

crosses of individuals, varieties or species, and they will, as a rule, find that the same characters are faithfully transmitted in subsequent similar crosses.

Inbreeding.

In the course of an article on systematic breeding, an English writer takes up inbreeding, upon which subject he says:

With wild animals the same principle is always at work. Every animal has a fair chance of life, and if it cannot compete with its associates it goes under. The weakly zebra foal is deserted, or falls a prey to the ever-watching enemy. No weanling can ever have the chance of handing on its characteristics to future generations. Furthermore, the struggle of the males for supremacy insures that only the best out of these splendid animals obtains supremacy and procreates his like; and on the least suspicion of failing powers he is ousted by his superior, and thus the vitality of the species continues undiminished. Instead of constitutional weakness becoming inbred and hereditary, exactly the opposite takes place; and if wild animals inbreed to the extent which we believe they do, their grand health and strength is passed on as an hereditary attribute from one generation to another. The absence of selection is worst exemplified, of course, in the human family. The ever-increasing discoveries of science which are continually finding new methods of combating disease and making durable our ailments, may be blessings to us, but at any rate can hardly be called a benefit for future generations. The very necessary prohibition of the marriage of near relations makes the general decline of the race slower than it would otherwise be; but, in spite of it, the survival to marry of the enormous army of the unsound, in consequence of medical assistance, is bound to tell in the long run, as it does among other animals.

We repeat we do not believe the closest inbreeding, even for an indefinite number of generations, would lead to any form of degeneration, if only the constitutionally perfect were bred together. The question is, then, if we select for constitution, can we hope to maintain the characters of speed, action, weight, etc., as the case may be? As matters at present stand, it hardly seems as if we could. The severe tests to which our race-horses are put is certainly some trial of constitutional merit, and if all breeders combined to breed from those individuals who stood the exigencies of three or four years' training, we should in a few years be in a fair way to possess a strain free from the slur of delicacy which at present surrounds it. At present, every speedy mare which fails to stand prolonged training, or which early breaks down, goes to the stud, to become the dam of offspring which are bound to inherit a tendency, if nothing more, to their mother's weakness. Inbreeding—the mating of these offspring with animals which perhaps possess a strain or two of the blood from which the dam inherited her weakness—at once insures that the infirmity shall not be lost, and, therefore, we can truly say that inbreeding is, in a way, the cause of all the evils that are laid at its door, but not that it causes them.

Under the circumstances, breeders should go to the roots of the matter, and turn their attention, above everything else, to the production of strong, healthy animals. In addition to the selection of healthy parents, there are other ways of doing this. One is to breed only from the fully mature, and from parents neither excessively young nor excessively old. Another is to breed under as natural conditions as possible, allowing an outdoor life to the mare and foals, and not permitting the birth of foals at unnatural seasons of the year because an extra race or two or some paltry prizes might be picked up by the most advanced youngster. A third course is not to wean too early; in fact, if this process is conducted naturally by the individuals most concerned, all the better for both. Of course, a liberal dietary during a foal's first winter comes under the head of elementary stud management, rather than within the province of this article, but its importance with regard to the whole future life and development of a colt justifies one in alluding to it here.

There is an old and hackneyed saying that "like produces like." So familiar is it that we are sometimes apt to overlook its significance. It is proved by the experience of certain breeders of the smaller mammals that it is possible to breed successful prizewinners without recourse to close inbreeding at all. The observations of fanciers, it may be added, are often of much value, by reason of the rapidity with which generation succeeds generation in small animals. Much more experience and valuable information are to be obtained than is the case with the slower-breeding horses and cattle. We know more than one case of men who objected to consanguineous mating on principle, and who adopted the course of never

breeding from near relatives. They found that by always buying the best, and by crossing the most perfect specimens together, the action of the above-mentioned saying was brought into force. That the animals were in reality related—that they were inbred in the back part of their pedigree—we have no doubt; at the same time, the relationship was not near.

It is extremely likely that the secret of the success lay in the fact that first-class specimens were bought, regardless of cost, and that in consequence the females at any rate equalled, if they did not excel, the males in points of conformation. The importance of good females as a factor in successful breeding cannot be too strongly insisted upon. Furthermore, to get the best results, the mating together of animals with the same good points conduces to the transmission of these points to the offspring, and by inbreeding to them in subsequent generations they will be fixed, and will become potent characters in a strain.

How to Bit the Horse.

"You can never give a horse a proper mouth," writes F. M. Ware, in *Outing Magazine*, "unless, first, you prevent him keeping his mouth open; second, you keep his tongue always under the bit, and not over it or 'lolling' out of his mouth; third, you train him to go pleasantly up to it, and to bend himself and never to be 'behind' his bit, or to pull on it, or to drive upon either rein; fourth, you keep him always 'alive on' and responsive to its slightest indications; fifth, you so balance him that he can do all these things without suffering personal discomfort; sixth, you thoroughly deceive him as to the qualities and quantity of your power to control and direct. These essentials may all be simplified into two divisions: First, make him absolutely comfortable; second, fool him."

From earliest colthood the horse should be allowed to yield jaw and neck, of course, but never to open his mouth to the pressure of the bit. An enthusiast, wrestling with the problem of biting a la Baucher, may train his horse to open his mouth to bit flexion—the most pernicious habit he could learn. The result is usual after the application of the 'dumb jockey' (now rarely used), with its tight check and rubber side lines cruelly shortened. When neck and jaw can stand the agony of restraint no longer, the opening of the mouth gives relief by yielding several inches, and the habit is adopted, in most cases, to last through life; the tongue often works over the bit to escape pain, and 'tongue lolling' becomes a confirmed habit."

