

undoubted instance I have not observed, but have only sometimes seen the beginning of the process.*

The cells are spherical, ovoid, flattened, or polyhedral from mutual pressure, or sometimes have filiform prolongations, which are frequently split up into delicate filaments. The cell-wall closely surrounds the nucleus, or is separated from it by a layer of softer granular, or amorphous semi-liquid contents, which may be constantly increased by endosmosis. The latter is rendered evident when cells are treated with water, when they are observed to dilate and then burst.

The formation of a nucleus is not an essential condition to the production of cells, for there are instances in which the latter occur without having been preceded by a nucleus. All non-nucleated cells, however, do not belong to this category, for frequently a nucleus originally exists, but afterwards becomes indistinct, or disappears entirely, by solution in the cell contents. Cells may form even after the exuded plasma is separated from the body. This may be observed with certainty in the fluid of a blister. There is, however, nothing very remarkable in the fact, for we observe, under the influence of the warmth of incubation, entire organs formed from the organizable liquid of the germinal vesicle in the egg of birds.

2ND. MODE OF CELL-FORMATION.

Small bodies appear, ordinarily, spherical and resembling fat granules, to which, in fact, they often correspond in their relation, but also frequently may consist of proteine, or sometimes of pigment. These average in size from the $\frac{1}{300}$ to the $\frac{1}{400}$ of a millimetre in diameter, and become associated, in groups of from ten to forty or more, by means of a coagulated albuminous matter soluble in acetic acid. The groups of granules are mulberry-like globules, measuring on the average the $\frac{1}{30}$ of a millimetre, and in this condition are frequently observed. Only at a later period does a cell-membrane rise upon these globules, occurring by the separation of an exterior soft layer resembling coagulated albumen, and, in the mean time, the granules within gradually disappear by lignefaction. This, however, only occurs when the contents consist of proteine or fat, and then, ordinarily, a nucleus, rarely more, becomes visible, which appears as if it had been previously formed. This is a peculiar mode of cell-formation, in which nucleoli are formed in large quantity (the first layer), from which a

* That cells do increase by division in the animal body, appears evident in the derm of groups of cells in articular cartilage.—Trans.