

Finally, I wish to express my indebtedness to Professor Bonney for the help he has afforded me in the preparation of these notes.

DESCRIPTION OF PLATE XII.

- FIG. 1.—General structure of glaucophane gabbro. To the right and below the centre are three crystals of diallage, showing the dark border of glaucophane, and, internally, dark patches of the same mineral. In reality nearly all the mineral is converted into glaucophane; the orthopinacoidal striation of the diallage is seen with difficulty in the figure. Above these crystals is much of a pale-green chloritic mineral with flakes of glaucophane, and in places with a border of the same. In it can be seen large black patches of pyrites, and others of a water-clear substance. Near the centre and left-hand top corner are good examples of the altered groundmass. \times about 8 $\frac{1}{2}$.
- FIG. 2.—The glaucophane fringe surrounding a crystal of diallage, itself almost entirely altered to the same mineral. The extension of the fringe into the altered groundmass of the rock is seen to the left of the figure. \times about 75.

III.—OBSERVATIONS ON SOME BRITISH CRETACEOUS MADREPORARIA, WITH THE DESCRIPTION OF TWO NEW SPECIES.

By ROBERT F. TOMES, F.G.S.

(PLATE XIII.)

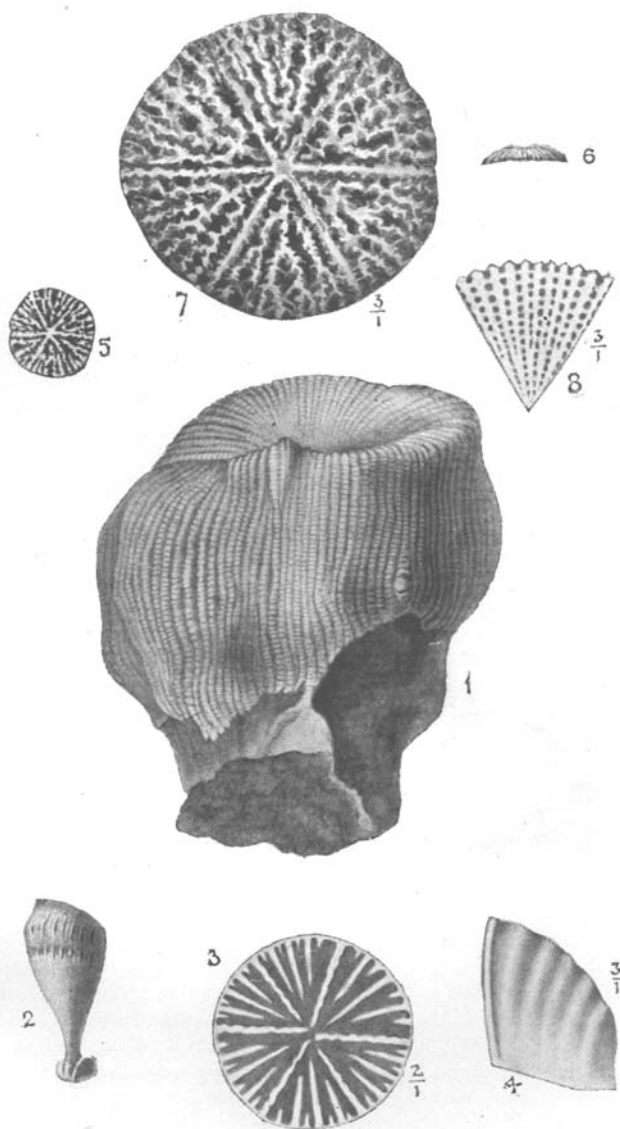
ON the 24th of June, 1885, a paper by me, entitled "Observations on some imperfectly known Madreporaria from the Cretaceous Formation of England," was read at a meeting of the Geological Society which, encountering an adverse report from the referee, was with the consent of the Council, withdrawn by me, and published verbatim in the GEOLOGICAL MAGAZINE of the same year (Dec. III, Vol. II, pp. 541-563, Pl. XIV), 1885. The present communication is a continuation as well as a correction of the former one, which has become necessary from the acquisition of additional material. Before, however, going into particulars respecting the several species to be referred to here, I wish to offer a few remarks on certain of the genera.

Bathycyathus has been merged by the late Professor Duncan into *Caryophyllia*, but I am not at present prepared to accept that alteration, a very strict revision of the latter genus being, according to my view, quite necessary before such forms as *Bathycyathus Sowerbyi* are placed in it.

