

ordinarily living in the open fields, should find its way to such a depth beneath the surface of the ground, and multiply to such an extent as to be able to construct, by the united labours of hundreds, immense sheets of web, stretching through all the deserted subterranean galleries. It seems that this little creature, at the same time that it shifted its abode, must also have acquired new instincts, becoming social and gregarious in its habits, and thus departing from the manners of most of the spider tribe, which are usually solitary, except when quite young. It may be said that numerous and large spiders' webs are often met with in other dark underground places besides coal-pits (as cellars, caves, &c.); but these are always constructed by larger species, each individual living separately, and having its own web; the spiders forming them may also mostly be referred to the genus *Tege-naria*, to which our common house-spider belongs.

Bradford, May 30, 1860.

VI.—*Description of a new Pentacrinite from the Kimmeridge Clay of Weymouth, Dorsetshire.* By WILLIAM H. BAILY, F.G.S. &c.*

[With a Plate.]

THE beautiful fossil Crinoid forming the subject of this communication received a MS. name from the late Prof. Edw. Forbes, who dedicated it to his friend the Rev. Osmund Fisher, by whom it was procured from the Kimmeridge Clay near Weymouth, and liberally presented, with numerous other interesting fossils from the neighbourhood, to the Dorchester County Museum. On visiting that Museum, I found that it had never been described or figured, and have therefore drawn up the following description, with illustrative figures, of this interesting species.

Class ECHINODERMATA.

Order CRINOIDEA. Genus *Pentacrinus*, Müller.

Pentacrinus Fisheri, Forbes, n. sp. Pl. I. fig. 1 a.

P. calyce parvo lævi; articulis basalibus clypeiformibus, quinque; articulis radialibus amplis, quinque; articulis brachialibus amplis, triangularibus, quinque; brachiis decem bifurcatis, articulis cuneiformibus, alternis; pinnulis articulis octo; columna pentagonale; ramulis articulis contiguis.

Diagnosis.—Calyx small, smooth, and composed of five shield-

* Communicated by the Author; having been read before the Dublin University Zoological and Botanical Association, December 16, 1859.

like thick plates, having a double excavation at their lower extremity, where they articulate with the pentagonal stem; radial plates five in number, about twice as broad as long; brachial plates also five, broad and triangular, supporting the rays, which are ten in number, very long, composed of cuneiform alternating articulations, and bifurcating four or more times, every alternate joint of these rays being furnished with a long, slender, eight-jointed pinnule. The column consists of a number of pentagonal joints, of equal length, each united by a crenulated margin, and for the greater portion of its length comparatively smooth, but towards the calyx becoming strongly ridged and beaded across the exterior surface of each angle. At about every eighth joint on each of its five angles a closely-jointed ramule was articulated.

Dimensions of small specimen.—Length of calyx $\frac{1}{10}$, diameter $\frac{2}{10}$ inch. Diameter of column rather less than $\frac{1}{10}$ inch. Length of rays about 2 inches; length of column nearly 5 inches (probably much longer when perfect).

Dimensions of larger specimen.—Length of calyx $\frac{3}{20}$, diameter $\frac{5}{20}$ inch. Diameter of largest fragments of column $\frac{2}{10}$ inch; other portions vary in diameter from rather less than $\frac{1}{10}$ to $\frac{2}{10}$ inch.

Remarks.—This *Pentacrinus* is remarkable for its graceful form, which it owes to the slender stem and great proportionate length of its arms; the calyx, like that of the typical and recent example of this genus (*Pentacrinus caput-Medusæ*) is small, and composed of but few plates, the basal series or pelvis consisting of five very convex and solid elements, the lower portion of each being excavated to form an articulating surface, which rests securely upon the pentagonal stem; to these are closely fitted the five radial plates; upon them rest the five triangular brachial plates, the sides of which support the long rays or arms, which bifurcate several times, and are ten in number; commencing from the brachial plate, they continue for about three-tenths of an inch to the first subdivision, consisting of from eight to ten irregularly-shaped joints closely fitting to each other and bearing a second triangular plate, the sides of which, like that of the first brachial plate, support the second division, one branch of which, consisting of fifteen joints, again, bears the third triangular plate, from which springs a third subdivision; to one of the branches of this division sixteen more joints can be counted without any further branching, the termination of this, the best-preserved of the arms, being still wanting. The plates composing the rays become flatter and more closely set towards their upper part, their surfaces being marked by a continuous double line or angular ridge (Pl. I. fig. 1 k).

