Fig. 31. *Mucronella spinosissima*, MacG. Aperture, showing denticles, × 50.
Fig. 32. *Mucronella diaphana*, MacG. Aperture, showing denticles, × 50.
Fig. 33. *Mucronella Peachii*, Johnst. Aperture, showing denticles, × 50.
Fig. 34. *Smittia Napierii*, Waters, × 25.
Fig. 35. The same, × 85.
Figs. 36, 37. *Exochella longirostris*, Jullien, × 85.
Fig. 38. *Mucronella variolosa*, Johnst., × 50.
Fig. 39. *Smittia Smittiana*, Busk. Aperture, × 50.

II.—*On the Cretaceous Species of* Podoseris, *Dunc.*

By Prof. P. Martin Duncan, M.B. (Lond.), F.R.S., &c.

[Plate V.]

Contents.

A very interesting collection of Corals, numbering nearly 140 specimens, has been entrusted to me by Thomas Jesson, Esq., F.G.S., who obtained them from the Red Chalk of Norfolk. The species do not assist the stratigraphical geologist in fixing a definite horizon for that interesting Cretaceous deposit. They are all members of the genus of Lophoserine Fungida which I established in 1869, under the name *Podoseris* (Pal. Soc. 1869, Monogr. Brit. Foss. Corals, 2nd ser. pt. ii. no. 1, p. 25) *. The species have not been found away from the Red Chalk. The great variability of the species of this genus was noticed in the essay which contained the generic diagnosis, and it is very evident after examining the collection lately received. The species *P. elongata* and *P. mamilliformis* have some very remarkable varieties, which are now described, and it is satisfactory to find amongst Mr. Jesson's treasures a perfect and unworn specimen of the last-named species. The diagnosis of both of the original species requires slight modification, and it is advisable to add some new species to the genus.

* The genus was considered during the publication of the "Revision of the Madreporaria" (Journ. Linn. Soc., Zool. 1884, vol. xviii. p. 153), and it was placed in the Podoserioida, an alliance of Lophoserines. It has of course no affinity with *Rhizangia*, Ed. & H., as has been suggested.

List of Cretaceous Podoseridæ.

1. *Podoseris elongata*, Dunc. (*op. cit.* p. 25).
2. —— *mamilliformis*, Dunc. (*op. cit.* p. 25).
3. —— *affinis*, sp. nov.
4. —— *anomala*, sp. nov.
5. —— *Jessoni*, sp. nov.
6. —— *brevis*, sp. nov.
7. —— *dubia*, sp. nov.

Reconsideration of the old and Description of the new Species.

Podoseris elongata, Dunc., was described in the Monogr. Brit. Foss. Corals, 2nd ser., Pal. Soc. 1869, Cret. Corals, pt. ii. no. 1, p. 26, pl. ix., and now requires some reconsideration on account of the discovery of some very interesting varieties. In one form, lately examined, the attached base is not so wide as the calice, whilst in the type the reverse occurred. This variation in the relative breadth of the calices is due to the coral having died at a particular stage of growth, and it can readily be imagined, after examining a tall corallum which has constrictions and enlargements of its otherwise cylindrical body, that calicular growth must have occurred both when the body was narrow and when it was broad. This variation in the breadth of calices is seen in many of the simple corals of the present day.

The septa are numerous and the greater number of them are long, stout, close, often uniting with a neighbour far inwards, or the union may not occur in all systems. Many septa, mainly formed by the union of others, reach the axis and join, forming with a very small amount of interseptal tissue a columella, which is usually seen at the bottom of the central fossula or which may project. The costæ were admirably drawn by De Wilde in pl. ix. of the memoir noticed above, and also the remarkable nodules shown on their flanks. These more or less wedge-shaped bodies are numerous and are either projected transversely or obliquely towards the neighbouring costa or septum. They rarely unite with these as stout synapticulæ directly, but interdigitate or are united by thin dissepimental ends, either with the corresponding bodies or with the opposed costa or septum. The synapticulæ are both stout and thin between the septa, but large ones are not common. The epitheca is sometimes preserved and is incomplete and in bands; it allows the alternately large and small costæ, the intercostal spaces, and even the synapticulæ to be recognized, and may be granular.