Cælosmilia, as we learn from the same authority, is a subgenus only of *Trochosmilia*; "the main distinction between the two types only relates to the amount of endotheca."¹ While, however, expressing himself as above, Professor Duncan did not fail to note that *Cælosmilia* includes "a number of species with a well-defined facies." It is that well-defined facies, with certain important peculiarities in the development of the septa themselves, into the consideration of which I do not here enter, that induces me to retain, at any rate for the present, the genus *Cælosmilia* as defined by MM. Milne Edwards and Haime.

Although no species of *Smilotrochus* is admitted in the present paper, it is desirable that a few remarks should be made respecting

¹ Revision of the Families and Genera, 1884, p. 52.



R. F. Tones del.

S. Austin & Sons imp.

British Cretaceous Madreporaria.

the genus. It was created in 1851 by MM. Milne Edwards and Haime¹ for the reception of a single British species from the Greensand of Blackdown, *Smilotrochus tuberosus*, which they had already placed, though with doubt, in the genus *Trochosmilina*.² Afterwards, that is to say in 1857,³ they brought two other species into the genus, one of them from the Farringdon Greensand, *Smilotrochus Austeni*, and the other, *S. Hagenowi*, from the White Chalk of Maestricht.

The "Introduction" of Dr. de Fromentel, which appeared in 1858-61, made no addition to or alteration of either genus or species; but in 1869 and 1870⁴ Professor Duncan, while including the two British species above mentioned, added five others to the genus, making in all seven British species. In 1885 the present writer⁵ described and figured an eighth; but both it and all those added by Professor Duncan have now been found to appertain to other genera. Moreover, *Smilotrochus tuberosus*, the very species on which the genus was founded, is in the present communication shown to be a *Placosmilina*. As a genus, therefore, *Smilotrochus* now rests on two species, *S. Austeni* and *S. Hagenowi*. Of the former so little is known that a re-examination is most desirable, and all the more so as so many simple Cretaceous corals have proved on close examination to appertain to genera characterized by the presence of a columella or pali, or of both.

Before entering into the details of the several species, I wish to record my indebtedness to Dr. Blackmore, of Salisbury, by whose kindness I have recently examined a collection of corals from the Chalk of that neighbourhood, some of which will shortly be mentioned. He has also favoured me with a section of the Salisbury Chalk, which enables me to place the several species in their precise position in the formation, and also to give their relative frequency, as follows:—

1. Zone of <i>Belemnitella mucronata</i> , the highest beds, corresponding to the beds of Norfolk and Dorchester.	Feet. 80	<i>Onchotrochus serpentinus</i> . <i>Cælosmilina laxa</i> . <i>Parasmilina centralis</i> . —— <i>Mantelli</i> . <i>Azogaster cretacea</i> . <i>Parasmilina centralis</i> . —— <i>Mantelli</i> . —— <i>Grævensis</i> . <i>Cælosmilina laxa</i> . —— <i>regularis</i> . <i>Diblasus Grævensis</i> . <i>Stephanophyllia numismatis</i> . <i>Azogaster cretacea</i> . <i>Caryophyllia cylindracea</i> . <i>Parasmilina centralis</i> . <i>Azogaster cretacea</i> . <i>Caryophyllia cylindracea</i> . <i>Parasmilina centralis</i> . —— <i>serpentina</i> .
2. Zone of <i>Actinocamax quadrata</i> , chiefly exposed at East and West Harnham, and worked for whitening.	170	
3. Zone of <i>Marsupites</i>	230	
4. Zone of <i>Micraster cor-anguinum</i>	250	

¹ Pol. Foss. Terr. Paleoz., 1851, p. 29.

² Brit. Fos. Cor., 1851, p. 58, pl. x, fig. 2.

³ Hist. Nat. Cor., t. ii (1857), p. 71.

⁴ Supp. Brit. Fos. Cor., pt. ii, No. 1, p. 19, and pt. ii, No. 2, p. 36 (1869-70).

⁵ GEOL. MAG., December, 1885.

