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AGRICULTURE.

BRIDGING AND TREATMENT OF HORSES.

To the Editors of the Cultivator:—Your correspondent W. B. From North Carolina, expresses a wish "to see some extended remarks on the best manner of treating work and travelling horses;" and you ask some of your correspondents to reply to his inquiry. To do so fully would require a book or pamphlet of a considerable size. But the subject is highly important to all who own horses and particularly to those of whom there are many who know little or nothing of their proper treatment: I will, therefore, offer a few remarks in the hope that some of your correspondents who are better qualified than I am, may be tempted by my efforts to enlarge upon it. My observations will consist chiefly of directions condensed from works published in England, under the supervision of the Society for the Diffusion of Knowledge. The first is entitled "The Horse," and is by far the best treatise I have ever read in regard both to the theory and practice of the veterinary art; no farmer should be without it. The second was only published last year, and is called "Outlines of Flemish Husbandry." It contains many very useful directions as to the management of farm horses, the correctness of which, as well as of those in the Horse Book, none could fail to perceive, if I had room to present them as such for them, together with the directions of themselves.

To begin with the stable. This should be so constructed that its temperature during spring, summer, and fall, should be very nearly the same as that of the open air; and in winter, not more than 10 degrees above that of the external atmosphere. The size recommended as best, is (in the proportion for six horses) 40 feet long, 13 or 14 wide, and 12 feet high, if a loft is made to it, in which case there should be a plastered ceiling, to prevent the hay from being scented by the exhalations of the stalls and floor. The whole stable, especially the stalls, should be kept as clean as practicable, by frequently changing the beds and strewing plaster of Paris on those spots, where the urine falls. This not only prevents its offensive odor, by combining with it ammonia, but thereby furnishes one of the most powerful of all the new manures yet discovered. The floor of the stalls should be sloped barely enough to drain off the urine not abstracted by the litter and plaster of Paris, since a level position for the horses' feet is the most natural, and consequently best for the muscles and sinews of their legs and ankles.

Light is quite as essential to the soundness of your horses' eyes, as pure air is to the health of his body. But it should be let in through glazed windows, and open gratings, which serve also as ventilators, under the eaves of the roof. No openings should be made, either under the mangers, or opposite, or just above the horses' heads, as partial streams of air often produce colds, with all their bad consequences in horses; especially if they are put up in such stables immediately after being much heated, and before they are rubbed dry. A glaring light, however, should always be avoided, since horses can neither rest, nor sleep, nor fatten so well in such light, as in that which is moderate.

Under the head of "grooming," it is recommended to treat farm horses differently from those kept for the saddle and carriage. The farm horse which is worked hard all day, and turned out at night, requires little more than to have the dust brushed off from his limbs, since the dandruff or scurf which is removed by the curry-comb, is a provision of nature to defend him from the wind and the cold. But if generally stabled, then currying, brushing, and rubbing are necessary. These operations are indispensable to saddle and carriage horses; and should always be performed in the open air when the weather permits. They open the pores of the skin, and in circulating the blood, in augmenting free, healthy, insensible perspiration, serve instead of exercise, when that cannot be taken. Moreover, it regularly and carefully performed, with a plenty of good food in which two or three table-spoons full of brown sugar is occasionally mixed, they will secure that fine, glossy, dappled coat, to attain which, the health, and not infrequently the life, of the horse is sacrificed, by keeping him covered up with blankets. Care should be taken in using both the curry-comb and brush, especially when new,

not to apply them roughly, particularly to horses that have tender skins, and fine, thin hair. For all such the curry-comb is hardly necessary, if they are well rubbed, and dressed with a soft brush and hair-cloth.

