of cells thus fortified, and the whole cohering in bundles, so as to present greater resistance to forces tending to displace them in the longitudinal direction than in any other.

Most of the plants which are included in the Linnean class of Cryptogamia have a structure exclusively composed of cells, as has been already shown in the *Fucus vesiculosus*. But the greater number of other plants have, in addition to these cells, numerous ducts or vessels, consisting of membranous tubes of considerable length, interspersed throughout every part of the system. These tubes exhibit different modifications of structure, more especially with regard to the form of the fibres, or other materials, which adhere to the inner surface of their membranes; and these modifications correspond very exactly with those of the vesicles already described as constituting the simpler forms of vegetable tissue. There can be little doubt, indeed, that the vessels of plants take their origin from vesicles, which become elongated by the progress of development in one particular direction; and it is easy to conceive that where the extremities of these elongated cells meet, the partitions which separate their cavities may become obliterated at the points of junction, so as to unite them into one continuous tube with an uninterrupted interior passage. This view of the formation of the vessels of plants is confirmed by the gradation which may be traced among these various kinds of structures. Elongated cells are often met with applied to each other endwise, as if preparatory to their coalescence into tubes. Sometimes the tapering ends of fusiform cells are joined laterally (as seen in Fig. 12,) so that the partitions which divide their cavities are oblique. At other times their ends are broader, and admit of their more direct application to each other in the same line, being separated only by membranes passing transversely; in which case they present, under the microscope, the appearance of a necklace of beads (Fig. 13.) When, by the destruction of these partitions, their cavities become continuous, the tubes they form exhibit a series of contractions at certain intervals, marking their origin from separate cells. In this state they have received