22. *On some NEW or IMPERFECTLY KNOWN MADREPORARIA from the GREAT OOLITE of the COUNTIES of OXFORD, GLOUCESTER, and SOMERSET.* By ROBERT F. TOMES, Esq., F.G.S. (Read January 28, 1885.)

[PLATE V.]

THE present paper is the result of continued search for Corals in the Great Oolite, and must be taken as supplementary to the one I have already published in the Journal of the Geological Society*. As the information it contains is wholly supplementary, I do not deem it necessary that a systematic classification of the species should be very closely observed.

A section will be given of the Great Oolite at Milton, Oxfordshire, where a coralliferous bed is exposed, and one also of the quarry near Cirencester, from which the late Mr. Brown obtained most of the Oolitic Corals which were given by him to the Oxford Museum. These sections, accompanied by an enumeration of the corals obtained from them, and some sections in the neighbourhood of Bath, with the species they have yielded, constitute the principal part of the paper. To this will be added notes and descriptions of some of the species.

The genus *Bathycænia*, and its allies, I have already shown to be characteristic of the Cornbrash; but three specimens of *Bathycænia Slatteri* have lately been found at Combe Down, Bath; and its presence there, taken in connection with the prevalence of the well-known Bradford-clay Ecrinite in the corresponding coral-beds of Farley Down and Hampton Down, would seem to point to a higher geological level for the coralliferous deposits around Bath than I have hitherto attributed to any of the Oxfordshire coral-beds. At the same time it is desirable that I should mention the occurrence of *Bathycænia Slatteri* in the Great Oolite of the railway-cutting near Rollright, where it was found by Mr. Jas. Windoes, of Chipping Norton, though its exact position in the section has not been ascertained. Moreover, as I shall point out further on, there are some stratigraphical reasons for believing the coral-bed at Caps Lodge, near Burford, where also the same species of *Bathycænia* has been met with, and those near Bath, to be of nearly the same age.

Some genera of Madreporaria, hitherto unknown in the Oolites of this country, have been recently met with, and will now be added to the list of genera. They are *Barysmilia*, *Stylosmilia*, *Heliocænia*, and two new genera which I have designated *Thamnocænia* and *Platastræa*.

Since the publication of my several papers on the Madreporaria of the Jurassic formations of this country, Prof. Duncan has brought out his "Revision of the Families and Genera of Sclerodermic Zoantharia"†. It is a valuable compilation, which by bringing together a great number of references to the works of other zoophytologists, past and present, renders the literature of the subject, comparatively speaking, simple and easy. How fully the classification therein set forth by

* Vol. xxxix. p. 168.

† Journ. Linn. Soc. vol. xviii. Nos. 104-105, 1884.

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Prof. Duncan will meet with acceptance at the hands of other workers in the same field, cannot at present be stated; but it may be confidently asserted that in some particulars serious modification will be imperative.

Section in Groves's Quarry, near the Village of Milton.

	ft.	in.
1. Surface-soil and shattered stone.....	3	0
2. Shattered stone, white, fine-grained, and scarcely oolitic in texture, containing a few scattered fragments of corals and a <i>Nerinea</i>	3	0
3. Marly clay of a bluish colour	2	8
4. Coral-bed. A light-coloured, fine-grained, hard limestone, not oolitic, and almost ringing when struck with a hammer	2	7
5. Marly clay with a bluish tinge	1	0
6. Stone in large blocks	1	0
7. Ferruginous marly clay	2	4
8. Stone in blocks.....	2	0
9. Marly clay with a bluish tinge	1	6
10. Soft imperfect stone with argillaceous seams, containing <i>Cypri-cardia</i> , <i>Natica</i> , <i>Modiola</i> , and <i>Ostrea</i>	1	10
11. Marly shale with <i>Modiola</i> and <i>Ostrea</i>	3	1
12. Soft imperfect stone	1	2
13. Marly shale with <i>Ostrea</i>	2	3
14. Imperfect stone, harder than no. 13	1	9
15. Marly shale, much filled with comminuted shells of <i>Ostrea</i>	1	10
16. Imperfect stone.....	1	4
17. Marly shale with <i>Ostrea</i> in extreme abundance	3	3
18. Rubby stone in about eight layers, without either shale or clay between them.....	4	0
19. Marly shale, grey and ferruginous, sometimes indurated, and having <i>Ostrea</i> in extreme abundance	3	3
20. Dense oolitic limestone of a yellow colour, and having oblique lamination. It contains comminuted fossils, chiefly shells, in extreme abundance	11	8
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The following Madreporaria have been taken from bed number 6 of the above section:—*Cryptocænia*, sp., *Montlivaltia caryophyllata*, *Montlivaltia*, a species having a naked costulated wall, *Chorisastræa obtusa*, *Adelastræa magnifica*?, *Isastræa limitata*, *I. gibbosa*, *Thamnastræa Lyelli*, *Anabacia complanata*, *Microsolena excelsa*.

From the nearness of the above section to the outcrop of the Great Oolite, and consequently to the underlying Inferior Oolite, it is more than probable that it corresponds more closely with the section exposed in the railway-cutting near Stonesfield than with the one at Caps Lodge near Burford, though the latter is only distant from it about a mile. But there is further and more direct evidence favouring the conclusion that the Caps Lodge and Milton sections, with their respective coral layers, do not correspond with each other in time. The Milton quarry is undoubtedly the one mentioned by Mr. Hull at page 58 of the Memoir of the Geological Survey, illustrating sheet number 44 of the map, in these words:—"On Milton field, in a large quarry, a section similar to that at Windrush is exhibited. There we find about 17 feet of interstratified marls, shales, and thin-bedded limestones, highly fossiliferous, resting on thick-bedded oolite more than 12 feet thick, and

yielding large blocks, the one belonging to the upper zone, the other to the lower."

Bed number 20 of my section is the thick-bedded oolite mentioned by Mr. Hull, and constitutes the lower zone, and this, he further on says, is the equivalent of the Stonesfield Slate. All above it (having, however, a much greater thickness than is stated by him) corresponds with the upper zone. The oyster which is so abundant in beds 17 and 19, and which occurs also in some of the other beds, is probably *Ostrea Sowerbyi*, and its prevalence in these beds, as well as the nature of the stone and shale of which they are composed, renders it quite probable that this part of the Milton section corresponds with the oyster-bed in the Stonesfield cutting. If such is the case, and the compact oolite below is identical with the Stonesfield Slate, further evidence in proof of the identity of the Stonesfield and Milton coralliferous deposits is unnecessary.

