan which I can identify as the type of this species described by Busk.

Tubulipora lobulata, Hassall. On stones, 30-70 fathoms.

— *flabellaris*, Johnst. "Shetland, Peach, 1864" (*vide* Alder in litt.).

Alecto granulata, M.-Edwards. Dourie Voe and Haddock-grounds; also Outer Haaf to 170 fathoms.

— *major*, Johnst. Common to 170 fathoms.

— *dilatans*, Johnst. 80-140 fathoms. Compared with the types in B. M.

— *compacta*, Norman, Report Brit. Assoc. 1866 (1867), p. 204. On stones, Outer Haaf, Unst, and Out Skerries, in 80-170 fathoms. It is, I believe, the *Alecto dilatans*, var., Johnston, p. 282, pl. xlix. figs. 7, 8.

— *diastoporides*, n. sp. Polyzoary lobulate, the branches diverging from a common centre, and rapidly widening into fan-formed terminations, appressed very flatly to stones or shells, closely punctate, but a transparent looking line (the appearance caused by absence of punctures) marking the course of each side of each concealed tube in a similar way to the transparent lines in *D. obelia*; cells scattered irregularly, many being present on the expanded terminations; mouth but little raised above the crust, opening vertically.

This is the largest *Alecto* in our seas, and a very marked species. It is found on shell and stone, in 70-110 fathoms.

Mr. Peach has also sent me the species from Wick, including a specimen nestling in a sheltered spot of the inside of a valve of *Tapes virginica*, which has the cell-tubes erect and long; in all other specimens which I have seen they are very short.

Diastopora obelia (Fleming). Down to 170 fathoms, common.

Patinella patina (Lamk.). Common to 170 fathoms.

Var. *prolifera*, Busk, Crag Polyzoa, p. 114, pl. xix. fig. 1, and pl. xx. fig. 3. Frequent on *Cellepora cervicornis* and *Eschara laevis*.

Discoporella hispida (Fleming). Common to 170 fathoms.

Defrancia truncata (Jameson). Not uncommon on the Outer Haaf, in 70-170 fathoms.

Suborder CTENOSTOMATA.

Alcyonidium gelatinosum (Pallas). 40–50 fathoms, 5–8 miles east of Balta, sandy bottom, with immense quantities of Hydrozoa and Tunicata; also 40 fathoms, six miles north of Whalsey Lighthouse.

— *hirsutum* (Fleming). On *Fuci*, tide-marks, Balta Sound, and Out Skerries, abundant.

— ? A third species was found by me in 1861 between tide-marks, West Voe, Out Skerries. Mr. Alder, who examined it for me, gave me the MS. name for it, "*Alcyonidium radiatum*."

Arachnidia hippothoides, Hincks, Cat. Zoophytes Devon and Cornwall, p. 57, pl. xvi. fig. 2. Creeping over the test of *Ascidia sordida*; dredged 5–8 miles off Balta.

Flustrella hispida (Fabr.) = *Flustra hispida*, Johnst. Brit. Zooph. p. 263, pl. lxvi. fig. 5, = *Flustrella hispida*, Gray, Brit. Radiated Anim. Brit. Mus. p. 108; Redfern, Quart. Journ. Mic. Sci. N. S. vol. vi. 1858, p. 96, pl. iv., = *Alcyonidium hispidum*, Smitt, Öfvers. af K. Vet.-Akad. Förh. 1866, p. 499, pl. xii. figs. 22–27. On *Fuci*, *Chondrus*, and other seaweeds; common.

Vesicularia spinosa (Linn.). "Shetland, 1858, Barlee" (*vide* Alder in litt.).
Buskia nitens, Alder, Cat. Zooph. Northumb. and Durham, p. 66, pl. v. figs. 1, 2; Quart. Journ. Mic. Sci. N. S. vol. v. 1857, p. 24, pl. xiii. figs. 1, 2. "On *Halecium labrosum*, procured by Mr. Barlee" (Alder in litt.).

Valkeria cuscuta (Linn.). Procured in 1861.

Bowerbankia imbricata (Adams). Tide-marks, common.

Avenella fusca, Dalyell, Rare and Rem. Anim. Scot. vol. ii. p. 65; vol. i. pl. xii. fig. 11; Alder, Cat. Zooph. Northumb. and Durham, p. 69, = *Farrella fusca*, Busk, Quart. Journ. Mic. Sci. vol. vi. fig. 3, = *Farrella dilatata*, Hincks, Quart. Journ. Mic. Sci. vol. viii. p. 279, pl. xxx. fig. 7; Cat. Zooph. Devon and Cornwall, p. 30. Parasitic on the tests of Ascidians from deep water.

