Wer die zweite Alternative bejaht, bringt damit zum Ausdruck, daß er einen Theil der Übereinstimmungen mehr als Producte paralleler Züchtung, denn als homophyletische Bildungen auffaßt. Aber auch er wird anerkennen müssen, daß jene Züchtung auf einer sehr ähnlichen, weil nahe verwandten, Grundlage stattgefunden hat, und daß ein anderer, kaum minder bedeutsamer Theil von Übereinstimmungen offenbar homophyletischer Natur ist.

4. An Abnormal Clypeastroid Echinoid.

By W. L. Tower.

(With 3 figs.)

eingeg 27. Februar 1901.

Specimens of *Echini* exhibiting abnormalities in the number of ambulacra or inter-ambulacra are certainly not frequent, if the fifteen or twenty known cases are any indication of scarcity. Every year in the laboratories of Europe and America many hundreds of specimens of various species of sea-urchins are examined, yet only rarely are there found any variations excepting those of minor structures, as the apical plates, the rows of plates in the inter-ambulacra, etc.

In a lot of about two-hundred specimens of *Echinarachnius parma*, from Wood's Holl, Mass., one abnormal individual was found. A careful examination of this material as well as of all other of this species that I could get failed to show any specimens like the unique one here described or any other variations of any moment. Prof. A. E. Verrill tells me he has examined many specimens of this species and has never seen any variation in the number of ambulacra or inter-ambulacra. Prof. R. T. Jackson likewise informs me that he has not observed any similar case in the large amount of material of this species which has come under his observation. Hence the variation exhibited by this specimen must certainly be a rare one, and interesting as being the first instance of a variation of this class in this genus of the *Clypeastroid Echini*. The known cases of these variations in *Echini*, as far as I can determine them from the literature at my command, are distributed as follows in eight genera: *Arbacia* (1), *Cidarites* (1), *Echinoconus* (1), *Discoidea* (1), *Echinus* (2), *Amblypneustes* (4), *Hemiaster* (6), *Echinarachnius* (1).

When discovered the specimen was dry and almost devoid of its spines, consequently, no study of the soft parts could be made. It is probable that as these were so closely correlated in position and structure with the hard parts they also were abnormal. The specimen was treated with potash (KOH) to bring out the sutures between the

individual plates, but this was impossible in many cases, which may indicate one of two conditions: 1) that the specimen was very old and the plates had fused as is characteristic of this form in old age; or 2) that for some reason the plates in certain regions had become more firmly united. I believe that the second alternative is correct, because two regions diametrically opposite alone remain as an almost solid plate, whereas in an "old" specimen the fusion of plates is more uniform.

The aboral surface shows an almost bilateral symmetry, with a line drawn through the anus and the anal inter-radius, the anus in this species being situated on the edge of the flattened test (Fig. 1, *an.*). The apical system, normally central in position, is excentrically placed, having moved away from the anus towards the opposite side,

Fig. 1.

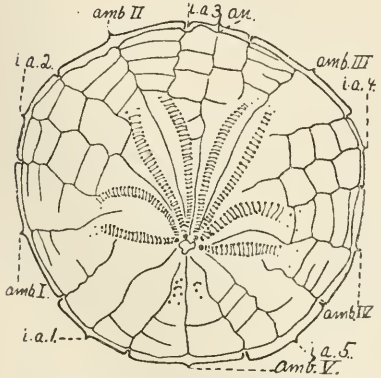

Fig. 2.

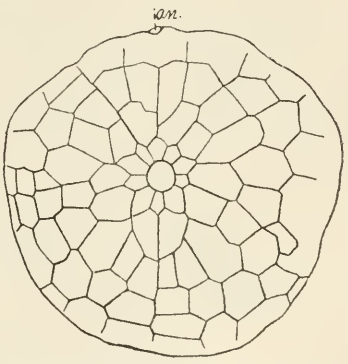

Fig. 1. *Echinarachnius parma*, aboral view, showing plates, ambulacra and inter-ambulacra. *an*, anus; *amb. I—amb. V*, ambulacra I—V; *i. a. 1—5*, inter-ambulacra 1—5.

Fig. 2. *Echinarachnius parma*, oral view, showing arrangement of plates. *an*, anus.

but in a straight line (Fig. 1). This migration greatly elongates certain ambulacral and inter-ambulacral systems, and shortens or twists others. Thus, in Fig. 1, ambulacra II and III and inter-ambulacrum 3 are much longer than normal, i. e., than when the apical system is central; while ambulacra I and IV have become so twisted that they mainly lie opposite, or 180° apart, instead of 75°, as is the normal position. Ambulacral system V is almost lacking, a few pores being all that remain, and there are through plates that are more like the plates of an inter-ambulacrum (Figs. 1 and 3, Amb. V). Thus the plates and pores of ambulacra I to IV are normal in number and relations, being changed only in size and shape to accommodate the changed location

of the apical system. The same is true of all of the inter-ambulacra, as far as can be determined. That part of ambulacrum V which is near the edge is normal, and only the part near the center shows abnormal conditions, where only a few pores, and no sure traces of any plates can be found.