There is, however, considerable dissimilarity between these two coral beds; the one at Milton being much more uniform in texture, as well as much harder than the one at Stonesfield. The former is, indeed, so compact a stone, that it is only by fortunate fractures that the enclosed corals can be examined; and what adds more to the difficulty of securing satisfactory specimens is their highly crystalline condition. This coralliferous layer does not, indeed, present the usual characteristics of a coral bank, but rather resembles some near deposit into which they have been removed from the place of their growth.

My previous assertion that some of the corals figured by Professor Duncan, from the collection of the late Mr. Brown of Cirencester, came from Fairford, has met with partial corroboration. Two of the species, *Chorisastræa obtusa* and *Cryptocenæa tuberosa*, do not occur in the quarry from which Mr. Brown's collection was made, and are not to be seen in the collection given by him to the Museum at Oxford. The species were, I do not now entertain the least doubt, originally in Miss Slatter's collection, and had been obtained from Fairford.

A visit recently paid to Cirencester gave me the opportunity of inspecting the lime-kiln quarry, three miles along the Stroud road, and of preparing the following section which appears in it. It was from this quarry that Mr. Brown obtained his specimens.

	ft.	in.
1. Surface-soil	1	6
2. Soil and shattered stone	1	6
3. A soft friable bed of an earthy nature, of a deep yellow colour, and containing rubbly nodular stone. A species of <i>Echinobrissus</i> occurs in it.....	1	6
4. Hard, fine-grained, whitish stone, non-oolitic, with a somewhat conchoidal fracture, and penetrated by tortuous, but more or less vertical and anastomosing perforations, which are filled with the soft earthy part of the bed above. No fossils observed.....	2	9
5. Fine-grained oolite of a light yellowish colour, in some parts nearly white. Fossils rare	3	0
6. Coral-bed. Resembles the last, but is a little coarser. Contains a <i>Nerinea</i> and other univalves, and about 15 or 16 species of corals	2	0
7. Compact yellow oolite with very few fossils.....	2	0

Bed 4 is very peculiar. It is honeycombed through and through with large perforations, and where the soft in-filling of the hollow places has weathered out, is much used for rustic rockwork.

Beds 5 and 6 are very much alike, and the latter might almost be regarded as the bottom part of number 5, but they have been separated in the section to define more exactly the position of the corals.

I have determined the corals from bed 6 as follows:—*Stylosmilia reptans*, n. sp., *Stylina solida*, *S. conifera*, *Cryptocenia*, sp., *Convexastræa Waltoni*, *Isastræa limitata*, *I. gibbosa*, *I. Beesleyi*, *I. tuberosa*, *Latimæandra lotharinga*, *Latimæandra*, sp., *Cladophyllia Babeana*, *Thamnastræa Lyelli*, *Thamnastræa*, sp., *Anabacia complanata*, and *Microsolena excelsa*.

The examples of *Isastræa gibbosa* are singularly fine, and one of them, forming part of Mr. Brown's collection, now in the Oxford Museum, is very remarkable. It has long radiating finger-like processes springing from the original gibbous mass.

The most abundant coral in the Lime-kiln quarry is *Convexastræa Waltoni*. One specimen obtained by Mr. Brown is more than a foot in height, and consists of a mass of parallel corallites, apparently all springing from one base; so far as I could see, none of them were ramified.

A small and delicately formed *Stylosmilia*, which has also been met with at Farley Down near Bath, occurs with the *Convexastræa*; and the association of the two species, here and at Farley Down, would seem to indicate that the coral-beds of these two localities may be identical.

The want of a more extensive collection of Great Oolite corals from the neighbourhood of Bath, from which district so many of the types of MM. Milne-Edwards and Haime were derived, as well as of a more intimate personal knowledge of the strata from which they were taken, has long been an obstacle to me, not only in working out the stratigraphical distribution, but also in the determination of the species of Great Oolite corals. This want has now been in a great measure relieved by recent examinations of the exposures on Farley Down, Combe Down, and Hampton Down. These are the particular localities, it may be remembered, which furnished many of the specimens from which MM. Milne-Edwards and Haime drew up their descriptions of Great Oolite corals. The results of researches, made in company with my friend and frequent companion in the field, Mr. T. J. Slatter, and with the Rev. H. H. Winwood, I will now proceed to give.

In a rather extensive and long-since abandoned quarry on the south side of Combe Down is the following section:—

	ft.	in.
1. Surface-soil and shattered stone	4	0
2. Compact yellow stone	3	0
3. Hard yellow stone divided into 3 or 4 layers, and containing a few corals	5	0
4. Yellowish oolitic stone, much bored vertically by Annelides?, but containing n corals	1	0
5. Coral bed. This very closely resembles bed 4, and like it is bored vertically	5 to 6	0
6. Bath Oolite, light in colour and oolitic in texture, containing very few fossils and forming the bottom of the quarry. Depth not ascertained.		

The following are the species which have been found in the above coral-bed by Mr. T. J. Slatter and myself:—*Enallohelix socialis*, n. sp., *Bathycenia Slatteri*, *Thamnocenia oolitica*, *Scyphocenia*?, *Barysmilia Etalloni*, *Stylosmilia excelsa*, *Stylina Ploti*, *Cryptocenia Pratti*, *Convexastræa Waltoni*, *Montlivaltia caryophyllata*, a *Montlivaltia* with a naked costulated wall, *Calamophyllia radiata*, *Isastræa limitata*, *I. serialis*, *I. microphylla*, *Latimæandra*, sp., *Chorisastræa obtusa*, *Platastræa Conybeari*, *Oroseris Slatteri*, *Dimorphastræa fungiformis*, n. sp., *Anabacia complanata*, *Microsolena excelsa*.

The bed in which the corals occur has not at all the appearance of a coral-bed, properly speaking, but is like a deposit into which the corals have been drifted from some near coral-bank and scattered about; not in any place thickly, though they are not anywhere absent. It is a distinctly oolitic layer, and the round grains of which it is composed, as is not unusual in the Great Oolite, have eaten into the imbedded organisms, and destroyed their external details. Such is the condition of many of the corals from the Great Oolite of Combe Down, though occasional specimens may be met with which are in a fair state of preservation.