The former specific diagnosis therefore requires to be slightly enlarged.

Podoseris elongata, Dunc., 1869 (amended 1889).
(Pl. V. figs. 14, 15, 16.)

Corallum simple, tall, originally and usually permanently attached to foreign bodies by a circular base, the width of which may be larger or smaller than that of the calice. Stem cylindrical and with constrictions and expansions or bluntly conical.

Calice broad or narrow, concave or convex, with a small central fossula or a projection. Septa numerous, the fifth cycle more or less incomplete; the higher orders either very small and rudimentary, or absent here and there; the rest long, broad, arched, close, and uniting more or less, many reaching and forming part or the whole of the small columella. Swollen in regular series at the sides, swellings more or less oblique, ending in synapticulæ or arched processes or in delicate dissepiments; sides of septa in ridges and may be granular.

A small columella, formed by the septal ends, but some interseptal tissue appears to be present. Costæ well marked, usually alternately large and small, with bands of synapticulæ in transverse series and with many false synapticulæ more or less triangular in outline, with or without endotheca, between them. Epitheca in bands.

Height from 15 to 20 millim., breadth from 9 to 12 millim.

Red Chalk, Norfolk.

Podoseris affinis, sp. nov. (Pl. V. figs. 1 and 2.)

Corallum tall, formerly attached, base small; stem more or less cylindrical, unequally swollen and constricted; calice narrower than the thickest part, broader than the base. Calice convex, with a small central fossula surrounded by the inner ends of the longest septa. Septa numerous, long, moderately stout, the larger passing far inwards, rather far apart, some rudimentary, the fifth cycle very incomplete, upper edges convex and with a single row of blunt granules.

Columella deeply seated at the base of the fossula, mostly formed by the ends of septa. Costæ close, moderately unequal, apparently more numerous than the septa. Synapticulæ large in the calice and numerous between the costæ. Probably an epitheca.

Height 15 millim., breadth 6 or 7 millim.

This species is closely allied to *P. elongata*, Dunc., but the arrangement of the septa forms a satisfactory distinction, the long series preponderating, and they are wide apart.

Podoseris anomala, sp. nov. (Pl. V. figs. 3 and 4.)

Corallum simple, moderate in size, constricted above the wide circular attached base; ending superiorly in a projecting ridge some distance below the true margin of the calice. Calice tall, small, open, slightly deformed, with an indefinite margin. Septa numerous, unequal, irregular in direction inwards, long, straight, or curved, moderately stout and distinct, some reaching the axis and uniting there, others passing far in and uniting with those which pass to the columella, or not. Many rudimentary septa barely passing inwards; septa of the fifth cycle often absent in some systems, the free edge of the septa with large granules which slope over the flanks. Costæ of two kinds—those reaching the calicular margin and uncovered by epitheca, and which are subequal, granular, or alternately large and small, wavy or straight, uniting and bifurcating; and secondly those below the upper ridge and which reach to the base of the coral and are covered with epitheca; they are large, straight, swollen at intervals and joined by synapticulæ, and there are many small costæ in the spaces between the larger. Epitheca granular, upon the lower part of the stem.

Height 15·5 millim., breadth of base 13 millim., of calice 7 millim.

Podoseris Jessoni, sp. nov. (Pl. V. figs. 5 and 6.)

The corallum has a small circular base, is high, subcylindrical nearly to the calicular margin, but before that is reached there is a definite enlargement, so that the upper part is broader than the rest. Calice broad, widely open, slightly concave; the margin is higher than the axial region, the septa slope to this, which has a fossula with the ends of the larger septa rising in the midst, with a rudimentary columella formed by their ends with some slight additional structure. Septa small, crowded, unequal in width and length, usually alternately large and small, some straight, others wavy, some uniting with others, upper edge slightly convex, the inner or axial part of some seventeen to twenty septa rising up and surrounded by a groove in a small sunken fossula. The septa usually diminish in thickness from the margin of the calice inwards, and some are stout, and many

retain a considerable development as far as the columella. The septal number appears to be incomplete five cycles.

