STOCK.

Draft Horse Breeding.

BY A. G. HOPKINS, V. S., WISCONSIN AGRICULTURAL COLLEGE.

LAWS OF HEREDITY.

The science of breeding, as related to its laws, "What's bred in the bone, etc.," and the adage, "Like produces like," is a theory so well borne out in practice as to be the cardinal feature in horse breeding, as the ignoring of it is the rock on which many a breeder, with high hopes, will founder. The average farmer of the present day admits the stupidity of using the scrub male bovine as a sire, and yet forgets that in the breeding of an animal higher in the scale of evolution, the same principles must be observed. The utility of the horse depends on his contour, speed, intelligence, weight, soundness, docility, *et al.*, the absence of any of these desiderata impairing his value greatly; not so in the bovine, at least in a lesser degree. Yet, by many the scrub stallion, on account of his small fee, is used, a case of penny wise, etc., policy, with results disastrous to the breeder, his locality, and his country. Still, one does not wonder at such ignoring of the laws of breeding, because as we go higher in the scale—Man—we find a total disregard of such laws, with its resultants of disease, deformity, imbecility, and crime. In Holy Writ we are given the theory of heredity in a few words, "The sins of the father, etc.," and a close study of history gives us testimony that it is irrefutable. Atavism and variation are dependent to a great extent on the preceding law, and also on the methods followed. Breed to type and for type! In-and-in breeding is not the menace to the horse breeder that it is to the cattleman, owing to different conditions; yet, the indulgence to excess in such methods will bring harm to the horse breeder. In-and-in breeding tends to conserve the type, and for this purpose may be used judiciously. Again, one must remember that in fixing a type, unsoundnesses are just as firmly fixed as good qualities. The general farmer-breeder will either follow line breeding or cross breeding. It must not be forgotten that in cross breeding the chances of variation from the desired type are greater than in the other method. *In breeding, we have the funding of individual differences in a common offspring, while complexity of the inheritance gives instability to the embryo, and thus the liability to variation in the offspring.*

SELECTION OF SIRE.

As we leave the theoretical for the practical, we are confronted with the duty of the selection of the sire. As the sire has the property of giving at least half the inheritance, and sometimes more, depending on his prepotency, it behooves one to use every care in his selection. Virility, not necessarily coarseness, must be evident; stamina and good constitution, evidenced by deep, wide chest, clean throat, deep, well-rounded barrel, tightly ribbed up, muscles well-defined; size and shape—16.3 to 17 hands tall, 10½–12 inches of bone below the knee, broad, long, deep, square joints; weight, 1,800–2,000 lbs.; short, strong neck, blending well with shoulders, which should be fairly upright; short, strong back, wide, strong loin; strong dock, well buttoned-up (the anus being closed); feet, strong, large, round, and flinty; bone, flat and compact. Activity and intelligence shown by the broad forehead, bright, large eye, head free from meatiness (meaty-headed horses are often *dummies*, a pathological condition resulting from previous brain trouble); active ears. Action strong, free, and elastic, perfect flexion of hocks and knees when trotted, picking the feet well off the ground; the generative organs large, tense (evidencing tone), and normal. The size should be the greatest possible commensurate with the type. Color:—It has been said a good horse is never a poor color; still, the solid colors are to be preferred, especially as the markets show that preference. The sire should be a good walker, although short-limbed.

THE DAM.

The dam should be of good size, low down to the ground, and, as in the sire, free from hereditary unsoundness; the general description as used for the sire will apply to the dam, only she should be wide in the hips, with a large barrel, so as to allow plenty of room for the generative organs during gestation. More quality or sweetness is allowed in the dam than in the sire, such quality not being incompatible with females. As the period of œstrum occurs about every twenty or twenty-one days, the time of mating will necessarily depend on its appearance, as a rule. The matron, already foaled, should be tried nine days after foaling, and can usually be again put in foal at that time.

MATING.