Horses which are constantly stabled, should be moderately exercised for two hours a day, when the weather permits, if you would keep them perfectly healthy. This, however, should depend somewhat on their age, as a young horse requires more exercise than an old one. But for neither should it be violent, when given for health; nor should the horse ever be put up until he is cool. The whip or spur should never be used for any fault but dullness or obstinacy, although it is very common to do it both for starting and stumbling, both of which are certainly aggravated by it, and thereby the rider punishes himself, in the end, much more than he does his horse. In fact, harsh, cruel treatment to horses succeeds as badly as it does with children; and all who are so brutal and inhuman as to be guilty of it, deserve well to become its victims; neither whip nor spur would be bad remedies for their detestable tempers and habits.

It is common, immediately after hard work or travelling in hot weather, to wash horses all over, or swim them in water much cooler than their skins or the atmosphere. This practice is very dangerous, often producing colds, fevers, and not infrequently, fatal chronic complaints, unless the same exercise is speedily repeated. Even the partial application of very cold water to parts of the body, or the head, or the legs, when the horse is much heated, should be avoided; for his appearing to be gratified by it is no more a proof that it is good for him, than the manifest gratification of a sot in dram-drinking, after having been drunk, is proof that he is benefited thereby. The poor horse which knows no better, experiences present relief, at the expense of future suffering that he is incapable of anticipating, or brute as he is, he would probably reject it. Rubbing in the shade and leading the horse about at intervals, constitute the proper treatment both for farm and other horses, when much distressed by severe work of any kind.

But all precautions to preserve the health and vigor of your horses will prove unavailable, unless you pay equal attention to the kind and quality of their food; the manner of feeding them, and also of giving them water.

To enable either farm or other horses to render the utmost service of which they are capable, they should be fed wholly no dry food, the grain and long forage to be old and sound, the first of which should be ground, and the latter chopped in all cases where practicable. For saddle and carriage horses under hard and constant usage, oats are better than Indian corn, and that is preferable to every other grain. The blades also, when well cured, are better than any other kind of long forage, as they contain more saccharine matter. When either farm or other horses are much heated, and great haste is indispensable, no other food should be given them than a hand full or two of old corn or oatmeal stirred into a few quarts of soft water, with a little salt dissolved in it. Before this is given, let their nostrils, inside and out, be cleansed by a sponge or rag wet with vinegar and water, if the former can be procured, if not, with water alone. After a very hard ride or travel in harness, the horse should be suffered to swallow, before any thing else is done to him, if time and weather permit, rather than to be led immediately into a stable to be cleansed and cooled.

Manger feeding with ground grain and chopped long forage, is now very generally preferred in England and Belgium, as well as by the best judges in our own country, to the old-fashioned, most wasteful way of giving unground grain in mangers, and unchopped forage in racks. These last are disused every where, but in a few places for green grass; and in lieu of the rack, wide, deep mangers are adopted, with small iron or wooden bars fastened across them, to prevent the horses from throwing out their food. In England the most common food for farm horses consists of a mixture of bruised oats, beans, and chaff, in the proportion of eight pounds of oats, which are equal to about five quarts, (their oats being a few pounds heavier per bushel than ours,) two pounds of beans, with twenty of chaff. Thirty-five or six pounds of such food is the day's allowance for medium sized horses while at work, and forty pounds for large horses. Such is the common allowance during winter, when the horses are constantly stabled. But from the end of April to the end of July they are usually turned out at night, and the whole of rest days. Other kinds of food, however, are much used by small farmers, such as barley, unmerchanted wheat, beans, peas, sweetish turnips, carrots, and potatoes, with grasses of various kinds but very little oats or rye.

In Belgium the chief food of their farm horses consists of green clover in summer, and roots with cut straw in winter. A few oats are occasionally given, but not in so regular a manner as to give great muscular strength. They usually go to work as soon as it is light, continue

at it until ten, then rest and feed until two or three o'clock, when they resume and continue their labor till six or seven. In harvest time they work from daybreak until evening, resting only a few hours in the heat of the day. A pair of horses with one plough are allowed for every 40 acres of arable land, the whole of which, on an average, is ploughed twice and harrowed three times; besides this they cart fodder and manure, and do the harvest work. Both in Belgium and England, they are moderately watered before and after feeding. When not worked, water is given them three times a day, and always of the softest kind, when it can be procured. In ordinary travelling also, a liberal supply of such water is strongly recommended to be given, a little at a time, which prevents excessive thirst, and the consequent drinking to excess. This is very dangerous, especially to a horse much heated, especially if the water be very cold.

