

lars—which give origin to as many tendinous slips, which are known as *corda tendina*, they are inserted in a fibrous membrane in the region of the auriculo-ventricular opening and these are named *valvula tricuspis*.

The venous blood having accumulated in the right auricle descends into the right ventricle, from which it is propelled through the pulmonary artery to the lungs. At the commencement of the pulmonary artery are found three valves which in form are half moon shaped—hence are termed semi-lunar valves,—their function is to prevent the return of the venous blood into the right ventricle.

The left auricle has scarcely any anatomical or structural differences than those observed in the right auricle, although its cavity is somewhat smaller, and its walls are somewhat thicker than those found on the right side; it is the receptacle for arterial blood, which is returned to it, after purification in the lungs, by vessels known as pulmonary veins.

The left or arterial ventricle, is the reservoir for arterial blood; which is destined to preserve the integrity of the animal economy, and guard against the wear and tear of the vital machinery; its functions requiring more muscular power than that of the right ventricle, we find that its walls are much thicker, sometimes three times as thick as those found on the right side. This peculiarity of two ventricles, viz.: the muscular mechanism, enables us, when the heart is detached from the body, to determine which is the right or left ventricle.

The channel of communication between the left auricle and ventricle is named, as is the case with the opposite side of the heart—auriculo-ventricular opening; it is furnished, however, with *two* instead of three valves; these are termed *valvula bicuspis*. The left ventricle is one of importance for our consideration, from the fact that here originates the great aorta—a vessel of considerable magnitude—engaged in distributing, by means of arterial ramifications, the arterial blood to all parts of the human body; at its base, near the ventricle, we find three valves named semi lunar; they are similar in function and structure to those found at the base or origin of the pulmonary artery. This ventricle has no direct communication with the left and *vice versa*, between the two we find a strong muscular partition termed *septum ventriculorum*; hence, the heart is a double organ, one is employed in receiving pure arterial blood and in circulating it; the other receives venous blood and distributes it throughout the lungs for purification.

The heart is located in the region of the fourth, fifth, and sixth, dorsal vertebræ right within the central region of the cavity of the chest. It appears that in the bovine—ox species—the heart differs in construction from that of the horse, in the following peculiarities: In the heart of an ox is found a small bone, termed by anatomists “so

cordis;” it probably is intended to serve as the attachment for the tendinous and muscular fibres which enter into the mechanism of the heart. Next we notice that on exploring the interior of the ventricles there are several fleshy bands, intended, no doubt, to aid the ventricles in their condition of dilation and contraction.

THE HEART'S FUNCTION.—The blood having gone the rounds of the circulation, through arteries, veins and capillaries, returns by the *vena cava* to the right auricle; it then passes into the right ventricle; by the contractions of this ventricle the blood is forced into the pulmonary arteries; from these vessels it reaches the capillaries, which are in contact with the air cells of the lung; here the venous blood comes in contact with the oxygen of the atmosphere, and is changed from a dark to a crimson colour, and now it returns, by the pulmonary veins, to the left auricle; from thence descends into its respective ventricle. The contractions of the left ventricle force the blood, just purified in the lungs, into the great aorta—*anterior and posterior*—which is the origin of an immense number of arterial branches, and it is through the medium of the same that the blood is distributed to all parts of the body.

The action of the heart may be thus summed up: When the heart contracts, the blood is forced into the trunk of the great aorta; this vessel and its various ramifications being endowed with elasticity, yield to the force and their calibre is increased into longer dimensions. So soon as the contractile force rests, blood ceases to flow into the aorta, it then recovers its size by virtue of its own elasticity, or in other words *muscularity*, and thus forces the contained blood into the capillaries and to all parts of the system.

By the time the aorta has acquired its original size, the left ventricle again contracts, the same process takes place, and is continually recurring, and so the blood is made to move continuously forward.

The beating of the pulse, therefore, is merely the enlargement of the artery under the above conditions, or when fresh arterial blood is forced into it. The blood that passes from the heart in this manner, returns to it, on the venous side by the veins, and by the contraction of the right ventricle the blood is sent to the lungs; so will be perceived that there are two distinct circulations going on in the body at the same time.

Vivisection.

We beg to direct attention to Prof. Spooner's inaugural address on opening the session of the Royal Veterinary College, London, for 1866. It is replete with instructive matter to the students assembled; but that portion to which we would more particularly refer our readers is: reference to the brutalizing system adopted.