

companion, and be maintained in better condition upon a smaller allowance of food.

In the organization of team labor it is essential to appreciate the natural paces of the individual animals, and yoke them in accordance therewith. When such a course is impracticable, the working speed should be adjusted to the qualification of the slower horse.

Although of less important account than pace, the distance traveled for a day's work will materially affect condition. Assuming that the time occupied by two pairs of horses in transporting twenty-four tons two miles be equal, but that the teams differ in strength and activity, pair No. 1 taking four three-ton loads, would be more fatigued, less easily conserve condition, and be sooner worn out than the slower-moving but stronger No. 2, with their four-ton burdens, but diminished mileage.

In an equal degree with underfeeding, long-continued overwork, whether caused by excessively long hours, overloading or overpacing, is the reverse of true economy; it can not fail to be attended with deterioration of physical strength and health; at first slowly, gradually, but very surely it reduces the power and consequently the value of the animals, and when pushed beyond a certain limit it rapidly and irreparably shortens their lives of usefulness.

Horses employed upon any kind of work are benefited by periodical intervals of thirty minutes' duration in each four hours for rest, when they may partake of a little food from a nose-bag. To work them, and to hold their provender for a longer period than six hours, is inconsistent with a proper appreciation of the functions of their digestive organs.

If requested to furnish an example or type of a fair day's labor, suited to the powers of average farm horses, and one that could be continued daily throughout the year, without causing loss of condition, on a 16-lb. corn ration, I should instance the plowing of an acre of land of average strength in furrows of 9 inches width, the numerical strength of the team proportioned to the resistance opposed by the nature of the soil, the depth of the furrow, and the gradients of the field. The distance to be travelled would not exceed 12 miles, the pace slightly over 1½ miles per hour.

The urgency which exists for the prompt completion of many farming operations necessitates the exaction of more severe and continued labor from the teams at certain seasons than would be consistent with the maintenance of good condition, vigor, and health, if prosecuted daily throughout the year. When an excessive, but temporary, increase of team-work must be undertaken, the owner in arranging his operations will do well to fully appreciate the effects of pace, mileage, hours of service, and food supply.

At what Age should a Heifer Calve?

This question has been frequently asked and discussed on both sides of the Atlantic. Some advocates of early calving have advanced the theory that their method is favorable to the development of the milk secretory organs, and that thereby the flow of milk is increased. Actual experiments, however, tend to disprove this statement. In painstaking experiments conducted in Denmark in which heifers having calved when about two years old competed against some having first calved when nearly three, the three-year-olds gave the greater yearly average quantity of milk. The experiment was continued for more than eleven years, and an average of about 150 cows were tested annually. The two-year-olds were especially well taken care of when young, and their weight at entry nearly equalled that of the three-year-olds.

If a heifer calves when not mature, she is very liable to become stunted and deformed. It is therefore of importance to have her fully developed before she drops her first calf. This, however, does not say that it is not desirable to

have her mature early, for early maturity is a great saving of food and expense.

The prevalent practice has been to let all calves drop in spring. Following this fashion, a heifer that is not quite mature at two years old must be kept over until she is three; whereas if she was made to calve when mature, she might drop her young in the fall and thus save half a year's food. The maturity of a heifer must be judged by her appearance when in a normal condition, together with the characteristics of her sire and dam, and not by her weight. High feeding does not promote maturity, but rather retards the perfect and harmonious development of all the parts. Feed liberally, neither stuffing nor starving. All conditions should be normal, so as to keep her in good health, causing her usefulness to extend over a longer period of years. The length of use is lost sight of by most breeders. If it is profitable to raise a cow at all, the longer her period of usefulness the cheaper she will be.

"Breaking" Colts.

