

COMPARATIVE STRUCTURE OF THE HORSE.

The concluding volume of a fine work on "The Horse," by Prof. Wortley Axe, contains much interesting information. Not the least notable section is a chapter on the horse's position in the animal world, from which the following interesting extract, dealing with the horse's skeleton as contrasted with that of man, has been extracted by the editor of the Farmers' Gazette:

The horse is generally described as a remarkable animal, at once exhibiting perfection of mechanism, complete balance of form, as well as beauty of outline. Professor Sir W. Flower lays great stress on the specialization of the horse; that is, the modification of its structure from the average type of quadruped to meet some special requirements. The horse is a favorite subject for the evolutionist, as illustrating probably more satisfactorily than any other mammal the truth of the doctrine of evolution. In particular, various rudimentary and apparently useless parts are met with in the horse which correspond to fully-developed structures found in other mammals. Such rudimentary structures in animals may either be in process of growth, or they may have the character of vestigial remains; that is, they may be structures that have degenerated from a former more perfect state of development, and are now only vestiges of what they once were. In the horse, most of the rudimentary structures and parts appear to be in a vestigial condition, and the discoveries in the geological history of the horse all point to that conclusion.

The accompanying illustration will show that in many respects it is possible to compare the bony framework of the horse with that of man, in whose structure the highest type of anatomical mechanism is exhibited.

For the general reader, the most interesting feature in the illustration will be the arrangement of the joints of the limbs of the horse, in comparison with those of man, and a very little study of the engraving will correct some popular errors, such, for instance, as refer to the position of the knee of the horse. The real knee of the animal is, in the phraseology of the horseman, the stifle-joint, and the joint which is usually called the knee of the horse is, in reality, the wrist. The letters in the illustration indicate the true shoulder, elbow, wrist, hip, knee and ankle in both man and horse.

Commencing with the fore parts of the skeleton, we will first notice the joint which is called the wrist or carpus, the knee of the horse, as it is wrongly named. In this, two rows of small bones are arranged, as can be seen in the figure, between the arm-bone above and the shank-bone below, the latter consisting of one large bone and two small splint-bones attached to it.

In man, the corresponding arrangement conduces to a very important end—a series of movements in the hand and arm which are mechanically impossible in the horse, notwithstanding the apparent similarity of structure.

The hand of man constantly performs the movements of flexion and extension, as they are called (these being hinge-like motions with extensive side movement), and, in addition, almost perfect rotation, at least to the extent of two-thirds of the circle. On the other hand, the horse's wrist or knee is only capable of flexion and extension.

Nearly the same degree and exactly the same variety of movement are possible in the elbow-joint of man, while in the horse, owing to the rudimentary form of the second bone of the arm (the ulna), no lateral or rotatory motion can take place. The movement is purely hinge-like.

Another marked peculiarity is observed in the connection of the shoulder-blade (scapula) with the trunk. In man, the junction is effected by a bone known as the collar-bone (or clavicle, which extends from the shoulder-bone, near the shoulder-joint, to the first rib on each side. The horse has no vestige of a collar-bone; the shoulder-blade (scapula) is joined to the trunk only by means of the muscles which are attached to it, so that the fore part of the horse's body is suspended by the aid of muscular bands between the two fore legs.

An examination of the hinder limbs will show that the general plan of construction is nearly the

