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### XLII.—On some new Mesozoic Radiata

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be taken for the *Amphipeplea involuta* of Thompson; but it may be distinguished from that shell by its being stronger and more ventricose, and especially by its having the whorls placed more to one side, giving it somewhat the form of a *Nerita*. When full-grown it is more than three times the size of *A. involuta*.

It differs from all the varieties of *Limnæa peregrina* in having the spire involuted and placed rather more obliquely, in the more gibbous and ampullaceous form of the shell, and in being more regularly striated. The animal, too, is much darker, and not so distinctly marbled on the cloak.

A shell found by Capt. Brown in Loch Leven, and described and figured in his 'Illustrations of Recent British Conchology' under the name of *Amphipeplea lacustris*, appears to resemble this species in form, but it is stated to have the spire with two small volutions, the superior one blunt at the apex, from which we must conclude that the spire is exerted: the shell is also stated to be 'extremely thin, pellucid and shining;'—characters which agree much better with *Amphipeplea glutinosa* than with our shell. The *Gulnaria lacustris* of Leach, to which Capt. Brown refers his species, is quite distinct from the one now described.

Mr. Burnett first detected this new *Limnæa* in the stomachs of trout caught in Loch Skene, and on a second visit to that wild locality, so tempting to the angler, he succeeded in obtaining many fine living examples, for the larger portion of which I am indebted to his liberality. Some of the older individuals are a good deal eroded and perforated, showing that they have other enemies besides the trout.

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XLII.—On some new Mesozoic Radiata. By FREDERICK M'COY, M.G.S. & N.H.S.D. &c.

AMORPHOZOA.

*Plocoscyphia laxa* (M'Coy).

*Sp. Char.* Hemispherical masses about 2 or 3 inches in diameter, formed of short, wide, irregularly contorted and lobed cups, varying from half to 1 inch in diameter, the walls about 2 lines thick, of a rather coarse irregular spongy texture.

On comparison with the figure of Goldfuss, and with authentic specimens from the Essen chalk of his *Achilleum morchella*, which now forms the type of the genus *Plocoscyphia* of Reuss, I find the present species distinguished by its much larger, more deeply and widely separated cups, their much thicker walls, and very much more open lacunose structure. The contortion of the

edges of the cups gives a superficial resemblance to some *Lobophyllia*.

Not uncommon in the greensand of Lyme Regis.  
(Col. University of Cambridge.)

*Jerea pastinaca* (M'Coy).

*Sp. Char.* Very elongate-conic, subcylindrical, gradually tapering towards the base (the extreme apex sometimes abruptly narrowed), free end obtusely subtruncate with rounded margin, but not contracted in diameter; mouths of the vertical excretory tubes rather less than a line in diameter, chiefly confined to a circular area in the middle about half the diameter of the individual, leaving an external margin about one-fourth the diameter of a dense reticulated substance having a slightly radiated structure in the cross section and destitute of the large tubes. Average length 6 inches, diameter 2 inches, or larger.

This species resembles a carrot or parsnip in size and shape, whence the specific name; it is distinguished from the *Siphonia pistillum* (Gold.) and *Jerea pistilliformis* (Lamx.), besides its peculiar form, by the vertical tubes being confined to the central part of the cylindrical mass, while in the terminal disc or transverse section of those species they are seen to open almost uniformly through every part; they are also much more numerous and rather smaller than in the present fossil.

Very common in the greensand of the Vale of Pewsey, Wilts.  
(Col. University of Cambridge.)

*Manon Reussii* (M'Coy).

*Sp. Char.* A large, auriform, foliaceous expansion, averaging rather more than half an inch thick and from 3 to 5 inches in diameter; undulato-concave above and irregularly convex below; the pedicle of attachment small, excentric towards the side where the margins are inrolled; edge obtusely rounded, of a fine lacunose or spongy texture; upper and under surfaces with thickly scattered, prominent, wart-like mouths of excretory ducts a line in diameter, averaging twice their diameter apart on the upper surface, more crowded and irregular on the lower; intervening spaces of a more dense and uniform porous structure than the margins.

Besides the difference of form and size, this is distinguished from the *Spongia marginata* (Phil., Geol. of Yorkshire) and *M. Phillipsii* (Reuss, Versteinerungen der böhmischen Kreideformation) by having the large excretory pores on the outer as well

as on the upper surface; the character is constant and strongly marked.

Common in the chalk of some parts of Yorkshire.  
(*Col.* University of Cambridge.)

*Manon foliaceum* (M'Coy).

*Sp. Char.* A large, flat, or slightly concave, thin foliaceous expansion (averaging 7 or 8 inches in diameter and quarter of an inch thick) of a very dense, minutely porous structure; margin rounded; upper surface with numerous very prominent ostiolæ, averaging twice their diameter apart, rather less than a line in diameter, perpendicular to the surface near the base, but becoming obliquely elongated towards the margin like adpressed tubuli; under surface marked with concentric waves of growth without ostiolæ.

This singularly thin expanded species has no resemblance to any other I am acquainted with.

From the coralline oolite of Malton.  
(*Col.* University of Cambridge.)

ZOOPHYTA.

(*Zoantharia.*)

*Dentipora glomerata* (M'Coy).

*Sp. Char.* Corallum forming irregular globose masses 2 or 3 inches in diameter, of a very dense granular structure, in which are distributed the circular cells, 1 line in diameter, and their own diameter apart; the stars have a small depressed centre, from which ten thick, equal lamellæ radiate to the circumference, where between each pair a minute rudimentary marginal lamella is usually seen.

Common in the coralline oolite of Malton.  
(*Col.* University of Cambridge.)

*Stylopora solida* (M'Coy).

*Sp. Char.* Corallum forming spheroidal masses about 1 inch in diameter, on the surface of which circular cells open, 1 line in diameter with slightly prominent margins; a minute central style or axis from which six strong equal lamellæ radiate to the walls, where in some specimens a minute rudimentary marginal lamella may be seen between each pair; the cells vary from once to twice their diameter apart, the intervening substance very compact, with a minute obsolete superficial granulation.

The remoteness of the cells from each other separates this con-

stantly from specimens I have examined of the *Astræa sexradiata* (Gold.) which agree with his figure in having them half their diameter apart, without perceptible variation, while from the *A. tumularis* (Michel.) it differs in its smaller and less prominent cells as well as form of the mass.

Not uncommon in the inferior oolites of Dundry.

(Col. University of Cambridge.)

*Astræa* (Lamk.).

From the unfavourable mode of petrification of the oolitic *Astræa*, I am unable to seize their subgeneric characters with the precision I could wish—their specific characters are easy enough—I have therefore provisionally been obliged to leave them all under the old genus *Astræa* for the present, being unable satisfactorily to define their differences from the recent group.

