

the inner delicate skin (epithelium) which lines the whole intestinal tube from the mouth to the anus, together with all the glands connected with it (lung, liver, salivary glands, etc.); out of the middle germ-layer lying between the two others arise all the other organs, muscles, bones, blood-vessels. (Compare my "Anthropogeny," and my "Studies on the Gastræa Theory," for the processes of the individual development of man and the animals.)

Now, the processes by which the various and exceedingly complicated parts of the fully-formed body of vertebrate animals arise out of such simple material—out of the three germ-layers composed only of cells—are, in the first place, the repeated division, and consequently the increase of cells; in the second place, the division of labour or differentiation of these cells; and thirdly, the union of the variously developed or differentiated cells, for the formation of the different organs. Thus arises the gradual progress or perfecting which can be traced step by step in the development of the embryonic body. The simple embryonic cells, which are to constitute the body of the vertebrate animal, stand in the same relation to each other as citizens who wish to found a state. Some take to one occupation, others to another, and work together for the good of the whole. By this division of labour, or differentiation, and the perfecting (the organic progress) which is connected with it, it becomes possible for the whole state to accomplish undertakings which would have been impossible to the single individual. The whole body of the vertebrate animal, like every other many-celled organism, is a republican state of cells, and consequently it can accomplish organic functions which the individual cell, as a solitary individual (for