Of the exposures on the Hampton Downs, I am unable to give detailed sections; but at the south end of that plateau are some ancient and abandoned excavations, which are usually denominated the Hampton Rocks, in the upper part of which is a bed which, from the abundance of sponges it contains, was called by the late Mr. Moore the Sponge-bed. Immediately overlying it is the surface-soil, mixed with a considerable quantity of shattered stone. This is a broken-up coral-bed containing many corals. They are mostly in a bad state of preservation; and as very few could be determined satisfactorily, a list of the species has not been prepared.

There is also on the same ridge, northward of the Hampton Rocks, a large and disused quarry lying immediately behind the rifle-butts, and now known as the Butts-quarry. In the upper part of it is a well-marked coralliferous layer. It is three or four feet above the beds of dense and massive building-stone for which Bath has been so long and justly celebrated. From it have been procured the following corals:—

Stylina Ploti, *Cryptocenia microphylla*, *Convexastræa Waltoni*, *Montlivaltia*, sp., *Isastræa explanulata*, a massive variety, *Chorisastræa obtusa*, *Thamnastæa scita*, *Thamnastæa*, sp., *Oroseris Slatteri*, *Dimorphæa*, a small species, *Comoseris vermicularis*, *Anabacia complanata*, *Microsolena excelsa*.

Across the valley, eastward of the Hampton Downs, near to the village of Bathford, and directly under the building called Brown's Tower, is a quarried escarpment which constitutes the western boundary of Farley Down. From this spot, as I learn from the Rev. H. H. Winwood, the late Mr. Walton obtained his Farley-Down fossils.

The coral-bed is here more fully developed than in the Hampton-Down quarry, or than at the Hampton Rocks. Varying in thickness from two feet to ten feet, it possesses all the peculiarities observable in such Inferior-Oolite coral-deposits as Crickley and the Horsepools, near Cheltenham, being a fine-grained and light-coloured mudstone, which in some places is somewhat brecciated. It corresponds precisely in position with the coral-beds on the south-west side of the valley, appearing immediately above the massive building-stone. In several places above the escarpment, where the surface of the turf has been broken through, thin patches of Forest Marble are exposed; and it would therefore seem that as the coral-bed occurs only a little way below that bed, and as it contains many fragments of the well-known Bradford-clay Emericina, it holds a higher geological position in the Great Oolite than has been assigned to the Oxfordshire coral-beds, if we except the one at Caps Lodge near Burford. From the Farley-Down exposure I have obtained the following corals:—

Stylosmilium reptans, n. sp., *Stylina Ploti*, *Cryptocenia microphylla*, *Convexastræa Waltoni*, *Helicocenia oolitica*, n. sp., *Montlivaltia caryophyllata*, *Isastræa limitata*, *I. explanulata*, *I. microphylla*, *I. sp.*, *Latimæandra lotharinga*, *Chorisastræa obtusa*, *Goniocora*, sp., *Thamnastræa scita*, *T. Waltoni*, *Comoseris vermicularis*, *Oroseris Slatteri*, *Dimorpharæa*, sp., *Anabacia complanata*, *Microsolena excelsa*.

All the species from this, as well as other places in the Bath district mentioned in this paper, have been obtained from their respective localities and beds by Mr. T. J. Slatter and myself.

ENALLOHELIA SOCIALIS, n. sp. (Plate V. figs. 13, 14.)

The corallum consists of a great many corallites proceeding from a common root, which is of small extent. From this they grow upward and outward in every direction, and form a very thick and tangled mass from one to two inches in height, and three or four in breadth. This has a very irregular but somewhat convex upper surface, formed by the union of the corallites, which are thus fused into a more or less compact mass. The corallites are thin and maintain nearly the same diameter throughout. They ramify in an irregularly alternate manner, but do so very much more thickly at their upper ends, where, coming into contact with others, many unite and form irregular masses, which have their upper surfaces more or less flattened. The mural costæ, which in some species of this genus are observable near the calices, and in connection with the septa, are in the present species nearly obsolete.

Very few calices appear on the lower part of the corallites, but on the upper surface they are thickly but irregularly scattered. All the prominent ends of the corallites, and all the axial spaces have

calices, and others occupy flattened areas formed by the union of the corallites. They are circular and have very little prominence, the walls of the corallites continuing quite to the calicular margins.

The septa are not exsert; there are three cycles, and the septa of the first, six in number, approach the fossula, which is rather deep; those of the second cycle are three fourths of the length of the primary ones, and those of the third cycle are very short, almost rudimentary.

Several specimens have been taken from the coral-bed in the Combe-Down quarry, all of which come well within the foregoing description, though they vary somewhat in their relative height and breadth.

From *Enallohelix compressa* and *E. clavata*, with both of which the present species agrees in the number of primary septa, it nevertheless differs considerably: from the first, in its general habit of growth; and from the second, which, however, it more nearly resembles, in not having exsert septa, in having the third cycle of septa rudimentary, and in the absence of the enlarged inner margins of the primary ones. There is no other species of the genus with which it is likely to be confounded.

BATHYGCENIA SLATTERI, Tomes.

Some ill-preserved examples of this coral have been taken from the coral-bed on Combe Down by Mr. Slatter and myself. A single worn specimen has also been obtained from the Great Oolite at Caps Lodge, Burford, and is now in Mr. Hudleston's collection of Great-Oolite corals from that and other localities in Oxfordshire.

Great doubt is expressed by Prof. Duncan, in his "Revision of the Families and Genera of Corals," as to the distinctness of *Bathygcenia* from *Stylosmilæ*, which genus, in habit of growth, it somewhat resembles. A careful comparison of well-preserved specimens of Tertiary *Stylosmilæ*, in my own cabinet, with *Bathygcenia* was made by me when drawing up the generic definition of the latter, and the absence of a true columella was clearly made out. The accuracy of my diagnosis has been fully confirmed by the discovery of a *Bathygcenia* in which the septa do not meet in the centre of the visceral cavity, and in which therefore there is no columella*.

Genus THAMNOCENIA, n. g.

The corallum consists of an irregularly formed and attached mass of compact ctenenchyma, from which corallites spring and present the appearance of a straggling ramified cluster.

The corallites have considerable prominence, the longest being fully half the height of the corallum. The intercalicular portion, as well as the free part of the corallites, is wholly without epitheca, and has long and equal costæ.

The calices are deep and circular. The septa are entire and the

* Since the above was written, I have detected tabulæ in the calices of a specimen of *Bathygcenia Slatteri*.

primary ones swollen at their inner margins, somewhat as in *Scyphocœnia staminifera*.