*Astræa tenuistriata* (M'Coy).

*Sp. Char.* Corallum forming irregular flattened masses, of shallow polygonal cells, very unequal in size and shape (most usual diameter about 5 lines); centre obscurely granular, radiating lamellæ very slender, close, minutely crenulated, alternately larger and several shorter (number varies with the size of the star, but always about twelve in a space of two lines at the margin).

In the very irregular size and shape of the stars and the great number and delicacy of the lamellæ, this agrees with the *A. confluens* (Gold.), from which it differs in the flatness of the cells, and in wanting the remarkable confluent character of that species, the young cells developing their boundary ridges almost on their first appearance.

Common in the inferior oolite of Dundry.

(Col. University of Cambridge.)

*Astræa explanulata* (M'Coy).

*Sp. Char.* Corallum forming flat expansions, of nearly equal, subrhomboidal, shallow cells, averaging 2 lines in diameter; radiating lamellæ from twenty-six to thirty, thick, very obscurely punctured or crenulated, about every third one reaching to the impressed central point; interstices very obtusely angular.

In the flat form of growth assumed by the masses, and in the equality, shallowness and tetragonal form of most of the cells, this strongly resembles the *A. explanata* (Gold.) of the Natheim oolite; but on comparison with authentic specimens of this latter, I find the cells of our species average only half the diameter of

that, the radiating lamellæ are little more than half the number, are much thicker and almost perfectly smooth. In number and thickness of the lamellæ it more nearly approaches the common *A. helianthoides* (Gold.), but differs in their comparative smoothness and the more equal size and quadrate form of the cells, &c.

Common in the inferior oolite of Dundry and Bath.  
(Col. University of Cambridge.)

*Astræa helianthella* (M'Coy).

*Sp. Char.* Corallum forming large depressed turbinate masses (generally from 2 to 5 inches in diameter and 9 lines to 2 inches high) with faint concentric wrinkles below, crossed by very minute radiating striæ; upper surface flat, covered with small, subequal, polygonal cells (diameter, or from centre to centre, varying from  $1\frac{1}{2}$  to 2 lines) with rounded boundaries and very deeply excavated centres; lamellæ about thirty-eight, eight or nine of which reach the centre, of moderate, nearly equal thickness, slightly rugged.

This fine species is abundant in the lower oolite, and seems to be constantly distinguished from the *A. helianthoides* (Gold.) of the coralline oolite by its smaller and more equal cells, more numerous lamellæ and flatness of the masses, particularly of the stelliferous surface.

Common in the inferior oolite of Dundry.  
(Col. University of Cambridge.)

*Siderastræa agariciaformis* (M'Coy).

*Sp. Char.* Corallum forming large foliaceous expansions; cells about  $1\frac{1}{2}$  line in diameter, arranged in rows, the cells of each row half their diameter apart, the rows nearly twice their diameter apart; the cells are radiated by about twelve lamellæ from a depressed cellulose centre; they increase in number towards the margin, and the greater number take a straight course in two opposite directions to unite with the nearest star of the adjoining row on each side (giving the corallum the appearance of being strongly striated in one direction as in *Agaricia*).

This coral is very like the lower part (natural size) of Goldfuss's figure of his *Astræa flexuosa* from the cretaceous rocks of St. Peter's Mountain. It is most usual to find the lower side exposed by a sort of rough section, in which the cells project like the so-called genus *Montastræa*. In the section the small connecting vesicular plates are seen.

Common in the coral rag of Upware, near Cambridge.  
(Col. University of Cambridge.)

*Meandrina vermicularis* (M'Coy).

*Sp. Char.* Corallum forming depressed rounded masses 3 or 4 inches in diameter; upper surface covered with vermicular contorted ridges about half a line in diameter, from 1 to 2 lines apart, and about 1 line high, variously connected at intervals, their sides very finely and regularly striated by the minute lamellæ (about eight or nine in the space of one line), and a single row of little stars in the valleys between each pair of ridges.

The extreme slenderness of the ridges and their strong contortion give this coral the appearance of a mass of little marine worms, and separate it easily from all known species; it far exceeding the *M. venustula* (Mich.) and *M. Lotharinga* (Mich.) in those respects, and I know no other species to which it makes any approach.

Rare in the inferior oolite of Leckhampton.  
(*Col.* University of Cambridge.)

*Montlivaultia* (Lamx.).

I have satisfied myself, from the examination of a large suite of both foreign and British species, that the *Montlivaultia* of Lamouroux are identical in generic character with those corals to which Münster, Goldfuss, Esper, Blainville, &c. have restricted the name *Anthophyllum* of Schweigger, the different ages of the *A. decipiens* (Gold.) for instance demonstrating the identity of the groups in a single species. This renders the synonymy of the genus *Anthophyllum* more clear and definite than it has been. That genus was originally established by Schweigger in his 'Beobachtungen, &c. Anat. phys. Untersuchungen über Corallen' (tab. 6), and defined as agreeing with *Turbinolia*, except in being fixed and having the margin of the cells dilated; he divided it into five groups: the 1st, "*cylindri turbinati subsolitarii*," since formed into the genus *Cyathina* (Ehr.); 2nd, "*cylindri turbinati in ramos connexi*," being, from the species referred to, equivalent to the later genus *Cladocora* (Ehr.); 3rd, "*cylindri turbinati, e basi stirpis divergentes, versus basin concreti*," might I think be united to his 5th group, which is similarly defined except that the tubes are "*lamellis calcareis horizontalibus juncti*," a difference which disappears on examining specimens of the species he refers to as examples of the groups; the 4th group, founded on the *C. calycularis*, is referred by Ehrenberg to his *Caryophyllia*. It is unfortunate that the characters of this group as originally given are not applicable to any natural genus. Ehrenberg in his 'Beiträge zur Kenntniss der Corallenthiere des rothen Meeres' having formed the 1st group into one genus, the 2nd and

4th into another, has retained the name *Anthophyllum* for the remainder (*Caryophyllia fastigiata*, &c.), while, as above mentioned, nearly all the continental palæontologists have been in the habit of using it for the very different, turbinated corals which now occupy us, and which agree with the general definition of Schweigger, though probably not contemplated by him at the time. In the young state those corals are attached by a broad base, which soon becomes carious and hollow as the coral grows, undermining its base even to the thin external wall, which at last gives way, and the corallum thus becomes a free cone with a naked, obtusely rounded apex: some species grow so little vertically, that the separation from the carious hollow old base is effected in a nearly horizontal plane, so that the adult free corallum is scarcely distinguishable from *Cyclolites*, being circular, thin, flat, the upper and lower surfaces nearly parallel and both radiated: whether the form be flat or conical, the terminal star is never excavated into a cup, by which the species may be known from *Turbinolia* and *Cyathina*, as well as by the obtuseness of the margin (the lamellæ extending over it), the thin easily lost outer wall, and the lamellæ being very thick and simply meeting in the centre without a cellulose axis.