For biting the saddle horse, Mr. Ware says that in every movement required of the horse, from yielding the jaw at a stand, action of the legs or spurs at first must always precede that of the hands. This is the basic rule of all horsemanship.

"The hands must never yield until the jaw and neck have first done so; then instantly. The snaffle is the harmless medium of the neophyte, the test of skill in the expert. No horse's head can be properly placed, leaving at the same time a pliant mouth, except with the snaffle (or bridle) in the fullbridle. Nature gave us two hands, and both are needed in equestrianism. As the first step is attaining balance, the horse must, in all his paces, carry his face perpendicularly."

Lessons should be short—not over ten minutes—frequently repeated twice or more daily, if possible; submission be followed by instant caress to the part addressed. If a horse turns sulky, revert instantly to first principles; that was the way you learned the multiplication table. The smaller the arena, etc., the quicker the pupil will bend himself, make his mouth, and come into balance. Even a box stall will do.

"Every horse has two ends, and we must obtain control of both; the 'fore hand' by our hands, the 'back hand' by our legs. The moment a horse rests upon the hand, that moment he is out of balance. When the mouth is 'making' and alive to address, it is always moist on bars and lip angles."

"The bridle 'sets' the head and gives the signals for turning, etc.; the curb restrains, aids the perpendicular carriage of the head, and so places it that the bridle may act properly."

"The first impulse of the horse is always to yield to the pressure of the hands and of the legs, but this yielding is evanescent (with the mouth at least), and must be instantly rewarded by the yielding hand. Care must be taken that when the jaw is yielded it simply relaxes, and that the mouth does not open, lest this be interpreted as the object of the tension."

"In all bending and suppling of the neck, the horse's head must be straightened by the opposite rein, and he must never be allowed to straighten it of his own volition. Nothing makes a horse bend himself, come into balance and carry himself light in hand better than backing."

Winter Care of Weanlings.

The first winter is a critical time in the life of a colt. The care and attention he receives during this period determines, to a great extent, his ultimate value and usefulness. If he be poorly fed, neglected, and allowed to become thin and weak, it is probable he will never be as good or valuable an animal as he would have been under more favorable circumstances. He, in the first place, should be provided with warm, comfortable and well-ventilated quarters, and, while he should be taught to lead and stand tied, it is much better if he have a roomy box stall to stand in. Two or more colts will probably do better together than one alone. At the same time, it is often necessary to winter one without company, as the owner has only one, and he is better by himself than with a colt a year or two older. The next question is: "What and how much should he be fed?" In our opinion, there is little danger of overfeeding at this age. While there are exceptions, it is usually safe to give a weanling all he will eat; but it should always be understood that he should not be given any more at a feed than he will eat. It is a mistake to keep food before him all the time. He should, with apparent relish, eat all that is given him in at most 1½ hours, and then he will be ready for the next meal when the time arrives; while, if food be in his manger or grain-box all the time, he will eat more or less constantly or irregularly, and never be sufficiently hungry to thoroughly enjoy his meal. It is not easy to say just how much food a colt of a given age should consume, but the attendant, if a careful and observant man, will soon be able to tell the quantity to be given at each meal, and be able to give sufficient without waste. Where convenient, it is probably better to feed four times daily, instead of three times; but this is often inconvenient, and experience teaches us that they do well when fed three times daily. The kinds of food to be given must be decided on, and we think that hay and oats should be the food on which to depend for growth, both of muscle and bone. If other grain than oats be given, we will take back what we have said about there being little danger of overfeeding. Of course, all food, both bulky and concentrated, should be of first-class quality. Well-saved clover is the best kind of hay, but where this cannot be got, well-saved timothy makes a good substitute. Hay should be fed in the necessary quantities three times daily, and we prefer whole to cut hay for such young animals. The manner in which oats should be fed will admit of argument. In our opinion, chopped oats are preferable to whole or even to rolled. We find that colts relish chopped oats that have been scalded and allowed to cool, and that they thrive well on such. The practice of putting a feed of oats in a pail, pouring a little boiling water on, and then covering the pail and allowing it to stand for a few hours before feeding, gives good results. The morning's feed can be prepared in this way in the evening, and the evening's feed in the same vessel in the morning. The noonday feed can be either dry chop or whole oats. Besides hay and oats, the colt should be given a carrot or two once daily, say at noon, and a feed of bran, either damp or dry, at least twice weekly. This may be extra, or in lieu of oats, as is indicated by the requirements of the colt. As regards water, it is good practice, where practicable, to allow access to good water at all times. Where this is not possible, the colt should be given water at least three times daily. It must always be understood that, in addition to the exercise the colt takes in the box stall, that he be turned out into a paddock or yard for at least a few hours every day that is not too rough and stormy, and the more gentle handling and leading with the halter he gets, the better. He should be well halter-broken the first winter. His feet, also, demand attention. Under ordinary winter conditions, the growth of hoof is greatly in excess of the wear, hence the toes grow long, the heels deep and narrow, and the wall of the hoof turns inward below the quarters. This unnatural shape and size of hoof interferes with action and with the relative position of the feet to the limbs, and, if allowed to continue, is liable to cause more or less serious deviations from the correct conformation, which never can be corrected. Hence we repeat, "attend to the feet." The feet should be carefully examined at least once every month, and, with a blacksmith's foot-knife and rasp, they should be pared and rasped into as natural a shape as possible. During the periods of the year in which the colt is on pasture the wear of the hoofs is usually equal to the growth, and interference is not required. The stall should be cleaned out at least once every week, unless it be a very large one, as when straw, feces and liquid manure are allowed to accumulate to any considerable depth, heat and gases are generated, and these have an evil effect both upon the feet and the general health.

"WHIP."