

through the membranes which form their sides, and not by any apertures capable of being detected by the highest powers of the microscope.

If all the cells consist of separate vesicles, as the concurring observations of modern botanists\* appear to have satisfactorily established, the partitions which separate them, however thin and delicate, must consist of a double membrane, formed by the adhesion of the coats of the two contiguous vesicles. But as these coats can hardly be supposed to adhere in every point, we may expect to find that spaces have been left in various parts between them; and that communications exist to a certain extent between all these spaces; so as to compose what may be regarded as one large cavity. These have been denominated the *intercellular spaces*; and they have been supposed to perform, as will hereafter be seen, an important part in the functions of Nutrition.

Fluids of different kinds occupy both the cells and the intercellular spaces. The contents of some is the simple water sap; that of others consists of peculiar liquids, the products of vegetable secretion: and very frequently they contain merely air. In many of the cells there are found small opaque and detached particles of the substance termed by chemists, *Fecula*, of which starch is the most common example. In several parts, and more especially in the leaves, and in the petals of flowers, the material which gives them their peculiar colour is contained in the cells in the form of minute globules. De Candolle has given it the name of *Chromule*.†

The cells of the ligneous portion of trees and shrubs are farther incrustated with particles of a more dense material, peculiar to vegetable organization, and termed *Lignine*. It is this substance which principally contributes to the density and mechanical strength of what are called the *Woody Fibres*, which consist of collections of fusiform, or tapering vessels, hereafter to be described, surrounded by assemblages

\* In particular, Treviranus, Kieser, Link, Du Petit Thouars, Pollini, Amici, Dutrochet, and De Candolle.

† *Organographie*, Tom. 1, p. 19.