

through the aorta, close accurately, so as to prevent a reflowing into the auricle. There is the same provision between the right auricle and ventricle, and also at the mouth or commencement of the aorta and pulmonary arteries, and the veins which communicate with the right auricle. These valves are of beautiful structure: they are composed of three flaps that join accurately over each other; and to prevent their being pushed by the impetus of the blood beyond their proper position, they have little tendonous cords attached, of exactly the length required. In the child before birth, as it cannot breathe, and therefore the lungs are not used, there is a small hole or communication between the right and left auricles, by which the blood from the veins flows directly through to the arteries, and thus avoids going to the lungs; at birth this hole closes up whenever the child begins to respire. The aorta, or great artery of the body, after it leaves the heart, passes upwards in the form of an arch, when it gives off the carotid branches to supply the brain, and face, and arteries, to the arms and chest. It then bends downwards, and gives off branches to the stomach and other viscera; and when it comes to the lower part of the belly, it divides into two parts, which pass out and become the arteries of the thighs and legs. The arteries of the body are composed of three coats or coverings, the principal one being a thick muscular ring, which encircles the artery, and which contracts and expands so as to assist in sending the blood onwards. The principal trunks of the arteries lie deep in the fleshy parts of the body; but their ramifications are so numerous and minute, that they may be said to pervade every particle of the human structure—bones, tendons, and every other texture.—These extreme branches of the arteries being so minute, anatomists have had great difficulty in tracing the exact point at which they pass into veins. They

do so, however, as is seen on the surface of the brain. The veins are another system of vessels which return the blood from the extremities of the body to the heart. They are larger and flaccid than the arteries, and are distinguished from them by having no pulsation. A large vein generally accompanies the corresponding artery, but the great proportion of the veins lie more towards the surface and are easily distinguished swelling out under the skin. The numerous veins from the lower extremities join into one trunk in the belly, which vein, after passing through the liver, as will be afterwards described, joins the right auricle of the heart, the blood from the upper half of the body joining also by another similar vein. In the veins of the extremities that hang downwards, and are apt to be gorged with blood, there are inserted numerous valves, at short distances, which prevent reflux of any kind.

#### THE BRAIN AND NERVES.

Like the arteries, the nerves branch out into every part of the body, however minute; and it is by the influence of the nerves communicating with the brain, that motion and sensation are derived. The brain is the great centre of the nervous system: it is contained within the bones of the head, and consists of a large pulpy mass, formed on its surface into numerous waved or convoluted furrows: inside, it is of a whitish cream color, and of the consistence of soft cheese: there are two large cavities in the centre, called ventricles, and three smaller ones below, all communicating with each other. The brain is also supplied with numerous blood-vessels, and there is always more or less of a fluid serum in its hollows. The internal structure of the brain has been accurately studied and minutely described by anatomists, but still these descriptions throw no light on the nature of its functions. The human brain is divid-