Suborder PEDICELLINEA.

Pedicellina Belgica, Van Ben. Recognized by Mr. Alder on some Shetland Hydrozoa sent to him in 1861.

— *gracilis*, Sars. On *Sertularia*, 1863; rare.

— *echinata*, Sars. "In Dourie Voe, 15 fathoms, 1864" (*vide* Peach).

Suborder LOPHOPEA.

I have pleasure in announcing the discovery in the Shetland seas of a species of this interesting tribe, which up to the present time has been supposed to embrace only freshwater forms. *Rhabdopleura* was dredged by me in the Outer Haaf, and being unable to recognize it, I sent it to Professor Allman for his opinion, and the extract from a letter received from him, given below, will show the result of his examination.

Rhabdopleura Normani, Allman, nov. gen. et sp. "Now with regard to the new genus. Expecting nothing but hydroids in your bottles, and being satisfied on a rapid glance that the contents of one bottle were something very different from any known hydroid, I at once set the specimen down in my mind as that of a new genus of Campanularians. I now find that it is no hydroid, but a very curious and new genus of Polyzoa. So interesting a form is it that I thought it worth while spending some

time over its thorough investigation . . . ; and so by the help of acetic and chromic acids and liquor potassæ, I have succeeded in very fairly unravelling the structure of your Polyzoon. It is a true Hippocrepian form, as entirely and typically so as *Plumatella*—a fact which gave facility to my examination, as I had already made the Hippocrepian Polyzoa a special subject of study. One of its most remarkable features is a rigid rod which runs through the cœnocœcium, and to which the polypides are attached, each by a funiculus. This rod was the only thing at first visible besides the polypides and their tubes of insertion; but I afterwards found that the whole of the rod and its attached polypides were contained in a most delicate and colourless cœnocœcium, into which the free tubes of insertion were continued. The remarkable internal rod will well suggest a generic name, and I have accordingly thought of *Rhabdopleura* as sufficiently significant and distinctive.”
—Allman in litt. Outer Haaf off Unst, in 93 fathoms.

Class ECHINODERMATA.

The *Crinoidea*, *Ophiuroidea*, and *Asteroidea* in the following notes are arranged in accordance with my paper “On the Genera and Species of British Echinodermata” in the ‘Annals of Nat. Hist.’ for February 1865. With respect to the *Echinoidea* and *Holothuroidea*, I give references where the nomenclature of Forbes’s ‘British Starfishes’ is not sufficient to indicate the species.

Order CRINOIDEA.

- Antedon rosaceus* (Linck). In the Voes and thence down to 40 fathoms, not uncommon, and attaining an unusually large size. Very abundant on Laminariæ, in Bressay Sound, off Lerwick.
— *Sarsii* (Düben & Koren). 80–100 fathoms, 40 miles east of Whalsey Lighthouse; very local, but gregarious where found.

Order OPHIUROIDEA.

- Astrophyton Linckii*, Müll. & Trosch = *A. scutatatum*, Forbes. Off the west coast, in very deep water (*vide* Forbes, British Starfishes). It has not been procured during the recent dredgings off the east and north coasts, nor do the fishermen on those sides of the island appear to be acquainted with the species.
Ophiothrix fragilis (Müller) = *Ophiocoma rosula* and *minuta*, Forbes. Having a very great range in depth, living between tide-marks and thence down to 170 fathoms, the deepest water dredged.
Amphiura filiformis (Müller). 3 fathoms, Balta Sound; Out Skerries Haddock-ground, and in St. Magnus Bay, 30–60 fathoms.
— *Chiagii*, Forbes. Off Balta; on the Haddock-ground near the Out Skerries, and in St. Magnus Bay.
— *elegans* (Leach) = *Ophiocoma neglecta*, Forbes. Tide-marks, to 40 fathoms.
— *Ballii* (Thompson) = *Ophiocoma Ballii* and *Goodsiri*, Forbes. Common on hard ground in deep water, delighting to nestle in crevices of stones, shells, and corals.
Ophiopeltis securigera, Düb. & Koren. Added to the British fauna in 1861, when a single specimen was dredged on the Haddock-ground, about 5 miles north of Whalsey Lighthouse, in 40 fathoms.
Ophiocoma nigra (Müller) = *Ophiocoma granulata*, Forbes.