Costæ variable in thickness, some large, may be alternately large and small or subequal, never very prominent, close, wavy, and more numerous than the septa, occasionally uniting. Epitheca covering the costæ and interspaces. Synapticulæ distinct, large between the costæ, with a broad attachment to the laminæ, and a conical top; numerous and small between the septa.

Height 16·5 millim., breadth of calice 11·5 millim., breadth of stem 11 millim., breadth of the upper expansion 13 millim.

Loc. Red Chalk, east of England.

All the Podoseridæ appear to obtain their septal development soon, and when very short the coralla have usually a high septal number.

This evident truth rather led to the belief that a very short but broad form might be the young of *Podoseris elongata*, Dunc. (Pal. Soc. 1869, Monogr. Brit. Foss. Corals, 2nd ser. pt. ii. p. 26), or even of *Podoseris Jessoni*; but it appears that the short form must be credited with five complete cycles of septa.

Podoseris brevis, sp. nov. (Pl. V. figs. 7 and 8.)

Corallum attached by a broad base, very low, subcylindrical. The calice is widely open, shallow, and slightly narrower than the base. The septa stout, enlarging here and there, long, uniting in groups, so that a few only (seven or eight) reach the axial space, moderately close, lowly arched above, and with rounded papillæ on their free edge, or rudimentary and placed between pairs of larger septa, and rarely long enough to unite with one of the longer septa. Five cycles.

Columella formed by the septal ends. Costæ short, usually alternately large and small or subequal, covered with epitheca; bifurcation of the costæ rare.

Breadth of the attached base 10·5 millim., breadth of calice 9·5 millim., height 3–3·5 millim.

Loc. Red Chalk, east of England.

Podoseris mamilliformis, Dunc. (Pl. V. fig. 9.)

Podoseris mammiliformis, Dunc. 1869, Pal. Soc., Monogr. Brit. Foss. Corals, 2nd ser. pt. ii. no. 1, p. 25.

This species was the type of the genus and was described from a considerable number of specimens, all of which were

unfortunately more or less worn and weathered. Specimens in a similar condition have passed through my hands since 1869, and there are some in the British Museum. Amongst the collection now under consideration there are probably a hundred specimens of various stages of growth and of decay, whilst a few present structures which, from their ready destruction under weathering, were not preserved in the specimens formerly examined.

The new specimens indicate that the ornamentation and shape of the septa, their number, their relation to a septal fossula, and the size and height of the corals vary, and that the true characters of the calices cannot be appreciated by the examination of weathered specimens. It is interesting to notice that in the specimens which were examined and described in 1869 there was a great amount of variation in their height and in the convexity of the calices. No satisfactory examples of the tall varieties with convex calices are amongst the new series. Most of the specimens are low, broad, slightly convex, with a massive-looking columella and numerous large uniting septa and synapticulæ. The usual cyclical number of the septa is incomplete five, but there are some specimens with five cycles complete, and in one very broad specimen there are some septa of the sixth cycle present.

The following is a description of what may now be considered to be a typical form :—

Corallum simple, attached, with a circular base, from which it rises very slightly and more or less vertically to the edge of the moderately convex calice, which has a distinct central fossula with the columella at its base. Broader than high, 12 millim. in diameter and 5·5 millim. in height.

