and connected together, and to the surface of the object upon which they were placed, by a transparent structureless substance. This chord when arranged in this manner made up a larger chord from three-twelfths to four-twelfths of an inch in diameter and several inches in length, which formed several coils, some of which crossed or were superimposed upon others. The structure of this chord was the same as that of the *Dendronotus arborescens*.

When the ova are examined under the microscope soon after the extrusion of the spawn, each is seen to consist of a thin transparent membranous case (Pl. X. fig. 1 *a*), with a round, smooth and opake body in its centre (fig. 1 *b*). This membranous case (chorion), which I shall designate the *case-membrane*, is of a circular or oval form, is larger than what is sufficient to contain the opake body within it, and its walls appear to be composed of at least two distinct laminæ*. The opake body within is of a round form, and is chiefly composed of minute cells (nuclei), intermixt with a structureless substance which I suppose to be semifluid, and the whole is inclosed in an external transparent membrane (vitelline membrane†). I shall restrict the term *ovum* to this opake body inclosed in the *case-membrane*‡. The ova of the *Doris bilamellata* vary in size from about 1-250th to 1-280th of an inch in diameter, those of the *Eolis* were nearly of the same size, while those of the *Doris tuberculata* were considerably larger and those of *Doto coronata* smaller than this. The minute cells (nuclei) composing the greater part of the vitelline mass are of a round or oval shape (fig. 3), vary in size in the *Doris bilamellata* from 1-6000th to 1-9000th—the greater number being from the 1-7000th to 1-8000th—of an inch in diameter, and no nucleoli were observed in their interior. A very great number of these ova were examined when subjected to very different degrees of pressure, and their structure appeared to be uniform, presenting no differences at different parts, and entirely composed of the materials we have described. I endeavoured to discover a clear cell in the centre of the vitelline mass, similar to that described by Kölliker and Dr. Bagge as existing in the ova of different species of *Ascaris*, and which plays so important a part in the cleaving of the yolk; but if such a cell exists, it escaped my notice from the opacity of the yolk. No evidence of the presence of this cell was obtained in any of the subsequent changes through which the ovum passed. In the spawn of the *Polycera quadrilineata*, *Doto coronata*, *Doris*

* I observed these laminæ separated from each other in some parts by a distinct interval in several ova of the spawn of the *Eolis*.

† Fig. 2 is a diagram showing the external or vitelline membrane imperfectly filled with its contents.

‡ No doubt the *case-membrane* is an accessory part of the *ovum*, and it is for convenience sake that I use the latter term in this restricted sense.

bilamellata, D. tuberculata and *Dendronotus arborescens,* one ovum is generally contained in each *case-membrane*; but in some portions of the spawn of the *Doris bilamellata,* two and even three ova were found in the same *case-membrane.* The greater number of the *case-membranes* in the spawn of the *Eolis* contained each two, three, four, and even five ova. The size of the case-membranes varies according to the number of ova which it contains. In the spawn of the *Eolis* the shape of the *case-membranes* is easily altered by external pressure, so that instead of being circular or oval they were frequently multangular.

One and sometimes two small transparent cells were seen in some of the ova examined soon after being spawned, adhering feebly to the outer surface of the external membrane (fig. 2 *a*) at the line of the first division of the ovum. These transparent cells were in general very easily detached by pressure, and were sometimes seen lying loose within the *case-membrane.*

I shall first describe the changes observed in the ova of the *Doris bilamellata* in the course of their development. A few hours after the extrusion of the spawn, a transverse groove presents itself on the surface of the ovum (fig. 4), and this gradually deepens and divides it into two equal parts, each part being of a circular form and completely inclosed in its own external membrane (fig. 5). Each of these again undergoes a bipartite division (fig. 6), and the four equal parts of which the ovum now consists proceed in their turn to divide in the same manner (fig. 7). In a portion of spawn examined between eleven and twelve hours after its extrusion, all the ova, with the exception of a very few which presented the primary division into two, had divided into four parts; and eight hours after this, or about nineteen hours from the time of spawning, most of them had divided into eight, some still consisted of four, and a few of six parts. Examined after twenty-seven hours from the time of spawning the ova had the appearance represented in fig. 8, and after fifty hours the appearance represented in fig. 9*. At the end of about seventy-five hours the cells of the ovum were still more subdivided, as is shown in fig. 10. Between this period and the end of the fifth day, the division of the cells of the ovum appeared to have reached its utmost limit, and the ovum gradually changed its shape, becoming somewhat elongated and broader at one end and narrower at the other, as in fig. 11. Up to this time these cells, though adhering by those parts of their external surfaces in contact, could sometimes be detached from each other by the application of pressure—more readily however at the earlier periods

* It is necessary to employ a fresh portion of spawn in each observation, as the development of the ova in those portions of the spawn used in such examinations under the microscope is very seriously disturbed.