

manner, originate from cells. Whether fibres ever form by the conjunction with one another of nuclei, I have never distinctly observed; and such a mode of origin is in my mind doubtful. By far the greatest part of fibres in pathological structures originate from cleavage of a coagulated plasma, as is frequently the case in pseudo-membrane and fibrous polypi of the uterus, or through coagulation in a liquid plasma. Generally in these cases, and always in young fibres, minute fat-molecules are observed upon their surface. Many fibres of pathological formations remain in the embryonic condition, with further development, they continue as cell, nucleus, or cleavage-fibres, without ever constructing a regular tissue.

### 7. Conclusion.

If we adhere to the general conception of the cell theory, and particularly the beautiful parallel drawn by Schwann between crystallization and the formation of fibres—the similarities and dissimilarities of which he has explained—and remember the opinion frequently expressed by him that the formation by layers, ordinarily of two different substances, is the most important character, it must be acknowledged that the physiological formation of cells by the first mode, as conceived by Schwann,\* is the same as that which is pathological. It is, however, to be regretted that Schwann, perhaps for the purpose of drawing the parallel between vegetable and animal tissues, was sometimes obliged to employ the term cell for structures which are not such; for a solid body, or one having no cavity, is no cell.†

As regards pathological tissues not consisting of cells, their immediate development from the latter, as we have

\* "The whole process of the construction of a cell, therefore, consists in the primary origin of a minute corpuscle, the nucleolus, around which is deposited a layer constituting the nucleus; and then, later, a second layer, the cell-substance or contents. The different layers grow by the reception of new molecules among those already existing by intussusception, and a law determines the deposition more strongly in the external than the internal part of each layer, and more so in the most exterior layer than in those within. Under the operation of this law, frequently only the external portion of each layer becomes condensed to a membrane (the membrane of the nucleus, and that of the cell) and the exterior layer is more perfectly developed than that of the nucleus."—Schwann, p. 211. Hence, the formation of the cell is a repetition of the production of the nucleus.

† By the irrational application of the discovery of Schwann, the view has been for some time entertained to reduce physiology entirely to a cell theory, and to consider almost all tissues which have heretofore been recognized as peculiar to be composed of cells. Thus we have pus-cells, blood-cells, ganglion-cells and even muscle-cells, &c. and he who cannot everywhere distinguish cells is in danger of being considered unskilled in microscopic examinations. It is almost overlooked that tissues preceded in their development by cells when fully formed, possess quite different propensities from the latter. When a chemist has learned the properties of sulphuric acid, and later finds it to be composed of sulphur and oxygen, he does not think of applying the qualities of one of these to the former. An application of this kind, however, certainly has been made in physiology. A nerve-tubule, or a muscular fibre, is no longer a cell, nor does it possess the properties, react, or grow like the latter, from which it was developed. From the false view which has been here opposed, our best works on general anatomy are frequently only histologies, and not general anatomy, as originally conceived by the genius of Bichat.