Septa mostly long and stout, passing far inwards, many reaching, after uniting with others, the edge of the fossula and uniting at its base to form, with some slight interseptal structure, the columella ; all more or less arched where free and carrying a single line of large distinct granules, which are especially large and distinct around the fossula and upon the columella ; or the position once occupied by granules may be occupied by pits. The number of the septa is variable in the six systems ; there is either a deficiency or a redundancy of large septa and the number of rudimentary small septa varies greatly ; still the complete fifth cycle is rarely reached in spite of there being some very remarkable long and very slender and almost linear septa close to some of the largest. There is union of septa either near the fossula or near to the calicular margin. Septa swollen in regular series, their swellings interdigitate, oblique ridges upon the sides of the

laminæ, which terminate either in synapticulæ, or in hooked processes with or without endothecal ends. The costæ are short, subequal or very unequal, having some granulation and a greater or less development of endotheca. Synapticulæ very numerous between the septa near the base, less so higher up; they occur between the costæ also. Another form shows the bifurcation of costæ and their union also. The height is 8·5 millim. and breadth 12·5 millim.

One specimen of *P. mamilliformis* deviates from the type in being comparatively taller, having a distinct, low, incurved part above the attached base and ending superiorly in a ridge-shaped calicular margin, and in having a very convex calice. The gradations of form and structure from the low and broad types to this high one with such a well-defined convex calice are fairly well seen in the collection. The height of the corallum is 9 millim., of the calice 6 millim., and the greatest breadth is 12 millim. Some orders of the sixth cycle of septa are present; there is no sunken central fossula, and the epitheca is granular.

Podoseris mamilliformis, Dunc., requires some modification of its original definition, and the following is the correct specific diagnosis :—

The corallum is simple, attached by a more or less circular flat, or concave base, being very low or slightly raised between the base and the calicular margin, constricted or not, and with costæ. The calice is circular in marginal outline, slightly or considerably convex, with or without a central fossula. The septa are numerous and become so early in life, are unequal, many long and some uniting and reaching the columella or the fossula, some slender and many rudimentary: longer ones, straight or wavy, ornamented at the arched free upper edge with a single row of large granules. Columella small, mostly formed by the septal ends, and there may be some interseptal structures there, at the base of the fossula, with large granules upon it, or projecting without a fossula. The costæ usually more numerous than the septa, straight or wavy, uniting and bifurcating, ending in septal laminæ, unequal or alternately very large and small, with granules. The septo-costal number is from less than complete five cycles to five cycles with part of a sixth. Synapticulæ moderate in number, continuous with a series of ridges placed obliquely upon the flanks of the septa; but the ridges may be curved, so as to resemble hooked processes in section, and may be free at one end or terminate in a thin endothecal process. Endotheca scanty, may exist

between the ridges of synapticulæ. Epitheca exists or not and is delicate and granular.

Breadth from 5–12 millim., height from 2–8 millim.

Podoseris dubia, sp. nov. (Pl. V. figs. 12 and 13.)

The corallum is small, attached, cylindrical, nearly as high as broad, with a slightly convex calice and a small central fossula. Septa numerous, subequal, mostly long, stout, and slightly wavy, often straight, passing far inwards, some uniting with others, and these reach the edge of the fossula, arched at the free edge, carrying a single row of large distinct granules; a few rudimentary septa. About sixty-four large septa, of which one half reach the fossula and form the columella, with probably the addition of some dissepimental structure, the top of the columella being the base of the fossula. Interseptal spaces well developed, but a slender horizontal growth is often seen upon the sides of the septa. Costæ more numerous than the septa, unequal in some parts, very straight and regular and well separated, alternately broad and narrow; in other parts very irregular, wavy, dividing and uniting, or straight, differing much in size. Synapticulæ few and deeply seated in the calice, probably few between the costæ, but in definite transverse lines and stout. Epitheca in bands in places, but the intercostal spaces are visible elsewhere; there is an indefinite and small granulation upon the costæ.

Height 8 millim., breadth of calice 9 millim.

Loc. Red Chalk.

Young Forms of Podoseridæ.

1. (Pl. V. fig. 10.)

