

kept pure. But if first crosses are desired, then it will only be necessary to keep one family of each breed. In this case also, the original stocks should be bred entirely apart from the others. It will then be easy to select the best birds for the desired purpose, and breed only from these. It is very desirable that experiments should be made in breeding and crossing, but experiments that demand the entire sacrifice of the original stocks need all to be begun over again if unsuccessful. If the poultry-breeder cannot see his way to keep separate families, he must buy stock birds to fill up the vacancies in the ranks."

OUR EQUINE FRIENDS.

LESSONS ON THE HORSE.

Secretary Russell to the Natural History Classes in the Worcester Schools.

(Worcester Spy & Abstract.)

From the New England Homestead.

It is an old English proverb that "Half a horse goes down his throat;" and there is another good proverb that applies to all cattle, "The breed is in the mouth." These proverbs have a deep meaning, the first means that you must feed well, and the second that pedigree is of no value if an animal is not a good feeder. A horse's availability for work, his endurance, condition, and value, depend upon the care he has in the stable, and the chief concern is the proper quality and quantity of his food. His failures, his diseases, his early decline, may in half the cases be traced to the lack of care in feeding. Close, unventilated stables, built over reeking manure pits, and crowded with unfortunate horses, are very common and very bad; but food, poor in quality, bad water, and lack of system in feeding is the chief difficulty in our management.

Most horse owners leave the business to men who have had no correct teaching or training, and a complex matter that requires care, thought, experience, and knowledge is left to ignorance and carelessness. If it is understood and posted as a rule on each stable door that each horse shall have so much hay by weight and so much grain by measure, and be watered at such and such times, the case cannot be met, because the food should vary with the age, condition, and habit of each horse, and especially with the amount of work that he is required to do. Some horses fatten easily; they are usually sound, strong animals, of bilious temperament, that work without fretting and lie down whenever they are not eating, taking life in a moderate, happy manner; such horses are good feeders and need restraint. Others are nervous in temper, take life hard, fret over their troubles, and are poor sleepers and slow eaters. Such need encouragement.

I state this to show that rules cannot be laid down, nor can anyone go from this room with any formula except what he can get from his own observation and experience. I can lay down this rule, that knowing the character and temperament of your horse you must regulate his food by his work. Next you must not over-feed him at any time. I believe that the diseases of humanity are largely due to gluttony. The greater part of mankind stuff themselves with food, and are incapable of effective work, and do not live half their days. In the matter of over-eating, a horse resembles his master. Such is the kindness of man toward the horse that he usually over-feeds him. One rarely sees a horse whose condition indicates lack of nutrition. He may be old, lame, or diseased, conditions his master cannot alter, but he has plenty of food.

The horse's stomach is the smallest similar organ that is to be found in comparative

anatomy. I believe it compares with the human stomach as one to four. It does not hold but about half as much as the horse needs to eat, eating no oftener than man. It is hard to find a horse asleep in a pasture. He goes to sleep in a stable, but when he gets out to pasture he eats nearly all the time. He is continually filling himself with grass. That indicates that he has a rapidity of digestion that is only equalled by his rapidity of power in regard to the oxygenation of the blood. What have we learned by the fact of the horse's stomach being so small? A man can go four hours without eating; then he begins to be very cross and disagreeable. Now a horse is hungry sooner than a man, if both have eaten at the same time. The largest horse's stomach ever examined, "Eclipse," was found to hold only about 16 quarts. The fact that the horse has no power to store bile indicates the great rapidity of his digestion and power of assimilation. For such reasons he should be fed as frequently as convenient, and I consider that if a rule can be applied that a horse should be allowed not more than two per cent. of his weight a day in food; that is, a horse weighing 1,000 lbs. should have 20 lbs. of food a day, half of which, when at hard work, may be grain. This is an abundant allowance, and in idle times should be reduced at least a quarter. He should have what salt he requires, himself to be the judge, and while I never would turn him out to pasture, he should have some green food in summer and carrots in winter. Indian corn, whole or in meal, is unfit food for horses, it is heating and fattening; no horseman wishes to see a fat horse, fatten steers, sheep, or hogs, but not horses or men. Oats is the best grain for horses, and the cheapest in the end; if we had some means of crushing or bruising them they would be worth 25 per cent. more to us than they now are. If I was a miller I would put in a set of rolls and crush oats, and in six months I would have all the business of my region. No man that has ever used crushed oats will leave any others.

