They curve outwardly and upwardly to cross in radiating smooth curves to the opposite side. The lower filaments end in the region of the greater trochanter: the adjacent filaments above these pursue a more nearly vertical course and end in the upper portion of the neck of the femur. The trabeculæ of this group are thin and with wide spaces between them. As they traverse the space between the medial and lateral surfaces of the bone they cross at right angles the system of curved trabeculæ which arise from the lateral (outer) portion of the shaft. (Figs. 247 and 249.)

"*b. The Principal Compressive Group.*—This group of trabeculæ (Figs. 247 and 249) springs from the medial portion of the shaft just above the group above-described, and spreads upward and in slightly radial smooth curved lines to reach the upper portion of the articular surface of the head of the femur. These trabeculæ are placed very closely together and are the thickest ones seen in the upper femur. They are a prolongation of the shaft from which they spring in straight

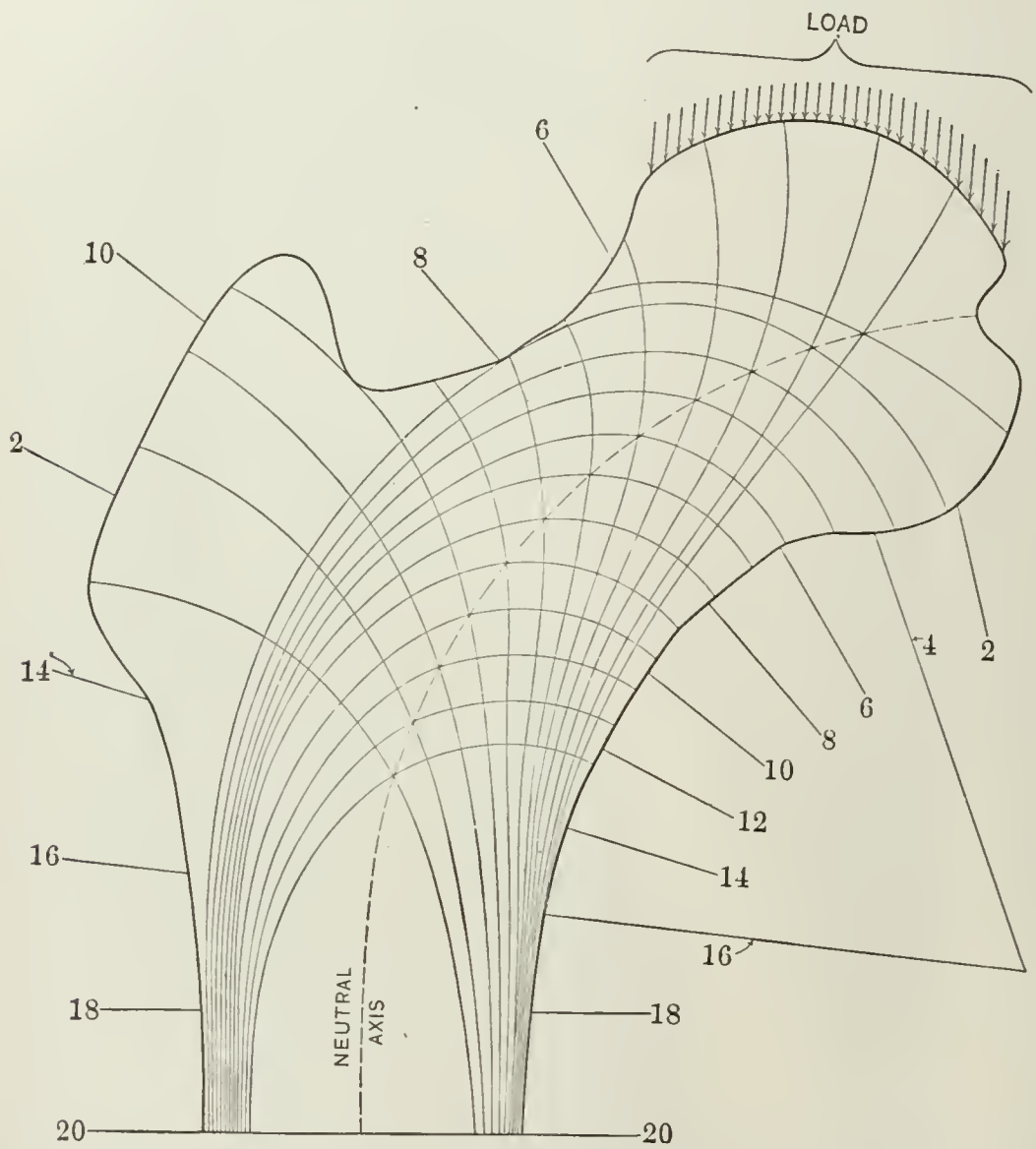

Fig. 248.—Diagram of the lines of stress in the upper femur, based upon the mathematical analysis of the right femur. These result from the combination of the different kinds of stresses at each point in the femur. (After Koch.)

lines which gradually curve to meet at right-angles the articular surface. There is no change as they cross the epiphyseal line. They also intersect at right-angles the system of lines which rise from the lateral side of the femur.

"This system of principal and secondary compressive trabeculæ corresponds in position and in curvature with the lines of maximum compressive stress, which were traced out in the mathematical analysis of this portion of the femur. (Figs. 247 and 250.)

"*B. Lateral (Tensile) System of Trabeculæ.*—As the compact bone of the outer portion of the shaft approaches the greater trochanter it gradually decreases in thickness. Beginning at a point about 1 inch below the level of the lower border of the greater trochanter, numerous thin trabeculæ are given off from the outer portion of the shaft. These trabeculæ lie in three distinct groups.

"*c. The Greater Trochanter Group.*—These trabeculæ rise from the outer part of the shaft just below the greater trochanter and rise in thin, curving lines to cross the region of the greater trochanter and end in its upper surface. Some of these filaments are poorly defined. This group