*Montlivaultia gregaria* (M'Coy).

*Sp. Char.* Corallum forming turbinate masses (about 3 inches wide and nearly 2 inches high) of few individuals which terminate on the upper surface as prominent, disconnected, circular, slightly concave or convex discs with obtusely rounded margins, generally  $1\frac{1}{2}$  inch in diameter, with about eighty thick radiating lamellæ, many of which reach the centre, the rest being irregularly smaller; connecting vesicular plates very delicate; external wall covering the lamellæ very thin, rarely preserved.

The individuals of which the turbinate masses are composed are identical in generic character with the ordinary *Montlivaultiæ*, as the term is here used; but no other species that I know has this gregarious mode of growth, nor will any other genus contain the species.

Common in the inferior oolite of Dundry and Cheltenham.  
(*Col.* University of Cambridge.)

*Dendrophyllia plicata* (M'Coy).

*Sp. Char.* Corallum of approximately straight stems from  $1\frac{1}{2}$  to 2 lines in diameter, giving off at an angle of about  $60^\circ$  branch-like cells averaging 3 lines long and slightly less in diameter than the stem, arranged spirally at short irregular distances;

surface with fine longitudinal punctured striæ (about seven in the space of one line); for rather more than a line from the edge of each cell, every alternate superficial ridge becomes narrowed and depressed, the intervening ones suddenly acquiring a greater thickness and prominence, giving a plicated appearance to the ends of the branches; cellular axis and alternating lamellæ of the star as in the allied species of the genus.

This species most resembles the *Lithodendron* (*Dendrophyllia*) *granulosa* (Münst.) of the Abtenau tertiary beds, of which Goldfuss has given a tolerably good figure in his 'Petrefacten,' but the stem is smaller, not flexuous nor marked with annular constrictions; it is also much more finely striated, and is remarkable for the peculiar plication produced by the unequal projection of the alternate ridges towards the mouths of the cells.

Coralline oolite, Steeple Ashton.  
(Col. University of Cambridge.)

*Chrysaora similis* (M'Coy).

*Sp. Char.* Corallum forming depressed rounded masses (usually about half an inch in diameter); upper convex surface with numerous small conical projections, generally rather less than a line apart, from which small, irregularly branching ridges radiate; the projecting points and ridges seem nearly solid and smooth, the intervening spaces coarsely punctured by the closely-placed openings of the minute cells.

This is so closely allied to the *Ceriopora* (*Chrysaora*) *venosa* (Gold.) of the Essen greensand that I scarcely can define their difference; the figures of Goldfuss of this latter species are both  $2\frac{1}{2}$  diameters larger than nature, but making this allowance the character of the surface is nearly the same in both; the present oolitic coral seems however to be constantly smaller and more delicate in all its parts, and forms smaller and more depressed masses.

Great oolite. Not uncommon at Minchinhampton.  
(Col. University of Cambridge.)

ECHINODERMATA.

*Crinoidea.*

*Bourgueticrinus cylindricus* (M'Coy).

*Sp. Char.* Column elliptical; *body* cylindrical, scarcely exceeding the stem in diameter, composed of four upper columnar joints of equal diameter, but the two upper thinner than the third, the fourth nearly double the thickness of the third, round in

its upper half, abruptly compressed and elliptical in the lower half; on the upper columnar joint rest five pentagonal *pelvic plates* nearly equalling it in depth; between the upper lateral angles of these are five exceedingly small, pentagonal *first radial plates* not half the depth of the pelvic plates. Length of body to base of fourth columnar joint  $9\frac{1}{2}$  lines, diameter  $3\frac{1}{2}$  lines: articulating surface of columnar joints perfectly smooth, having a thickened external rim and a mesial transverse articular ridge perforated in the middle by a minute alimentary opening.

This is so strongly marked in all its characters that a comparison with other species is scarcely necessary: the "straight encrinite" of Parkinson (*B. æqualis*, D'Orb.) is easily distinguished by the above characters.

The nearest approach to it that I have seen is the so-called *Eugeniocrinites Hagenowii* (Gold.), figured by Dr. Hagenow in his memoir on the "Rügenschen Kreide-Versteinerungen" in Leonhard and Bronn's 'Jahrbuch' for 1840. The latter fossil, though I think probably referable to the present genus, is distinguished as a species by the great depth of the two upper joints of the dilated column.

Rare in the upper chalk, Norwich.  
(Col. University of Cambridge.)

*Bourgueticrinus Milleri* (M'Coy).

There are two species confounded in England under the name *Apiocrinus ellipticus* of Miller, by whom they are both figured without distinction; one with the first radial plates, about double the depth of the pelvic plate which most of his figures illustrate, is the one recognized by nearly all continental writers as this species, and as such is figured as the type of the present genus by D'Orbigny; to it therefore the name *B. ellipticus* should be retained. The other (fig. 1 of Miller's work) has the first radial and pelvic plates about equal in depth, with the same club-like figure; this, which is more rare, but constant in its characters, I beg to distinguish by the above name.

Upper chalk, Norwich.  
(Col. University of Cambridge, &c.)

*Bourgueticrinus oöliticus* (M'Coy).

*Sp. Char.* Column much-compressed, of thin elliptical joints angulated and obscurely tuberculated round the middle of their outer edge; articular surface having a strong transverse ridge, with a central boss perforated by the small alimentary canal,

external margin broad, central oval hollow, deep: long diameter 6 lines.

Among mesozoic crinoids the present genus is well characterized by its column, and as this is a large well-marked species, I have not hesitated to characterize it from the portion known on account of the interest attaching to its geological locality, the genus being hitherto only found in the upper chalk.

Rare in the Bradford clay at Bradford.

(Col. University of Cambridge.)

*Apiocrinus exutus* (M'Coy).

*Sp. Char.* Cup ovate (less ventricose in the middle than the *A. Parkinsoni*, Schlot., and more so than the *A. elegans*, Def.); about six of the upper columnar joints widen to form the base of the cup and increase greatly in thickness; on the upper columnar joint rest five pentagonal *pelvic plates*, alternating above which are five quadrangular *basal radial plates* (first costals of Miller), on each of which the cuneiform axillary radial joint (*scapula*) rests, the intermediate plate being wanting; on these rest two semiradial plates or *arms*; diameter at upper columnar joint 1 inch 6 lines; width of radial plates 9 lines, depth of each in middle 3 lines, depth of pelvic plates in the middle 4 lines, depth of upper columnar joint  $4\frac{1}{2}$  lines; columnar articulation very finely radiated.

