

our anticipations are realized in the most perfect manner. In the pelvis, too, we have the thyroid hole and ischiatic notches, furnishing subordinate instances of contrivance to save material weight; they are merely deficiencies of bone, where solidity could not have given additional strength.

The HIP JOINT exhibits the perfection of the ball and socket articulation. It allows the foot to move round in a circle, as well as to have the great range of backward and forward motion, exhibited in the action of walking. When we see the elastic, tough smooth cartilage, which lines the deep socket of this joint, and the similar glistening covering of the ball or head of the thigh bone, and the lubricating synovia poured into the cavity, by appropriate secretories, and the strong ligaments giving strength all around we feel how far the most perfect of man's works fall short of the mechanism displayed by nature.

The THIGH BONE is remarkable for its projections, called trochanters, to which the moving muscles are fixed, and which lengthen considerably the lever by which the muscles work. The shaft of the bone is not straight, but has a considerable forward curvature. Short sightedness might suppose this a weakness, because the bone is a pillar supporting a weight; but the bend gives it, in reality, the strength of the arch, to bear the action of the mass of muscle called vastus, which lies and swells upon its fore part.

The KNEE is a hinge joint of complicated structure; and it claims the most attentive study of the surgeon. The rubbing parts are flat and shallow, and therefore the joint has little strength from form; but it derives security from the numerous and singularly strong ligaments which surround it. The ligaments on the inside of the knees resemble, in two circumstances the angular ligaments of joints, namely in having a constant and great strain to bear, and yet in becoming stronger always as the strain increases. The line of the leg, even in the most perfect shape, bends inward a little at the knee, requiring the support of the ligaments, and in many persons it bends so

very much: but the inclination does not increase with age. The legs of many weakly in-kneed children become straight by exercise alone. This inclination at the middle of the legs, by throwing a certain strain on the ligaments, gives an increase of elasticity to the limb, in the actions of jumping, running, &c. In the knee there is a singular provision of hose cartilages, which have been called friction cartilages, from a supposed relation in use to friction wheels; but their real effect seems to be to accomodate, in the different positions of the joint, the surfaces of the rubbing bones to each other. The great muscles on the fore part of the thigh are contracted into a tendon, a little above the knee, and have to pass over and in front of the knee, to reach the top of the leg, where their attachment is. The tendon, in passing over the joint, becomes bony, and forms the patella, or knee pan, often called the pulley of the knee. This peculiarity enables the muscles to act more advantageously by increasing the distance of the scope from the centre of motion. The patella is, moreover a sort of shield or protection to the fore part of this important joint. The leg below the knee, like the fore arm already described, has two bones. They offer spacious surface of origin for the numerous muscles required for the feet; and they form a compound pillar of greater strength than the same quantity of bone, as one shaft would have had. The individual bones also, are angular, instead of round, hence deriving greater power to resist blows, &c.

The ANKLE JOINT is a perfect hinge of great strength. There is in front of it an annular ligament by which the greater part of the tendons passing downwards to the foot and toes, are kept in their places. One of these tendons passes under the bony projection of the inner ankle, in smooth the appropriate groove, exactly as if a little fixed pulley were there. The heel, by projecting so far backwards, is a lever for the strong muscles to act by, which from the calf of the leg, and terminate in the tendo achillis. These muscles, by drawing at it, lift the body, in the actions of standing on the toes, walking, dancing, &c. In the foot of the negro, the heel is so long as to be ugly, in