

the leg, which is termed the *semimembranosus*. Frequently the structure is rendered still more complex, by the interposition of several tendinous layers among the fleshy fibres. This arrangement, which constitutes a *complex muscle*, (as shown in Fig. 42) occurs, for example, in the *Solæus*, or large muscle, which raises the heel, and forms the thickest part of the calf of the leg.

It very commonly happens in the animal frame, as it does in other machines, that the presence of the moving agent in the place where its action is wanted, would be exceedingly inconvenient. The usual plan adopted for transferring the effect of the moving power to a distant point is the employment of a rope, or strap. Such is precisely the office of the *tendons*, which are long straps, attached at one end to the muscle, and at the other to the bone, or other part intended to be moved. (See Fig. 43.) If the hand, for instance, had been encumbered with all the muscles which are necessary for the movements of the fingers, it never could have performed its office as a delicate mechanical instrument. These muscles accordingly are disposed high up on the arm, and their tendons are made to pass along the wrist to the joints of the fingers which are to be moved.

The employment of tendons is accompanied with this farther advantage, that by their intervention the united power of all the fibres of the muscle may be obtained, and concentrated upon any particular point. In this respect, likewise, they resemble a rope, at which a great number of men are pulling at the same moment, and whose combined strength is thus brought into action. Another principal use of tendons is, that a different direction may, by their means, be given to the moving power, without altering its position. Many instances occur of their application in this manner, by their being made to pass round corners of bones, and along grooves, or channels, expressly formed for their transmission, and producing the effect of pulleys.

In a great number of muscles, the fibres, instead of running parallel to one another, are made either to converge, or to diverge, in order to suit particular kinds of movements; and