

demonstrating the regenerative powers of bone itself, apart from periosteum, and more particularly in young animals. These may be briefly summarized. Although grafts of periosteum into the neck will not grow osseous tissue, thin shavings of bone itself, similarly transplanted, will double in length and thickness in most cases. In a number of experiments, pieces of bone an inch or more in length, or even comprising the whole shaft of a long bone, were successfully transplanted from one dog to another. In a classical case, Macewen built up a new humerus for a lad who had lost the shaft by acute necrosis, and although the wedges of bone, derived from excisions for deformed legs, were not covered with periosteum, they grew and consolidated, and now, more than thirty years after, aided by the great growth of the upper epiphysis which has contributed the bulk of the humerus, the arm is strong and useful. In other cases, fragments of bone have been replaced to fill gaps in the skull, with excellent results.

Many surgeons besides Macewen have achieved success with bone transplantation. For instance, a piece of the fibula has been inserted to supply the defect in the humerus left by the removal of an intra-osseous cyst, and consolidation took place. The lower jaw and the tibia have several times been replaced in similar fashion by bone grafts from the same patient.

Macewen has secured osseous growth by transplantation of bone chips into the omentum, and also after burying glass tubes in the middle of a long