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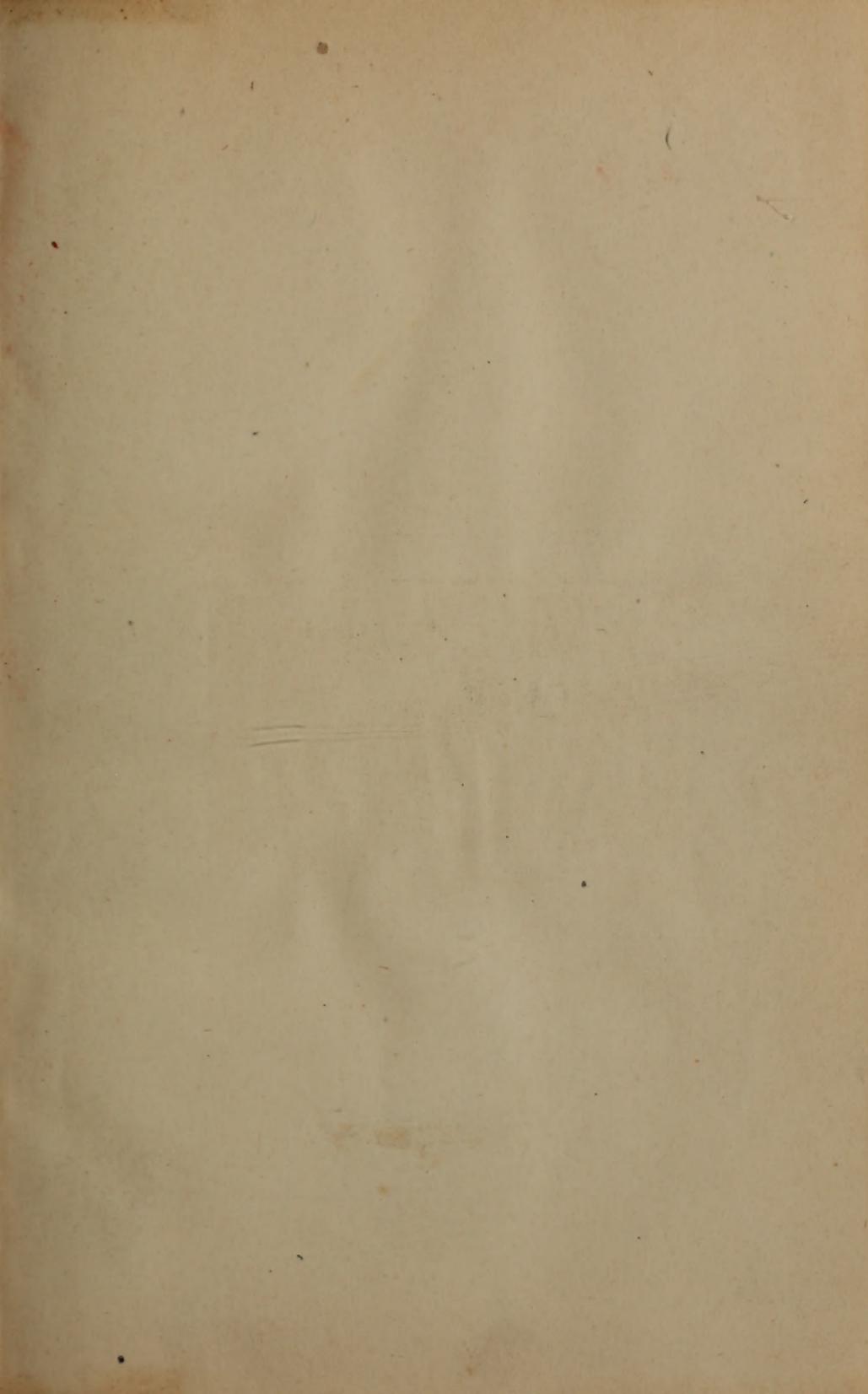
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