count of the stones found there. For the knowledge of the fact of their having been found there, as well as for valuable information regarding the numerous "sarsens" in the adjoining county of Wiltshire, I am indebted to Mr. E. T. Stevens, curator of the Museum at Salisbury.

6th.—Between Bishopstoke and Winchester, at about eight miles from Southampton, there is said to be a large "erratic:" the information I have of it is on trustworthy authority.

7th.—A large block of stone near to Winchester, discovered about two years ago. About twelve miles from Southampton, to the north. Authority—a newspaper paragraph.

Whether or not the three last instances (Nos. 5, 6, and 7) are connected with gravel deposits, I am not aware.

None of the seven stones which I have seen and examined, are, in the least degree, scratched, striated, or rounded, and the tortoise-shaped one (No. 2) at Bishopstoke, and the dromedary-hump shaped one (No. 1 of 3rd instance) Plate XIII., at Bevois valley, have been separated from their parent rock by a clean, straight, fresh-looking fracture, in their greatest diameter, so as almost at once to suggest the action of very heavy ice as the disrupting power, by a heavy side blow. The Bishopstoke example affording but a few inches of height for leverage in the fracture, to some two or three feet of length fractured.

In the foregoing communication I may not, perhaps, have written what is substantially new, for I confess myself not "posted" to the latest date in geology. I would, however, with much respect, quote from a little work¹ published three years ago, showing what was then the knowledge, in geological circles, on the subject on which I now write, premising that I am not of opinion that in any of the instances which I have given, were the "sarsens," or erratic blocks, deposited by coast-ice;—with regard to instance No. 5, however, at Hill Head, I cannot speak:—"But England, south of the estuaries of the Severn and Thames, seems all this time to have remained above the waters, for not only is the country in general destitute of drift, but it is only close on the sea near Selsea and Brighton that erratic boulders have been found."—p. 82.

FULHAM, 25th April, 1866.

V.—DESCRIPTION OF THREE SPECIES OF POLYZOA FROM THE LONDON CLAY AT HIGHGATE IN THE COLLECTION OF N. T. WETHERELL, ESQ., F.G.S.

By G. BUSK, F.R.S., ETC.

(PLATE XII.)

THE plate containing the figures of the Polyzoa here described was prepared some years since by Mr. J. De Carle Sowerby, but has never been published, and no description of the fossils them-

¹ The Physical Geology and Geography of Great Britain, by Professor A. C. Ramsay, F.R.S. London, Stanford, Charing Cross.

selves has as yet been given. I have, therefore, been requested by my friend Mr. Woodward to draw one up; and the specimens have been kindly placed in my hands by Mr. N. T. Wetherell for the purpose.

Although the magnified figures are rather small, they are sufficient to afford a very good idea of the structures they are intended to represent.

The species here figured are three in number, but beside these there are one or two more of which very minute specimens are found amongst those forwarded by Mr. Wetherell; but not in such a condition as to admit of any satisfactory description.

The figured species belong to the Families *MEMBRANIPORIDÆ*, *ESCHARIDÆ*, and *GEMELLARIADÆ*, as understood by me and defined in my monograph of the Crag Polyzoa.¹

1. Fam. *MEMBRANIPORIDÆ*, Busk, Brit. Mus. Cat. p. 55.

1. Gen. *MEMBRANIPORA*, Johnst.

M. Lacroixii? Pl. XII. Fig. 1.

" " Savigny. Egypt. P. 10., fig. 10.

" " Busk, B. M. Cat., p. 60, pl. 69.

Flustra distans, Hassall, Johnst.

" *Peachii*, Couch.

Conopeum reticulum, Gray.

As I am unable to perceive any essential difference between the form here represented and the existing species above referred to, I feel justified, though, of course, with some doubt, in placing them together. In general aspect, and mode of growth, usually on the outside of a turreted shell, or of stones, the two agree very closely. The only distinction I am able to draw between the Eocene and recent form, as exemplified in a specimen now before me, collected by the late Mr. W. Thompson, of Belfast, at Portmarnock, consists in the somewhat greater thickness of the septa in the former. The two agree also in the circumstance that in the septa of the more worn cells there is an appearance of minute distant pores, which is quite in accordance with the existence in very perfect specimens, of extremely delicate marginal spines.