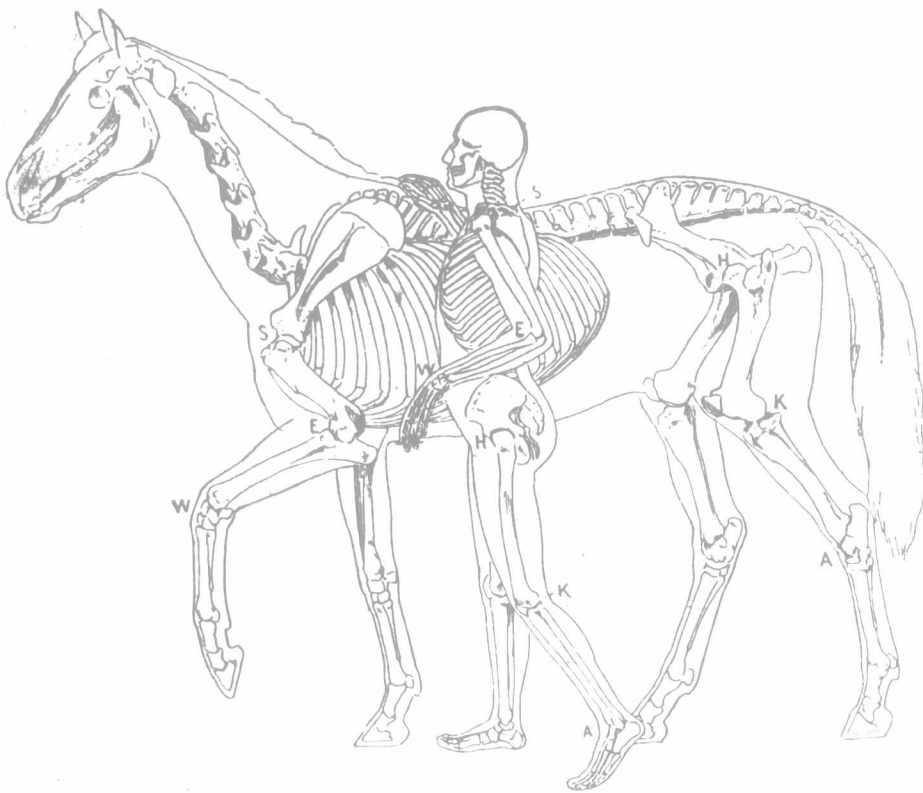
same in both man and horse, as far as the joints are concerned. The hip-joint, the stifle (the true knee), with the floating bone or knee-cap (patella), and the hock (ankle of man), are almost identical in mechanical arrangement.

With regard to the hock-joint, it may be observed that the two rows of small bones are placed as in the ankle of man, but the movement of the joint is purely hinge-like, and experience proves that the two rows of small bones may be cemented together, and to the cannon-bones and splint-bones below them, by bony deposits in old horses, without causing any defect in the action, to a sufficient extent, at least, to be noticed. In fact, the provision for perfectly complete flexion in the hock-joint is secured by the mode of junction of the bones called tibia and astragalus. The so-called cushion-bones do not appear to contribute much, if anything, to the movement of the joint, in the flexion and extension of which the small bones are largely concerned. Below the knee, in front, and the hock behind, begins the hand and foot, respectively. The one large digit in each extremity, composed of what are called the metacarpal and metatarsal bones; the rudimentary second and fourth digits (the splint-bones) attached to them, and reaching two-thirds of their length, and the three following phalanges, constitute the true hand and foot. The horse, in fact, stands on those parts which in man form respectively the tip of the middle finger and the point of the middle toe, both of which are capped with an investing hoof, instead of a nail.

LIVE STOCK.

BREED FOR EARLY FALL PIGS.

Indications are that the price of bacon-type hogs will be higher next winter than this; and,



Comparative View of Skeletons of Man and Horse.

S, shoulder-joint; E, elbow-joint; W, wrist-joint (so-called knee in the horse); H, hip-joint; K, knee (stifle-joint in the horse); A, ankle (hock-joint in the horse).

if the grain crops are also better, as there is good reason to hope they may be, feed will be more plentiful and cheaper. If this prediction appeals to farmers as consistent with the probabilities, it would appear to be the part of wisdom and judicious foresight to breed for early fall litters, as experience has taught that pigs born in September, and having the advantage of outdoor exercise for the first two or three months of their lives, have their bones and muscles grown strong, and their constitutions made vigorous, enabling them to more safely endure the enforced confinement of the winter months, when they are being fed to the finished condition required for the market.