The comparative slenderness of its form and thickness of the upper columnar joints make it intermediate in those points between the *A. Parkinsoni* (Schlot.) and *A. elegans* (Def.), while it is distinguished from all of the genus by the want of the intermediary radial joints (or second costæ) in each row.

Rare in the Bradford clay, Bradford.

(Col. University of Cambridge.)

*Pentacrinus dichotomus* (M'Coy).

*Sp. Char.* Column, auxiliary side-arms, *pelvic* and *costal joints* as in the *P. Britannicus* (Schlot.), but the entire animal smaller and more slender, and the *auxiliary side-arms* proportionally wider; each of the five scapulæ supports two slender *arms* of nine or ten joints each, the last joint cuneiform, and supporting *two slender hands of equal thickness*, the inner usually of thirteen, and the outer of sixteen joints, each hand *regularly dichotomizing into a few very slender fingers of perfectly equal thickness*; auxiliary side-arms very thin, but equalling the arms in width. Length of body and fingers  $1\frac{1}{2}$  to 2 inches.

This delicate little species has a very singular aspect, and differs from its congeners in the hands not continuing as thick main branches, giving off comparatively thin fingers from one side, but both hands and fingers dichotomizing into perfectly equal branches.

I have examined portions of eight heads, some nearly perfect, with their columns and side-arms, on a slab of lias shale from Whitby.

(Col. University of Cambridge.)

*Pentacrinus Goldfussi* (M'Coy).

*Sp. Char.* *Column* pentagonal, joints alternately thicker and thinner, or three thin between each pair of thicker joints, articulating by five oval, prominent, finely crenated ridges, the intervening spaces much depressed; *auxiliary side-arms* large, flattened, of elliptical joints, five arising from every thick columnar joint (one from each side), the long axis being attached vertically; *pelvic joints* large, cuneiform; *first costals* heptagonal, twice as wide as long, flattened (not produced into a cone downwards), each having a prominent tubercle in the centre, adhering laterally by only a short portion of its margin; *second costals* horseshoe-shaped; *scapula* cuneiform, as long as wide; from which two arms arise, of eight or nine joints, the last being cuneiform and supporting two hands, the inner of nine and the outer of fourteen or fifteen joints, the last cuneiform and giving off a lateral finger, and after fourteen or fifteen joints more another (total number of fingers unknown, but small).

In the great number, size, and mode of insertion of the auxiliary side-arms this agrees with the *P. Britannicus* (Schlot.), (*P. Briareus*, Mill.), but differs in its small size, broad oval pentapetalous markings of the columnar joints, and from that and all allied species it strongly differs in the first costals not being prolonged into a cone down the sides of the column.

There are clearly two species confounded by Goldfuss under the name *P. scalaris*, one of which, figured on the 60th plate of his 'Petrefacten,' is much allied to this; the other figures on pl. 52 of the same work differ considerably, but agree with numerous authentic specimens I have seen of that species from the German oolites, and also with some from our lower oolite at Dundry; the latter is therefore the most proper type of his species.

Marlstone, Gloucestershire.

(Col. University of Cambridge.)

*(Asteroïda\*.)**Goniaster (Goniödiscus) rectilineus* (M'Coy).

*Sp. Char.* Sides straight or nearly so; on the dorsal surface each side has eight finely granulated, moderately convex marginal ossicles, of which the two end or "ocular" plates are triangular and the four intermediate ones are quadrate, *all of one length*, the width of each equal to half its length; the ossicles of the oral side are similar except the triangular plate at each end, which is there replaced by three smaller ones; plates of the disc small, polygonal and minutely granulated. Width of each side 1 inch 3 lines; length of marginal ossicles 3 lines.

The straightness of the sides, and all the marginal ossicles (except the eye-plates) being of one size, so that the inner and outer boundaries of each row form two straight, parallel lines, distinguish this species, which is, I think, only likely to be confounded with the *G. regularis* (Park. sp.); I have good specimens of this latter now before me, and it is distinguished from the present species by having the margin of the sides *convex* outwardly, and the middle marginal plates being considerably the largest, the others decreasing rapidly in size towards the angles, so that the row of plates instead of being rectilinear and parallel-sided is clearly elliptical: this character is represented in Parkinson's figure, but not to the extent to which it is seen in nature, from the inner ends of the ossicles in his specimen being manifestly a little broken.

Upper chalk of Norwich (two specimens).  
(Col. University of Cambridge.)

*Asterias (Astropecten) recta* (M'Coy).

*Sp. Char.* Rays five, straight, length from the base about three times the width of the disc, widest at the base, tapering gradually to the apex, with straight sides; rows of lateral plates averaging one-third the width of each ray (occupying rather less at the base and rather more at the apex); they average  $1\frac{1}{2}$  line long and 3 lines wide, the long diameter or width diminishing gradually from the base to the apex; angles be-

\* Prof. Forbes having recently published in the 'Memoirs of the Geol. Survey of Great Britain' short descriptions of a number of new chalk starfishes, I trespassed on his good-nature so far as to send the notes and rough sketches of mine for identification. The one above described is distinct from any of his, but he suggests that the straightness of the sides may result from the suppression of one of them:—the specimen I first sketched may have been four-sided, for the two angles preserved are pretty nearly of 90°, but the second specimen has portions of its five sides preserved, and has all the above characters.

tween the rays acute; disc and middle of the rays closely covered with blunt tubercles about  $\frac{3}{4}$ ths of a line in diameter. Each ray about  $5\frac{1}{2}$  inches long and 1 inch wide at base.

This species is distinguished from the *A. Aalensis* (Münst.) and the *A. arenicola* (Gold.) by the very long, rigid, straight-sided rays, there being no dilatation beyond the base as in those species, as well as its greater size, perfect specimens being upwards of a foot in diameter, while the others are little more than half that. The *Astropecten Orion* (Forb.) seems much allied, but is a smaller species with longer rays, the interradial angles obtuse, and the lateral plates square and much fewer in number. The starfish figured from the same locality as this in Charlesworth's 'London Geol. Journal,' no. 3. pl. 17, as the *A. arenicola* of Goldfuss, agrees with the present species in every particular save the dilatation of the rays beyond the base; this character exists clearly in the species of Goldfuss, which however is perfectly distinct by its shorter rays and other characters. I suspected that in the English fossil alluded to, this appearance might have been a fault of the artist; Forbes however has I presume seen the species, as he describes it (Mem. Geol. Survey, vol. ii. part 2. p. 477) in accordance with this figure, also referring it to Goldfuss's species, but without referring to the figure of that author, which is most accurate.

Not uncommon in the calcareous grit of Filey Brig, Yorkshire coast.

(Col. University of Cambridge: three specimens.)

(*Echinida.*)

*Echinus petallatus* (M'Coy).