In addition to the foregoing condensed remarks, taken chiefly from the two excellent works already mentioned, permit me now to offer such information as I have derived from others and from my own long experience as an owner of every kind of horses but the race horse, in regard to the best mode of managing these most useful animals in our own country. I will begin (as the saying is) at the beginning.

Colts should always be weaned before the grass is generally gone, and should be put into some enclosure where they cannot hurt themselves. Their dams should be stabled for a few days, and milked if their bags swell much. Those colts should never be stabled until broke, nor much after that before they are full grown. But they should have well covered shelters, open to the south, under which to protect themselves from bad weather. Plenty of good corn, fodder, or hay in winter, and grass when it comes, and as long as it lasts, will keep them whilst unbroke, in a healthy, growing condition, which is far better than keeping them very fat to force their growth beyond what is natural; for overgrown horses, like overgrown men, rarely, if ever, have hardihood, vigor, and activity in proportion to their size. In fact, very large horses are objectionable for all purposes, except slow and heavy drafts.

The gentling of colts should commence soon after they are foaled, and continue until they are backed. Frequent handling, occasional salting or feeding them out of your hand, and stroking their necks are all good practices. From two to three years old they should be accustomed by degrees to the saddle and bridle; a light snaffle is best. Thus treated, the breaking becomes so easy, that they will rarely play any tricks, and may be soon taught even to stand fire, by shooting off a gun or a pistol for a few days, just as they commence eating. In a word, uniformly kind, gentle treatment by their master, will always make such good, docile, gentle horses, that they will often follow him like his dog, and will manifest equal regard for his person.

All the general directions for the treatment of horses in England will suit quite as well for the horses of our own country. But the articles of food being somewhat different with us, I will now add a few remarks on that subject. In most of our states, the chief food for horses is Indian corn and the fodder thereof. Both are usually fed away in the most careless, extravagant, and wasteful manner—the corn being given in the ears, and the fodder in bundles, which are thrown untied into the horse-racks or on the ground. Much then, is wasted by being trampled under foot, and so dirtied that the horse rejects it, whilst many of the grains of corn pass through his body undigested, and of course render him no service whatever. He also loses all the benefit of the cobs, which he rarely eats when whole, although they make an excellent food, if ground up with the grain. This mode of feeding is much the most general, notwithstanding it has been indisputably proved by actual and numerous experiments, that to give the corn and cob ground together, which is called *cob hominy*, and fodder chopped in a cutting box, not only saves more than enough to pay the extra expense of grinding and cutting, but actually keeps the horse in a better condition than the same quantity of corn and fodder given in the usual way. Moreover, it is a cheaper food than any other of which grain, either whole or crushed, forms a part. Take oats for example, which are the most common, where corn is not used, and let us estimate the former at forty and the latter at sixty cents a bushel, which I think a fair general average in the states wherein corn is a staple crop. Now as only half the cob hominy is grain, the mixture will cost only thirty cents a bushel, and is generally deemed fully equal in nutritive qualities to a bushel of oats. If these also be crushed, we must add about four cents to their cost, and the difference between the two kinds of ground food. (The chopped fodder being the same in both cases.) will be about 14 cents per bushel, in favor of cob-hominy. Suppose then, that one gallon, three times a day, is enough, as experience has