The comparative frequency of some of the species is as follows :—

<i>Parasmilia centralis</i>	200
— <i>Gravensis</i>	4
— <i>Mantelli</i>	38
<i>Cælosmia</i> (both forms)	64
<i>Caryophyllia cylindracea</i>	12

The small Madreporaria of the Gault are so beautifully preserved externally, and, from the cavity of the calice being almost always obscured, are so difficult to examine internally, that a few words on the best method of investigating their inner parts will not be out of place. To begin with, all idea of washing out the calice may be at once dismissed as altogether impracticable. Then there is the breaking up of the corallum in the hope that a fortunate fracture may reveal what lies in the bottom of the calice, which sometimes proves successful. But it is very uncertain work, and the following method of examination may with advantage be adopted in its stead.

Take a spoonful of fine plaster of Paris and well mix with it a sufficient quantity of lamp-black to make it of a pale slate colour; add water until it is of the consistency of thick cream. With this fill a small box—an ordinary pill-box will do very well—and place the coral, which must have been carefully removed from its matrix of Gault, vertically in it, with the calice only exposed. It should then be allowed not only to set, but to become thoroughly dry, when some thin gun-water must be dropped into the calice, and again be allowed time to dry. The whole can then be rubbed down until the bottom of the calice is exposed. I have found fine sand-paper, kept flat by attachment to a strip of wood, a good thing to rub down with, but great care must be taken to keep all the dust raised by the operation blown away as fast as made. A common blowpipe will do that quite successfully. If there is no destructive pyrites or hard phosphate present in the calice, the coral will then be seen in section, and present the appearance of a well-defined white figure on a dark ground, and the presence or absence of a columella or pali can be at once determined. It is the nearly white colour of the substance of the coral itself which renders desirable the mixture of lamp-black with the plaster, which, with a little care, will when dry have very nearly the same colour as the Gault matrix.

BATHYCYATHUS SOWERBYI, Edw. & Haime : Brit. Fos. Cor., 1850, p. 67, pl. ii, fig. 2.

Smilotrochus elongatus, Dunc. (in part) : Supp. Brit. Fos. Cor., 1869, pt. ii, No. 1, p. 19, pl. vi, figs. 1–6.

Trochoecyathus conulus, Jukes-Browne (not Phillips) : Quart. Journ. Geol. Soc., 1875, vol. xxxi, p. 303, pl. xiv, figs. 14–16.

After a most painstaking examination I am fully satisfied that all the specimens of the so-called *Smilotrochus elongatus* from the Coprolite Bed of the Cambridge Greensand must be referred to *Bathycyathus Sowerbyi*, and not, as was supposed by Mr. Jukes-Browne, to *Trochoecyathus conulus*, and my reasons for arriving at that conclusion are as follows:—The broad and spreading foot which is so well shown in Mr. Jukes-Browne's figure (fig. 14)

is precisely that of *Bathycyathus*, and is not characteristic of *Trochocyathus conulus*. The comparatively feeble development of the columella is also evidence in the same direction; but what is most conclusive is the fact that unquestionable specimens of *Bathycyathus* from the Folkestone Gault, when much worn and the wall and spreading foot partially or wholly absent, are undistinguishable from the Cambridge specimens, which, it should be remembered, are very rarely anything more than casts of the interior. It was Mr. Jukes-Browne, however, who pointed out that the Cambridge coral could no longer be retained in the genus *Smilotrochus*, and he subsequently showed that the so-called *Smilotrochus angulatus* must also be removed from that genus. Of the latter so-called species I can only say that I can follow Mr. Jukes-Browne in that conclusion, having observed in some of the Cambridge specimens the evidence of a small columella near the lower end of the coral.

CYCLOCYATHUS FITTONI, Edw. & Haime.

Micrabacia Fittoni, Dunc.: Supp. Brit. Fos. Cor., 1870, pt. ii, No. 2, p. 37, pl. xiv, figs. 6-9.

The specimen which I mentioned in my former paper as having been received from Dr. S. P. Woodward still retains its label in his handwriting: "*Cyclocyathus Fittoni*: Gault, Folkestone." It came to me in 1862, and has never been out of my hands, and every endeavour to obtain another specimen has proved futile.

The description and figure of *Micrabacia Fittoni* by Professor Duncan appeared in 1870,¹ but it is worthy of remark that in 1884, a year before the date of my paper,² he expressed some doubt as to the generic relationship of the type-specimen. There can be no doubt from the very close resemblance between my specimen and the figure of *Micrabacia Fittoni* as to the specific identity of the two specimens; and that there is a columella and pali in the one is beyond all doubt, while in the other the whole of the centre was so much obscured by extraneous matter that it is impossible to say what there may have been. The occurrence of only two specimens in the Folkestone Gault indicates the rarity of this form, whether we regard it as a variety of *Cyclocyathus Fittoni* or a distinct species.