*Sp. Char.* Conoidal (diameter  $1\frac{1}{2}$  inch, height 1 inch 2 lines), base slightly contracted, obscurely ten-lobed; ambulacral areæ half the width of the interambulacral, three oblique pairs of pores in each row; the ambulacral and interambulacral spaces have each an elliptical, petal-like, concave, smooth space extending from the vertex nearly to the base, each space being one-third the width of its respective area; the upper two-thirds of the ambulacral areæ have but one row of large tubercles on each side, surrounded by a circle of very minute granules; towards the base where the smooth central space stops there are four rows of large tubercles; the upper third of the interambulacral spaces has but two rows of large tubercles with their circle of small granules, but they gradually increase towards the base, and at the end of the smooth space there are about eight rows.

This is allied to the *E. gyratus* (Ag.), but is distinguished by

having the elliptical smooth spaces in *both* the interambulacral and ambulacral areas ; the present is also a larger and more conical species.

Not very uncommon in the coralline oolite of Calne, Wiltshire. (Col. University of Cambridge.)

*Echinus diademata* (M'Coy).

*Sp. Char.* Conoidal (diameter of one specimen 10 lines, height 6 lines), base abruptly flattened, subpentagonal from the prominence of the ambulacra, which are slightly convex and one-half the width of the interambulacra ; interambulacra having a concave, smooth, narrow space in the middle of their upper portion, the middle of each half bears one row of about twelve large primary tubercles, their wide smooth disc surrounded by a circle of minute granules, numerous granules being scattered in the intervening spaces ; only two or three very small secondary tubercles on the outside of the base of the primary rows ; ambulacra with two rows of large primary tubercles each, with many small, irregularly placed intervening granules ; three oblique pairs of pores in each row ; ovarian and ocular plates as in the genus generally.

The two rows of large tubercles in each area, with the very minute intervening granules, distinguish this species from its congeners. It is most closely allied to the *E. fallax* and *E. serialis* (Ag.), but is well distinguished by the almost complete absence of secondary tubercles as well as the greater size of the primary ones, and the more pentagonal form of the disc, in which it approaches the *E. excavatus* (Gold.), from which it equally differs by the above characters.

Occurs in the coral rag of Malton and in the great oolite of Minchinhampton.

(Col. University of Cambridge.)

*Arbacia inflata* (M'Coy).

*Sp. Char.* Oblate-spheroidal (diameter 6 lines, height  $4\frac{1}{2}$  lines), margin of the base tumid, rounded ; ambulacra flat, depressed, slightly less than half the width of the interambulacra, the pores forming very narrow rows of one pair each, the space between the lines of pores with four to six very unequal, irregular rows of small granules ; interambulacral spaces tumid, with a slightly impressed, narrow, smooth line down the middle of each ; each interambulacral space contains about sixteen rows of minute tubercles, of which the two middle rows, or that bordering on each side the sutural line, are largest ; under the lens the tubercles are distinctly arranged in transverse rows, eight on each interambulacral plate, touching each

other without intervening granules, but between one plate and the next above or below (or between the rows) there are a few minute granules, generally arranged in one or at most two irregular rows.

Distinguished from the *A. pilos* (Ag.) by its more depressed, inflated form, rounded margin of the base, the outer\* row of ambulacral tubercles not being largest, and the greater number of tubercles in both areas, as well as the central smooth line of the interambulacra; the *A. granulosa* (Münst. sp.) is much more depressed, has the ambulacra wider and more convex, the interambulacra more deeply divided, and a much greater number of tubercles in the transverse rows, which latter are separated by very numerous crowded granules.

Not uncommon in the upper greensand of Cambridge.  
(Col. University of Cambridge.)

*Acrosalenia rarispina* (M'Coy).

*Sp. Char.* Spheroidal, depressed; ambulacra flat, slightly flexuous, with two rows of tubercles which towards the base are large, mammillated and perforated; interambulacra three times the width of the ambulacral spaces, primary tubercles very prominent, nearly twice their diameter apart, placed alternately, but scarcely more than two tubercles in each vertical row; each tubercle surrounded by a ring of blunt granules, and between one tubercle and another numerous similar granules are scattered.

I think the position of the anus and the plates of the vertex agree with that division of the genus to which the *A. aspera* belongs, but a little adhering siliceous matrix in each of the specimens before me prevents my being quite certain. The ambulacra being a little undulated also approximates it to the *A. aspera*, but it is a much rarer species, and easily distinguished by the singularly small number and great distance of the primary tubercles, and the quantity of intervening granulation. Diameter 4 lines, height  $3\frac{1}{2}$  lines; sometimes larger.

Rare in the great oolite of Minchinhampton.  
(Col. University of Cambridge.)

*Hemicidaris confluens* (M'Coy).

*Sp. Char.* Depressed (average diameter 9 lines, height 5 lines); ambulacra undulating, upper third narrow, gradually widening to the mouth; the upper portion bears very minute crowded tubercles, which gradually increase in the wide por-

\* By "outer" I here mean, adjoining the ambulacra, without intending to deny that the mesial line may be the true exterior.

tion, forming two alternating rows of moderately large, perforated, crenulated primary tubercles with many intervening blunt granules; interambulacral spaces twice as wide as the ambulacral, with two rows of very large primary tubercles, only four to five in a row, the smooth bases of which are vertically confluent (not separated by rows of granules), two vertical rows of small granules between the tubercles.

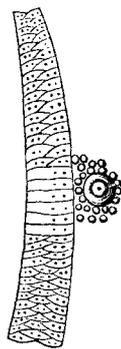
The only species this can be confounded with is the *H. Thurmani* (Ag.), which it resembles in its depressed form and very few large tubercles, and in the small size of the tubercles on the interambulacral spaces, but in this species the ambulacra widen more and the primary tubercles on them are larger; while each of the primary interambulacral tubercles in that species is separated from the next above and below by several rows of granules, while they are confluent, so to speak, in the present.

Rare in the great oolite of Minchinhampton.  
(Col. University of Cambridge.)

*Diplopodia* (M'Coy), n. g.

*Gen. Char.* Depressed, subpentagonal from the projection of the ambulacral spaces; two rows of primary tubercles both on the ambulacral and interambulacral spaces; ambulacral rows of two pairs of pores in the upper half, of one pair in the middle and becoming again compound, of two or sometimes three pairs of pores towards the mouth.

This genus is distinguished from *Diadema*, to which it is most allied, and *Pedina*, by the former having uniformly one pair of pores in a row, and the latter having uniformly three pairs of pores in a row. The following species and the *D. subangulare* (Ag.) are the types of the genus, which is only known in the oolites.



Ambulacrum  
of *Diplopodia*.

*Diplopodia pentagona* (M'Coy).

