

pulp begins to shrink, and the diameter of the tube diminishes; so that it exhibits a tapering form at both ends. Thus, mere variations in the bulk and the action of the pulp, accompanied with changes in that of the capsule, are sufficient to account for every diversity in the form and condition of the resulting structures.

Among the mechanical uses of the integument, that of serving as a cushion for relieving the more prominent parts of the frame, and especially of the bones, from unequal pressure ought not to be overlooked. This object is promoted by the interposition of a layer of *fat*, which is another animal substance entitled to be enumerated among the elements of its structure. It consists of an oily fluid, composed, according to the analysis of Chevreuil, of two constituent principles, which he has distinguished by the terms *stearin*, and *eluin*.\* In warm-blooded animals the temperature of the body is always sufficient to preserve this compound substance in a fluid form; but it is prevented from being diffused through the cellular texture by being contained in separate vesicles of extreme minuteness.† Hence, the whole mass of the fat, which is thus formed of an aggregation of these vesicles, has not the appearance of being fluid, but seems to be composed of small grains united by membranous investments into larger masses; a structure peculiarly adapted to the purposes of a soft cushion, retaining only a small share of elasticity, and yielding only in a certain limited degree to pressure.

### § 5. *Muscular Power.*

IN Machines contrived by human skill the chief art consists in devising expedients for regulating and directing the

\* These two constituent principles possess very different degrees of cohesion; eluin being liquid, and stearin nearly solid, at the usual temperature: and the consistence of the compound will, therefore, depend altogether on the proportions in which they are united. Thus a ready expedient has been provided for varying the mechanical properties of fat, according as circumstances required.

† Dr. Monro estimated their diameter at between the 800th and 600th of an inch. But their size varies in different animals.