The process of mating should only be entrusted to capable, strong grooms, and the mare if at all irritable should be hoppled, either one or both hind legs. The stallion should be so trained that a proper service is given, or damage, sometimes irreparable, will result to both. If the stallion has a heavy season the teasing can be done by an inferior entire horse. A two-year-old stallion should not have more than twenty mares in a season, while aged horses have been known to serve over one hundred during the same time. Mares should be returned to the stallion once every two weeks, and can then be tried. The stallion should be limited to four services a day, and at least one hour between services. His food should be of the most nutritious character, as the tax on his system is severe; for this purpose whole oats cannot be surpassed, and if he will drink milk, so much the better. If the stallion has been recently imported, he may prove unfertile until acclimated, and if put to too many mares the same result will occur. In purchasing a stallion it is always advisable to find out as to his power of procreation. Examination of the semen microscopically might also be of some assistance. Unless in very valuable horses, for whose services there is a great demand, artificial impregnation will not be needed. The procedure is very simple, consisting as it does in one mare being served by the horse, and the semen being dipped up in gelatine capsules, the mouths of which are closed by the finger, the several capsules being introduced immediately into the wombs of the several mares which it is desired to impregnate. Some breeders practice bloodletting immediately before a service, and with good results. These breeders hold that conception is rendered more sure by such methods. Mating is usually done in the spring or fall, according to the facilities of the breeder for raising spring or fall foals. If a breeder possesses good barns with ample boxes, the practice of having the foals come in the late fall is to be recommended, especially so if the breeder wishes to work the mares heavily in the spring, and if he has plenty of good, succulent food.

Mr. A. S. McBean's System of Steer Fattening.

DEAR SIR,—In reply to your inquiry as to the manner in which I house and feed steers for the export market, I will endeavor to give you a general outline of the system I have adopted on my farm, and the results obtained.

My farm, about a mile in length, contains 117 acres. The buildings are located about the middle of the farm. The south end of the farm borders on Lake St. Francis, and the north end adjoins the village of Lancaster, through which runs the main line of the Grand Trunk Railway. About 17 acres of the farm are taken up by buildings, lanes, ditches, and lawns, leaving 100 acres under cultivation. Thirty acres are devoted to gardening, the chief products of which, consisting of small fruits, vegetables, and nursery stock, are shipped to Montreal. The remaining 70 acres are used for growing coarse fodder, such as hay and turnips, with an occasional field of grain for seeding down. A rotation of crops is so arranged that meadows are cropped only for two years, and the manuring for the turnips is done by top-dressing the meadows. I do not keep any cattle during the summer months, except one or two milch cows. My idea is to grow enough coarse fodder to feed 124 steers, and buy concentrated food for them, and 100 hogs housed with the steers. The feeding of this number of steers and hogs gives me a large quantity of manure for my garden and farm, the product of the former giving me my cash returns during the summer and early winter months.

I have never raised or wintered any stockers, but have bought in the fall, generally on the Toronto market, 3- to 4-year-old steers, averaging in weight from 1,100 to 1,200 lbs., as I prefer animals of this size for fattening. I house my animals during November. I find I can get a better selection on the market during November, and as I find it unprofitable to keep them over five months, I make a special effort to have them fat and ready for shipment about April 1st, just before the warm weather sets in. I find that animals do not put on much fat after the weather becomes warm, especially when they are fed loose, as I now feed.

SHORTHORN BULL CALVES, ROYAL JUDGE, JUDGE 2ND, AND DREYFUS.

Royal Judge first prize, Judge 2nd second prize, Winnipeg Industrial Exhibition, 1899. Bred by Hon. Thos. Greenway, Crystal City, Man.; sold to J. S. Robson, Manitou, and J. G. Barron, Carberry. Dreyfus from herd of W. D. Flatt, Hamilton; sold by Mr. Greenway to A. Morrison, Carman, Man.