*Sp. Char.* Pentagonal, depressed, having an average diameter of 9 lines, with a height of 4 lines; interambulacral spaces one-third wider than the ambulacral at middle; two distinct rows of primary tubercles in each interambulacral space, surrounded by few small granules, and having on the outer side near the mouth five or six secondary tubercles one-third the size of the primary, forming a short single irregular row scarcely reaching the middle; ambulacral spaces with two rows of primary tubercles nearly equalling those of the interambulacra in size,

having a few crowded granules between the rows but no secondary tubercles; there are only five or six pairs of ambulacral pores disposed in the single part of the row, rather below the middle, above which the pairs of pores are in regular double rows, each pair being separated by a diagonal line; below the single part of the ambulacra the pairs are in irregular double series increasing to three rows near the mouth.

This differs from the *Diadema (Diplopodia) subangulare* (Ag.) in its more depressed and distinctly pentagonal form, in the very short single portion of the ambulacra, there being nineteen or twenty pairs of pores in a single vertical row in the middle of that species, and in the deficiency of secondary tubercles along the margin of the interambulacra.

Not uncommon in the great oolite of Minchinhampton.  
(Col. University of Cambridge.)

*Discoidea marginalis* (M'Coy).

*Sp. Char.* Nearly circular, depressed (length and width 1 inch, height 6 lines), margin obtusely rounded; mouth one-third the diameter of the disc; anus small, pyriform, marginal extending as much above as below, its own width distant from the mouth; about six rows of primary granules in the ambulacral and fourteen in the interambulacral spaces.

The only other oolitic *Discoidea* I know with a marginal anus is the *D. hemispherica* (Ag.), from which this differs in having the anus even more remote from the mouth, the mouth larger, the granules more numerous and smaller, and above all by the form being even more depressed than that of the *D. depressa* (Linn. sp.).

Very abundant in the inferior oolite of Bridport.  
(Col. University of Cambridge.)

*Pygaster sublaevis* (M'Coy).

*Sp. Char.* Orbicular, margin of the posterior interambulacral space more convex than the others; much depressed (length 2 inches 4 lines, width 2 inches 6 lines, depth 10 lines); vertex central; anal furrow deep parallel-sided, becoming gradually fainter towards the posterior margin; surface of oral disc undulated by the gentle convexity of the interambulacral spaces and the depression of the ambulacra; mouth only about one-seventh of the diameter, rather nearer the anterior than the posterior margin; granulation on the dorsal aspect so fine that the surface seems smooth or nearly so to the naked eye, abruptly increasing in size on the oral disc and margin, where however four of the primary tubercles only occupy the space

of one line; in a transverse row there are nine or ten in an ambulacral and upwards of fifty in an interambulacral space.

In its depression, the shape of its anal sulcus, and the undulation of its base and small mouth, this species resembles a *Clypeus*, but the structure of its ambulacra, &c. is strictly that of this genus. Its nearly smooth surface, resulting from the very small size and prodigious number of the primary tubercles, distinguishes it from its congeners.

Common in the inferior oolite of Leckhampton.  
(Col. University of Cambridge.)

*Pygaster brevifrons* (M'Coy).

*Sp. Char.* Subpentagonal, much elevated (length 3 inches 2 lines, width 3 inches 3 lines, height 1 inch 8 lines); posterior margin slightly less convex than the others; anus large, pyriform, close to the vertex, which is nearer to the anterior than to the posterior margin, so that in the profile the anterior side is considerably shorter and more steeply inclined than the posterior; mouth small, deeply impressed; primary tubercles large, scattered.

This species in size and form of the base resembles the *P. umbrella* (Lamk. sp.) (*Clypeus semisulcatus*, Phil.), but is more elevated; and while in the profile of that species the posterior side is much the shortest and most highly inclined, the proportions of the present fossil are precisely reversed, a character which also separates it from the other known species. The tuberculation is as large, but more scattered than that of the *P. patelliformis* (Ag.).

Not uncommon in the inferior oolite of Dundry.  
(Col. University of Cambridge.)

*Dysaster symmetricus* (M'Coy).

*Sp. Char.* Regularly oval (length 10 lines, width  $8\frac{1}{2}$  lines, depth  $6\frac{1}{2}$  lines), anterior and posterior ends equal in size and convexity, neither of them sinuate; uniformly gibbous, except a small subangular prominence at the apex of the anterior ambulacrum, and the middle of the base which is slightly concave, the margin of the base being obtusely rounded except in front of the mouth where it is concave—it is most tumid at the opposite end; mouth small, rather more than one-third of the length from the anterior end; anus high on the posterior face, the shell beneath is not sinuate, evenly convex; ambulacra of moderate and nearly equal width, the posterior pair meet just over the anus, the anterior one does not quite reach to the other two, the point of convergence of which is two-fifths the length of the shell distant from that of the posterior pair.

The symmetry of the two ends separates this species at a glance from its congeners.

Not uncommon in the inferior oolite of Bridport.  
(Col. University of Cambridge.)

*Dysaster subringens* (M'Coy).

*Sp. Char.* Nearly orbicular, faintly subpentagonal by the projection of the interambulacra, depressed, but the height rather more than half the length (length 1 inch 1 line, width the same, height 7 lines); dorsal surface evenly convex; oral surface radiatingly undulated by the shallow concavity of the ambulacral spaces, and the gentle gibbosity of the interambulacra, the posterior one most prominent; each interambulacral plate seems on the oral face nodulous in its middle, forming two obsolete rows of nodules on each ridge; mouth nearly central; anus a little above the posterior margin; three anterior ambulacra meeting at the centre of dorsal surface, very narrow, gradually enlarging towards the margin, posterior pair double the width of the anterior ones, short, curved, meeting immediately over the anus.

If carefully observed, this can only be confounded with the *D. ringens* (Ag.) of the Swiss oolites, but it is at once distinguished by its greater gibbosity (in which it exceeds the allied *D. Voltzii*) and in the less prominence of the ridges on the under side, which however exceed those of the latter species; the disproportionate narrowness of the three anterior ambulacra, as in the *D. ringens*, separates it from the *D. Voltzii* and *D. Eudesii* (Ag.).

Not uncommon in the inferior oolite of Dundry and Leckhampton.

(Col. University of Cambridge.)

*Nucleolites planulatus* (M'Coy).

*Sp. Char.* Rotundato-subquadrate, length and width equal, much-depressed, upper surface flattened, margin obtusely rounded (length and width 1 inch 3 lines, depth 6 lines); ambulacra wide, the pores of each pair in the petaloid part connected by a long distinct furrow; anal sulcus deep, extending from the vertex to the anal margin which it slightly indents; granulation very minute.

This species from its great depression need only be compared with the *N. planatus* (Römer, Versteinerungen des norddeusch. Oolithengebirge), but it is wider than that species and the upper surface flatter, and I find on comparing specimens of the two species that the present is completely distinguished by its wide

ambulacra and the very distinct sulcus connecting the pores of each pair; the ambulacra of the former species being narrow and the pores unconnected.