Increase takes place by gemmation, quite at the base of the corallites, probably from the basal cœnenchyma, but not on any other part of the corallum.

In its general form the only specimen I have seen bears considerable resemblance to the small and not much developed examples of some species of *Dendrophyllia*, but only superficially, its affinities being with the family Astreidæ, while the absence of denticulations on the margins of the septa indicates a place in the subfamily Eusmilinæ.

THAMNOCœNIA OOLITICA, n. sp. (Plate V. figs. 5-8.)

The corallum has an irregular basal part, which is broadly attached to a worn fragment of *Platastrœa Conybeari*, on which it spreads, and which it partly covers. From this the corallites spring in a more or less upward and outward direction. Gemmation taking place at the base of the corallites gives to them somewhat the appearance of having been produced in pairs. They are prominent and cylindrical, but a little enlarged at their calicular ends. Both the corallites and the spaces between them have long, straight, and regular, but not prominent costæ, which extend from the margins of the calices downwards to the attached part of the corallum.

The calices are circular and deep, and their margins are prominent and thin. The septa are straight and project but little into the calice. They are wholly without denticulations, but those of the first and second cycles have their ends much swollen, a good deal as in the genus *Scyphocœnia*. Those of the first cycle are six in number, and extend very nearly into the fossula, which is small, circular, and distinct. The second cycle has septa which are very nearly as long as those of the first, and the remaining cycle consists of septa which are about three fourths the length of those of the second cycle. These have very little prominence, and are without the terminal swellings.

The full height of the corallum is about 9 lines. The diameter of the corallites is 2 lines. One specimen only has been met with; it was taken by me from the coralliferous layer on Combe Down, and was in near proximity to a specimen of *Barysmilia Etalloni*.

SCYPHOCœNIA ?

I have obtained a coral from Combe Down, where it was associated with *Barysmilia Etalloni* and *Thamnocœnia oolitica*, which possesses some of the characters of *Scyphocœnia*, but differs from it in one very important particular. It bears considerable resemblance to *Scyphocœnia excelsa*, in the form and arrangement of the corallites, but the latter do not remain attached to each other excepting quite low down. The septa appear to resemble those of *Scyphocœnia excelsa*, and there are a few strongly developed tabulæ, as in that species. The specimen is, however, too much injured to permit of detailed description.

The following table will show the relationship which exists between some of the Oolitic *Eusmilinae* which I have had occasion to speak of in my several papers on Oolitic Madreporaria.

EUSMILINÆ having the corallum	{ simple; epitheca present; corallum	{ elongated CERATOCENIA. discoid DISCOCENIA.	{ compact; corallum	{ hemispherical, turbidate, or lenticular; gemination intercalicular. BATHYCENIA.	{ curved, compressed, and attached by a point; gemination lateral and terminal. SCYTHOCENIA.	{ formed by a mass of cenenchyma, from which the corallites spring and form a straggling ramified cluster; gemination external and basal. THAMNOCENIA.				
	{ compound; epitheca	{ rudimentary or absent; corallum								
		{ well developed; the corallum bushy; gemination lateral and terminal ... DONACOSMILIA.								

NOTE.—Most likely the form for which I have suggested the name of *Depaphyllum* should be associated with the above genera.

Genus *BARYSMILIA*.

I have long known *Barysmilia* as a Cretaceous genus in this country; but until quite recently was unaware of its presence in the Oolitic formation either in England or elsewhere. Two examples were, however, taken by me during the present year (1884) from the coralliferous layer in the quarry on Combe Down, of which I have given a section. So long ago as 1859 M. Etallon made known the existence of three species of corals in the Corallian beds of the Haut-Jura, attributable to the genus *Baryphyllia* of M. de Fromentel*. That genus differs chiefly from *Barysmilia* in having denticulated septa. At present I am unable to observe the least evidence of denticulations on the septa of the specimens from Combe Down, and am compelled, therefore, to refer them to the genus *Barysmilia*. If, however, the specimens here mentioned have lost the denticulations of their septa, which is very probable, the already acknowledged Jurassic genus *Baryphyllia* will have to be substituted for *Barysmilia*.

BARYSMILIA ETALLONI, n. sp. (Plate V. figs. 1-4.)

The corallum has an irregular subglobose form, a little higher than wide, the lower part being peduncular and attached by a small base.

The whole of the peduncular part, as well as the space around and between the calices, is ornamented with costæ, which are regular, long, and anastomosing, and, near to the calices, more or less papillated. On the lower part of the corallum they are less distinct and nearly smooth. In the bottom of the hollows, between the calices, there is sometimes a distinct line of demarcation between the costæ surrounding the several calices, which has something of a herring-bone arrangement.

The calices are rather distant, the intervals between them being in all cases greater than their own diameter; but they approximate most nearly to each other on the top of the corallum. They are extremely variable in length, and occur as a simple oval, shaped like a figure 8, like the letter S, or like a more or less irregular cross. The longest calice I have seen has a very serpentine form, which, if straightened out, would have sufficient length to pass over the whole of the corallum, from the base on the one side, in a line over the top, to the base on the other side. The margins of the calices are prominent; they are rather deep, and the septa are thin, irregularly developed, and continuous with the intercalicular costæ.

In a simple ovoid calice I can determine about fifty septa, about twelve of which, constituting the first and second cycles, pass into the fossula, where they unite and form a very irregular but dense columella, which in the long calices appears as a rugged but prominent line of very variable thickness, which is continued the whole length of the calice.

STYLOSMILIA REPTANS, n. sp. (Plate V. figs. 18-21.)

The corallum consists of short tufted masses, rarely exceeding an

* Etud. Paléont. Terr. Juras. Haut-Jura, p. 93.

inch in height, which are usually attached to some hard body, and over which they spread, in a manner which is the result either of basal gemmation, or of increase by means of stolons. Of several specimens now before me, one from Farley Down is attached to a weathered fragment of *Thamnastræa*, which it partly conceals; and another, from the Lime-kiln quarry near Cirencester, is parasitic on *Convexastræa Waltoni*, over which it spreads.

The corallites are small at their attachment, rather crooked, increase in size gradually, and attain to three fourths of their full height before freely branching out. This they do irregularly, though lateral gemmation apparently takes place about the same time in the several corallites. Once commenced, it proceeds with sufficient rapidity to form a crowded mass of corallites, the calicular extremities of which, however, have every degree of prominence, scarcely any two being of exactly the same height.