There have been many complaints during the past winter of fall pigs becoming crippled and stunted, even in warm quarters and with liberal feeding, but they have been almost invariably pigs that were farrowed in November and December, and hence had not had the advantage of abundant exercise in their earlier life. In order to have litters come early in September, the sows should be bred in April or early in May; and, as most of the older brood sows will be nursing litters at this time, and cannot be bred for early fall litters, would it not be well to have young sows bred now to supply the pigs needed for winter feeding, when, in view of the probable scarcity of stock, prices will probably be such as to make it profitable? Those who have not young sows

of breeding age at this time can now secure them at very moderate prices, as many breeders have an unusually full stock of such, owing to the slack demand during the last few months, and are prepared to part with them at reasonable figures. It is certainly an uncommonly favorable opportunity to secure pure-bred seed stock at prices the average farmer can afford to pay, and pure-bred stock of the proper type cost no more to feed than do ordinary or inferior animals.

THE WINTER FAIR.

Editor "The Farmer's Advocate":

I have been watching the expressions of opinion now being published in the different agricultural journals relative to moving the Ontario Winter Fair from its present location. The present seems an opportune time for a word from myself, as one of the principal actors in locating it at Guelph.

I have no quarrel with the proprietors of the Union Stock-yards at Toronto Junction, who, acting within their rights, are seeking to establish a rival institution at that point. But because they and many others do not seem to be informed as to the object sought by the permanent location of the Winter Fair at Guelph, I deem it wise to offer a few words of explanation.

First, let me say, it is evident there are before the minds of the people now considering this question two ideals, entirely differing from each other. I am bold enough to say that you could not successfully hold the present Winter Fair at Toronto Junction, no matter what appliances might be there. The people interested would not go until they were certain what it was to be. It would not, in my judgment, be accomplished for a considerable period. The exhibition at the Junction which would attract would be of another kind altogether, and after the type now established at the great International at Chicago. This exhibition is entirely spectacular. It is a great show of the finest cattle and horses which can be brought together in that country. There has never been any attempt, nor was such a thing thought of, in the early effort to organize the Winter Fair at Guelph. The ideal to be reached was entirely and absolutely different. I call it an "educational show," and, in order to reach the greatest usefulness, it is not really essential that there should be the presence of stock in large numbers at all, but it is necessary that there should be present animals of a superior quality. In fact, it falls in highest usefulness unless the very choicest specimens are present for inspection. Mark, I do not say for display. The show is not in any sense to be spectacular. We have plenty of these everywhere. What, then, is its object? What was present in the designer's mind? It was to present these good specimens in contrast with others inferior, in a lecture-room prepared for the purpose, and teach the younger men WHY one was of more value, and hence to be desired, than the other; and, secondly, to teach them how they could, with success, produce similar specimens—how to breed, how to feed, how to house them, etc. The spectacular display entirely shuts out and makes impossible such work as this. There are thousands of our people, many of them in towns and cities, who love the spectacular, and will patronize, with high-sounding trumpet, a fancy horse show—to all of which I have not the slightest objection. But I point out that the young men, who arrive in the midst of all this splendor, from the farms where they must be produced, look in vain for any help as to their production. Horsemen, especially, are always crying out, "Why don't the farmers produce" this or that class, for which they declare there is a constant demand? I answer, because they have never been told what they are; and, secondly, if they were told, they would probably be in ignorance how to produce them. To supply this and similar needs, the Winter Fair, in its present form, was organized. It has accomplished much good in past years, the most notable being the entire revolution of the swine industry of Ontario from the lard-producing variety to the opposite character of the bacon variety. I have declared elsewhere, and I here repeat the statement, that we have succeeded in developing a better type than is found elsewhere. This has been accomplished by watching the killing process, and noticing the type of animal which gave best results on the block. Nothing like this can be attained at a great show of the spectacular type. I notice, further, there appears to be a desire to attach to the Winter Fair a great display of horses. I hope this will never be accomplished, for the reason that it would entirely overshadow and destroy the educational influence of the present Winter Fair. Education in the production of horses might, with much profit, be added, but the moment a merely spectacular display is presented, the original ideal will soon be lost.

JOHN DRYDEN.