

On a new attached Crinoid, Democrinus Parfaiti, from the Dredgings of the 'Travailleur.' By M. E. PERRIER.

Among the results of dredgings made at great depths none have excited a more lively interest than the discovery in the living state of forms which were believed to have long since disappeared. Among the fossil Invertebrata there are few that, during the Primary and Secondary periods, played so important a part as the attached Crinoids, and are so badly represented in existing nature. When, in 1755, Guettard announced the existence of a living *Pentacrinus* in the West Indies, it was almost a scientific event; for a long time this species remained the only representative of a group which was formerly extraordinarily varied and so rich in individuals that its representatives must sometimes have formed vast submarine prairies. Slowly other types have been added to the list, nearly all found in deep seas; so that the order of the attached Crinoids is now represented by fourteen species. These are as follows:—*Pentacrinus asteria*, *Mülleri*, *decorus*, *Wyville-Thomsoni*, *Maclearanus*, *Blakei*, and *alternicirrus*, *Rhizocrinus lofotensis* and *Rawsonii*, *Bathycrinus gracilis* and *Aldrichianus*, *Holopus Rangii*, *Hyocrinus Bethellianus*, and *Hyponome Sarsii*.

The dredgings of the 'Travailleur' have just revealed the existence of a fifteenth form, brought up from a depth of 1900 metres on the coast of Morocco, off Cape Blanc. We propose to give this new Crinoid the name of *Democrinus Parfaiti**.

Democrinus is distinguished at once from all the other genera by the constitution of its calyx, which is formed of five long basals constituting of themselves a funnel-shaped calyx; a circular groove separates these five basals from five rudimentary radials, which are crescentiform, alternate with the former, and are themselves surmounted by five free, movable, rectangular axillary radials, to which, respectively, are attached five arms, much broader than the radials. These arms break very easily at the level of their articulation with the axillary radials, which then fold down upon the roof of the calyx; of three specimens that we have been able to examine, two are completely destitute of arms, and the third only presents very short remains of them, from which it is easy to see that the arms must have had an extremely small development; but we cannot ascertain whether or not they bore pinnules. In *Rhizocrinus* and *Hyocrinus* the arms are simple, as in *Democrinus*; but in the former the basals are amalgamated and the calyx is partly formed by radials; and in the second the first radials are larger, soldered together, and also take part in the formation of the calyx. Moreover, in the latter the roof of the calyx is covered with calcareous plates. Like the *Rhizocrini*, the *Democrini*, of which the peduncle is destitute of cirri, are attached to the ground by a greatly developed radicular apparatus.

Of all the existing attached Crinoids the *Democrini* are those in

* We dedicate the species to the commander of the 'Travailleur,' M. T. Parfait.

which the transverse dimensions of the calyx are the smallest relatively to the diameter of the peduncle. If we consider that in the existing free Echinoderms the whole body only represents the calyx of the attached Crinoids surmounted by its arms, we are astonished to see a part which is absolutely *nil* in the representatives of the other groups acquire in *Democrinus* so great a development that it represents at least five or six times the volume of the body properly so called. This fact alone warns us that the peduncle must be regarded as of great importance in the determination of the fundamental form in the Echinodermata. In *Democrinus* it produces a radicular apparatus formed of ramified articulated branches having the same structure as itself, and presenting dimensions superior to those of the arms: this apparatus cannot be neglected from a morphological point of view; and one is led to regard its different branches as having the same value as the peduncle itself, of which they possess the structure.

In one of our *Democrini* the peduncle furnishes two bundles of roots and becomes slightly attenuated in the region where these appendages originate; but it afterwards resumes its primitive dimensions; and we cannot avoid inquiring whether the part which is produced beyond the roots is not destined to become a second peduncle surmounted by a second calyx. If this induction should be verified, the *Democrini* will constitute the first existing example of Echinoderms living in colonies and ramified.

In a former work* I have shown that there exists a striking parallelism between the Echinodermata and the Coelenterata with a radiate structure. Under the empire of a determinate condition of existence, namely fixation to the ground, the Coelenterata form arborescent colonies upon which modified polyps group themselves in whorls, just as the leaves of plants do to produce flowers, and thus give origin to radiate organisms, Medusæ or Corallarian polyps.

The greater number of the primitive Echinodermata were fixed to the ground; the existing Echinodermata are all radiate; it was natural to conclude that the same condition of existence had led, by the same mechanism, to the formation of organisms presenting the same mode of symmetry in the two groups of the Coelenterata and Echinodermata. But the series of Echinodermata wanted the arborescent forms, which are the starting-point of all subsequent evolution in the Coelenterata. The *Democrini* evidently serve greatly to diminish this gap. Even if they did not live in colonies, the considerable bulk of their branched roots, the resemblance of these roots to the arms which surmount the calyx and with which they are probably homologous, suffice to demonstrate that the arborescent arrangement of parts, which is in some sort a preface to radial symmetry, is not more foreign to the type of the Echinodermata than to the type of the Coelenterata.—*Comptes Rendus*, February 12, 1883, p. 450.

* Les Colonies Animales et la formation des Organismes.



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