The apical system is also abnormal. The madreporite is a large, wart-like protuberance occupying almost the entire apical space. During the treatment with potash this part was destroyed. Four ocular plates are present, one in each of the ambulacra numbered I to

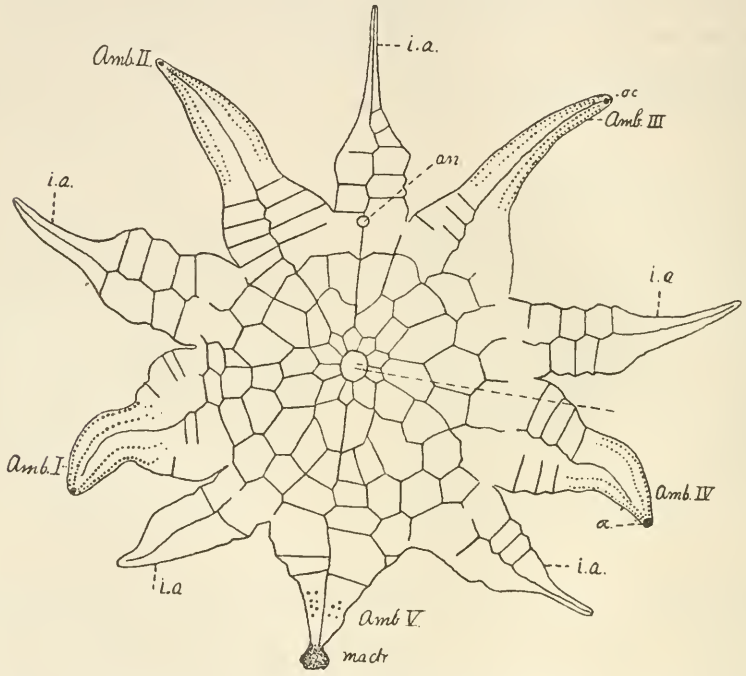

Fig. 3. Diagrams te show relation of the various systems of plates *oc*, ocular plate; *madr*, madreporite. The lettering as in Figs. 1 and 2.

IV (Figs. 1 and 3). No traces of genital plates or pores have been discernible at any time and I feel confident that they did not exist in the specimen.

On the ventral side (Fig. 2), the oral opening has moved towards the anus about the same distance that the apical system has moved away, the two giving one the impression of their having swung upon some axis. The plates of the ventral side show no character worthy of comment.

In Fig. 3 I have plotted the arrangement of the ambulacra and inter-ambulacra, together with that of the plates and pores in each,

after the system devised by Lovén (1892) in showing Echinoid structures. In this figure the amount of distortion that each area has undergone is more clearly shown than in Fig. 1. I have indicated only those sutures that I could determine beyond doubt, and such as remain undetermined are perhaps unimportant. Any further development of the specimen would certainly destroy it.

According to the division of echinoid abnormalities into four classes which was made by Bateson (1894), this specimen belongs to class 2, characterized by a total or partial disappearance of a definite system of plates which can be named. In the specimen it was impossible to determine the relative position of the madreporic body, because of its position in the center of the apical system. It is therefore not possible to say positively which ambulacral area has been modified, but we may be sure that it is either the right or left anterior system, according to whether the madreporite belongs to inter-ambulacrum I or V. The eccentric position of the apical system, and its migration away from the anus, the marked bilaterality, and the almost complete reduction of one ambulacral system give the specimen much the appearance of one of the Petalostichous Echinoids. It is extremely improbable that this resemblance has any significance in any phyletic or atavic sense.

The specimen herein described has been deposited in the Museum of Comparative Zoölogy at Cambridge, Mass.

Yellow Springs, O., Jan. 26, 1901.

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1892. Lovén, S., Echinologica. Bihang till Kongl. Svensk. Vetenskaps-Akad. Handl., B. 18:IV. Stockholm.

5. Mittheilungen aus der Biologischen Station zu Plön, Holstein. Über einige bisher unbekannte Süfswasserorganismen.

Von Max Voigt (Plön).

eingeg. 1. März 1901.

Bei der im August 1900 begonnenen Bearbeitung der Rotatorien und Gastrotrichen, sowie der Fischparasiten der Plöner Gewässer wurden bis jetzt nachfolgende, bisher unbekannte Süßwasserorganismen aufgefunden. Eine ausführliche Beschreibung und Abbildungen der neuen Formen beabsichtige ich in dem IX. Forschungsberichte der Plöner Biologischen Station zu geben.