TROCHOCYATHUS CONULUS, Phillips, sp.

Caryophyllia conulus: Phill. Ill. Geol. Yorks., 2nd ed., 1835, pl. ii, fig. 1.

Turbinolia conulus: Mich. Icon. Zooph., 1840, p. 1, pl. i, fig. 12.

Trochocyathus conulus, Edw. & Haime: Brit. Fos. Cor., 1850, p. 63, pl. ii, fig. 5.

Smilotrochus elongatus, Duncan: Supp. Brit. Fos. Cor., pt. ii, No. 2, p. 36, pl. xii, figs. 10-16; pl. xiii, figs. 10-12. (Not Jukes-Browne: Quart. Journ. Geol. Soc., 1875, vol. xxxi, p. 303, pl. xiv, figs. 14-16.)

Smilotrochus cylindricus, Duncan: Supp. Brit. Fos. Cor., 1870, pt. ii, No. 2, p. 36, pl. xiv, fig. 16.

¹ Quart. Journ. Geol. Soc., 1884, p. 565.

² GEOL. MAG., 1885.

The name of *Caryophyllia conulus* was given by Phillips in 1835 to a coral found in the Speeton Clay of Yorkshire; and having obtained a number of specimens from that locality which are obviously identical with the coral figured by Phillips, I have been enabled to compare and identify these with specimens from the Folkestone Gault, and to clear up the synonymy of the species.

Trochocyathus conulus, as I now restrict it, never attains to the size of the specimens from the Cambridge Greensand described by Professor Duncan as *Smilotrochus elongata*, which latter, it should be remembered, are only casts of the interior, and are not nearly so large as the perfect coral would be. The figures of *Trochocyathus conulus* given by Phillips and Michelin represent very full-sized examples, but most of the specimens from both Speeton and Folkestone are smaller and less regular in form.

Michelin gives two figures of this species, one being of an adherent coral and the other of one that was free. The latter is a good representation of *Trochocyathus conulus*, but the former is more like *T. Wiltshirei* than *T. conulus*, both of which species are found associated at Folkestone. In none of the specimens from Speeton which I have seen is there an adherent foot.

The more elongated corals from the Gault at Folkestone described and figured by Professor Duncan as *Smilotrochus cylindricus* occur also at Speeton. They have both columella and pali, and are certainly *Trochocyathi*—indeed, nothing more than elongated individuals of *Trochocyathus conulus*.

TRÖCHOCYATHUS WILTSHIREI, Duncan.

Trochocyathus Wiltshirei, Dunc.: Supp. Brit. Fos. Cor., 1870, pt. ii, p. 34, pl. xiv, figs. 10–12.

Smilotrochus granulatus, Dunc.: loc. cit., p. 76, pl. xiv, fig. 17.

Since the appearance of my former paper in 1885 I have examined many specimens of this species, and while I am satisfied that it is a good one I am more than ever convinced that the so-called *Smilotrochus granulatus* is nothing more than the young form of it.

TRÖCHOCYATHUS? CALCARATUS, Tomes.

Smilotrochus calcaratus, Tomes: GEOL. MAG., 1885, p. 543.

Of this very peculiar species I can now say that its characters are by no means those of *Smilotrochus*. The ragged spines of the septa, which increase in size and prominence as they approach the fossula, obscure the latter part so much that examination is difficult, but they meet and blend in the centre of the calice, with what I have little doubt is a true but small columella. Moreover, in some of the better preserved calices there is a somewhat circular disposition of the spines around a centre, indicative of the presence of pali. And if there is both columella and a ring of pali, the species must be referred to the genus *Trochocyathus*.

Besides occurring in the Gault at Folkestone, the present species has been found in the Speeton Clay of Yorkshire, from which locality I have a well-preserved specimen, in which there are certainly evidences of the presence of a columella.

CERATOTROCHUS INSIGNIS, Duncan, sp.

Smilotrochus insignis, Dunc. : Supp. Brit. Fos. Cor., 1870, pt. ii, No. 2, p. 37, pl. xii, fig. 17; pl. xiv, fig. 18.