proved it to be, for an ordinary sized horse, with eighteen or twenty bundles of fodder, the saving in one week, by feeding with cob-hominy, will be a fraction over thirty-six cents, or nearly nineteen dollars a year for each horse, which is the annual interest of rather more than \$315. Yet not one in a hundred of us ever thinks of saving it! Few southern and western men who are "well off," (as the saying is,) keep less than three or four horses that do no farm work, and this they do at an additional yearly expense, when oats and unchopped fodder are their food, of 57 dollars for three, and 76 dollars for four horses, rather than be at the small trouble of having their fodder chopped, and their ears of corn ground into cob hominy. Ten or twelve poor children might be annually schooled for that sum. For horses that are often hard ridden and rapidly travelled, oats are generally deemed better than corn, as less heating; but a greater quantity of them must be given, in the proportion of about one and a half gallons of oats to one of corn at each feed. Under such usage, green food should never be given if avoidable. But when the horse can rest for a few days some may be allowed him, in small quantities, by way of medicine. Any kind of grass that a horse will eat, may answer the purpose, but lucerne and clover of the first cutting are deemed best—the second always salivates—an effect, by the way, for which no cause, I believe, has yet been discovered. Presupposing that a horse has plenty of wholesome food and proper grooming, if you would give him a finer coat than these alone can produce, let half a pint of sound wheat or a small handful of brown sugar be mixed with his food, about once in every six or eight days, for a few weeks, and the object will be attained far better than by blanketing, which always makes him more liable to take cold, when exposed to bad weather, as he sometimes must necessarily be. On long journeys, in hot weather, give your horse a double feed at night; in the morning travel 15 or 20 miles before you feed him again, then do it lightly and after he is cool. Give a few quarts of soft water both before and after his food, then resume your journey and go fifteen or 20 miles farther. This will enable you to stop early every evening, without any night riding, and will give both yourself and your horse a long rest to recruit your strength. If your horse be sound, you may thus travel him hundreds of miles without danger of his failing.

Farm horses may be kept in good order at much less expense; for they may be fed, when unemployed, upon any of the roots which it is customary to give them in England, in addition to these, we have the pumpkin and its varieties, all of which are good food for horses, but the seeds should always be taken out, as they are powerfully diuretic. If such food be at first rejected, horses may soon be taught to eat it, by mixing a little salt with it, and offering them nothing else for a few days. To this should be added, as soon as they will eat such mixture, from thirty to forty pounds of chopped provender, for every twenty four hours, and this may be made either of well-cured corn tops, blades, hay wheat, oat, or rye straw, or chaff. Corn shucks (which is the southern name for the covering of the ears) answer well to mix when chopped up with the roots or pumpkins; if they are salted as they are put up, and kept dry. Another very good long forage peculiar to our country, consists of Indian pea-vine. These make excellent food for farm horses, if exposed to the sun until they are somewhat wilted, then stacked in alternate layers with the straw of either wheat, rye, or oats, and each layer sprinkled with salt, as they are stacked. Thus fed and protected from bad weather by warm shelters, open only to the south, and well covered with any kind of thatch, or corn tops, or loose straw, farm horses may be kept healthy and in good order throughout the Southern states, without their owners incurring the expense of wooden or brick stables for them. Stalls, however, should be made for them under the shelters, with divisions high and close enough to prevent their fighting, and in those they should be tied while eating. Their mangers or troughs should be wider and deeper, than when racks also are used, although they never should be, or lazy hostlers will be sure to avail themselves of them, if not closely watched. When put to constant farm work, horses should have only dry food, three times a day. It may consist either of bran, shorts, cob-hominy, ground rye, oats, broom corn, or oats mixed with chopped stuff in the proportions already mentioned—that is, about thirty-five pounds for horses of common size, and forty pounds for the largest. But after the grass is in plenty, and as long as it lasts (if it does not salivate,) they may be turned out of nights and rest-days, although if your pastures are large, more time is lost, every morning in catching them and getting ready for work, than would amply compensate, if spent in farm labor, for the expense of keeping them up, especially should you have any grass to give them a moderate quantity in lieu of a portion of their dry food.