It is to be remarked that the existing form is very widely distributed, occurring very abundantly on our own shores, as well as in the Mediterranean and at Madeira. It is curious, however, that it has not occurred to me among the Crag Polyzoa.

2. Fam. *ESCHARIDÆ*, Busk, Brit. Mus. Cat. p. 88.

Under this term I include all those species which have an erect, rigid, compressed, foliaceous, ramose, lobate, or reticulate polyzoary, composed of a single or double layer of cells.

The genera in which the cells are disposed in a double layer are *Eschara* and *Melicerita*, in which the two layers are inseparable, and *Biflustra* in which they are readily separated, when the posterior surface of each layer exhibits a sort of ridge and furrow appearance.

¹ Palæontographical Society's Monographs, 1859.

The species here represented belongs to the latter genus, and it is somewhat remarkable though not difficult of explanation that in all the specimens the posterior furrowed surface is that which is most extensively exposed.

In the Crag Polyzoa I have recorded the existence of a species belonging to the genus *Biflustra* as thus defined, which so closely resembles an existing species abounding in the Eastern seas from China to Australia, and doubtless elsewhere, that I have ventured to describe them as identical under the name of *Biflustra delicatula*. The resemblance between this form and the one I am about now to describe is so close, that in small fragments and in certain conditions, it would be next to impossible to distinguish one from the other. But closer and more extended observation will, I think, show that they are specifically distinct.*

In the Eocene species the polyzoary seems to have grown in an irregularly plicated, infundibuliform shape, probably not unlike that of *Biflustra meandrina* of D'Orbigny (Paleont. Franc. p. 257, pl. 695, fig. 7-10), and which may be likened to the mode of growth of *Retepora cellulosa* and *Beaniana*, whilst in the recent form the growth is more like that of *Eschara foliacea*, that is to say in large, foliaceous, contorted expansions. And the Crag species would seem to have had the same habit. Other differences are seen in the rather small size of the cells; in the more rounded form of the opening and more especially in its being bordered below by a distinct thickened margin whilst in *B. delicatula* that border is thin and sharp. From *B. meandrina*, D'Orbigny, it differs in the absence of the regular rhomboidal areolation of the surface as well as in the thickened border of the aperture. In *B. marginata* (Pl. 696, fig. 1-4), D'Orbigny, the openings appear to be oblong and the septa are not doubled as in the London clay species—nor are they represented as granular, but there may, nevertheless, be some reason for doubting whether the two are really distinct; for the present, however, I think, it will be safer so to consider them.

2. Gen. *BIFLUSTRA*, D'Orbigny.

B. eocena, Pl. XII. Fig. 2.

B. cellulis oblongis, supra arcuatis, septis granulosis, duplicibus; aperturâ subrotundâ, margine inferiori, incrassato, granuloso. Polyzoarium subinfundibuliforme.

Cells, oblong arched above; septa, granular double; aperture, sub-oval or rounded, the lower border thickened, granular: polyzoary, irregularly infundibuliform.

3. Fam. *GEMELLARIADÆ*, Busk, Brit. Mus. Cat. p. 93.

The family *Gemellariadæ*, as defined in the above place, comprises all species having the cells in pairs, which do not form distinct internodes separated by flexible joints, but constitute a continuous dichotomously divided polyzoary. As hitherto known to me it contains only forms having a flexible consistence, but the present instance seems to show that that is not to be taken as an essential character.

The genera at present included in it are *Gemellaria*, *Dimetopia*, *Didymia* and *Notamia*.

In *Gemellaria* and *Dimetopia* the twin cells are placed back to back; in the former the cells on either side all look in the same direction, whilst in the latter, they look in directions at right angles to each other in each alternate pair. In *Didymia* the cells are placed side to side; and in *Notamia* between the pairs of cells are placed two peculiar avicularian organs. The nearest ally therefore of the present species is *Gemellaria*, and at first sight, except in the rigidity of the polyzoary, there would not seem to be sufficient reason to exclude it from that genus. But besides that not unimportant distinction, another is shown in the mode in which the branches arise at each dichotomy.

In *Gemellaria*, whilst the main series appears to be uninterruptedly continued by gemmation from the summit of each cell, a new branch is formed by the pullulation from the side of each cell, a little below the summit, of a second cell, which, applying themselves back to back, constitute the origin of a new branch. In *Dittosaria*, on the other hand, the two branches would seem to be formed by a double cell arising from each of the primary cells.