There is considerable doubt as to the generic place of this small species, but that it cannot retain its position in the genus *Smilotrochus* is most certain. In addition to the existence of a very distinct columella it is probable that there is a ring of pali, in which case it is a *Trochocyathus*. In fractured specimens there is to be seen surrounding the large columella a kind of outer ring having much the appearance of adherent and styliform pali, which, however, have a height corresponding with that of the columella, and may therefore be a part of it.

DIBLASUS, sp.

By the kindness of Mr. Jukes-Browne I have examined some much worn specimens of *Diblasus* from the Coprolite Bed of the Cambridge Greensand, and compared them with examples of *Diblasus Gravensis* from the Chalk of Gravesend. They are certainly specifically distinct, the costæ being small—only half the size of those of *D. Gravensis*—and much more regular in size and prominence. In none of the specimens are there any calices, and I refrain from further description.

PLACOSMILIA TUBEROSA, Edw. & Haime, sp.

Turbinolia compressa, Morris : Cat. Brit. Fos., 1843, p. 46.

Trochosmilium?, *tuberosa*, Edw. & Haime : Brit. Fos. Cor., 1850, p. 58, pl. x, fig. 2.

Trochosmilium tuberosa, Morris : Cat. Brit. Fos., 2nd ed., 1854, p. 68.

Smilotrochus tuberosa, Edw. & Haime : Pol. Fos. Paleoz., 1851, p. 29; Hist. Nat. Cor., 1857, tom. ii, p. 71.

Placosmilium cuneiformis?, Duncan (not Edw. & Haime) : Supp. Brit. Fos. Cor., 1869, pt. ii, No. 1, p. 27, pl. x, figs. 1-5.

A single specimen from the Greensand of Blackdown, which formed part of the collection of my late friend Dr. Wright, and is now before me, has the peculiar swellings near the foot which gave to the species its specific name; and although they are not quite so conspicuous as in the figures given by MM. Milne Edwards and Haime, there is no doubt as to the species.

The Blackdown specimen has a deep-seated and not very strongly formed columella, extending the whole length of the fossula, which is more than half the length of the calice, and its presence removes the species at once into the genus *Placosmilium*, and confirms its specific identity with the small deltoid corals from the Haldon Greensand regarded by Professor Duncan as the *Placosmilium cuneiformis* of MM. Milne Edwards and Haime; a wholly distinct and dissimilar species occurring in the Gosau deposits, as I have determined by the comparison of undoubted specimens from the last-named locality.

The Haldon specimens correspond very closely in general size and form with the one from Blackdown, and especially in the length

and degree of development of the lamelliform columella, but differ in having the tuberosities at the foot only feebly indicated, and the ribs on the sides of the septa more strongly marked. I have examined a considerable number of these small *Placosmilæ* from Haldon, but they are merely siliceous casts, and so badly preserved that had I not the advantage of a well-preserved specimen from Blackdown for comparison, I should hesitate to speak decisively of them, excepting to determine with absolute certainty their distinction from the Gosau specimens of *Placosmilæ cuneiformis*. The latter are perfectly distinct from the Blackdown and Haldon specimens.

TROCHOSMILIA SULCATA, Edw. & Haime: Brit. Fos. Cor., 1850, p. 68, pl. ii, fig. 6.

I notice this species only to record its great rarity, one specimen alone amongst several hundreds from the Gault at Folkestone having reached me; and I may make the same observation respecting the extremely pretty *Leptocyathus gracilis*,¹ a single specimen being all that has appeared.

PARASMILIA GRANULATA, Duncan: Supp. Brit. Fos. Cor., 1869, pt. ii, No. 1, p. 13, pl. vi, figs. 5-8.

The present species was founded on one or more specimens in the Dixon Collection, but as no indication of locality has been made known, I take the opportunity of recording some examples which were in the collection of Dr. Wright and came to me labelled in his handwriting, "*Monocarya centralis*, W. C. Brighton." They accord well with the figures and description given by Professor Duncan, but one of them is of greater size than the types, having a height of 1 inch 4 lines and a diameter of calice a little exceeding 10 lines. It has the largest calice of any British *Parasmilia* I have yet seen.

PARASMILIA MANTELLI, Edw. & Haime: Brit. Fos. Cor., 1850, p. 49, pl. viii, fig. 2; Hist. Nat. Cor., 1857, tom. ii, p. 173.