Part of a small, simple, very low corallum, expanded, and about 2 millim. broad from the extremity of the base to the inner ends of the septa. The discoid coral slopes up very slightly from the outer edge of the costæ at the base to their septal end, which is raised. The septa are sunken below the calicular margin, large and small, long and short, irregular in thickness, radiating from a circle of synapticulæ, which unites the inner ends of the larger septa and surrounds a wide axial space; the smaller septa may unite with the larger; interseptal spaces large, shallow. Two, or in places three, concentric lines of synapticulæ and some small septa end in the circle nearest the costæ. Costæ larger than the septa; close, unequal, slanting synapticulæ seen. The wall

is a thin dissepimental looking circle at the junction of the costæ and septa, in places raised higher than the septal ends. Original width 5 millim.

The septa reach from the foreign body to which the coral is attached but a very slight distance upwards; *there is no true basal structure.* The axial space shows the stone at its base, and it is clear that the septal apparatus and its associated costal structures were the first parts of the skeleton.

2. (Pl. V. fig. 11.)

A young, flat, discoid corallum, upon the side of a *Podoseris elongata.* The base is nearly circular at its edge, and the coral then slopes very slightly upwards, being covered by costæ, to the calicular margin. The calice is sunken close to its margin and the columella is raised above the level of the rest of the calice and is formed by the inner ends of the longest septa.

The calicular margin is broadly elliptical and is recognized easily in places, and elsewhere is produced by close synapticulæ.

The septa are narrower than the costæ, and some are very much smaller, unequal, irregular, long, and wavy, others rudimentary; close to the costæ there are seventy-two, and eight reach the columella, or, rather, form it. Some septa crooked, most uniting, and some bifurcating, the junction may result either in a narrow or a thick septum. The costæ are not so numerous as the septa, slope widely upon the supporting body, are subequal to very unequal, usually nearly straight, projecting, but slightly rounded, or flat or swollen here and there, close to touching, some bifurcating, united by transverse or oblique synapticulæ; the narrow intercostal spaces correspond with interseptal spaces.

Height about 2 millim. long diameter, 8 millim., short diameter of the calicular part 5 millim. and its long diameter 6 millim.

It is evident that the septa and costæ spring from the supporting foreign body *without any intervening basal structure.* The septo-costal cyclical number is attained very soon after a moderate breadth has been reached.

Remarks upon some Morphological Details.

The septa of the species are solid, unilamellar, and are formed by spicules which pass from within the septa outwards to their surface from definite centres or nodules. Often

very stout, the septa have corresponding large granules upon the free upper edges, or after the effects of weathering these granules may have disappeared and deep holes exist in their place. A very interesting structure is sometimes seen upon the flanks of these large septa and close to their upper free edge, and it consists of a thin, more or less horizontal, narrow lamella of hard structure which occludes, to a small extent, the interseptal loculus. The modern example is seen in *Bathyactis*, a deep-sea Fungid, but this is more complete, for the lamellæ of opposed septa join over the interseptal loculi, especially near the axis of the coral. Some septa are very delicate and long, and this is a truly Fungid character and is exemplified in the modern genus *Fungia*. The union of many septa with others, so as to form a converging series ending in one septum at the axis, is well seen in *Podoseris*. On the flanks of the larger septa are close, small, sharp, spinulose granules, and as all the septa are swollen tolerably regularly, so as to present a series of transverse or curved or oblique projections into the interseptal spaces, the general appearance is very irregular.

A transverse section of a specimen of *Podoseris elongata* (Pl. V. fig. 14) taken just below the surface of the calice shows structures similar to those of weathered calices. Synapticulæ stretch across interseptal spaces and fuse with the septa, and this union is especially well seen in the inner third of the section. Beyond that area, and where the interseptal spaces are often wider, the projections from the alternating nodules of opposed septa do not all terminate in synapticulæ, for many end in recurved blunt points, the ends being directed towards the circumference of the coral. These points and the curvatures of their processes, together with the alternating and interdigitating of the nodules of the septa, give a very characteristic appearance to the section. There is no doubt that some of the points terminate in stout laminæ which reach the opposed face of the neighbouring septum, and are thus synapticulæ, whilst others end in very delicate arched processes which touch the opposed septum. These delicate processes are dissepimental for the most part, but some of them cannot be distinguished in structure or direction from very thin synapticulæ. It must be remembered that long and thin synapticulæ are exemplified in the modern *Bathyactis symmetrica*, Moseley (Report on 'Challenger' Deep-sea Corals, 1881, p. 186, pl. xi. fig. 2). They are the simplest forms of the structures. An advance upon this particular elongation is seen in the synapticulæ of *Pachyseris speciosa*, Dana, and *Mæandroseris Bottæ*, L. Rouss, and in

