

which contains mainly types of radioles similar to those of *Dorocidaris* and *Cidaris* proper.

The spines of *Rhabdocidaris* are of two principal types, one of which, like those of *R. copeoides*, has also been found in the spines of a recent species; the other, like those of such recent forms as *imperialis*, approaches more to the fossil types of *Phyllacanthus orbignyana*.

*Cidaris tribuloides* (Pl. I. figs. 2, 3, 5, 6).

*Cidarites tribuloides*, Lamk., 1816, Anim, sans Vert.

*Cidaris tribuloides*, Bl., 1830, Zooph.

There exist in several of the European museums small specimens of *Cidaris*, generally labelled "Africa," resembling the young of *Phyllacanthus verticillata*, which they have usually been considered. One or two such young specimens were collected by M. Bouvier at Cape Verde Islands, and are now in the Jardin des Plantes. I did not attempt to incorporate them in my Revision of the Echini for want of sufficient material.

The Challenger dredged at Bahia in 7 to 20 fathoms, and also at Fernando Noronha a few specimens of a *Cidaris*, which at first sight would readily be mistaken for *Phyllacanthus verticillata* (Pl. I. fig. 2). On comparing, however, young *Phyllacanthus verticillata* with the present specimens, we readily note the following striking differences. In *Phyllacanthus verticillata* the verticillations are formed by large prominent lamellæ (see A. Agassiz, Revis. Echini, pl. i.° figs. 40-42), while in this species there are a few larger sharper serrations rising irregularly above the general granulation of the shaft, and concentrated on from three to five swellings along the length of the shaft (Pl. I. fig. 3). Otherwise the radioles and papillæ vary in shape much as do those of *Cidaris tribuloides*, and bear the same proportion to the diameter of the test, and the granulation is similar to that of the ordinary type of *Cidaris tribuloides*. The test of the largest specimen collected measures 17 mm. in diameter, and differs in no particular from the test of a normal *Cidaris tribuloides* of the same size.

Similar young specimens having thus far been observed only in localities where *Cidaris tribuloides* occurs, I am inclined to regard them as only a variety of that species. In some of the Challenger specimens, especially the smaller ones, this abnormal decoration exists only in a few of the spines, the other radioles do not differ from those of young specimens of a similar stage of *Cidaris tribuloides*. The differences in the spines of these specimens, and those thus far regarded as the normal *Cidaris tribuloides* are not greater than differences with which we are familiar in the spines of *Goniocidaris tubaria* for instance. In the section of *Cidaris* to which *Cidaris tribuloides* and *Cidaris metularia* belong, no such variation of the spines was