The rays, in consequence of the numerous subdivisions, were probably, in the perfect specimen, fifty or more in number. The delicate pinnules or tentacula with which they are furnished are not closely arranged, but attached to every alternate joint; they are about $\frac{4}{20}$ of an inch in length, flattened, angular, and curved, consisting of about eight elongated joints (fig. 1 *l*). The column or stem is composed of pentagonal plates of nearly equal thickness, each having a star-like, crenated articulating surface (fig. 1 *i, f*), the external face of each angle being ornamented with a faint band of bead-like markings, which become strong ridges accompanied by a central depression or pit towards the upper portion of the stem. At variable intervals, generally about the eighth joint, spring the ramules or auxiliary side-arms, five in number, developed from an articulating surface between each of the angles of a joint (fig. 1 *j*); in the specimen under consideration they are mostly broken off near the base; the portions which remain show that they were round and closely jointed; one of these articulating surfaces may be seen in the enlarged figures of portions of the stem (figs. 1 *h* and *e*).

The plan of the arrangement of plates composing the calyx (fig. 1 *c*) is taken from a well-preserved and larger specimen, which is quite relieved from the matrix, exhibiting most perfectly the whole of the plates of the head, with the lower subdivision of the arms, their upper portions being imperfect (fig. 1 *b*).

Affinities and Differences.—This species somewhat resembles *Pentacrinus Milleri*, Austin, but differs in the following particulars:—it is of more delicate proportions; the branching of the rays takes place at longer intervals; the tentacles are not so closely set; the column has sharper angles and square sides; whilst in *P. Milleri* the angles of the pentagonal joints are much rounded and very prominent, and in our species the ramules are situated at greater distances. *Pentacrinus scalaris*, Goldfuss, said to be a synonym of *P. Milleri*, is a species founded upon portions of the stem only; in some of its varieties, as figured by Goldfuss, it bears a considerable resemblance to the stem of *P. Fisheri*: it is, however, considered by good authorities to be identical with *P. Milleri*, from which our species is certainly distinct.

Locality and Stratigraphical Range.—This interesting addition to the Echinodermata of the Secondary Rocks was discovered by the Rev. Osmund Fisher, in the Kimmeridge Clay, at Green Hill, Weymouth, Dorsetshire. It was obtained from a bed of dark-blue clay, the surface of which was covered

with the remains of this and other individuals of the same species.

EXPLANATION OF PLATE I., Figs. 1 a-1 l.

Fig. 1 a. *Pentacrinus Fisheri*, natural size; 1 b, detached head of a larger specimen; 1 c, plan of arrangement of plates composing the calyx of a larger specimen (natural size), showing articulating surface of ramules; 1 d, joints from the upper part of the column; 1 e, part of ditto, enlarged; 1 f, articulating surface of ditto; 1 g, portion of column, of still larger diameter, nat. size; 1 h, part of ditto, enlarged; 1 i, articulating surface of ditto; 1 j, portion of the column, enlarged, showing fragments of the ramules articulated to one of the joints; 1 k, two plates from the upper part of the rays, showing a double ridge; 1 l, one of the pinnules.

VII.—On a new Species of Solarium from the Upper Greensand, near Dorchester. By W. H. BAILY, F.G.S.

Class MOLLUSCA. Order GASTEROPODA.

Fam. Littorinidæ.

Solarium Binghami, Baily, n. sp. Pl. I. fig. 2 a.

S. testa parva discoïdea-depressa; spira prope plana; anfractibus (6) clathratis, marginibus bicarinatis tuberculatis, umbilico magno profundo margine tuberculosa ornato; apertura angulosa.

Diagnosis.—Shell small, discoidal; spire nearly flat, consisting of six whorls, their margins bicarinated and ornamented with varices or tubercles; whorls decussated with longitudinal and transverse lines; umbilicus large and deep, its margin being ornamented with a row of tubercles gradually decreasing in size; mouth angular.

Dimensions.—Elevation $\frac{2}{10}$ inch; diameter $\frac{4}{10}$.

Affinities and Differences.—This pretty little *Solarium* differs specifically from all other described forms, being distinguished from *S. moniliferum*, Michelin, by its very depressed spire and large, deep umbilicus; and from *S. albensis*, D'Orbigny, by its depressed spire and reticulated sculpturing. Its nearest affinity, however, is with these, and more remotely with *S. ornatum*, Fitton,—all species from the Gault, the two former being from foreign localities, the latter a British species.

Locality and Stratigraphical Range.—This beautifully preserved specimen was collected from the Upper Greensand at Bingham's Melcombe, near Dorchester, by the Rev. C. W. Bingham, a gentleman who has enriched the Museum of that town with many contributions, and to whom I have much pleasure in dedicating it.

EXPLANATION OF PLATE I., Figs. 2 a-2 c.

Fig. 2 a. Side view of *Solarium Binghami*, natural size; 2 b, the same, magnified 3 diameters; 2 c, upper surface of the same; 2 d, under surface of the same.



Baily, William Hellier. 1860. "VI.—Description of a new pentacrinite from the Kimmeridge Clay of Weymouth, Dorsetshire." *The Annals and magazine of natural history; zoology, botany, and geology* 6, 25–28.

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