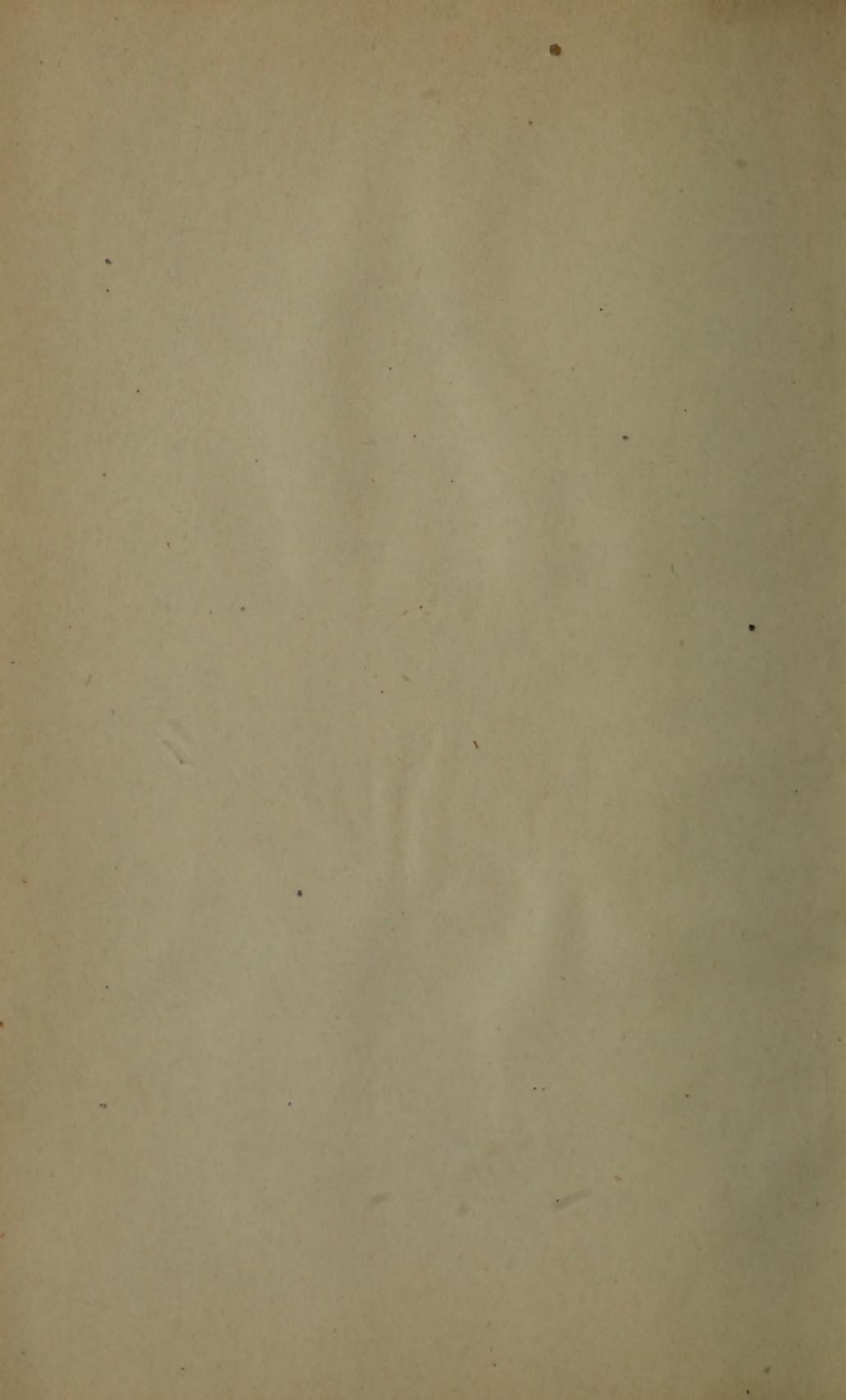
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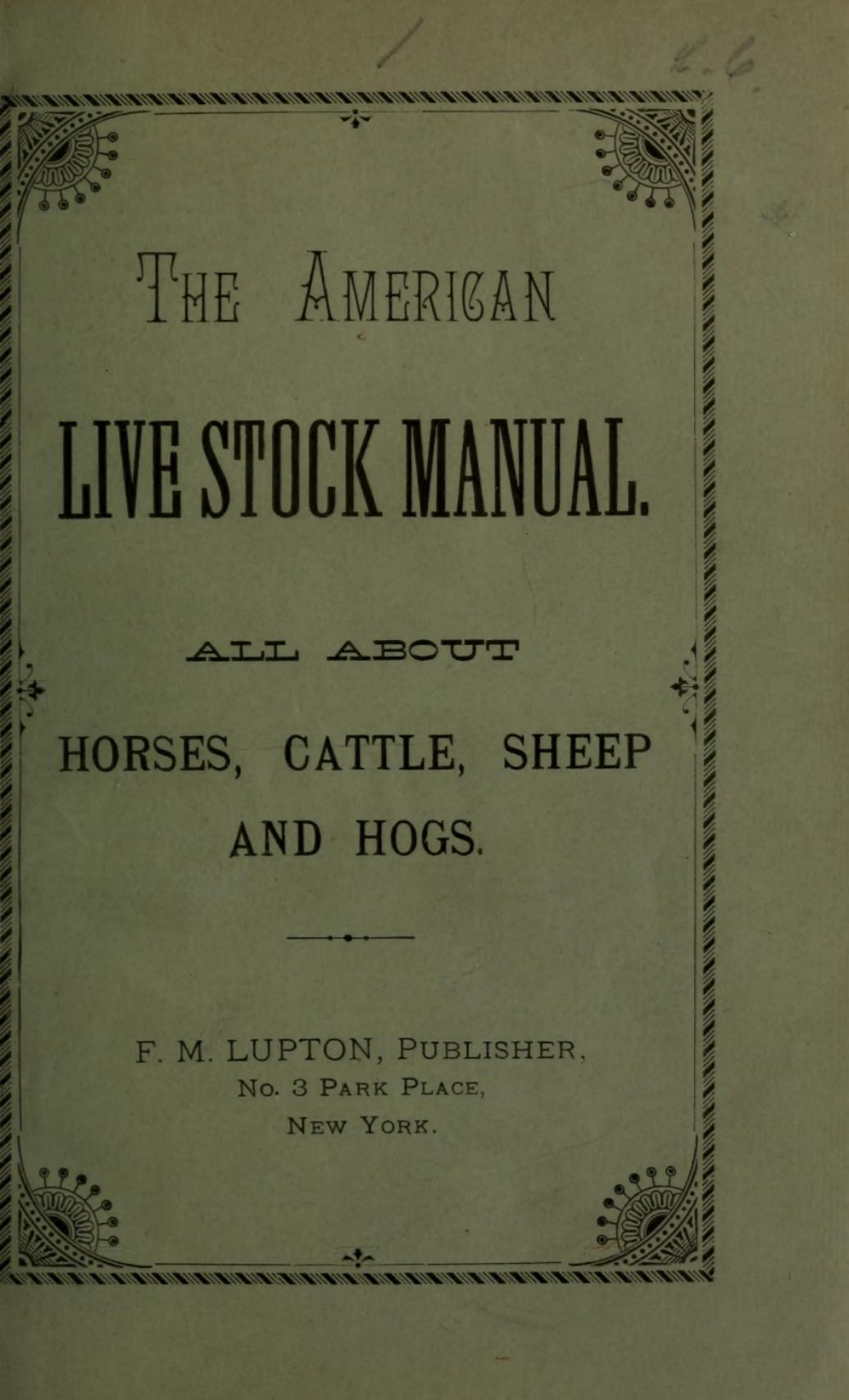
