

now restricting Chapman's name to the form with straight rays and the plate ornamentation described below.

DESCRIPTION.

Specimens small, circular in outline, not ordinarily resting upon any foreign object. Rays five in number, narrow, straight, and tapering but little toward the distal end, the two rays enclosing the anal inter-radius a little further apart than the others. Each ray has about thirteen pairs of alternately placed lateral covering plates, which are truncated at the ends, so that they interlock along the median line. The points of these plates are curved, so that when the ray is slightly sagged apart, alternating pores are seen between the covering plates. Over the central area, presumably covering the mouth, there are three principal plates, a large one next to the anal inter-radius and two smaller ones anterior to it.

For convenience in speaking of these fossils, the anal inter-radius is called posterior, the ray opposite to it anterior, and the rays numbered in clock-wise (solar) order, beginning with the one at the left of the anal inter-radius.

The single large plate of the supra-oral series is then, between rays I and V, and its great width is due to the enlargement of the posterior inter-radius by the anal opening. The other two plates are inter-radial in position, one being between rays II and III, and the other between III and IV. There are also two other narrow, five-sided plates accessory to the supra-oral system, one between rays I and II, and the other between IV and V. These plates at their proximal edges abut against the anterior supra-oral plates. Numbering these plates according to the inter-radial areas which they oppose, we have the broad posterior one as 5, the next one to the left 1, the first anterior lateral 2, second anterior lateral 3, and the right posterior lateral 4.

There can be no reasonable doubt that Chapman's specimen had this structure. In his principal description, in the *Ann. Mag. Nat. Hist.* he says: "These rays, at their origin, leave a small central space covered by larger and somewhat rhombic plates. The latter appear to be five in number, and to constitute the first ray plates, one being common to two adjacent rays."

None of the covering plates, either of the rays or of the supra-oral system, seem to be in any way joined together, but were probably all movable. The three principal supra-oral plates, Nos. 2, 3, and 5, are of such form and strength as to suggest that they could have functioned as jaws.

The inter-radial spaces are covered with small imbricating