The original describers of this species had access to one specimen only (from Bromley in Kent) when diagnosing the species, and Professor Duncan does not appear to have seen a single specimen even, but was of opinion that it was only a variety of *Parasmilia Gravesana*, which he reduced to the rank of a subspecies. By the kindness of Dr. Blackmore, of Salisbury, who has favoured me with a number of *Parasmiliæ* from the Chalk near that town, amongst which are several specimens of *Parasmilia Mantelli*, I can without hesitation restore the species to its former place. There can be no doubt as to its distinctness from *Parasmilia centralis* and *P. Gravesana*, and, indeed, from all the other British species of the genus; but I must make an addition to the otherwise very exact description of MM. Milne Edwards and Haime, and note the existence of a very large and rather elaborately developed columella, which attains in one specimen to quite one-third of the diameter of the calice.

¹ Duncan: "Supp. Brit. Foss. Cor.," pt. ii (1870), No. 2, p. 34, pl. xiii, figs. 5-8.

CÆLOSMLIA REGULARIS, sp. nov. Plate XIII, Figs, 2, 3, 4.

The corallum is small, turbinate, straight or a little curved, and attached by a very small foot, and there are distinct but not prominent annular swellings indicating periods of growth. The costæ are very indistinct, almost obsolete at the foot, but more defined near the calice. They are sub-equal, and alternately finely granulated and papillated.

The calice is symmetrical, circular or a little ovoid, and rather deep; the margin well defined, thin, and prominent, and the fossula small, deep, and a little elongated.

There are four cycles of septa in six systems; they are straight in their entire length, regular, not exsert, and their margins present a regular curvature from the wall downward into the fossula. Those of the first cycle almost meet in the centre of the visceral cavity, and are undulating in the direction of a horizontal line across them from the wall to the fossula. The undulations form broad, flattened, vertical ridges and furrows on the sides of the septa; the ridge on one side corresponding with the furrows on the other. The septa of the second cycle are three-fourths the length of the primary ones, and those of the third are a little more than half the length of those of the first cycle, while the septa forming the fourth are short, but vary considerably in different calices.

				in. lines.
Height of the corallum	...	...	...	1 0
Diameter of the calice	...	...	...	0 6½

A larger specimen, showing periods of growth, has a length of 1 inch 9 lines, but has a calice of no larger dimensions than that given above.

The present species may be readily distinguished from all the other British species by the great regularity in the form of the calice, and in the development of the septa, as well as by the number of the cycles, and by the length of the septa forming the fourth cycle.

Hab.—The Upper Chalk of East and West Harnham, Salisbury, and the Upper Chalk of Brighton.

CÆLOSMLIA LAXA, Edw. & Haime.

This was the only British species of the genus accessible to MM. Milne Edwards and Haime when they wrote their history of British fossil corals, and of it they observe, "the septa are very unequally developed, broad, very exsert," and "those of the first and second cycles (*sic*) united along the lower part of their inner edge." In all the specimens from the Norwich Chalk which I have seen that irregularity is so remarkable that I have wholly failed to define the cycles, and have been obliged to satisfy myself by merely counting the septa. Including those which are merely rudimentary, I find in the largest corallum 68 septa, or four cycles, and 20 septa of the fifth cycle. In another having a calice only a little smaller there are 43 septa only. A third specimen has 44 septa. A fourth specimen, with a calice much reduced in size by recent rejuvenescence, has only 32 septa. Other specimens which I have examined have only

confirmed the great irregularity of septal development in the genus *Celosmilia*, in so far as *C. laza* is concerned; and as the same thing has been noticed in *C. poculum*, *C. Fanjasi*, and *C. punctata* by MM. Milne Edwards and Haime, and in *C. Woodwardi* by Professor Duncan, we are justified in regarding it as having more than specific value, and as, I think, of more than subgeneric significance.

Of the Jurassic representatives of the genus *Celosmilia* reputed to have been found in the Nattheim Oolite, I am unable to speak.

RHIZANGIA MAMMILIFORMIS, Dunc., sp.

Podoseris mammiliformis, Dunc.: Supp. Brit. Fos. Cor., 1869, pt. ii, No. 1, p. 25, pl. ix, figs. 2–15.

I have examined several other specimens of this coral since the appearance of my paper in 1885, in which the stolon connecting the corallites is well preserved and obvious. I regret, however, that the opportunity has not occurred for examining any of the earlier known species of *Rhizangia* by means of sections, and ascertaining whether their septa have a pseudo-synapticular growth or not. There is no doubt whatever that the present species has septa which do not differ materially in structure from those of *Thamnastræa* and that there are also tabular dissepiments between them.

