

*Cup*, obconical of a sub-pentagonal outline viewed from below; at the junction with the column the diameter is a little less than one-half the greatest diameter. Surface of cup ornamented with radiating costæ, two lines of which, one each at the centre of the radials and sub-radials, form zones around the cup; between these two lines others pass at right angles across the sutures of the plates, forming a series of triangles; below the lower zone, from the centre of each sub-radial, a single costa passes downward to the basals, where it is continued, one-half on each plate (without bifurcation), and expands into a slightly elevated ring, encircling the base of the cup.

Each rhomb, or hydrospire, occupies an angle of three separate plates; they are trilobate, and in shape bear some resemblance to a very stout letter Y, with pointed terminations, having three re-entering and nine salient angles.

The angles of the inter-costal triangles to the edges of the hydrospires are striated in lines parallel to the lines of the spiracles. These striations are not even grooves, but appear to be formed of elongated, shallow pits or punctures placed with their ends in contact.

*Arms* simple, apparently long, one specimen having a portion of an arm, once and a half the length of the cup, but slightly reduced in diameter, and without branching (Fig. 3). The same specimen shows that the grooves of the arms were bordered by erect rows of plates about two-thirds the width and somewhat less than one-half the depth of the arm joints.

*Vault* composed of five large plates separated by broad grooves continuous with the upper grooves of the arms and radiating from the centre of the apex; four of these fit in between the re-entering angles of the radial plates, and the fifth (situated immediately over the proboscis) is excavated in the same manner as the radials on either side of the upper azygos plate. The radiating grooves appear to be covered with double rows of small plates interlocking and alternating with one another. Only one specimen has been examined showing the summit structure, and in it the arrangement of plates at apex could not be satisfactorily made out. A small tube or circular opening was observed at the lower end of one of the grooves, immediately above the arm notches (Figs. 1 and 6).

The proboscis appears to have been short and made up of lancet-shaped imbricating plates, but as the area immediately around it has none of the plates preserved in the only specimen possessing this organ, it cannot be spoken of with certainty.

*Column* round, with a small pentagonal canal. In the specimens examined only small portions of the columns are preserved, and these taper to such a degree that the diameter is reduced from one-quarter inch to one-fourteenth inch in a proximal fragment of column three-eighths of an inch long; and in a similar portion five-sixteenths of an inch long from one-quarter inch to one-ninth inch. The separated disks of column appear flat and smooth, and show five indistinct petaloid depressions on the under side which correspond with similar elevations on the upper side, and which terminate outward on the line of sutures of basals; these disks do not reach the external surface of the column, there being an investing sheath or covering encircled by wavy lines at distances from each other equal to the thicknesses of the disks.

This species differs from *P. Conicus* in having prominent costæ instead of a smooth surface; in having wide short basals; in having the external shape of the hydrospires trilobate instead of being spherical triangles; as also in its greater size. From *P. Crassus* the chief points of difference are that the sutures are not prominent, nor does the base overhang the column, while the hydrospires are trilobate throughout. *P. Pentagonus* is the species most nearly related to the one now under consideration. It differs in the shape of the body which (in *P. pentagonus*) is obovoid and broadest on a line drawn through the centre of the sub-radials; it also has only a portion of the hydrospires trilobate: otherwise it appears to agree very closely with our new species.