

— Outside the Gates. —

Science Notes.

THE POINTS OF THE HORSE.

THE remarkable book bearing the above title is by Captain Hayes, whose name will perhaps be already familiar to some readers as the author of works on "Horsemanship," "Horse-breaking," etc., and also as the husband of Mrs. Hayes who wrote "My Leper Friends in India." Although presumably intended chiefly for those whose daily work (or pleasure) is connected with horses, Captain Hayes' most recent book is by no means uninteresting to the lay reader. In the first place, it is illustrated by over seventy reproductions of photographs and over two hundred drawings, which cannot fail to interest everyone who has any affection for the beautiful animal, which is the subject of them. In the preface the author records his indebtedness to a friend, who undertook to convey his manuscript to the publishers ten years ago, and lost it so effectually that it was never heard of again. This apparent misfortune turned out to be a blessing in disguise, as Captain Hayes was subsequently convinced that this lost book would not have satisfied his more mature judgment, and, moreover, his readers must feel equally grateful, as it was after this loss that the author studied photography with a view to illustrating his book. He gives a brief account of the ten years preceding the appearance of the present volume. They were spent in India, China, Japan, Egypt, South Africa, England, and elsewhere, breaking, training and dealing in horses. Captain Hayes mentions the difficulty of obtaining really good subjects to illustrate points (whether good or bad). He has "run his eye" over more than 10,000 horses in selecting illustrations for his book.

Comparing animals of great strength with those of great speed, we find the latter have the legs (and especially the hind legs, which are most used in propulsion during the gallop) much longer in proportion to the animal's height than the former. The difference is well illustrated by a comparison of the racehorse with the Shirehorse. On examining the conformation of such animals as exceed the racehorse in speed, we find the same characteristics exaggerated, as in the case of the greyhound. "The manner in which the proportions of speed and strength are varied in each particular horse is the measure of the suitability of the animal to the kind of work it is called upon to perform. Thus a dray-horse, which can trot a mile in eight minutes with 3,000 lbs. behind it, may be quite as useful, in its own way, as a match trotter, which, with a sulky and driver weighing together 200 lbs., can do a mile in two minutes, twenty seconds."

Most of our readers are probably aware that the bones of the horse's limbs resemble those of our own, except that the digits are all suppressed but one on each foot. Thus, the horse walks on the extreme points of its third fingers and third toes, which are much larger than in the case of animals possessing several digits on each hand or foot, and its hoofs are exaggerations of the flat nails or claws of other animals. There is no doubt that the ancestors of the horse were possessed of more toes; fossil remains of

horse-like animals with three toes, and older remains with four toes, have been described, and the former may be seen in the Natural History Museum at South Kensington. These animals had the third toe much larger than the rest, which may never be regarded as in process of suppression. The so-called knee of the horse corresponds to our wrist, and below that point is the cannon-bone (metacarpal of the third finger); on either side of the cannon-bone are two splint bones, which are the rudimentary metacarpals of the second and fourth fingers. If the fossil remains, and the structure of the skeleton of the modern horse were all the evidence forthcoming to prove that the horse is descended from an animal with several toes, it might be considered sufficiently convincing; but there is more. The horse belongs to the class of Ungulates or hoofed animals, and to the division of Perissodactyles or odd-toed forms. The only other odd-toed ungulates now living are the Rhinoceros and the Tapir. The rhinoceros has three toes on each of its four feet, the middle one of the three being much larger than the others, and the tapir has four toes on the fore-foot, and three on the hind-foot, the third again being the chief. Captain Hayes states that horses have been born with three toes and three distinct hoofs on each fore-foot, which, being probably a reversion to an ancestral form, seems to prove conclusively that the above is the true explanation of the significance of the splint bones.

What Captain Hayes and others have said concerning the intelligence of the horse must be deferred until next week.

Notes on Art.

ROYAL ACADEMY.

(First Notice.)

It is difficult to really see the pictures in a first visit to the Royal Academy. The many colours and the exceeding newness of all the work, make it an effort to concentrate the eyes on individual pictures, and the first thought of those who have watched the progress of a work is how much better it looked in the studio. So much so is this the case that clever works are often passed by the public, who have not learned to make allowances for conflicting colours and methods when grouped on a wall.

This, the 126th Exhibition of the Royal Academy, is neither better nor worse than the usual annual collection of pictures. But what is unusual, is the evidence it contains of the stir of new interests in the Art world. The influence of the "realist" and the "impressionist" is for the first time distinctly felt in an exhibition of academic rank, not always agreeably presented, it is true; but, no doubt, in time the crudeness of the realist and the vagueness of the impressionist will tone down, and, like the great pre-Raphaelite revival, leave Art better than they found it. At any rate, it is well to look at Nature through our own eyes, as the painters of both these schools do, provided that the search for truth is not abandoned, and an honest attempt is made to paint the time we live in, and to catch its spirit. A good ex-

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