Of the second species, *Rhizangia elongata*, there is great doubt respecting its specific distinction. The taller the specimen, the more irregular is the outline; the smaller and more deformed the calice, the more abnormal is the cycle of septa. In fact, the elevated specimens present much the appearance often seen in other simple forms, namely, an abnormal and excessive growth, just what is not uncommon in certain species of *Montlivaltia*. *Rhizangia elongata* is at best a doubtful species.

LEPTOPHYLLIA CLAVATA, Reuss.

Leptophyllia clavata, Reuss: Denk. der Wiener Akad. der Wiss., 1854, t. vii, p. 101, pl. vi, figs. 3–6.

Turbinoseris de Fromenteli, Dunc.: Supp. Brit. Fos. Cor., 1870, pt. ii, p. 42, pl. xv, figs. 13–18.

Leptophyllia Anglica, Tomes: GEOL. MAG., 1885, p. 551.

Continued investigation has made it quite obvious that the coral which Professor Duncan described as *Turbinoseris de Fromenteli*, and which I subsequently named *Leptophyllia Anglica*, is nothing more than the *Leptophyllia clavata* of Reuss, the very species on which the genus *Leptophyllia* was founded.

LEPTOPHYLLIA IRREGULARIS, Reuss. Plate XIII, Fig. 1.

Leptophyllia irregularis, Reuss: Denk. der Wiener Akad. der Wiss., 1854, t. vii, p. 101, pl. vi, figs. 2, 3.

One instance only of the occurrence of this fine species in this country has come to my knowledge. It was obtained by Mr. F. H. Butler from the Lower Greensand at Sandown, Isle of Wight, out of the same bed which has supplied the *Leptophyllia clavata*. I have compared the specimen, which is

a large one and in fine preservation, with specimens of *Leptophyllia irregularis* from Gosau, and find that, although it differs a little from them in having rather thicker septa and costæ, it corresponds in every other particular, and so closely that the identity of the species cannot be doubted.

STEPHANOPHYLLIA NUMISMALIS, sp. nov. Plate XIII, Figs. 5-8.

The corallum is subcircular and much depressed, the upper surface having but little convexity and the outer edge being very thin. The base is a little concave. The basal wall is much perforated, much more so than in *Stephanophyllia Bowerbanki*, though less so than in *S. radiata*. The mural costæ are rather thicker than in *S. Bowerbanki*, and not so closely placed, the perforated spaces between them being nearly their own breadth. There are about fifteen perforations between each pair of costæ, but the number is somewhat variable. The costæ anastomose less freely than in *S. Bowerbanki*, and there are no indications of dissepiments between them.

The columella is rudimentary and depressed. The primary septa are straight, and pass into the columella; they are relatively rather thin and very irregular. The secondary septa are a little shorter than the primary ones; those forming the third cycle anastomose with the secondary ones near the columella, and the septa of the fourth cycle pass into those of the third at about half their length, while the septa constituting the fifth cycle join those of the fourth at a point approximately to their middle. There are some short and very irregularly developed septa of the sixth cycle anastomosing with the others. All the septa have margins which are excessively rugged (lacerated is the word used by MM. Milne Edwards and Haime), and the prominent angular points have the appearance of being twisted or bent in different directions.

Diameter of the corallum ...	...	...	5½ lines.
Height of the corallum ...	...	...	1 line.

One specimen only has been met with. It was obtained from the zone of *Actinocamax quadrata* in the Upper Chalk at East Harnham, near Salisbury, and is in the museum of that city. I am indebted to Dr. Blackmore for the opportunity of describing and figuring this rare and interesting species.

DESCRIPTION OF PLATE XIII.

- FIG. 1. *Leptophyllia irregularis*, Reuss, the corallum, natural size.
 „ 2. *Celosmilia regularis*, the corallum, natural size.
 „ 3. „ „ the calice, magnified twice.
 „ 4. „ „ a septum, magnified three times.
 „ 5. *Stephanophyllia numismalis*, the corallum, natural size.
 „ 6. „ „ the same, seen in profile.
 „ 7. „ „ the calice, magnified three times.
 „ 8. „ „ a portion of the basal wall showing the inter-costal perforations, magnified three times.