

sons. If the question called for but one tap, he could not give it, neither could the horse, his explanation being that there was not time for sufficient concentration and muscular tension to cause the questioner to assume the stooping posture from which he would involuntarily arise when the correct number of taps was reached.

On the whole, no such light has ever been thrown upon the psychology of the horse or upon that of any other of the larger mammals, as is thrown by these controlled experiments of Professor Pfungst. It helps one to understand the intimate relations that so often exist between horse and rider or driver, when the unspoken thought of the man is so quickly responded to by the horse. If some laboratory psychologist would now solve the mystery of the balky horse for us, how would not only mankind but also horse kind be the gainer! We have had many noted horse-trainers and horse-breakers, but their procedures do not seem to have been based upon any special insight into the psychology of the horse.

How this clever horse became able to discriminate these minute muscular movements is not clear, as the weight of evidence seems to show that this German trainer and owner did not consciously train him to take his cue from these movements, and did not seem aware that he made such movements while questioning the horse. He himself appears really to have believed that the horse had a mind, and could be taught as one teaches a child, and he patiently set himself the four years' task of training him, and was, of course, very reluctant to see his dream dispelled by the crucial experiments of Professor Pfungst.

There is this fundamental difference between man and the lower orders that we need not have recourse to the laboratory to verify: We can educate a man, draw out and develop his intelligence, but we cannot in the same sense educate one of the lower animals. We can train an animal and cause it to form new habits; we can change its size, color, form, disposition, and make it our slave, but we cannot add to its natural intelligence to the extent of making it a thinking being. Mr. von Osten labored diligently for more than four years with his clever horse, employing sets of wooden pins, a counting machine, charts with numbers from one to one hundred, and with letters in German script accompanying the numbers; he also used a small organ to teach the horse to discriminate, as he believed, between tones, and used colored cloths to teach him to differentiate colors. With what must have been phenomenal patience, if he followed the laborious methods which he asserts he did, he drilled the horse by easy stages until he obtained correct responses to his questions (which became more and more complicated as the training advanced), until the horse appeared to be able to do many a stunt in calculation beyond the power of most of the human bystanders. And yet this painstaking old teacher of mathematics had all his theories of his horse's mental ability swept away when it was clearly proven that his correct tapping to questions, whether simple or complex, were all dependent upon his ability to watch his questioner, and thus learn when he was expected to tap with his foot and when he was to come to rest.

All animal life flows more or less in grooves or channels, that of the lower orders more, that of man less. Perhaps we should say that the life of man flows in many more grooves and channels, his system of activities is so much more various and complex. His gift of reason enables him to vary and change his channels, and to invent new ones. But four-fifths of the life movements of the animals immediately below him flow in fixed grooves, and are dominated by the environment as a stream is controlled by the contour of the land. Watch a squirrel, for instance, carry away nuts to its hole, or to hide them in the grass and leaves. He never varies his course from that of his first trip—and that course is not the easiest one, but along the line that will give him the most coigns of vantage from which to keep a sharp lookout for his enemies. I have seen him go out of his way to go up and over an outbuilding 12 feet high and 8 wide, on every trip, and by the same short, spasmodic sallies on each trip. Many birds sing their songs about six times a minute during the period of song, with the regularity of clockwork. And the song impulse runs down at the end of the breeding season like clockwork—tapers off to a half, to a third, to a note or two, and then stops. All the animals come nearer to automata than a casual observation of them would lead one to believe. They are set going by their environment acting upon their organization, and are almost as much machines as are water wheels, though not quite. They can and do vary their activity under stress of circumstances, which a machine cannot. But the animal has no ideas, and hence no power of invention, as the man.

But the loose cattle is a problem where strict control is needed. The best one can do is to pick up the loose ends and not be too particular about keeping them in line.

The Future of the Horse.

Is the modern horse to be superseded? The foregoing question is a very pertinent one, and is worthy of some consideration by breeders and owners of animals of the equine tribe. By a process of evolution due to changes of environment and different systems of breeding (in-breeding, line-breeding, and cross-breeding), widely diversified types of the family Equidae have resulted. Each of these many types is well suited for one or more special features of the many complicated and intricate workings necessary for the most rapid advancement of human endeavor. Yet, with all his usefulness and all his matchless animal beauty, which have been attained through ages of careful breeding and management, we hear it whispered that modern inventions are about to wrest from "our faithful friend" his exalted position in the pleasure and power of the world. Is it possible that the horse will cease to be an appreciable factor in the world economy of coming years? The trend of events in these early years of the twentieth century would seem to indicate that the horse had reached the zenith of his usefulness in modern civilization, and that he would gradually be replaced by inanimate machines, the result of the inventor's and mechanic's skill.

Whether or not the familiar whinny and the sonorous neigh will soon be matters of history, is somewhat speculative, but in face of all that has been said in concurrence with the belief that the horse must go, it must be admitted that there is still very substantial ground for the opinion that the high-water mark of horse-breeding has not yet been reached, and that the business will flourish and increase in magnitude as years go on.

The evolution of the modern horse from the primitive prehistoric species has required ages. The first horses which showed any degree of improvement were owned by the wealthy, and they were first used in the days of war and chivalry. With these, they were also used in the chase. Africa and Asia were the first to adopt the horse for these purposes, and as civilization gradually trended westward, the horse spread with it, and gradually his usefulness increased. It is a matter of some curiosity to note that agriculture was the last use to which the horse was put. Is it very likely that anything which has taken so many centuries to improve and establish as has the horse will decline and disappear because of unparalleled advancement of the inventor's genius? It is scarcely conceivable that the results of all the labors of horse-breeders could be hastily abandoned, more so when it is a recognized fact that many avenues for improvement are still open to the breeder. The best specimens of the modern horse may rightly be considered high-class animals, still perfection has not been reached, and never can it be; but improvement is always possible. As long as there is opportunity for improvement, there will be sufficient fascination in the business to keep large numbers engaged in it, and this will serve to maintain the demand and warrant the continuance of the business indefinitely.