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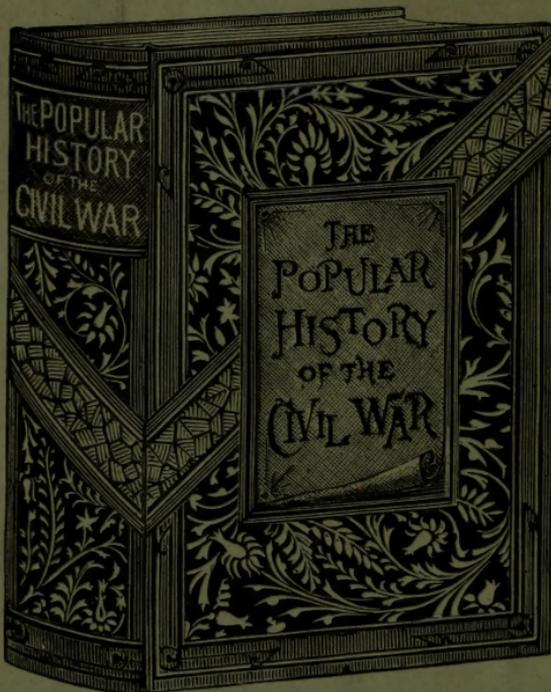
THE AMERICAN
LIVE STOCK MANUAL.