To fatten a horse rapidly, his fodder or hay should always be chopped and steamed, before it is mixed with the meal of either corn, oats, or rye, and as much

should be given him, three times a day, as he will eat without leaving any. Give him also salt alone as often as he will eat it, and soft water at least thrice a day, but always with some meal of either of the above mentioned grains stirred up with it. A small quantity of ground Indian peas will add much to the nutritive properties of his food; and thus treated, with moderate daily exercise, in good weather, the process of fattening will soon be completed, provided the horse be in good health at the commencement.

I fear that some of your readers perhaps, may deem the foregoing details relative to horses, more minute than they need be, and possibly may think me somewhat officious in giving them. But should they be disposed thus to condemn me, I must beg them to recollect before they pass sentence, that all I have written on the subject has been communicated at the request of yourselves and one of your correspondents. It is true that this request was made to your contributors generally, and therefore it was not my special business to comply with it. Still I have ventured to make the attempt, and should it bring me into any scrape, I therefore give you and your North Carolina friend fair notice that I shall call upon you both lustily for help. If either of you should want farther information in regard to horses, let me strongly recommend to you the work on "The Horse," for in addition to all that I have said, you will find a prescription for all their diseases, and directions for correcting every fault which can be corrected.

FARM-YARD MANURE.

The manure commonly furnished by the farm-yard is compounded of a mixture of animal substances, of the putrefying straw of various descriptions of grain, mixed with the faeces, and urine of cattle, horses and swine.—The mixture forms no new substances, neither does the putrefaction which ensues add to the bulk of the dung; on the contrary, it causes a considerable loss of weight.

There have been many arguments and much difference of opinion among cultivators, with regard to the advantages of employing dung in a fresh or in a putrid state; and, as is too often the case, both parties have run into extremes, the one side contending for the propriety of employing it fresh from the farm yard, the other contending that it cannot well be too rotten. The mode employed by Mr. Coke is the medium between these erroneous practices; he found that the employment of the fresh dung certainly made the dung go much farther; but then a multitude of the seeds of various weeds were carried on to the land along with the compost; He has therefore, since used his manure when only in a half putrid state, called short dung by farmers; and hence, the seeds are destroyed by the effects of the putrefaction, and dung still extends much farther than if suffered to remain until quite putrefied.

Putrefaction cannot go on without the presence of moisture; where water is entirely absent there can be no putrefaction; and hence, many farmers have adapted the practice of pumping the drainage of their farm-yards over their dung heaps; others invariably place them in low damp situations. This liquid portion cannot be too highly valued by the cultivator. The soil where a dunghill, has laid in a field is always distinguished by a rank luxuriance in the succeeding crop, even if the earth beneath, to the depth of six inches, is removed and spread with the dunghill.

The controversy, too, which once so keenly existed, as to the state of fermentation in which dung should be used on the land, has now pretty well subsided. There is no doubt but that it cannot be applied more advantageously than in a fresh state as possible, consistent with the attainment of a tolerable clean husbandry, and the destruction of the seeds of weeds, grubs, &c., which are always more or less present in farm-yard dung. These are the only evils to be apprehended from the desirable employment of this manure in the freshest state; for otherwise the loss of its most valuable constituents commences as soon as ever fermentation begins. This was long since demonstrated by Davy, whose experiments I have often seen repeated and varied. He says, "I filled a large retort, capable of containing three pints of water, with some hot fermenting manure consisting, principally of the litter and dung of cattle; I adapted a small receiver to the retort, and connected the whole with a mercurial pneumatic apparatus, so as to collect the condensable and elastic fluids which might arise from the dung. The receiver soon became lined with dew, and drops began, in a few hours to trickle down the side of it. Elastic fluid likewise was generated; in three days thirty five cubical inches had been formed, when analyzed, were found to contain twentyone cubical inches of carbonic acid; the remainder was hydrogen-banate, mixed with some azote, probably no more than existed in the common air in the receiver. The fluid matter collect-

ed in the receiver at the same time amounted to nearly half an ounce. It had a saline taste, and a disagreeable smell, and contained some acetate and carbonate of ammonia. Finding such products given off from fermenting litter, I introduced the beak of another retort, filled with similar dung very hot at the time, in the soil, amongst the roots of some grass in the border of a garden; in less than a week a very distinct effect was produced on the grass; upon the spot exposed to the influence of the matter disengaged in fermentation, it grew with much more luxuriance than the grass in any other part of the garden."