Lophoseris cristata, Ehr., the thickness of the growths being variable, but on the whole they are thicker than in *Bathyactis* (Duncan, 1884, Journ. Linn. Soc., Zool. vol. xvii. pp. 304, 308, 312, pl. xiii.).

A longitudinal section of *Podoseris elongata* (Pl. V. fig. 15), taken nearly along the plane of the axis, shows in the middle numerous septa cut across longitudinally, and showing the alternating succession of nodules on their flanks. The nodules terminate in oblique processes, which either cross the interseptal space and are synapticulæ, or are curved and pointed more or less bluntly and are free at the end. Some of these hooks end in the same manner as in *P. mamilliformis*, and the delicate arched terminations so like those described by Pratz in *Thamnastræa* may also be seen. Now towards the sides of the section the septa are cut across obliquely, and close to the edge of the section the flanks of a septum are visible on either side of the fossil. The flanks show an oblique series of successive ridges, each series upon the nodular flank of a septum ; and each ridge has been cut across parallel with the flank of the septum, for the ridge was once continued over the interseptal loculus as an elongate synapticulum. The oblique ridges are plainly united here and there by delicate processes, which are directed from one ridge downwards and slightly obliquely to reach the next ridge in downward succession (fig. 16). This feeble development of the endotheca does not resemble that of *Cyclolites* and of some Thamnastræans (Pratz, 1882, Palæontographica, vol. xxix. Taf. xiv. figs. 7, 12, 14, "Ueber die verwandtsch. Beziehung einiger Korall. mit hauptsächl. Berücksicht. ihrer Septalstructur").

The synapticulæ of the species are often large and are usually well developed, appearing in transverse section as cross bars, but in vertical sections the structures are elongate upon the flanks of the septa. The fossilization of the specimens is not altogether favourable to the microscopist, but in some places the synapticulæ blend intimately with the septa, whilst in others a line of separation can be seen between the synapticulæ and the sides of the septa on either side. This union of the two kinds of synapticulæ in the species would have had considerable significance at the time that Milaschewitsch wrote in 'Palæontographica,' 1875, Korall. d. Natth. Schicht. That author found in some genera, *Thamnastræa* for instance, that the synapticulæ did not fuse into the septa, but that there were junction-lines, indicating that the structures were at one time separate. This form of synapticula was called a pseudosynapticula. On the other hand, there are

genera which have the synapticulæ without any junction-lines, and they blend without lines of union. These are true (echte) synapticulæ. Pratz, following Milaschewitsch, gave some excellent figures of the kinds of synapticulæ (*op. cit.* pl. ix. figs, 7 *d*, 12 *a*, 13 *a*, and 14 *a*), and quoted his predecessor's remark that it is necessary to distinguish between the kinds of synapticulæ in classification. All the descriptions of these authors are excellent, and nothing can be more true than Pratz's delineations; but, as was shown after the publication of their essays, the modern example fails to substantiate the value of the distinctions between the kinds of synapticulæ (Duncan, 1884, Journ. Linn. Soc., Zool. vol. xvii. p. 146), and, moreover, the microscopic investigation of *Siderastræa* and of a true Tertiary Thamnastræan leads to the same result as the study of *Fungia*; that is to say, as both kinds of synapticulæ are found in the same specimen of a species, and the difference between the kinds of structures is of no physiological importance, the distinction between so-called true and false synapticulæ is of no classificatory value.

