

layer becomes separated, which is the cell-membrane. The new cell grows by endosmosis, and finally is supplied by blood-vessels, and through these material for a repetition of the same process. New cells produced within the former, originally are eccentric and attached to the wall of the parent cell, but afterwards separate and pass towards the centre of the latter, so as to give place to new formations. In this manner several generations of cysts, that is to say, cells within the parent cyst (cell) may be produced. The origin of cysts in organs, in which they do not exist normally, without doubt frequently occurs through the enlargement of an ordinary cell.

Cells produced in diseases exhibit throughout a like relation to those, the result of physiological development. As we have seen, they grow by imbibition and deposit upon the inner surface of their membrane, and exchange or convert chemically their contents. The latter fact is particularly striking in the case of adipose cells of many fatty tumors, which, after having existed some time, are found to contain albumen or fibrine; also in the cells, inclosing blood corpuscles, which afterwards become converted into pigment; and again, in the calcification of cells. On the other hand, cells containing albumen often become filled with fat globules, or with pigment.

Besides the faculty of imbibition and growth possessed by cells, which, according to the ingenious comparison of Schwann, might be considered as crystals formed of organic materials endowed with the capacity of imbibition, they have no other vital property. Movement or contraction in cells is observed quite as little in those produced pathologically, as in such as are physiological. On the contrary, nuclei, as well as cells, have a marked degree of influence upon the production of new cells in the plastic liquid which contains them, as in the case of pus-corpuscles and the cells in cancer.*

4. *Artificial formation of Cells.*

The artificial production of cells from the contact of oil with albumen, as discovered by Ascherson, has often been compared with that which takes place in the living body. Such cells, however, although composed upon the principles

* Unfortunately the conditions of this influence are unknown, but they appear to depend upon accidental causes, and the nature of the cystoblastema. Thus, fermentation is induced in a solution of sugar, by the addition of yeast, but the ferment corpuscles disappear. If, however, the yeast be mingled with a vegetable juice containing gluten, the former reproduces itself from the latter. Again, the products of fermentation differ when yeast or when rennet is added to a solution of sugar. These observations have no other object than to show that what exercises an influence upon the production of the various forms of tissues, are causes certainly accessible to the naturalist, and not hypothetical vital powers.