

vessels at each vigorous output of blood from the heart; such an immunity is sometimes beaten down, and we have the disease arteriosclerosis and also aneurysms—the latter of which very often lead to sudden death on the slightest exertion. Also, the compensatory functions of the heart to various conditions of the circulation is due to the nervous mechanism—both vagal and sympathetic—and is included in the list of protective means.

Another great defensive factor in the mechanism of the circulatory system exists in the arterioles, which are controlled by the vaso-motor centre in the bulb. And were it not for this caloric regulator, present in all homoiothermal animals, one would freeze to death when the atmospheric temperature happened to be a little below normal, or one would die as the result of excessive heat when the atmospheric temperature is a few degrees above the normal body-temperature.

Nor can one over-rate the advantageousness of the existence of auriculo-ventricular valves and of valves between the auricles and the large arteries; at the same time, the usefulness of the chordæ tendinæ, and the contractile powers of the muscoli papillares to which the latter are attached, must also be remembered.

The *involuntary* reflex closure of the glottis is of extraordinary importance in the prevention of the entrance of foreign bodies into the larynx—which would lead to choking and death. The elasticity of the skin serves as a great protection to the body. The value of this property is often taken advantage of by surgeons. For example, by the removal of a tumour of the breast or by excision of epithelioma of the lip or by excision of a large piece of scrotum in varicocele, a large piece of skin is necessarily removed. To make up for this deficiency, the surgeon pulls together the opposite sides of this exposed wound surface and sutures them, thus covering up the space left by the removal of the skin.

We now come to consider the question of Chemical Immunity. It must be remembered that the natural defences of the body are also partially composed of substances whose mode of action is chemical, as opposed to such whose mode of action is of a physical or of a vital nature. A very good illustration of what is meant by this form of immunity, is a factor which plays an important part in the protection of the individual. I allude to the clotting of blood. This is almost a purely chemical action. And, were it not for the clotting of blood, surgery, even of the slightest kind, would be dangerous. Unfortunately, the lack of this coagulating property of the blood exists in hæmophilics. But, very fortunately, hæmophilia is rare.