

dant nourishment, but continue to maintain an exact equilibrium between the expenditure and the supply; so that the horns of the cameleopard are never shed, and remain permanent bony structures.

A farther modification of this process occurs in the construction of the horns of the ox and of the sheep; for in these the bony processes arising from the frontal bones are invested with a covering composed of horn, the nature of which is totally different from bone. Two tubercles may be seen in the young calf, proceeding from the bones of the forehead: the skin covering these tubercles, unlike that which precedes the antlers of the deer, is unusually thick and hard. As the skull expands, this portion of integument becomes more and more callous, till it is converted, by the action of the subjacent vessels, into a solid, hard, elastic, and insensible fibrous substance, fitted to give effectual protection to the subjacent bony layers which are forming underneath it. The highly vascular membrane, from which these new structures chiefly arise, appears to have different powers of production at its two surfaces; for while the inner surface is forming the osseous portion of the horn, and supplying the phosphate of lime required for the construction of its plates and fibres, the exterior surface is adding successive layers of horny substance to the inner side of those portions which had been before deposited. These two operations, which offer a remarkable contrast, both as to the mode of their performance, and as to the nature of the resulting products, are carried on at the same time, and by the same organ, but on different sides. The bony basis of the horn is an organic structure, which continues to be nourished by vessels forming part of the general system: the horn is a mere excretion, which appears to be destitute of vessels, and is, consequently, removed from the influence of the living powers. Thus the growth of horn is somewhat analagous to that of shell; for the layers which compose it are deposited in succession; each new layer is agglutinated to the inner surface of the preceding; and each has the shape