

by treatment with a solution of potash. It consists of five very small fragile radial pieces, held together by some very minute interradsial fragments; each radial piece is deeply notched. Only a single madreporic canal, but two cylindrical, narrow Polian vesicles, about 20 mm. long, are present. The alimentary canal presents anteriorly a kind of muscular stomach with strong muscular walls. The retractors are attached at about the middle of the body or a little more posteriorly. The genital tubes are simple, and the efferent duct very long. The respiratory-trees are slender and very little ramified. Considering the great resemblances, I am much inclined to consider this species to be identical with Semper's *Cucumaria leonina*.

*Cucumaria serrata*, var. *intermedia*, nov. (Pl. III. fig. 6; Pl. IV. fig. 2).

*Habitat*.—Station 150, February 2, 1874; lat. 52° 4' S., long. 71° 22' E.; depth, 150 fathoms; bottom temperature, 35°·2; coarse gravel; several specimens. Station 151, February 7, 1874; lat. 52° 59' 30", long. 73° 33' 30" E.; off Heard Island; depth, 75 fathoms; volcanic mud; several specimens.

So far as I can find, the only difference existing between the typical form and its variety is seen in the deposits, which are much larger in the former, and have the handle much longer and narrower. In the variety, the deposits only attain a length of 0·16 mm., and their handle is short, broad, and spinous. The plates themselves are oval, elongate, or sometimes almost round, and the number of holes and knobs is very variable. Moreover, some small x-shaped bodies and rounded plates, with a few perforations, are to be observed in the integument of both forms, but these represent only different stages in the development of the plates. Anteriorly, the perisome is almost destitute of deposits. The pedicels and tentacles are strengthened by deposits of about the same shape as those in the true specific form; thus no rods are present, but only rather large, smooth, perforated plates of varying forms (Pl. IV. fig. 2*b*). Instead of two Polian vesicles, I often find four.

The specimens from Station 151 are considerably larger, some of them measuring 65 mm. or more, and they differ from the former mainly by the presence of a greater number of pedicels, which in some specimens seem to form a double alternating row along each ambulacrum. The smaller individuals, on the contrary, like those from Station 150, have them arranged in simple zigzag rows, excepting, of course, anteriorly, where two rows are always present. But it is a well-known fact that the young forms always have fewer pedicels situated in a simple row, while the older forms possess double rows.

*Cucumaria serrata*, var. *marionensis*, nov. (Pl. IV. fig. 3).

*Habitat*.—Marion Islands, December 26, 1873; depth, 50 to 75 fathoms; numerous specimens. Station 148A, January 3, 1874; lat. 46° 53' S., long. 51° 52' E.; depth, 550 fathoms; hard ground, gravel and shells; a single small specimen.