Common in the coralline oolite of Malton.

Rare in the great oolite of Minchinhampton.

(Col. University of Cambridge.)

*Nucleolites pyramidalis* (M'Coy).

*Sp. Char.* Base obtusely cordate or rotundato-quadrate, width equalling or slightly exceeding the length, much elevated to a nearly conical apex which is slightly nearer the anterior than the posterior end (length and width 1 inch 2 lines, height 8 lines); a deep narrow sulcus extends from the vertex to the posterior margin; petalloid ambulacra of moderate width, the pores of each pair united by a strong sulcus; upper surface not very tumid, but rather pyramidal, of four slightly flattened sides; profile, anterior end slightly convex, posterior face longer, forming a steeply inclined plane from the pointed vertex to the rounded posterior margin; granulation of surface very minute and close.

This resembles the *N. clunicularis* (Smith sp., *Clypeus lobatus*, Flem.) in the long, deep, narrow posterior sulcus, extending quite from the vertex; but is wider and more quadrate, the base having exactly the form of the *N. scutatus* (Lamk.); from the latter it differs in the strong sulcus uniting the pores as in most of the genus, and from both species it is distinguished by its pointed elevated apex and the straight declivity of the posterior side.

Common in the cornbrash near Weymouth.

(Col. University of Cambridge.)

*Nucleolites æqualis* (M'Coy).

*Sp. Char.* Subquadrate, very much depressed (length 9 lines, width  $8\frac{1}{2}$  lines, height 4 lines), evenly convex above, very concave beneath; vertex central; anal fissure deep, wide, and sharp-edged, extending from the vertex to the margin, which however is scarcely indented; ambulacra very broad, petalloid part with the pores of each pair connected by a deep sulcus; the two anterior interambulacral spaces are each at the margin only the width of an ambulacral space less than the width of the lateral interambulacral spaces.

This species is much depressed, but not flattened above; the ambulacra equal or even slightly exceed those of the *N. latifrons* (Ag.) in width; but the species is distinguished from all of the genus by the near equality in size of the interambulacral spaces,

the two anterior ones, usually so small, being only the width of one of the ambulacra less than the lateral ones in width.

Great oolite near Minchinhampton.

Inferior oolite near Castle Ashby.

(Col. University of Cambridge.)

*Clypeus excentricus* (M'Coy).

*Sp. Char.* Orbicular, depressed (length and width each 3 inches 11 lines, height 1 inch 2 lines), posterior end slightly produced and sinuate; anal sulcus deep; vertex nearly one-fourth of the length nearer the posterior than the anterior end; mouth small, a little excentric towards the anterior end; ambulacra very wide; granulation as in the *C. patella*.

This species differs from the *C. sinuatus* (Park.) by the vertex being so much nearer one end than the other, and from the *C. patella* by its much greater depression.

Abundant in the inferior oolite of Leckhampton.

(Col. University of Cambridge.)

*Clypeus altus* (M'Coy).

*Sp. Char.* Subhemispherical, base nearly circular, posterior interambulacral space slightly produced in the middle and subtruncate; length and width equal (each about 1 inch 9 lines), height half the width; upper surface evenly convex; oral disc strongly undulated towards the margin by the convexity of the interambulacral spaces and the depression of the ambulacra; vertex central, with a very narrow, deep anal sulcus extending from thence to the margin where it is slightly dilated and spoon-shaped; mouth small, a little in front of the middle, indented by the five tumid ends of the interambulacra; ambulacra narrow, upper two-thirds of their dorsal portion petalloid, lower third and oral portion of parallel rows of unconnected pores.

In form and undulation of the base this resembles the *C. Hugii* (Ag.), but is distinguished by the narrow anal sulcus extending quite to the vertex, instead of being confined to the margin; the deflected lip-like projection of the posterior interambulacral space is very remarkable.

Common in the inferior oolite of Bridport.

(Col. University of Cambridge.)

Exclusive of the above new species, I have, since the publication of Mr. Morris's Catalogue of British Fossils, recognised the following Mesozoic Radiata not included in it, examples of all of which are in the Geological Collection of the University of Cambridge.

## AMORPHOZOA.

## OCELLARIA.

- angustata* (Reuss sp.). *Scyphia* id., Verstein. böhm. Kr.  
Chalk, Cambridge (drift).  
*pedunculata* (Reuss sp.). *Scyphia* id., Verstein. böhm. Kr.  
Chalk, Cambridge (drift).

## SCYPHIA.

- Bronnii* (Münst.), Goldfuss, Petrefacten. Great Oolite, Minchinhampton.  
*cylindrica* (Gold.), Petrefacten. Coralline Oolite, Malton.  
*heteromorpha* (Reuss), Verstein. böhm. Kr. Greensand, Lyme Regis.

## SPONGIA?

- helveloides* (Lamx.), Exp. Méth. Pol. Great Oolite, Minchinhampton.

## ZOOPHYTA.

## AGARICIA.

- elegans* (Michel.), Icon. Zooph. Inferior Oolite, Dundry.

## ASTRÆA.

- confluens* (Gold.), Petrefacten. Great Oolite, Minchinhampton.  
*gracilis* (Münst.), Goldfuss, Petrefacten. Great Oolite, Minchinhampton.  
*helianthoides* (Gold.), Petrefacten. Coralline Oolite, Steeple Ashton.  
*limitata* (Lamx.), MSS. Michelin, Icon. Zooph.  
Inferior Oolite, Leckhampton.  
*reticulata* (Gold.), Petrefacten. Great Oolite, Minchinhampton.  
*varians* (Röm.), Verst. norddeut. Oolithen-Gebirges.  
Coralline Oolite, Malton; Upware.  
Great Oolite, Minchinhampton.

## CERIOPORA.

- dumetosa* (Lamx. sp.). *Millepora* id., Exp. Méthod. Polyp.  
Great Oolite, Minchinhampton.  
*fibrosa*\* (Münst.), MS. name in his collection.  
Great Oolite, Minchinhampton.  
*globosa* (Michel.), Iconog. Zooph. Inferior Oolite, Leckhampton.  
*grandipora* (Münst.), MS. name in his continental collection.  
Great Oolite, Minchinhampton.  
*mutabilis* (Münst.), MS. name in his continental collection.  
Great Oolite, Minchinhampton.  
*pustulosa* (Michel.), Iconog. Zooph. Great Oolite, Minchinhampton.

## CHÆTETES.

- capilliformis*? var. † (Michel.), Iconog. Zooph.

\* This is the oolitic, slender, nearly equal-pored variety of the *C. dichotoma* (Gold.), Petrefacten, tab. 10. fig. 9 *d, e, f*.