The best time to water a horse is an hour before or an hour and a half after eating. If watered immediately before eating the temperature of the stomach is lowered beyond the digestive point, and the food is not acted upon till the temperature gets back to where it ought to be. Suppose his master takes him to the watering trough immediately after eating and his stomach is full of food and he drinks a pail or two pails of water? The consequence is that a portion of the food is forced out of the stomach and is swept along into the larger intestines without assimilation. In France some years ago I saw some horses that were going to be killed. They were fed coarse beans, and immediately after they were allowed to drink all the water they would, and were then killed and dissected, and some of these beans were found 26 feet distant from the stomach itself in the intestines.

BREEDING VS. RACING.

From the Live Stock Record

If science is the result of experimental laws, and experience alone can teach mankind, then how absolutely certain and wise should all the breeders of the thoroughbred race horse be in A. D. 1885.

It is an old saw that "nothing succeeds like success," and with this as our premise, let us see if by example we cannot obtain light upon the question of successful breeding and racing. You cannot couple animals of unlike characteristics, temperament, form, and motion with the expectation that good result will be homogeneous or at all fitted for the highest purposes; but

on the other hand you will find as the chemist — an incompatible combination.

We will disregard altogether the question of tracks, jockeys, and trainers, and presuppose that all external surroundings be equal, and look only to the main question, BREEDING VS. RACING. We can best, to the casual observer, illustrate by taking the "crack" three-year-olds of the year, and without disparagement to others, will select what all would place at the head, because the performances of each of the named have been so uniform as to out-class by pounds all others. "Volante," belonging to California; "Lizzie Dwyer," the property of Ed. Corrigan; "Joe Cotton," the representative of Kentucky; "Biersan," the support of Morris and Patton; "Tyrant," the best of all Great Loue's get, and lastly, "Wanda," the best two-year-old of last year and the equal of anything ever owned by Mr. Lorillard. It will be seen that we have selected but six three-year olds out of at least six hundred in good repute.

These animals are all in outward appearance and physical conformation unlike each other, but in the essentials that build and characterize a first-class race animal they are similar, if not alike. The deep set shoulders, the heavy middle piece, the long flat muscles on hind quarters, rounded down into not a flat leg, but a round leg below the thigh, as if all the tendons were closely gathered together and tied in place. The mental characteristics of these animals may be as different one from the other as the color of the horses, but it is in the breeding we are to closely look and find the solution of the phenomenal success of each of the horses named.

Two of the above are sired by imported horses, "Tyrant" and "Wanda," while three of the above are sired by half brothers who were sired by imported Phaeton, viz.: "Joe Cotton" and "Lizzie Dwyer" by King Alphonso, and "Biersan" by Ten Broeck, while the dam of "Joe Cotton" was also imported, and thus of the six representative three-year-olds we only have "Volante" left whose immediate parents were not imported on either side.

We do not mean to discourage American bred horses, but we do affirm that so long as we follow the English races in character, just so much better are we prepared to win if we closely follow English breeding, and breed to imported horses direct or at least not more than one remove therefrom. The short purse races so much in vogue up to one mile may be and most generally are won by either short-bred horses or horses of American descent; but the rich stakes fall with almost painful regularity to horses from English birth. In conclusion we would say discard the weak strains on many of our breeding farms, and get in more bone and size, and separate our races now as in the days when our grandfathers frequented the paddocks when the quarter horse bore no resemblance to nor traced relationship with the four-miler.

The New York Herald says no forage plant receives less care than the common white clover. It is seldom sown, and wherever it has once grown seeding is not needed. Yet it is not a weed, only appearing on land that would otherwise be bare from failure of other clovers and grasses. Although its small size precludes it from being cut for winter use, it springs up so quickly when cropped that rich land will produce a great amount of food per acre. No plant is better adapted to the dairyman's use in producing milk and butter. In the best dairy regions fields are kept seeded with white clover for cows to pasture.