The selecting of the animals is one of the most important points in successful feeding. My experience convinces me that the best feeders are the roan Shorthorns and good grade Herefords. The animals are all weighed and dehorned on arrival. About 15 average animals are selected, marked, and weighed every two weeks during the feeding period, which process gives an idea of the progress the whole lot is making. The first month the animals are fed only uncut turnips and hay. About 1,800 lbs. of straw per day is used for bedding, and when this is put down fresh, I judge that each animal eats from 3 to 4 lbs. The animals are fed twice a day. The first feed, consisting of 30 lbs. of turnips and from 12 to 15 lbs. of hay for each animal, is placed in the racks from the feeding passage, and racks are lowered to the cattle about 6 a. m., and left down until 1 p. m., giving the animals plenty of time to eat. The racks are then raised and filled with the same quantity of turnips and hay as given in the morning, and lowered about 4 p. m. About 5.30 p. m. fresh hay is put in the racks without raising, as the tops of the racks are level with the feeding floor. The racks are left down all night. The cattle have water before them all the time in two large troughs furnished from a tank on the second floor. This tank is supplied with water by a windmill. A handful of salt for each animal is thrown on the turnips twice a week. A tablespoonful of sulphur is given in the feed about once every two weeks. I have never used any spices or drugs, so cannot say anything about them. The second month I begin feeding them about 4 lbs. of meal per head per day, with the same quantity of hay and turnips as fed the first month. The third month the meal is increased to about 8 lbs. per animal per day, and the turnips are reduced to about 40 lbs. The fourth month the meal is increased to about 12 lbs. per day, and the turnips reduced to about 30 lbs. The fifth month 15 lbs. of meal is fed and 30 lbs. of turnips. The quantity of hay fed during the last three months must be left to the judgment of the feeder, who must never forget that the animals should have abundance of hay, without waste. My average was about 15 lbs. per day per head for last three months. This combination of rations gives each animal an average of 10 lbs. of meal per day for 120 days. The concentrated food cost me about $11 per head for the whole feeding period. The increase and decrease of meal and turnips is made gradually, and not abruptly. Regular feeding and nondisturbance of the animals are important factors to successful feeding; therefore I insist upon the observance of these factors, and I have found, when attended to, that the cattle lie down about 9 a. m. and ruminate till about 3 p. m.

When the animals come into the stable they are examined for vermin, and if quiet enough a strip about 6 inches wide is clipped down the backbone with the horse clippers, and the whole herd is then sprayed with a coal-oil emulsion. I use a spray pump attached to a barrel, and work the same from the feeding passage above, the cattle being driven past underneath until they are all soaked with the solution. For the last number of years it has been found necessary to spray three times during the feeding period. It is important to keep the animals free from vermin, but is not profitable to feed two families when one gives no return. If an animal is sick he is removed from the herd and is tied in a stall set aside for that purpose, where he can be properly treated and looked after.

My experience is that steers fed loose do better than when tied in stalls, for when loose the animal is not under restraint as if tied, and lives much as he did in the open field. He is also at liberty to rub himself against posts, and in this way relieve himself of this great itchiness incident to confinement. He can also lie down and rise with greater ease. The most important reason is the great increase in weight in cattle fed loose over those tied. On fine warm days the cattle are let out in a yard to the south, but, strange to say, they do not seem satisfied and want to get back into the stable.

It is almost impossible to select 124 good feeders in one day, and last year it took from October 29th to November 15th to get the required number. Last year the whole herd when stabled averaged 1,107 lbs. On the 27th March, 1899, I shipped out 38 head averaging 1,410 lbs., leaving 86 head in the stable. Four of these 86 were old animals and poor feeders, one actually weighing less going out than when he went in, the other three not gaining anything. One steer died early in the season; the remaining 85 were shipped out May 3rd, and averaged 1,370 lbs., making the average gain of the 123 head 276 lbs. If the four poor feeders had been taken out the gain would have been considerably more. I have no doubt, all conditions being right, but that steers weighing 1,100 lbs. on entering the stable can be increased in 150 days to 1,400 lbs. The profit on these cattle will vary in proportion to the value put on the coarse feed and the cost of the concen-