ALL ABOUT
HORSES, CATTLE, SHEEP
AND HOGS.

F. M. LUPTON, PUBLISHER,
NO. 3 PARK PLACE,
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A BOOK THAT EVERY AMERICAN CITIZEN SHOULD POSSESS !

THE POPULAR HISTORY of the CIVIL WAR!



We suppose that almost any intelligent American of the present day, if he were limited to the possession of *three books*, would select as follows: 1. The Bible; 2. A Dictionary; 3. A History of the Civil War. The great Civil War between the North and South, in the years 1861 to 1865 inclusive, was, next to the American Revolution, the most stupendous event in the history of our great country. During those memorable four years, when our fair land was bathed in the blood of its gallant sons, the whole world looked on with breathless interest. It is but natural that an event of such paramount importance in our national history should have engaged the attention of every prominent American historian. Almost a multitude of books directly bearing upon the Rebellion have been published. Yet it is our firm belief that the War Histories heretofore published are but meagerly adapted to the wants of the masses of American citizens to-day; first, because they are too expensive, involving an outlay greater than the majority of people can afford to make; and, second, because they are too lengthy, going so minutely into particulars and details that they become dry and uninter-

esting. This work is most aptly and appropriately entitled 'THE POPULAR HISTORY OF THE CIVIL WAR.' because it meets the *popular* demand for an authentic history of the Rebellion, written in the most entertaining manner and published at a price within the reach of all. The book is a thorough, complete and authentic history, not only of every important battle and naval engagement that occurred during the war, but is likewise very complete in treatment of the political conditions, sectional differences and other causes which brought on the great conflict. It is just such a war history as every American citizen should possess and will prove of the utmost interest and value, not only to those who well remember, as some of whom participated in the war for the Union, but especially to that large class who have grown to manhood and womanhood long since the war closed, none of whom, not having read and carefully studied the history of the greatest contest of the Nineteenth Century, can claim to be well-informed and intelligent American citizens.

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AND REARING, OF

HORSES, CATTLE, SHEEP AND HOGS,

DIRECTIONS FOR THE

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PECULIAR TO THEM, AND OF ALL

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LIVE STOCK.

How to Judge a Horse.—1. Never take the seller's word. If disposed to be fair, he may have been the dupe of another, and will deceive you through representations which cannot be relied upon.

2. Never trust a horse's mouth as a sure index of his age.

3. Never buy a horse while in motion; watch him while he stands at rest and you will discover his weak points. If sound, he will stand firmly and squarely on his limbs without moving any of them, feet planted flat upon the ground, with legs plump and naturally poised. If one foot is thrown forward with the toe pointing to the ground and the heel raised, or if the foot is lifted from the ground and the weight taken from it, disease of the navicular bone may be suspected, or at least tenderness, which is a precursor of disease. If the foot is thrown out, the toe raised, and the heel brought down, the horse has suffered from laminitis, founder, or the back sinews have sprained, and he is of little future value. When the feet are all drawn together beneath the horse, if there has been no disease, there is a misplacement of the limb at least, and weak disposition of the muscles. If the horse stands with his feet spread apart, or straddles with his hind legs, there is weakness of the loins, and the kidneys are disordered. When the knees are bent, and totter and tremble, the beast has been ruined by heavy pulling, and will never be right again, whatever rest and treatment he may have. Contracted or ill-formed hoofs speak for themselves.