The walls of the corallites are thick, but do not extend to the margin of the calices, and there is no appearance of epitheca, but well-marked costæ which blend with the septa pass down the corallites, and become less distinct as they extend downwards.

The calices are circular and prominent, but there is a well-marked fossula. The septa are exsert and are continuous outwardly with the mural costæ. The first two cycles are well developed and pass into the columella; the third cycle has very short septa, which are scarcely a fourth of the length of those of the earlier cycles. The columella is large, styliform, and with a pointed apex, but is not very prominent.

Height of the corallum about 9 lines; diameter of the corallites about one line.

A specimen from Farley Down indicates, by the manner in which the corallites spread over the substance to which they are attached, the possibility, almost the probability, of increase by means of stolons. Some other examples, taken from the Lime-kiln quarry, Cirencester, present precisely the same peculiarities.

STYLOSMILIA EXCELSA, n. sp. (Plate V. figs. 9-12.)

The corallum consists of a dense mass of slender corallites, and very closely resembles those of *Calamophyllia radiata*, so closely, indeed, that the two species have been confounded. On nearer examination the corallites are seen to be a little less straight than in that species, and rather more densely placed. There is no trace of the long mural costæ which characterize *Calamophyllia*, the corallites appearing to be quite smooth. The walls are thick, and the calices appear to have been shallow, but none of them retain their margins. There are about 12 septa, which are thin and not very regularly developed. In some calices those of the third cycle join the older ones near to the columella, but more frequently all of them run into the columella; the latter is large and styliform. In some of the calices two opposite septa are much thicker than the others, which is suggestive of fissiparity.

The only specimen I have seen is of considerable size, and was

taken from the coralliferous layer in the Combe-Down quarry by my friend Mr. T. J. Slatter.

Genus *HELIOCENIA*.

Heliocenia, Etallon, Etud. Paléont. Terr. Jurass. Haut-Jura, p. 74 (1859).

Placocenia, d'Orb. ?

M. d'Orbigny formed the genus *Placocenia* from a cast of a coral somewhat like *Stylina*, but differing from it in having a lamellar columella. His description is very brief, and the genus is not sufficiently particularized for adoption, though there is some probability that the subsequently created genus *Heliocenia* is identical with it.

The want of figures to illustrate Etallon's descriptions of *Heliocenia* has been supplied by M. Koby, in his fine work on the Jurassic corals of Switzerland*. Five species are therein figured, one of which, *Heliocenia costulata*, Koby, has a small, styliform columella and appears to me to differ so much from the others as to be doubtfully referable to the same genus.

M. de Fromentel, while acknowledging the genus *Placocenia* of M. d'Orbigny, does not admit *Heliocenia*, but has created a very closely allied genus, *Stylohelix*. This latter has been merged into *Heliocenia* by M. Koby.

Prof. Duncan, while reducing *Heliocenia* to the rank of a subgenus, has placed it in his "Alliance *STYLOIDA*"†, immediately following *Stylina*. The genus *Placocenia*, which I have supposed to be identical with *Heliocenia*, he introduces into another "alliance," which he designates "*Placocenoida*." Further, he separates the genus *Stylohelix* entirely from the foregoing, and associates it, with *Enallohelix* and *Dendrohelix*, in the family *OCULINIDÆ*.

In direct contrast to the views of Prof. Duncan, M. Koby unites *Stylohelix* and *Heliocenia* in one genus, giving the latter name the preference on account of its priority. With specimens of *Stylohelix mamillata* before me, which I have received from the Corallian of the Haute-Saône, I feel no hesitation in associating the genus *Stylohelix* with *Stylina* and other allied genera, but fail to observe any alliance whatever with the *OCULINIDÆ*.

HELIOCENIA OOLITICA, n. sp. (Plate V. figs. 15-17.)

The corallum has a somewhat peduncular form, with an irregularly flat but not overhanging top. The calices are very unequally distributed over the whole corallum, but are very thinly scattered on the peduncular portion. On the top they are thinly placed, excepting where gemmation has taken place most recently, where they are rather crowded. They have not much prominence, and the intercalicular costæ, which are of nearly equal size, meet, but end abruptly in the middle of the intercalicular spaces.

The septa are exsert, and they and the costæ, with which they are

* Monogr. Polyp. Jurass. de la Suisse, p. 63 (1881).

† "Revision of Families and Genera," see pages 45, 110, and 197.

continuous, nearly conceal the wall, much as in unworn calices of *Convexastræa*. Those of the first cycle extend towards the centre of the calice, and have a slight swelling at their inner end. The septa of the second cycle are half the length of those of the first, while those of the third are half the length of the second.

The lamellar columella has very little prominence, and is so placed between two opposite septa of the first cycle as to fill up the space between them so closely that, when the calices are worn down, the whole becomes a continuous and straight line across the calice, dividing it in half. Both septa and septal costæ have their margins distinctly crenulated, the crenulations being small, pointed, and irregular. Their sides also are furnished with coarse irregular granulations, which are also observable in the spaces between them.

Height of the corallum 1 inch 6 lines; the diameter is about the same, and the calices are about 1 line in diameter. The spaces between the calices considerably exceed the diameter of the latter, excepting in one or two crowded spots.

Excepting the single example from Farley Down, I have not examined a species representing this genus.

Genus CONVEXASTRÆA, d'Orb.

As *Convexastræa Waltoni*, our only representative of the genus, was described from specimens collected by the late Mr. Walton at the Hampton Rocks near Bath, it is, perhaps, desirable that I should state that I have compared specimens from that locality with others from the coralline deposits in the Great Oolite of Oxfordshire, and find them to be in all respects similar.

The differences between *Convexastræa* and *Cryptocœnia* have been recently defined with great clearness by M. Koby in his work on the 'Jurassic Corals of Switzerland,' now in course of publication. He observes that the former differs from the latter in having the septal costæ less numerous, rarely confluent, and not completely concealing the intercalicular spaces.

Genus MONTLIVALTIA, Lamx.

I have often met, in the Great Oolite, with a supposed *Montlivaltia* which is characterized by a stunted form, a naked costulated wall, and rather a small number of very thin septa. The fossula is elongated, much as in *Montlivaltia caryophyllata*. The mural costæ are rather far apart, and have a prominence according to the order of the septa they represent. They are wholly without tubercles or papillæ, and if their smooth and rounded form may be taken as any indication of the nature of the margins of the septa, the latter may also have been smooth. In that case it could not be placed in the genus *Montlivaltia*. It occurs in the Great Oolite of the Rollright and Stonesfield railway-cuttings, in the Caps-Lodge and Milton quarries, and I have a specimen taken from the coral-bed on Combe Down. From none of these places have I obtained well-preserved specimens.