For this genus I would propose the name *Dittosaria* (*δίττος*, *duplex*.) with the following definition:—

"Polyzoarium rigidum, calcareum, dichotomum; cellulis, dorsi adnatis, ad singulam bifurcationem cellulam duplicem pullulantibus."

(Polyzoarium, rigid, calcareous, dichotomous, cells, adnate by the back; and throwing out a double cell at each dichotomy.)

3. *DITTOSARIA WETHERELLII*, sp. nov.

The orifice is much smaller than in *Gemellaria loricata*, and nearly round; and the wall of the cell is sparsely punctured, so as at first sight to suggest a suspicion that the species may belong to the cyclostomatous suborder, but close examination of the orifice will show, I think, signs of the articulation of an operculum, were not the ventricose form of the cell itself a sufficient indication of the true place of the species.

The two other forms, amongst the specimens submitted to me by Mr. Wetherell, are 1. a very minute *Cellepora*, resembling some of the minute globular specimens of *C. pumicosa*; and a very minute and imperfect fragment of what appears to be a species of *Idmonea*.

EXPLANATION OF PLATE XII.

Figs. 1. *Membranipora Lacroixii*? from the London Clay.

a. Natural aspect.

b. and c. do. do. on shells of *Voluta* and *Fusus*.

d. A portion magnified.

2. *Biflustra ecena*.

a. Appearance as seen imbedded in a mass of *Septaria*; and showing, except in parts of the left hand figure, only the back view of the layer of cells.

b. Detached portion, magnified, showing to the left hand, a part in which both layers are present and towards the right, the exposed back of the adjacent layer.

c. A detached cell.

3. *Dittosaria Wetherellii*.

a. Natural size.

b. and c. Portions magnified. The puncta on the walls appear to have been overlooked by the draughtsman.

4. *Ophiura Wetherellii*, Forbes "Tertiary Echinoderms," (p. 32, t. 4, fig. 7), from the London Clay, Highgate.

VI.—THE ROCK OF THE CAMBRIDGE GREENSAND.

BY HARRY SEELEY, F.G.S., OF THE WOODWARDIAN MUSEUM, CAMBRIDGE.

EXAMINING the Cambridge sands, fresh from a remembrance of the Undercliff and the grand development of the cherty rock of the Upper Greensand in Southern sections, perhaps its most marvellous character is that here it no longer makes a feature in the land, but has dwindled away to barely a foot in thickness, and yet is to be traced through several counties.¹ Blending insensibly into the chalk, resembling in structure beds that sometimes occur in the Gault, it appears but as a parting seam between those deposits. Yet so soon as Dr. Fitton made clear the sequence of the Cretaceous beds, Professor Sedgwick recognised in the film of black nodules, glauconite and chalky marl, the analogue of the sands of the Vale of Wardour and the Isle of Wight.

Although occurring everywhere below the Chalk and often in outliers capping the Gault, there are no good natural sections. But there is no lack of opportunities for seeing the superposition, since contractors pay £100 the acre, or more, for the privilege of making sections to dig out the dark nodules of phosphate of lime.

The plan of working is to sink a trench down to the sands; it may be one foot or twelve feet, but it rarely pays to work deeper; then, when the whole of the deposit has been dug out and one side undermined, a line is cut parallel to the perpendicular face of the trench and about four feet behind it, along which, according to the size of the working, from twenty to forty men appear with iron crowbars, which are used vertically till the whole slice gives way, and goes toppling over. Then digging out recommences, and so the work goes on till the field is turned upside down.

The sections so made, show a layer of nodules imbedded in a soft matrix of marl and glauconite, a stratum varying from six inches to a foot thick, which is all that is left of the Upper Greensand. The nodules rest on a flat irregular surface of clay, into which they do not penetrate; but above the phosphate bed small stragglers usually extend up into the flaggy Chalk. Sometimes, however, another bed is introduced as in Coton, where a dark unfossiliferous clay, nearly black when wet, comes under the flaggy Chalk and over the layer of phosphatic nodules.

¹ See Ann. and Mag. Nat. Hist., March, 1866, on Torynorvinus, etc.; Quart. Journ. Geol. Soc., Nov. 1864, on Hunstanton Red Rock; GEOL. MAG., Vol. II., p. 262, Sequence of Rocks and Fossils; Ann. and Mag. Nat. Hist., Oct. 1864, Fossils of Red Rock.