Nothing, indeed, appears at first sight so simple, as the manufacture and collection of farm-yard dung; and yet there are endless sources of error into which the cultivator is sure to fall, if he is not ever vigilant in their management. The late Mr. Francis Blakie, in his valuable little tract upon the management of farm-yard manure, dwells upon several of these; he particularly condemns the practice of keeping the dung, arising from different descriptions of animals, in separate heaps or departments, and applying them to the land without intermixture. It is customary," he adds, "to keep the fattening neat cattle in yards by themselves; and the manure thus produced is of good quality because the excrement of such cattle is richer than that of lean ones. Fattening cattle are fed with oil-cake, corn, Swedish turnips, or some other rich food, and the refuse and waste of such food, thrown about the yard, increases the value of the manure; it also attracts the pigs to the yard. These root the straw and dung about, in search of grains of corn, bits of Swedish turnips, and other food, by which means the manure in the yard becomes more intimately mixed, and is proportionately increased in value. The feeding troughs and cribs in the yard should, for obvious reasons, be shifted frequently."

"The horse dung," continues Blakie, "is usually thrown out at the stable doors, and there accumulates in large heaps. It is sometimes spread a little about, but more generally not at all, unless where necessary for the convenience of ingress and egress, or perhaps to allow the water to drain away from the stable door.—Horse dung lying in such heaps, very soon ferments, and heats to an excess; the centre of the heap is charred or burned to a dry white substance, provincially termed *fire-fanged*. Dung in this state, loses from 50 to 75 per cent. of its value. The diligent and attentive farmer will guard against such prodigal waste of property, by never allowing the dung to accumulate in any considerable quantity at the stable doors. The dung from the feeding hog styer should also be carted and spread about the store cattle yard, in the same manner as the horse dung."

Johnson on Manure.

CARE OF STOCK.

At reasonable times we have spoken of the producing and gathering of hay, roots, &c.; also of the importance of making the barn comfortable. Without food and comfortable lodging, stock will not thrive. But these alone are not all that the farmer may profitably allow to his domestic animals.

Kindness or gentleness in the general treatment of all animals, is quite conducive to their enjoyment and thrift; we therefore recommend the employment of kind tones and gentle actions towards the inmates of the barn. No matter how large your outlay of kindness, for the investment will yield a good interest.

The card and curry-comb, by exciting the action of the skin, help to increase the circulations and to give health and vigor to the animal. The cow being generally confined to the yard in winter and accustomed to but little exercise, requires carding and rubbing more than the ox, whose exercise will open the pores of the skin and help to keep up good circulations throughout the system. And yet it is the ox, that goes into company with his owner, whose hide is rubbed down with elbow grease—while the cow, needing it more, is seldom thus favored. A good carding, each morning, will be found economical food for your beasts.

Let all your animals be so well littered that their bed shall be dry and comfortable. Sides bedaubed and wet with excrements, must be both uncomfortable and unhealthy.

Feed out your hay in small quantities at a time—the cattle relish better that which has just been put before them, than that which they have fouled by their breath. Mix a variety of kinds together—fresh meadow hay, salt marsh hay, oat or barley straw, English hay; these or whatever other ingredients you may have, it is often well to mix thoroughly and feed out to the stock. The proportions must be determined by the quantity of each that is to be consumed in the course of the winter—but make your calculations so as to have the food to become better in quality toward spring, than it is in mid winter.

All hay before being fed out should be well shaken up. The more the straw and each other, and the lighter they lay, the