

differs widely from what we have seen in fishes, and approaches to the structure of the higher classes of vertebrata. The body of each vertebra, instead of having at its posterior surface a cup-like cavity, terminates by a projecting ball, which is received into the cavity in the anterior surface of the next vertebra, so as to compose a true ball and socket joint, capable, when other circumstances permit, of a rotatory motion. But the vertebræ of the tadpole, as we have seen, are constructed on the model of those of a fish; that is, have cup-like cavities on both their surfaces, which play on balls of soft elastic matter, interposed between them. We should naturally be curious to learn the mode in which the transition from this structure to that of the frog is accomplished. By carefully watching the progress of ossification, while this change is taking place, Dutrochet found that the gelatinous ball, on which both the adjacent vertebræ play in the tadpole, becomes gradually more solid, and is converted into cartilage. This cartilage afterwards becomes united by its anterior surface to the vertebra which is in front of it; and the whole then becomes ossified, so as to compose only one bone, its posterior surface remaining distinct, and continuing to play within the cup-like hollow of the vertebra which is behind it. The cartilaginous coccygeal vertebræ of the tadpole are lost long before there is time for their being ossified; but those nearest to the body are consolidated into one long and straight os coccygis, which, being joined to the sacrum at an angle, gives rise to the strange deformity observable at that part of the back of a frog; for it here looks as if it had been broken. The spinal cavity is, at the same time, obliterated; that portion of the spinal marrow which had passed through it, in the aquatic life of the animal, being now withdrawn.

The theory of the spinal origin of the cranial bones receives considerable support from their structure and relative position in the skeleton of the frog. The cavity for the lodgement of the brain, which is enclosed by these vertebræ, is perfectly continuous in the same line with the spinal ca-