4. Never buy a horse with a bluish or milky coat in his eyes. They indicate a constitutional tendency to ophthalmia, moon-blindness, etc.

5. Never have anything to do with a horse who keeps his ears thrown backward. This is an invariable indication of bad temper.

6. If the horse's hind legs are scarred, the fact denotes that he is a kicker.

7. If the knees are blemished, the horse is apt to stumble.

8. When the skin is rough and harsh, and does not move easily and smoothly to the touch, the horse is a heavy eater, and digestion is bad.

9. Avoid a horse whose respiratory organs are at all impaired. If the ear is placed to the heart and a wheezing sound is heard, it is an indication of trouble.

Feed for the Horse.—One of the most sensible articles on the treatment of a horse is that which is given from a physiological standpoint by Colvin.

It is the opinion of this authority that the horse's stomach has a compacity of only about 16 quarts, while that of the ox has 250. In the intestines this proportion is reversed, the horse having a capacity of 190 quarts against 100 of the ox. The ox, and most other animals, have a gall bladder for the retention of a part of the bile secreted during digestion; the horse has none, and the bile flows directly into the intestines as fast as secreted. This construction of the digestive apparatus indicates that the horse was formed to eat slowly and digest continually bulky and innutritious food. When fed on hay it passes very rapidly through the stomach into the intestines. The

horse can eat but about five pounds of hay in an hour, which is charged, during mastication, with four times its weight of saliva. Now, the stomach, to digest well, will contain but about ten quarts, and when the animal eats one-third of his daily ration, or seven pounds, in one and one-half hours, he has swallowed at least two stomachfuls of hay and saliva, one of these having passed to the intestines. Observation has shown that the food is passed to the intestines by the stomach in the order in which it is received. If we feed a horse six quarts of oats it will just fill his stomach, and if, as soon as he finishes this, we feed him the above ration of seven pounds of hay, he will eat sufficient in three-quarters of an hour to have forced the oats entirely out of his stomach into the intestines. As it is the office of the stomach to digest the nitrogenous parts of the feed, and as a stomachful of oats contains four or five times as much of these as the same amount of hay, it is certain that either the stomach must secrete the gastric juice five times as fast, which is hardly possible, or it must retain this food five times as long. By feeding the oats first, it can only be retained long enough for the proper digestion of hay, consequently it seems logical, when feeding a concentrated food like oats, with a bulky one like hay, to feed the latter first, giving the grain the whole time between the repasts to be digested.

Feeding Horses.—Another authority writes as follows: The horse has the smallest stomach, in proportion to his size, of any animal. This space is completely filled by four quarts of oats and the saliva that goes into the stomach with it. Horses are generally overfed and not fed often enough. For a horse with moderate work six or eight quarts of bruised oats and ten pounds of fine hay are sufficient. This should be fed in three meals, and is better if fed in four. A horse's digestion is very rapid, and therefore he gets hungry sooner than a man. When he is hungry he is ineffective, and wears out very rapidly. Water fills the stomach, lowers the temperature, and dilutes the gastric juice; therefore a horse should not drink immediately before eating. Neither should he be watered immediately after eating, because he will drink too much and force some of the contents of the stomach into the large intestine, which will cause scouring. Scouring is also caused by too rapid eating, which can be prevented by putting half a dozen pebbles half the size of the fist into the manger with the oats. Give only a moderate drink of water to a horse. A large drink of water before being driven will have a very quieting effect on a nervous horse. A race horse always runs on an empty stomach. Digestion progresses moderately during exercise, if the exercise is not so violent as to exhaust the power of the horse. I consider bruised oats worth twenty per cent. more than whole. They are more perfectly digested. I prefer oats to any other grain for horses. Cracked corn is good under some circumstances, but I would not use meal or shorts. The disease called big head is caused by feeding corn. When a horse comes in hot I would give a moderate feed immediately. If the horse is too tired to eat I would take the feed away. A heated horse is a reason against watering and for feeding, for the system is just then in a condition to begin digestion. A horse will not founder if fed immediately when hot. I prefer dry feed, unless the horse has some disease of the throat and lungs. I do not consider it worth while to cut hay. I always feed hay from the floor, then the horses do not get particles in their eyes.