The synapticulæ in *Podoseris* are therefore both thick and thin, long and short, and are long from without inwards and obliquely placed upon the flanks of opposed septa, which they unite. This last kind is a feeble representative of the synapticulæ of the recent *Fungia*, and as in that genus the upper and the lower synapticulæ form the roofs and bases of so many oblique canals in regular succession. The delicate dissepiments interfere with the continuity of the lumen of the canals.

The Epitheca.—This structure varies in amount according to the height of the corallum. When the coral is low and plano-convex the epitheca is scanty or absent, and it exists over more or less of the costæ close to the periphery. But when the coral is tall the cylindrical or nipped-in stem above the attached base is covered with epitheca up to varying heights, but usually to the calicular margin. The epitheca is thin, moulded as it were to the outer edges of the costæ and to their interspaces; it is more or less granular, and it must have prevented any watery connexion between the synapticular canals and the surrounding medium.

There is no epitheca on the attached base, but the lower surfaces of the septo-costæ are in contact with the foreign body supporting the coral, and the synapticulæ may be seen to exist between the septa in concentric rows. The coral appears never to have been free.

In the very interesting young form the low septa and two concentric series of synapticulæ form all the coral.

The genus *Podoseris* evidently requires some further amendment.

Genus Podoseris, Dunc. Supp. Brit. Foss. Corals, Pal. Soc. 1869, Cretaceous Corals, pt. ii. no. 1, p. 25, and Oolitic Corals, pt. iii. p. 24; Revision of Madreporaria, 1884, Journ. Linn. Soc., Zool. vol. xviii. p. 153 (amended).

The corallum has a narrow or wide base of permanent attachment, the height varies from very low, plano-convex, to high, stem more or less cylindrical. Calice more or less circular, with a small axial fossula or projecting there: a columella formed by the septal ends, with or without other structure, small; septa numerous, uniting much, stout, or very slender, solid, largely granular at the free convex edge, minutely acicular at the sides; costæ as continuations of septa, in the direct line, usually the most numerous. Synapticulæ numerous, oblique, continuous with septal nodules, interseptal loculi also with recurved hook-like processes; a delicate arched dissepimental structure scanty. Epitheca exists on the sides and at the periphery.

Fossil: Red Chalk, Oolite, England.

The Oolitic species *Podoseris constricta*, Dunc., Pal. Soc. Supp. Brit. Foss. Corals, Oolitic Corals, pt. iii. p. 24, pl. iii. figs. 5, 6, came from the Lower Ragstone of Dorset. It has a higher septal number and much more delicate and nearly uniform costo-septæ than the Cretaceous species. It originally was fixed and probably upon a spine-shaped body.

EXPLANATION OF PLATE V.

Fig. 1. *Podoseris affinis*, sp. nov. Side view, nat. size.
Fig. 2. The same. The calicular fossula, magn.
Fig. 3. *Podoseris anomala*, sp. nov. Side view, nat. size.
Fig. 4. The same. Part of the calice, magn.
Fig. 5. *Podoseris Jessoni*, sp. nov. Side view, nat. size.
Fig. 6. The same. The fossula and some septa, magn.
Fig. 7. *Podoseris brevis*, sp. nov. Side view, nat. size.
Fig. 8. The same. Test of the costæ, magn.
Fig. 9. *Podoseris mammiliformis*, Dunc. Part of calice, magn.
Fig. 10. Young *Podoseris*, slightly magn.
Fig. 11. Older *Podoseris*, slightly magn.
Fig. 12. *Podoseris dubia*, sp. nov. Side view, nat. size.
Fig. 13. The same. Part of calice, magn.
Fig. 14. *Podoseris elongata*, Dunc. Part of a transverse section below the calice, magn. *a*, synapticulæ; *β*, dissepiments.
Fig. 15. The same. Part of a longitudinal section, magn. *a*, synapticulæ; *β*, dissepiments.
Fig. 16. The same. A longitudinal slice, polished. *a*, synapticulæ, long and oblique; *β*, dissepiments.