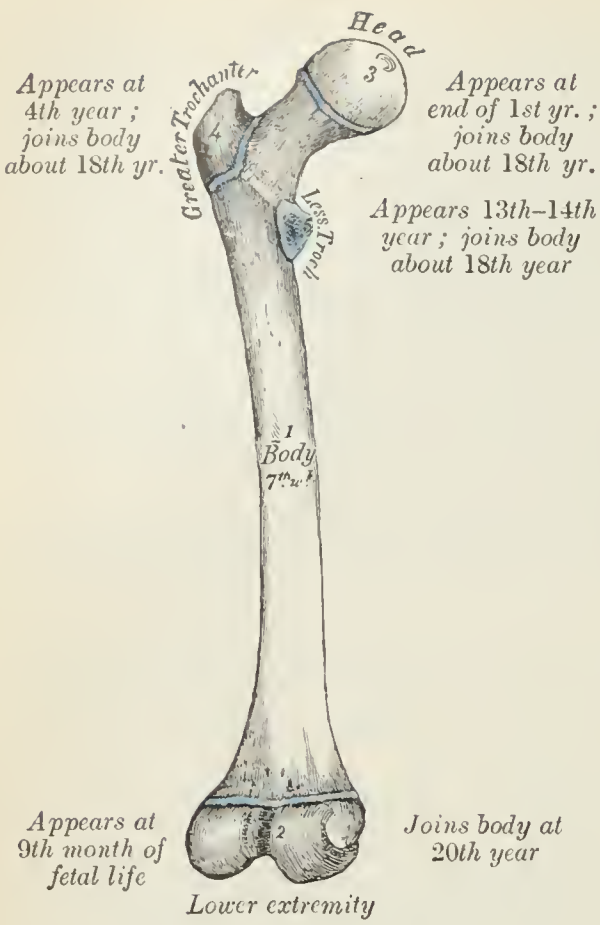

Fig. 252.—Plan of ossification of the femur. From five centers.

0.4 inch in diameter and consists of compact bone from which a number of thick trabeculæ pass at right angles to the main longitudinal system. The inner structure of the bone is here evidently adapted to the efficient distribution of the stresses arising from this ligamentary attachment.

"Near the distal end of the femur the longitudinal trabeculæ gradually assume curved paths and end perpendicularly to the articular surface at every point. Such a structure is in accordance with the principles of mechanics, as stresses can be communicated through a frictionless joint only in a direction perpendicular to the joint surface at every point.

"With practically no increase in the amount of bony material used, there is a greatly increased stability produced by the expansion of the lower femur from a hollow shaft of compact bone to a structure of much larger cross-section almost entirely composed of spongy bone.

"*Significance of the Inner Architecture of the Distal Part of the Femur.*—The function of the lower end of the femur is to transmit through a hinged joint the loads carried by the femur. For stability the width of the bearing on which the hinge action occurs should be relatively large. For economy of material the expansion of the end bearing should be as lightly constructed as is consistent with proper strength. In accordance with the principles of mechanics. . . . . ,

Fig. 253.—Epiphysial lines of femur in a young adult. Anterior aspect. The lines of attachment of the articular capsules are in blue.

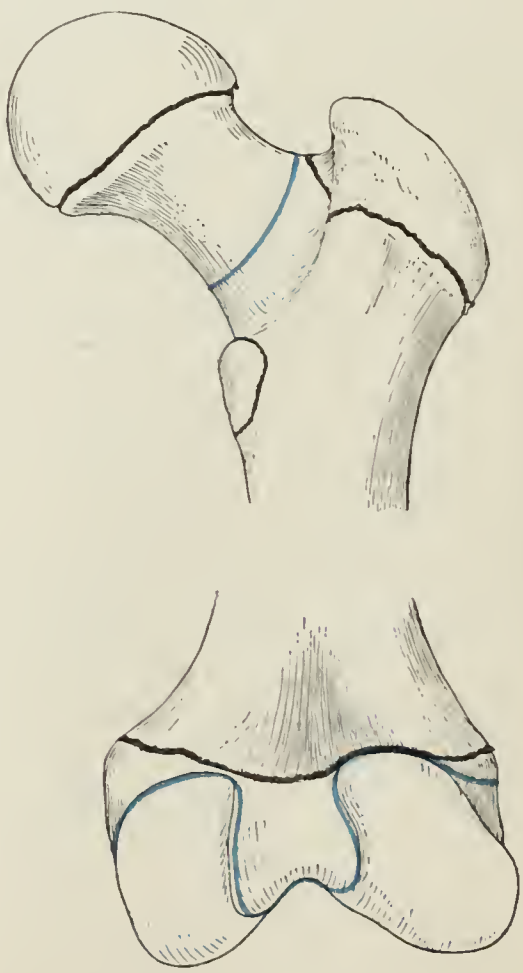

Fig. 254.—Epiphysial lines of femur in a young adult. Posterior aspect. The lines of attachment of the articular capsules are in blue.