Genus ADELASTRÆA, Reuss.

An objection was some time since raised by Reuss to the use of the unclassical name *Confusastræa*, and attention having been called to this by Prof. Duncan, it must now be abandoned. *Adelastrea*, the name applied by Reuss to a species from the Cretaceous beds of Gosau, will now take its place, and *Confusastræa consobrina*, *Confusastræa tenuistriata*, and *Confusastræa magnifica*, which I have introduced into our coral-fauna, must now be called *Adelastrea consobrina*, *Adelastrea tenuistriata*, and *Adelastrea magnifica*. Three other species which occur in the Great Oolite of the Boulonnais, one of which has been lately described by me under the name of *Confusastræa Rigauxi*, are now also to be referred to the genus *Adelastrea*.

Some very large specimens of a coral appertaining to the genus occur in the Great-Oolite quarry near Great Milton, and some of less dimensions have been taken from the Caps-Lodge quarry; but whether they are distinct from *Adelastrea magnifica*, to which they bear considerable resemblance, I have not yet been able to determine.

Genus PLATASTRÆA, n. g.

Clausastræa, Milne-Edw. and Haime, in part.

The genus *Clausastræa* is one of those in which there is ample scope for diversity of opinion, for it has been placed among the *Astreidæ*, among the now discarded *Tabulata*, and in the newly proposed half-way group designated *Plesiofungidæ*. It is now, however, evident that two very distinct forms have been confounded under the name of *Clausastræa*. In specimens of *Clausastræa dubia* and *Clausastræa Edwardsi*, with which I have been favoured by M. de Fromentel, there are, as mentioned by him in the description of the species*, very distinct and numerous tabulæ, arranged one above the other with great regularity, and extending on the same level across the corallum. They have been observed and figured in another species by M. Etallon, in which the same distribution and form are obvious†.

The other form is represented by two English species, one of which, from the Great Oolite of Combe Down, Bath, has been described by MM. Milne-Edwards and Haime under the name of *Clausastræa Pratti*. The endotheca of this species they describe in the following words:—"The loculi are closed by well-formed and rather numerous dissepiments." In the figure which accompanies the description these are shown‡. In weathered specimens from Combe Down, now before me, the nature of these dissepiments is very apparent. They are obviously quite unlike tabulæ.

Under the impression that the so-called *Clausastræa Pratti* has an essential columella, the original describers transferred it to the genus *Plerastræa*, in which genus it appears in their general work on corals. But from the examination of a number of specimens

* Introd. Etude Pol. foss. p. 281.

† Leth. Bruntr. pl. lvii. fig. 5.

‡ Brit. Foss. Cor. pt. ii. pl. xxii. fig. 5.

from Combe Down, I am convinced that the supposed columella does not exist in any of them, and that, as I shall presently show, they are identical with the *Isastræa Conybeari* of the same authors, from the same locality. In fact the supposed columella is nothing more than the blending together of the inner margins of the septa, which takes place in a very uncertain manner quite low down in the corallites, and becomes visible only when the corallum is much worn down. It was from such a worn specimen that the figure of MM. Milne-Edwards and Haime was taken. With the full conviction therefore that the Coombe-Down coral cannot consistently be placed either in *Clausastræa* or *Plerastræa*, I have created a genus for its reception which I define as follows:—

The corallum is massive and more or less globular. The calices are large and shallow; there is no wall surrounding the corallites, and the septa of one calice meet and unite with those of the adjoining ones. They are not numerous, and are strongly denticulated. There is no columella. The dissepiments are very numerous, completely filling up the loculi. They are well developed and strongly arched.

PLATASTRÆA CONYBEARI, M.-Edw. and Haime, sp.

Isastræa Conybeari, M.-Edw. and Haime, Brit. Foss. Cor. pl. ii. p. 113, pl. xxii. fig. 4 (1851).

Clausastræa Pratti, M.-Edw. and Haime, Brit. Fos. Cor. pl. ii. p. 117, pl. xxii. fig. 5 (1851).

All the specimens recently collected at Combe Down may be referred either to *Clausastræa Pratti* or to *Isastræa Conybeari*, according to the condition of the specimen examined. In its normal form this species is more or less globose, and in such specimens, when not too much worn, the calices have much the form and appearance of those of *Isastræa Conybeari*. But frequently the corallum has departed from this regularity of outline, and the departure has been accompanied by a corresponding irregularity in the form of the calices, and in the degree of development of the septa where they meet in the fossula. Such specimens, if much worn, present all the appearance of *Clausastræa Pratti*; and indeed the characteristics of both the supposed species may sometimes be observed on different parts of the same corallum.

GONIOCORA, sp.

I have met with a single specimen referable to this genus, which in size, mode of growth, and so far as can be seen in its calicular characters, bears some resemblance to *Goniocora socialis*. It is too much overgrown with Bryozoa to permit examination of the mural costæ, and the septa are only visible when the ends of the corallites are broken off. It has very thick walls, and thin and straight septa. The first cycle of septa extends almost to the centre of the calice, the secondary ones are three fourths the length of the primaries, and the tertiary septa are rudimentary.

The specimen here mentioned was obtained by me at Farley

Down, and the existence of the genus *Goniocora* there establishes its distribution through nearly the whole of the English Oolites. It has now been met with near to the bottom of the Inferior Oolite at Crikley, in the Great Oolite of Farley Down, and in the Coral Rag at Steeple Ashton and other places.

DIMORPHASTRÆA FUNGIFORMIS, n. sp. (Plate V. figs. 22, 23.)

I have obtained from the coral-bed of Combe Down several corals of a species which, as I fail to detect pores in the septa, is here placed in the genus *Dimorphastræa*. It has a pedunculate form with an overhanging rounded fungiform top, the upper surface of which is convex. The peduncular part is short, and the expanded top has a thin and slightly lobed outer edge.

The peduncle has regular and straight costæ, which are similar in size to the septal costæ near the outer part of the corallum, but smaller than those around the central calice.