What has been the effect exerted upon the horse business by the introduction of other powers and means of conveyance in the past? Have they permanently injured the horse's position in the affairs of man? We think not. They may have had more or less of a local or transient effect, but no lasting injury to horse-breeding resulted. Man, in his desperate efforts to accomplish, as far as possible, that which is beyond his power—the annihilation of time and space—succeeded in producing the steam engine, which has made rapid transit of both freight and people possible; the telegraph and telephone have come to do away with much travel which was formerly necessary; the electric car robbed thousands of horses of the means of earning their daily hay and oats; and now the automobile and the conquest of the air are combining their efforts with those formerly mentioned to bring about the downfall of the horse. Not only are these factors working against him in city and country, but steam, gasoline, electric and other powers are lined up in formidable array against his prestige on the farm, where he has for the past three-quarters of a century been the solution of the power problem. And yet, today, with the results of the work of the brainiest inventors and the most skilled mechanics against him, steam, electricity, gas, gasoline, and even wings, we find the horse in greater demand than ever before; and, while prices of other motive powers descend, the horse sells higher and higher. Is this not a significant fact, and does it not foretell a brilliant and profitable future for the horse-breeding business?

While horseless drays increase yearly in numbers, they are not increasing as rapidly as is the volume of dray business. Heavy horses must still be used in great numbers in the large cities. The draft horse, notwithstanding the advent of electricity, steam and other powers on the farms, will continue to be for years to come the common, reliable and infallible power on the farm.

Automobiles and aeroplanes may become as thick as bees, but there will still be charm enough in the fancy carriage horse to make him the idol of scores—yes, myriads—of the wealthy classes who can afford both the automobile and carriage-horse luxuries.

The spirited stepper gives the average man much more satisfaction than the "Honking" auto, particularly after the novelty has worn off. Controlling something which can understand and comply with man's wishes will ever prove more enjoyable than the mere turning of a metal wheel and the pulling of a lever. It is "life" itself which man joys in controlling, and no form of animal life offers more to his liking than the horse. High-steppers are in greater demand in this age than ever before, and are selling for higher prices. This does not look much like an age of horseless carriages in the near future.

The race-horse, whether he be saddle or sulky, is as popular as ever. Ascot, Newmarket, the Woodbine and Grand Circuit courses draw larger crowds each year. This proves that, for sport, as well as pleasure, the horse can hold his place. Aeroplane exhibitions and auto races draw large crowds, but they are not depleting the attendance at the annual horse races, where, year by year, time is clipped from the records. Crowds demand "Thrillers" in this age, but the half-minute speed of the racing auto creates no more interest, if as much, than does the exciting finish of the two-minute trotters or the speedy runners. These horses sell for very high prices, and, as records are broken, these prices will advance. Nothing will take the place of a fast horse in the eyes of the racing world.

The roadster and general-purpose horse, like the other types, are increasing in demand. They fill a place that cannot well be reached by the inventor's products. The graceful driver will for years be the means of short-distance travel for the majority of people. He is fairly speedy, and can endure long drives. His value is such as to put him within the reach of those who cannot afford an automobile or a very fancy carriage horse; consequently, his position is impregnable, and, while the demand is not so great as for some of the other classes, it is steady, and his future is assured. The general-purpose horse also fills a position not likely to be seriously injured by power projects. He, too, by virtue of his many uses and his reasonable price, fills a want which will withstand the advances of his mechanical opponents.

Even the diminutive pony has his place. He is the pet of the family. No miniature automobile or aeroplane could be safely handled as a means of conveyance by children; and if it could, it is doubtful whether they would derive as much real enjoyment from it as they get from caring for, petting, riding and driving their favorite Shetland, Welsh or Hackney pony. The pony's position is safe as long as children play on earth.

Weather conditions, together with the state of the public highways, which results from this and other causes, make it practically impossible to replace the horse. He can be relied upon to go at all times, and difficulties in surmountable to other powers and means of conveyance are easily overcome by him. He can always "get there," though the motor may fail. This aids materially in strengthening his stronghold.

Concluding, then, that, from the viewpoint of actual utility in the world's economy, the horse's future is safe, and that this is strengthened by the favor in which he is held by the world's population in various sports, in stylish turnouts, and as a means of pleasing the children and instilling into their minds a love for animals generally, one cannot but think that, no matter what strides the horseless carriage and powers other than horse power may make (and they will make many), horse-breeding will continue to be practiced on a larger scale than ever, and, provided the right class of horse is bred, it will continue to be profitable. With the rapidly-increasing need of power and means of locomotion, due to increasing population and the rush of the times, there is room for both the horse and his competitors, and the present-day horse-breeders need have little fear for the future of their "favorites" and the safety of horse-breeding as a business.

Experiments in Army Horse Breeding.

The United States Government has outlined a plan to encourage the breeding of horses for the army, whereby mare owners in suitable sections will have the command of service to first-class stallions free, in return for which they agree to give the United States options on resulting foals at a fair price. The plan was taken up as a means to provide a good supply of horses such as the army needs, which, strange as it may seem, is rapidly becoming more and more limited. An appropriation was suggested at the last session of the 61st Congress, but no action was taken, one objection being that the plan was not prac-