Raising a Colt.—A colt is regarded as an incumbrance because he is useless until he arrives at a suitable age for work, but it really costs very

little, compared with his value, to raise a colt. When the period arrives at which the colt can do service, the balance sheet will show in its favor, for young horses always command good prices if they are sound and well broken. One of the difficulties in the way is the incumbrance placed on the dam, which interferes with her usefulness on the farm, especially if the colt is foaled during the early part of the spring. Some farmers have their colts foaled in the fall, but this is open to two objections. In the first place, spring is the natural time, for then the grass is beginning to grow, and nature seems to have provided that most animals should bring forth their young in a season beyond the reach of severe cold, and with sufficient time to grow and be prepared for the following winter.

Again, when a colt is foaled in the fall he must pass through a period of several months' confinement in the stable, without exercise, or else be more or less chilled with cold from time to time. Should this happen, the effect of any bad treatment will be afterward manifested, and no amount of attention can again elevate the colt to that degree of hardiness and soundness of body that naturally belongs to a spring colt. Besides, a colt foaled in the spring will outgrow one foaled in the fall. An objection to spring colts may be partially overcome by plowing in the fall, or keeping the brood mares for very light work, with the colts at liberty to accompany them always. A colt needs but very little feeding if the pasture is good and there is water running through it. He needs then only a small feed of oats at night—no corn—and if he is given hay it is not necessary to give him a full ration. What he will consume from the barn will not be one-third his value when he is three years old, and if he is well bred the gain is greater.

When a farmer raises his horses he knows their disposition, constitution and capacity. It is the proper way to get good, sound, serviceable horses on the farm. It should not be overlooked that a colt must be tenderly treated from birth, and must be fondled and handled as much as possible. He should never hear a harsh word, but should be taught to have confidence in everybody he sees or knows. This is an easy matter if his training begins from the time he is a day old. He can be thus gradually broken without difficulty, and will never be troublesome. No such thing as a whip should be allowed in a stable that contains a colt. Colts should not be worked until three years old, and then lightly at first, as they do not fully mature until they are six years old, and with some breeds of horses even later. Mares with foals at their side should be fed on the most nourishing food.

To Bit a Colt.—The true way to bit a colt is not to bit him at all; that is, let him bit himself. When my colts are one year old, I begin to teach them to hold the bit in their mouth. The bit is of pine, some half-inch in diameter, and five inches in length. This piece of soft pine is held in the mouth by a cord tied to either end, and fastened on the head, back of the ears. The colt loves to have the bit in his mouth, because it enables him to bring forward the saliva process. He will bit, and work it over in his mouth, and enjoys it hugely. He will welcome it, and will actually reach out and open his mouth for it, as a trained horse will for a bit. After a few days, you can tie strings making miniature reins to this bit, and teach the colt the proper use of it. When this is done, he is ready for the regular steel bit. Put your bridle on with a leather bit, large and pliant; throw your check-line, if your bridle has one attached, into the pigsty; get into your wagon and drive off. This is all the "bitting" a colt needs. Treated in this way, he will have a lively, yielding, sensitive mouth. He will take the bit bravely

when working up to his speed, but yield readily to the driver's will. A horse, bitted in this sensible way, can be driven a forty-clip with the lines held in one hand, or be lifted over a five-barred gate with the strength of a single wrist. If you do not believe it, try it and see.



