

BOOK REVIEWS

GROWTH OF BONE.

The Growth of Bone—Observations of Osteogenesis. An Experimental Enquiry into the Development and Reproduction of Diaphyseal Bone. By Sir William Macewen, F.R.S., Glasgow. James Maclehose & Sons, Publishers to the University, 1812. 10s net.

Sir William Macewen has done the medical profession a distinct service in giving it the full benefit of his long and careful investigations on the growth of bone. Sir William opens his book by stating that "in the foetal shaft diaphyseal ossification proceeds through cartilage." The nuclei of the cartilage cells divide, become osteoblasts, and the cartilage disappears. Diaphyseal cartilage would seem to be a phase of bone formation. In the adult bone regeneration is through a transition stage of cartilage or by division of the bone cells into osteoblasts. When the conditions are favorable osteoblasts are formed directly from the bone cells; where the conditions are not favorable the formation of bone is through cartilage and slower. When cartilage exists the cell may free itself from its envelope and rapidly proliferate. The nuclei thus set free are like the neighboring osteoblasts, and play the same rôle. The osteoblast is the free form of the bone cell.

Cartilage exists in the epiphyseal plates. There is freedom from pressure at the epiphyseal lines, and the osteoblasts have an opportunity to grow. "The periosteum keeps it within the confines of the shaft." When the cartilage at the epiphysis has disappeared proliferation is retarded or disappears. The conditions regarding increase of osseous structure at the epiphysis and the diaphysis become the same. If a portion of the shaft of a bone be removed the ends will form new bone tissue and fill in the space. If the epiphyseal cartilage be removed the length is not solely limited to the epiphyseal cartilage.

Bone is living tissue and, as such, is undergoing constant change as absorption and repair. When a bone is stimulated the cells in the interior escape into the Haversian canals and find their way to the surface of the bone under the periosteum, where they find room to expand, and proliferate. Pressure on bone causes its absorption to become much more rapid than when there is no such pressure.

On the influence of the periosteum in the formation of bone the author takes the view that it is very little if at all present. There