"Educating" is a better word than "breaking" when applied to colts reared by intelligent and humane horsemen. Though many a colt is really "broken" in training, there is seldom, if ever, any necessity for such a course. Take a "sucker" when he is too young to have any very pronounced opinions of his own, and there will be found but little trouble in making him understand that his master is really his best friend. When this has been accomplished no further trouble need be anticipated, so far as an intelligent colt is concerned. Unfortunately, occasionally it happens that a horse is met with that has been a fool, and of such an animal it is difficult if not impossible to make a horse that can ever be handled with any degree of safety. It often happens that a really intelligent horse becomes possessed of a vice that is troublesome and dangerous, but such a case never presents the difficulties which characterize that of a horse that has been born a fool. As long as a horse has intelligence he can be educated, no matter how strongly unfounded prejudice may mislead him. More than 99 percent of the foals that are dropped have quite enough intelligence to enable them to get through the world pleasantly and satisfactorily, but the reason that so many horses are addicted to troublesome and dangerous vices is to be found in faulty education.

Too often the system of handling colts is something as follows:

The young thing is allowed to run with his dam and to make no human acquaintances. All he knows about boys and men is that whenever they can get near him they hit him with a whip or make some (to him) horrid noise that thoroughly terrifies him. He very quickly comes to look upon boys and men as the most dangerous and troublesome enemies of the equine race in general and of himself in particular. This state of affairs continues till he is two or three years old. Then some day he finds himself being chased about a paddock and worried till he is half dead with fright and fatigue, and finally from sheer exhaustion he is compelled to allow himself to be handled. He does not know what is wanted of him, and all that he learns about it comes in the shape of bitter experience. After trying every other course to escape punishment and fright, with disastrous results, he gives himself over in sheer desperation to a sort of sullen despair, and allows himself to be pushed about by his tormentors or hauled

about by another horse that is harnessed with him, just because he has given up all hope of escaping the persecutions of his enemies. His spirit is broken and he is pronounced broken to harness. He is now obedient so far as he knows how to be, but he is so because he dare not be anything else, and not from any desire on his part to do what is right. Such a horse may do what is required of him, but he is liable to run away if suddenly frightened, to kick if anything touches his heels, and, in short, to do almost anything that is objectionable in the very emergency when his good behavior would be most highly prized by his master. That is what may properly be styled "breaking" a colt.

If a man wants an "educated" horse he should begin by winning his confidence during the foal's babyhood, the sooner the better. It does not much matter what the youngster is taught during his first summer, so long as he is thoroughly familiarized with the halter and accustomed to being handled freely (though always kindly and with gentleness). He soon learns to regard those who handle and feed him with the warmest friendship, and his highest ambition will be to merit their approval as evidenced by a kind word, a caress, or some little dainty of which he happens to be particularly fond. As he grows a little older he should be accustomed to the bit, to the harness, and to other appliances to be used when he shall have arrived at a proper age to go into business. In this way the youngster really grows into his work. He is taught to carry his head properly, to draw, to turn, to back, to be mounted, harnessed and unharnessed, all without any painful or unpleasant process. He grows up to be, not the cowed slave, but the trusted, well-tried friend of his master. All that he does he does cheerfully and pleasantly; in short, he is an "educated" and not a "broken" one.—[Farming World.]

The Apiary.

Swarming.

Swarming is the natural method of increase. In this latitude bees usually swarm during the latter part of May or in June. During the hot weather of the above date the queen starts to lay drone eggs in drone cells, and should the colony be populous and crowd the inside of the hive, the bees will prepare for swarming by starting queen cells. Shortly afterwards they are supplied with eggs and royal jelly, with which the queen brood is fed. These cells are sometimes built to the number of a dozen or more, and sometimes only three or four. Good queen cells are something the shape of a large pea nut, and instead of being horizontal, are more inclined to the perpendicular. When these cells are nearly capped, if the weather is fine and warm and honey coming in freely, you can expect the swarm to leave the hive between 10 o'clock a.m. and 2 o'clock p.m., although bees have been known to leave at all hours. Cook's Manual of the Apiary tells of a swarm leaving by moonlight on one occasion. Before starting the bees fill themselves with honey, so that they will be prepared for any emergency. It is supposed that bees, when nearly ready to swarm, send out scouts to search for a home, so that they will not be long delayed and will not have to cluster longer than necessary. The old queen leaves with the swarm, but should the queen by any accident not be able to continue with the swarm, the bees will return to the hive again. In about a week after the swarm has issued, if the parent colony is strong, you can expect another swarm, should there be a number of queen cells and the weather favorable. Bees usually cluster soon after they issue from the hive, but sometimes