

called *lacunae*, with tiny canals or *canaliculi*, leading from them, while in the centre of the concentric rings is a hole, the opening of a larger *Haversian* canal running straight down the bone. When the shaving is taken down the length of the bone, as in Fig 9, the Haversian canals and their canaliculi become more evident. Through these canals, the blood is always circulating which nourishes the bone, feeds it so that it grows and continually renews itself and, in fact, maintains its active life.

Bone tissue is composed of *earthy* and *animal* matter—about two-thirds of the former, and one-third of the latter. The earthy matter is chiefly *phosphate* and *carbonate of lime*. The

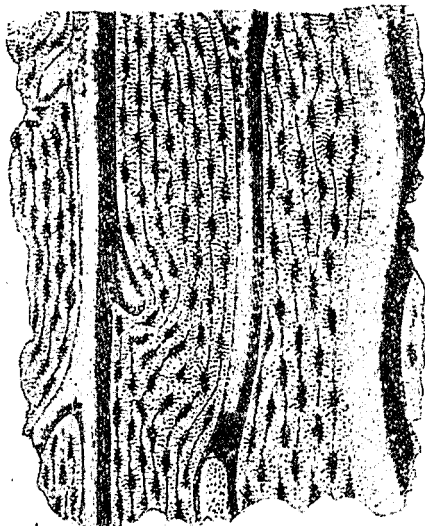


FIG. 9.—Longitudinal Section of a long bone, showing the Haversian canals, lacunae and canaliculi.

animal matter is chiefly *collagen*, which is converted into *gelatin* by boiling.

The chemical composition of all bones varies very greatly at different ages of life: in infants we find—to use the popular expression—that the bones are all “gristle,” that is to say, they are chiefly composed of cartilage, which has not yet become fully impregnated with earthy salts. In childhood and adult age, these mineral constituents gradually increase in amount, until, in old age, the mineral portion predominates over the animal tissue, that is to say, the earthy salts are in excess of the animal matter. The bones in infancy, in adult life and in old age have therefore been aptly compared to new wood, living wood, and dead wood. In infancy, the bones bend easily, but do not often break; in old age, the bones are abnormally brittle, and are therefore abnormally prone to fracture. This will explain

facts which you will often observe in practice that children suffer from what is called *greenstick* fractures, the bones cracking but not breaking right across: and that in old age the merest slip will sometimes cause complete fracture of even the strongest bone in the body.

(To be continued.)

Special Feeding.*

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[Concluded from page 332.]

II. *Bright's disease*.—This is usually a disease of years; a complete cure is not anticipated, but a regimen must be instituted which will give the patient the greatest amount of comfort possible and the greatest aid in continuing his work. It is believed to be caused by alcoholism or improper diet. There is an overproduction of uric acid, a functional derangement of the liver; the urine is of a low specific gravity and is passed in larger amounts than is normal; thirst is increased. The points aimed at in treatment are to protect the kidneys from irritation, to strengthen the heart, and to maintain the general health. In early stages of the disease much may be accomplished by dietetic treatment. As the kidneys are the chief route for the excretion of products of nitrogenous waste, foods rich in proteids must be avoided. If a purely vegetable diet is tried, the patient grows too anæmic, and the kidneys are favoured at the expense of the general health.

A milk diet is resorted to occasionally—always, during acute attacks—and sometimes it is adopted as a routine measure, once or twice a year, for several weeks at a time. The kidneys are usually so much improved after such a course that some meat can be borne and the patient will grow strong faster. The quantity of milk taken daily will depend on the age and strength of the patient and the amount of exercise he is able to take. From five to seven pints a day are enough for a person confined to his house and room. This is better borne if given at three hour intervals. It is usually better not to begin the milk diet abruptly, but to gradually substitute a glass of milk for some article of food until all others have been withdrawn; and the change to a more general diet is made in like manner. Milk is deficient in carbohydrates, and if the patient loses weight on it, though otherwise it agrees, a little farinaceous food may be added in the shape of

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[previous page](#)

[next page](#)