

THE CHEST OF THE HORSE.

The following remarks from a paper lately read before the High and Agricultural Society of Scotland, by Professor Bailow, of the Edinburgh Veterinary College are well worthy the attention of every one who has anything to do with horses:

The chest, as every one knows, is the great cavity containing and protecting those essential organs of circulation and respiration—the heart and lungs. It is also much more concerned in insuring speed, good action, and endurance, than is sometimes remembered. In illustration of this last statement, let me remind you that a spacious and well formed, in other words, a *good chest*, is always associated with a strongly developed muscular system; again, a small and badly-formed chest always involves deficiency of muscle, and oftentimes deficiency of bone as well. This is true in men, horses, oxen and dogs alike. In a man whose breast is narrow, the shoulders droop forward, and are rounded instead of square; he is often round in the back also; he has slender arms, thighs, and legs, and a weak body; he may be tall enough, and too tall, but is certain to want breadth, muscular power, and strength of bone in proportion. So a horse with flat short ribs, and of course a contracted chest, has the fore legs standing near together, is slender in limb, and defective in those masses of muscle which are required to combine great strength with easy rapid, and lasting powers of locomotion. On the other hand a good chested horse is the one for active endurance, and good-chested cattle are most to be prized for milking, feeding, or labor; a man, too having his shoulders well apart and showing a good front, is best adapted for great physical exertion, and possesses best health; truly athletic men, as every one knows, are not narrow-chested, but broad-chested.

Now it is a well known fact, because attested by daily experience, that when a man or animal becomes distressed for breath, he is unable to undergo any protracted exertion. On the other hand, when bodily labor is performed by means of comparatively easy and slow breathing, such labor can be continued far longer and far more efficiently than when respiration is highly excited or oppressed. We can, indeed, predict a horse's capacity for enduring throughout a long and laborious day, by watching his breathing under the first half-hour's exertion. If he should blow, purge, perspire much, and become flat in the sides, he is not trustworthy; but if he should keep round in the flanks and breathe freely, without perspiring unduly, he is worthy of dependence, so far as endurance is concerned. Some horses can go at a satisfactory speed without betraying unusual distress during a long day's work in the fields or in harness, and appear as lively at night as they were in the morning. They feed well on coming to the stable, and will be little the worse to-morrow for what they have done to-day. Other horses go freely for an hour or two, but lose energy, and accomplish their work under symptoms of increasing fatigue. They refuse to feed on coming home, and for days after this are unfit for any active exertion. It is too easy to work some horses beyond their appetite; other horses again perform any amount of labor, yet feed heartily, and seldom appear tired.

Let us endeavor to explain what the chest and its contents have to do with this ability for endurance in one case, and inability for endurance in the other. Active exertion induces a great amount of wear and tear in the system, for every motion necessitates more

or less destruction of muscular tissue. If the muscles then, are not continually supplied with adequate nutrition, or if they are exhausted and worn-out products are not restored by new substances, they become incapable of action. Their supply of actual nutrition comes through arterial blood from the food; blood enriched by good food, must therefore be supplied in proportion to the demand established by exertion. Venous blood however, is continually taking away exhausted tissue, and carries it to the lungs, whence it is expired; if the lungs, chest, and heart are capable and efficient in action, the supply of good blood is sufficient to maintain the physical powers in full integrity. Large lungs, a powerful heart and a good chest make and circulate abundance of good blood; or rather, good food makes rich blood, good respiratory powers keep the blood pure and a strong heart keeps the stream in motion. In a horse where such a state of things exists, there is a power of digestion which work can rarely impair, and a muscular development which exertion can only improve. If, again, the lungs and chest are small in size and ineffective in action, the blood becomes highly charged with noxious matter; this, like a poison, destroys the appetite, and muscular power will certainly fail when muscular nutrition is not maintained.

The capacity of a horse's chest depends of course upon its *breadth depth and length*. *Breadth* of chest is due to the amount of divergence, or arching outward and backward, of the ribs from the spine. *Depth* of chest is determined by the length or prolongation of the ribs in a direction downwards. The anterior (fore) limbs are required to aid in supporting the body in a horizontal position, and so serve as important organs of progression; they become, in fact, reduced to pillars of support and levers of propulsion only. Hence, so far as their osseous framework is concerned, we find them resolved into comparatively simple columns of bone, comprised chiefly of long pieces piled one upon another, and tipped or protected below by a tough, thick, horny box or hoof. Their motions are chiefly those of bending in two directions, forward and backward; the shoulder does certainly possess considerable rotary movement, but the joints below it act like ordinary door hinges. Now to bring these limbs sufficiently beneath or within the weight they have to sustain, each side of the chest is much flattened before. This flattened surface is most complete over the four or five ribs first in order, and is covered by muscle, tendon, and elastic tissue, which join the shoulder bones to the chest. * * * The flattening of which we have spoken is greatest, as a general rule, in animals which are specially fitted for rapid action. It is more obvious in the greyhound than in the bulldog or mastiff; is more evident in the wild boar than in the prize swine of our cattle-shows; and as everyone knows, it is far more determined in the racer than in the day-horse. A very broad chest between the shoulders and elbows is incompatible with great powers of speed. Horses, for instance, such as the gigantic creatures seen in London drays, make a poor business of a trot, and mere burlesque of galloping; no more can a bulldog walk or trot like a greyhound.

In trotting, one fore foot is on the ground at once; whilst each foot descends and becomes placed, it approaches the middle vertical longitudinal plane of the body; it is brought, in fact, below the centre of gravity, in order to balance the weight above; and the corresponding shoulder is thrown outward. This bringing of the feet inward, so as to place them