

naturally shed from the cortex have not been forthcoming; a non-spicular cortex through which the young sponges can easily make their way to the exterior has been the result.

It is true that in a specimen of *Craniella simillima*, Bwk., also containing large embryos with fully developed spicules, the cortex retains its usual structure. The spicules of the embryos of this species, however, are not of so massive and rigid a character as those of *Craniella schmidtii* (?), so that the embryos may in this case possibly be squeezed through the canals of the parent sponge, which is, however, not a very likely supposition, and it is still possible that even in this sponge expulsion may take place through the cortex, which at a later stage may become modified for the purpose.

*Development.*—Three stages in the embryonal history of the sponge are represented. In the earliest, the embryo is a solid, more or less oval body, about 0·64 to 0·7 mm. long, by 0·4 mm. broad. It appears to consist entirely of rounded or polygonal cells, from 0·025 to 0·035 mm. in diameter; these cells are in turn composed of granular spherules, from 0·002 to 0·004 mm. in diameter; in their midst is one larger than the rest, and somewhat more deeply stained, varying from 0·006 to 0·012 mm. in diameter; it must, I suppose, be regarded as the nucleus, though very different in appearance from ordinary nuclei. On the exterior of the embryo is a thin layer of structureless or finely granular stained material, which extends inwards between the cells, filling the interstices left by them. This material is similar in character and distribution to the structureless blastema which I have described as investing the blastomeres of *Oscarella lobularis*, O. Sch.

The existence of an outer layer of columnar cells could not be demonstrated in embryos at this stage; though traces of such a layer appear in those of the succeeding stage. The subdivision of the large granular cells of the embryo appears to proceed very irregularly; in one embryo, the other cells remaining unchanged, one in the centre has disappeared, its place being taken by a multitude of small (0·008 to 0·01 mm. in diameter) more or less polygonal, finely granular, not deeply stained cells, in which a comparatively large spherical, vesicular nucleus, 0·004 to 0·006 mm. in diameter, with a small spherical deeply stained nucleolus, 0·002 mm. in diameter, can be distinguished.

In embryos of the next stage a structureless gelatinous matrix makes its appearance between the cells, many of which have lost their individuality and appear to be resolved into a crowd of granules; others remain unchanged and are sharply defined against the gelatinous matrix. Numerous finer fibrils traverse the matrix and can be traced into connection with isolated granules and minute fusiform and polygonal cells. Traces of a columnar epithelium are now observable at the poles of the embryo, and spicules make their first appearance. These earliest spicules are oxeas; they are of almost hair-like fineness, and are arranged more or less radiately, their distal ends pointing at right angles to the surface of the embryo, their proximal ends lying tangentially about the centre.