The central calice is large and prominent, but is centrally depressed, somewhat like the calices of *Crateroseris* and *Adelastræa*. The smaller calices are about twelve in number, and are arranged somewhat symmetrically around the larger one, and, like it, are prominent, with a depressed centre. About one hundred septa enter into the composition of the central calice, and about half the number are observed in the smaller ones. In all the calices the septa anastomose very near to the fossula, but not anywhere else; and none of the septal costæ anastomose, excepting quite at the outer margin of the corallum, and then only sparingly. The septa are rather stout, regular, parallel; and the loculi have the same breadth as the septa themselves. The edges of the septa and the septal costæ have regular and rounded tubercles, much as in *Crateroseris*.

Height of the corallum about 1 inch.

Diameter of the corallum about 1 inch 4 lines.

The present species bears some resemblance to *Dimorphastræa helianthus*, Becker, from the Corallian of Nattheim, in so far as the stoutness of the septa and septal costæ is concerned, but differs wholly from that species in general form, in the shape and arrangement of the calices, and in the absence of anastomosing septal costæ.

At present I am unable to state whether the septa are perforate or not, nor can I speak of the synapticulæ, excepting to say that they are present.

Genus *COMOSERIS*, d'Orb.

In his recently published "Revision of the Families and Genera of Sclerodermic Zoantharia," Prof. Duncan takes exception to my statement that no very near relationship exists between *Comoseris* and *Oroseris*; and after stating that there is no wall either surrounding the calices or in the collines of the former genus, he asserts that I have "misunderstood the diagnoses of the genera, for it must appear, on reading them, that *Oroseris* can hardly stand as a genus

distinct from *Comoseris*. *The only distinction is the length of the ridges bounding the calicinal valleys.*" From this concluding statement, which is here printed in italics by me, I feel myself compelled to express a most unqualified dissent. Wishing, however, to make a more critical examination of the ridges of the calicular surface of *Comoseris*, with a view to the determination of the question whether they have walls or not, I have made careful examination of a great many specimens of *Comoseris irradians*, from the Corallian of Steeple Ashton and the Boulonnais, and of *Comoseris vermicularis* from the Great Oolite of the neighbourhood of Bath. The results of this renewed examination I will now proceed to give, premising that the time and trouble will not be wasted which places on a sounder footing our knowledge of the forms now under consideration.

The most superficial observation of well-preserved specimens of *Comoseris irradians* will afford sufficient evidence of the distinctness of the ridges or collines which divide the upper surface of the corallum into segments. When compared with the intervening calicular surface these collines (Pl. V. fig. 24) have a character of their own, quite independently of the calices, and are clothed with costæ, very little resembling the septal costæ in connection with the calices. For instance, on some of the collines the costæ on the one side do not correspond with those on the other side, but alternate with them, just as do the septa of contiguous calices of many compound corals, such as those of some species of *Isastræa*, and they are consequently very suggestive of a concealed wall. Accordingly, in worn specimens a very distinct and continuous line is sometimes observable, simulating a true wall; but sometimes it has a serrated or zigzag course, and then presents so much the appearance of the inflected walls between the lobes of *Phyllogyra* as to suggest a similarity of origin. Without entering further into the question of the nature of the wall observable in the collines of *Comoseris*, I may venture to assert that no such wall, whatever may be its nature, exists in *Oroseris*. To this I shall again refer. I may add, as characteristic of the genus *Comoseris*, that the calices are scattered over the surface between the ridges, and never developed in lines as they commonly are in *Oroseris*. Sometimes the collines are very frequent, and there is only space for one row of calices between them. But when the former widen out, the calices spread out also, and the uniformity of the line is broken. This is very observable in both *Comoseris irradians* and *Comoseris vermicularis* (Pl. V. fig. 25).

Fortunately for the examination of the genus *Oroseris* there is a species commonly occurring in the Great Oolite of Bath, which, when rubbed down, shows the structure of the calices very satisfactorily. In this species the calices are so near together in the lines, and the lines themselves have so much of a radiate direction, that they can only have been the result of direct gemmation from the inner calices outwards, without the interposition of septal costæ. The so-called ridges laterally bounding the lines of calices are really nothing more than ordinary septal costæ, such as are visible between the calices of many species of *Thamnastræa*. The *Thamnastræa*

media of Reuss, from the Cretaceous deposits of Gosau, is a good illustration of this. When the corallum of *Oroseris* has been ground down and polished, the intimate connection of the calices with the costæ forming the supposed ridges becomes even more evident, and the importance of the successive development of the calices in lines still more obvious.

COMOSERIS VERMICULARIS, M.-Edw. and Haime, Brit. Foss. Cor. p. 122.

Meandrina vermicularis, M'Coy, Ann. & Mag. Nat. Hist. ser. ii. vol. ii. p. 402.

Several very small examples of this species, associated with larger ones, have been met with on Farley Down, which have a very leaf-like form with a thin edge. On these the ridges are especially pronounced, and the costæ, which meet on their line of greater prominence, are rarely continuous.

OROSERIS SLATTERI, Tones.

A considerable number of specimens of a species of *Oroseris*, which, though varying extremely in form, may nevertheless be referred to the above species, have been met with at Combe Down, Hampton Down, and Farley Down. Those on Hampton Down are in large blocks of stone, and are of great size, but they are very ill-preserved. The Farley-Down specimens are, however, in a far better condition, and as they occur of all sizes, they furnish a good opportunity of studying the successive periods of growth, and illustrate the particular mode of increase of the genus. Young examples are simple, and usually, but not invariably, turbinate. The calice is circular and not very deep. At this period they greatly resemble *Thecoseris*. At a more advanced stage the calice has become elongate, and it has two or three calices in a line. But it still retains its turbinate form, though it speedily afterwards departs from the upward mode of growth and spreads out in all directions, eventually attaining to a great size and undefinable form.

I am in complete ignorance of the early form and mode of growth of such species of *Oroseris* as are broadly attached or incrusting, but I may venture to record my conviction that none of them exhibit the same method of growth as *Comoseris*.

Genus TRICYCLOSERIS, Tones.

M. Pratz, in his very valuable paper on the Fungidæ, published in the 29th volume of the 'Palæontographica' (1882), suggests that the specimen from which I drew up my description of the genus may be nothing more than a young example of a species appertaining to some other genus. Of the more recently described species from the Great Oolite of Fairford, *Tricycloseris limax*, he entertains the same opinion, and informs me that there are many examples in the museum at Munich which have considerable resemblance to the specimens I have figured. When drawing up the description of *Tricycloseris limax* I made use of many young speci-

mens of *Thamnastræa*, both of Great-Oolite and Inferior-Oolite species, for comparison, but did not in any instance meet with an example having a single row of calices surrounded by long septal costæ. I may confidently state that *Tricycloseris limax* is not the young form of any English species of *Thamnastræa*, though I cannot at present be sure that it is not the young of an *Orosieris*. However, as I know of no species of the latter genus to which it can be referred, I must, for the present at any rate, regard it as a distinct genus, but will omit no opportunity of investigating more fully the several periods of growth of the last-named genus.

