

With regard to the articulation of the bones, we cannot mistake the reason of the surfaces of contact being enlarged. Now the advantage which is obtained from this expansion of the ends of the bones, is gained without the motion of the joint being impeded. In machinery it is found that, if the pressure be the same, the extension of the surfaces in contact does not increase the friction. If, for example, a stone or a piece of timber, of the shape of a book or a brick, be laid upon a flat surface, it may be drawn across it with equal facility, whether it rests upon its edge or upon its side. The friction of the bones, which enter into the structure of the knee joint, is not increased by their greater diameter: while obvious advantages are gained by their additional breadth; the ligaments which knit these bones give more strength than they otherwise would, and the tendons which run over them, being removed to a distance from the centre, have more power.

“ first instance. In the same way the stones which form an arch,  
 “ of a large span, must be of the hardest granite, or their own  
 “ weight will crush them. The same principle is applicable to  
 “ the bones of animals. The material of bone is too soft to  
 “ admit an indefinite increase of weight; and it is another illus-  
 “ tration of what was before stated, that there is a relation  
 “ established through all nature: that the structure of the very  
 “ animals which move upon the surface of the earth is propor-  
 “ tioned *to its magnitude*, and the gravitation to its centre.”—  
 Animal Mechanics.