† A variety, perhaps, of this species occurs in the inferior oolite of Dundry, with coarser tubes, forming depressed masses, about an inch thick, with very distinct parallel lines of diaphragms at various distances—if distinct it might be named *C. Michelini*.

**CRICOPORA.**

- annulosa* (Michel.), Iconog. Zooph. { Great Oolite, Minchinhampton.  
Inferior Oolite, Leckhampton.  
*Tessonis* (Michel.), Iconog. Zooph. Great Oolite, Minchinhampton.

**DIASTOPORA.**

- Eudesiana* (M.-Edw.), Ann. des Sc. Nat. 2nd series, vol. ix.  
Great Oolite, Minchinhampton.

**GEMMASTRÆA.**

- limbata* (Gold. sp.). *Astræa* id., Petrefacten.  
Great Oolite, Minchinhampton.

**GONIOPORA.**

- racemosa* (Michel. sp.). *Alveopora* id., Iconog. Zooph.  
Great Oolite, Minchinhampton.

**HETEROPORA.**

- ramosa* (Michel.), Iconog. Zooph. { Great Oolite, Minchinhampton.  
Inferior Oolite, Leckhampton.

**LITHODENDRON.**

- ? *astreatum* (Münst.), MS. name in his continental collection.  
Inferior Oolite, Dundry.  
*dichotomum* (Gold.), Petrefacten. Coralline Oolite, Steeple Ashton.  
*Edwardsii* (Michel.), var. Icon. Zooph. Coralline Oolite, Malton.

**LOBOPHYLLIA.**

- trichotoma* (Münst. sp.). *Lithodendron* id., Goldfuss, Petrefacten.  
Coralline Oolite, Steeple Ashton.

**MONTLIVALTIA.**

- decipiens* (Gold. sp.). *Anthophyllum* id., Petrefacten.  
Oxford Clay, St. Ives; Inferior Oolite, Dundry.  
*dilatata* (Michel. sp.). *Caryophyllia* id., Icon. Zooph.  
Coralline Oolite, Malton.  
*Moreausiaca* (Michel. sp.). *Caryophyllia* id., Icon. Zooph.  
Coralline Oolite, Malton.  
*obconica* (Münst. sp.). *Anthophyllum* id., Goldfuss, Petrefacten.  
Coralline Oolite, Malton.

**SIDERASTRÆA.**

- cadomensis* (Michel. sp.). *Astræa* id., Iconog. Zooph.  
Inferior Oolite, Leckhampton.  
*Defrancii* (Michel. sp.). *Astræa* id., Iconog. Zooph.  
Inferior Oolite, Dundry.  
*incrustata* (Michel. sp.). *Alveopora* id., Iconog. Zooph.  
Great Oolite, Minchinhampton.  
*Lamourouxi* (Le Sauvage sp.). *Thamnasteria* id., Michelin, Icon. Zooph.  
Great Oolite, Minchinhampton.  
*meandrinoides* (Michel. sp.). *Pavonia* id., Iconog. Zooph.  
Coralline Oolite, Steeple Ashton.  
*microsolena* (Michel. sp.). *Alveopora* id., Iconog. Zooph.  
Great Oolite, Minchinhampton.  
*rotata* (Gold. sp.) var. *Agaricia* id., Petrefacten.  
Coralline Oolite, Malton.

**TEREBELLARIA.**

- antilope* (Lamx.), Exp. Méth. Polyp. Coralline Oolite, Malton.

**ECHINODERMATA.**

**ACROSALENIA.**

- aspera* (Ag.), Cat. Syst. { Great Oolite, Minchinhampton.  
Inferior Oolite, Dundry.  
*spinosa* (Ag.), Echinoderm. Suiss. Great Oolite, Minchinhampton.

## APIOCRINUS.

*elegans* (Defrance sp., *Astropoda* id.), D'Orbigny, Monog. des Crin.  
Bradford Clay, Bradford.

## CIDARIS.

*trigonocantha* (Ag.), Echinod. Suiss. Kimmeridge Clay, Weymouth.

## DIADEMA.

*aequale* (Ag.), Echinod. Suiss. Coralline Oolite, Steeple Ashton.  
*ornatum* (Gold. sp.). *Cidaris* id., Petref. Greensand, Blackdown.  
*Rhodani* (Ag.), Echinod. Suiss. Greensand, Blackdown.  
*rotulare* (Ag.), Echinod. Suiss. Durdle Door, Dorset.

## DYSASTER.

*Avellana* (Ag.), Desor. Monog. des Dysaster. Inferior Oolite, Bridport.  
*Eudesii* (Ag.), Desor. Monog. des Dysaster. Inferior Oolite, Dundry; Bridport.

## DISCOIDEA.

*minima* \* (Ag.), Desor. Mon. des Galer. Upper Greensand, Cambridge.  
*rotula* (Ag.), Echinoderm. Suiss. Upper Chalk, Norwich.

## GALERITES.

*castanea* (Brong. sp.), Ag. Echin. Suiss. Chalk, Cambridge.  
*laevis* (Ag.), Desor. Monog. des Galerit. Chalk, Dover.  
*globulus* (Desor.), Monog. des Galerit. Chalk, Cambridge.

## HEMICIDARIS.

*stramonium* (Ag.), Echinoderm. Suiss. Coralline Oolite, Calne, Wilts.

## HYBOCLYPUS.

*gibberulus* (Ag.), Echinoderm. Suiss. Inferior Oolite, Dundry.

## MICRASTER.

*gibba* (Lamk. sp.). *Spatangus* id., Goldfuss, Petrefacten.  
Chalk, Cambridge.

## MILLERICRINUS.

*echinatus* (Schlot. sp.). *Encrinites* id., Nacht. z. Petref. Coralline Oolite, Malton.  
*Milleri* (Schlot. sp.). *Encrinites* id., Nacht. z. Petref. Bradford Clay, Bradford.

## NUCLEOLITES.

*latiporus* (Ag.), Echinoderm. Suiss. Great Oolite, Minchinhampton.  
*scutatus* (Lamk.), Ag. Echinod. Suiss. Inferior Oolite, nr. Castle Ashby.

## PEDINA.

*rotata* (Ag.), Echinod. Suiss. Great Oolite, Minchinhampton.

## PENTACRINUS.

*cingulatus* (Münst.), Gold. Petrefacten. Bradford Clay, Bradford.  
*subteres* (Münst.), Gold. Petrefacten. Bradford Clay, Bradford.  
*subsulcatus* (Münst.), Gold. Petrefacten. Bradford Clay, Bradford.

## PYGASTER.

*umbrella* (Ag.), Echinoderm. Suiss. Coralline Oolite, Malton.

## TETRAGRAMMA.

*Brongniarti* (Ag.) var., Echinod. Suiss. Greensand, Blackdown.

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\* With the small anal plates preserved *in situ*.