MICROSOLENA EXCELSA, M.-Edw. & Haime.

The specimens from which MM. Milne-Edwards and Haime took their description of this species were found in the Great Oolite near Bath, and formed part of Mr. Walton's collection. Some years since I was favoured by that gentleman with specimens from Farley Down, and was at the same time informed by him that all his specimens had been taken from that locality. During the present year (1884) I was conducted to the spot by the Rev. H. H. Winwood, when I made the following note of its occurrence there.

Although fragments may be found scattered all through the coral-bed, it is only at two very restricted and not very distant spots that this species is abundant. It is there found in a softish white layer which is overlain by a bed of hard stone. To the under side of the latter the coral appears to be attached by a rather small base, from which it ramifies in every direction downwards, and forms a thick rounded bush which attains to a height of as much as a foot and a half. The peculiar position of these bush-shaped masses, bottom upwards, would seem to indicate that the whole of the beds had tumbled over and reversed the position of the corals, a conclusion not however borne out by the presence, in place, of the regularly bedded compact Bathstone immediately beneath, which was at one time worked at that place, and is still well exposed.

I have examined several specimens of this species from the railway-cutting near Stonesfield, which are worthy of mention. They are attached to worn specimens of *Thamnastræa Lyelli*, are small in size, and have a pyramidal or subconical form, with a large apical calice, and an irregular ring of smaller ones near the base, just as in the genus *Genabacia*. At this period of their growth they might be referred to an attached species of that genus, such as *Genabacia Sancti-mihieli* of MM. Milne-Edwards and Haime. But other examples of rather more advanced growth have a less regular form, and a greater number of lateral calices, while the earlier-formed ones, near to the terminal calice, have increased visibly in size, and do not differ much in this respect from it. I would suggest the probability of the *Genabacia Sancti-mihieli* being merely the early period of growth of some dendroid species of *Thamnastræa*.

In addition to the foregoing there are several species which are represented by such unsatisfactory specimens that they cannot be

placed even generically. I may allude, however, to one which has a dendroid growth, a thick and wrinkled epitheca, increase by lateral gemmation, and denticulated septa which pass into a central mass which has something the appearance of a papillose columella.

CONCLUSION.

The beds of massive and nearly unfossiliferous building-stone around Bath indicate a period of continuous deposition which was inconsistent with coralline growth. At the conclusion of this period, when there was a pause, the condition became so far favourable as to be productive of coralline life, and in considerable variety and plenty.

The coral-beds exposed on the Farley and Hampton Downs consist of a whitish mudstone, in which the corals are imbedded, many of them showing, by their incrusting and delicate Bryozoa and *Serpula*, perfect in their details, that they lived and died where they are now found. Such has been the case with some of the tall dendroid examples of *Microsolena excelsa*, which, attaining to a height of a foot and a half, and having a bush-like form, may still be seen in the Farley-Down section attached to the substance on which they grew when the sea of the Great Oolite washed over them. It is probable that the coral-beds of these localities, like other oolitic ones, were not of great extent; for on Combe Down other conditions prevail. The coral-bed there, though holding the same position, presents a very different appearance. The corals are scattered in it in varying degrees of abundance. It is distinctly oolitic, and does not afford the least evidence of having been the place of growth of the corals. On the contrary, they have much the aspect of derived fossils. Yet this bed, from its stratigraphical position, and from the number of corals it contains, is evidently of the same age as those of Farley and Hampton Downs, and may perhaps have been the result of a wash from some near coral-bank.

Correlated with the coralliferous deposits of the Great Oolite of Oxfordshire, those around Bath probably correspond with the one exposed at Caps Lodge, near Burford. At that place, and on Farley Down, are patches of Forest Marble which overlie the coral-beds and appear to hold nearly the same position in relation to them at both those places. Hence the probability of their being on the same geological level.

From the frequency of sponges associated with corals in the Butts Quarry, Hampton Down, and at Farley Down, it is probable that Mr. Moore's sponge-bed at Hampton Rocks is the equivalent of the lower part of the coral-bed, which at that place contains more sponges and fewer corals.

Of the probable age of the coralline deposit in the Lime-kiln Quarry, near Cirencester, I can say nothing.

EXPLANATION OF PLATE V.

- Fig. 1. *Barysmilia Etallonii*: the corallum, natural size.
2. ———: another specimen, natural size.
3. ———: some costæ, magnified, showing their ramification.
4. ———: a few costæ, much magnified.
5. *Thamnocænia oolitica*: the corallum, natural size.
6. ———: a part of the corallum, magnified, showing its attachment to a foreign body.
7. ———: some of the axillary costæ, magnified.
8. ———: a calice, greatly magnified, and one side cut away to show the septa.
9. *Stylosmilia excelsa*: part of a corallum, natural size.
10. ———: a portion of the calicular surface, magnified about two diameters.
11. ———: a worn calice, considerably magnified.
12. ———: an unworn calice, considerably magnified.
13. *Enallohelix socialis*: a portion of the overhanging consolidated upper surface of the corallum, natural size.
14. ———: part of a lateral corallite, with a calice, much magnified.
15. *Heliocænia oolitica*: the corallum, natural size.
16. ———: a young calice before becoming prominent.
17. ———: a worn calice, showing the lamellar columella.
18. *Stylosmilia reptans*: a young corallum, natural size, attached to a *Thamnastræa*.
19. ———: a portion of another specimen, much magnified.
20. ———: a worn calice, magnified.
21. ———: another calice on the same specimen, having very irregularly developed septa.
22. *Dimorphastræa fungiformis*: the corallum, natural size.
23. ———: the calicular surface, natural size.
24. *Comoseris irradians*: portion of a colline of a weathered specimen from Steeple Ashton, magnified, and showing the supposed wall.
25. ——— *vermicularis*: portion of a colline of a worn example from the Great Oolite of Farley Down, Bath, magnified.

DISCUSSION.

Dr. HINDE expressed his sense of the value of the researches of Mr. Tomes on the distribution of corals in the Jurassic rocks; but expressed his regret that the specimens described were not laid on the table for the inspection of the Fellows of the Society.