vessel anastomose with the arteries of the cancellous and compact tissues. In most of the flat, and in many of the short spongy bones, one or more large apertures are observed, which transmit to the central parts of the bone vessels corresponding to the nutrient arteries and veins. The **veins** emerge from the long bones in three places (Kölliker): (1) one or two large veins accompany the artery; (2) numerous large and small veins emerge at the articular extremities; (3) many small veins pass out of the compact substance. In the flat cranial bones the veins are large, very numerous, and run in tortuous canals in the diploic tissue, the sides of the canals being formed by thin lamellæ of bone, perforated here and there for the passage of branches from the adjacent cancelli. The same condition is also found in all cancellous tissue, the veins being enclosed and supported by osseous material, and having exceedingly thin coats. When a bone is divided, the vessels remain patulous, and do not contract in the canals in which they are contained. **Lymphatic vessels,** in addition to those found in the periosteum, have been traced by Cruikshank into the substance of bone, and Klein describes them as running in the Haversian canals. **Nerves** are distributed freely to the periosteum, and accompany the nutrient arteries into the interior of the bone. They are said by Kölliker to be most numerous in the articular extremities of the long bones, in the vertebræ, and in the larger flat bones.

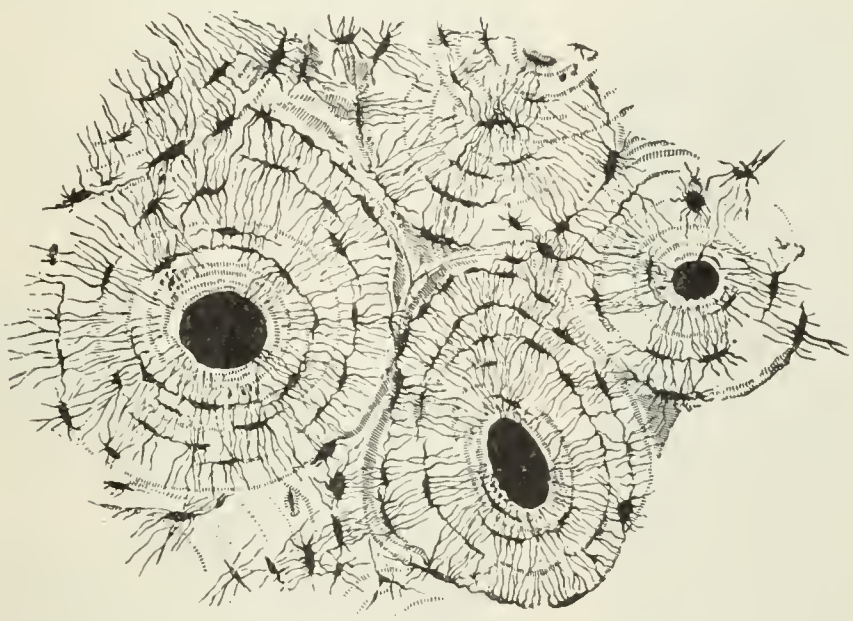

Fig. 73.—Transverse section of compact tissue bone. Magnified. (Sharpey.)

Minute Anatomy.—A transverse section of dense bone may be cut with a saw and ground down until it is sufficiently thin.

If this be examined with a rather low power the bone will be seen to be mapped out into a number of circular districts each consisting of a central hole surrounded by a number of concentric rings. These districts are termed **Haversian systems**; the central hole is an **Haversian canal**, and the rings are layers of bony tissue arranged concentrically around the central canal, and termed **lamellæ**. Moreover, on closer examination it will be found that between these lamellæ, and therefore also arranged concentrically around the central canal, are a number of little dark spots, the **lacunæ**, and that these lacunæ are connected with each other and with the central Haversian canal by a number of fine dark lines, which radiate like the spokes of a wheel and are called **canaliculi**. Filling in the irregular intervals which are left between these circular systems are other lamellæ, with their lacunæ and canaliculi running in various directions, but more or less curved (Fig. 73); they are termed **interstitial lamellæ**. Again, other lamellæ, found on the surface of the bone, are arranged parallel to its circumference; they are termed **circum-**