HORSESHOE.—FIG. 1.

wedges, are inserted. These are fastened by the fangs being brought, without touching the hoof, to the outside of the shoe, over which they are clenched with a small hammer. The cogs do not penetrate the hoof, and there is no risk of hurting the horse. The holes being wedge-shaped, cannot fill up with stones or dirt, and the fangs being malleable, the wedges are easily removed or inserted at pleasure. It is necessary, however, to get the holes punched in the shoes before the horse is shod, and for the coachman to be provided with a supply of these patent cogs to insure safety on any road in frost or on wood.

As many are accustomed to use a cog which screws into the shoe, Mr. Offord has prepared a steel wedge-shaped one (Fig. 2) for this purpose. The screw cogs are, of course, more expensive. In using them the shoe has to be drilled and tapped with one or more holes before the horse is shod. The cogs are inserted into these holes when needed, or removed at pleasure by means of a wrench provided

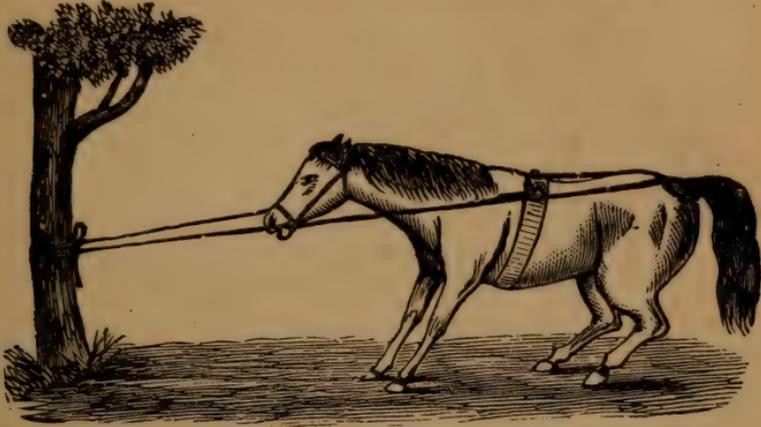


HORSESHOE.—FIG. 2.

A Convenient Horseshoe.—Among the numerous horseshoes lately devised in this and other countries, that invention in England, by Mr. Joseph Offord, seems worthy of special notice. Its object is to fit the hoof with a movable but firm covering, which can be readily adjusted to fit every kind of work and road, so that, like its master, the horse may own several sets of shoes for different occasions. The device consists in having one or more perfectly wedge-shaped holes in the side and close to the edge of each shoe (Fig. 1), in which triangular cogs, or

for this purpose. We give two illustrations, reproduced from the *Agricultural Gazette*, showing both these methods, with the punch, wrench, and cogs, both of which have stood the test of many years' experience, and have given great satisfaction.

To Break Horses from Pulling at the Halter.—Two methods of breaking a horse of this habit are here illustrated, as follows:



TO BREAK HORSES FROM PULLING AT THE HALTER.—FIG. 1.

Fig. 1.—Get a strong half-inch cord twenty-two feet in length; put the center under the tail like a crupper; twist them a few times as you bring them forward over the back; pass forward on each side of the body, the pass them forward through the halter below the jaw. Tie firmly to a tree, post, or stall, and excite the animal by any means that will cause him to pull, until the habit is overcome. You may even whip across the nose keenly until there is perfect submission, which will not require long. Hitch in this way for a few days, or so long as there is any predisposition to pull on the halter.

Fig. 2.—This contrivance consists of an ordinary ring halter, with the two side rings connected by a strong, flexible cord. Whenever the horse pulls, the inner part of the cord is drawn forcibly against his jaw, and the effect is a severer punishment than he is willing to endure.



TO BREAK A HORSE FROM PULLING AT A HALTER.—FIG. 2.

Warts on Horses.—A correspondent of an English agricultural journal writes: "Inquiries are made for a cure for warts on horses, mules, and cattle. Many remedies are prescribed

—many barbarous and cruel to the animal. I will give you a remedy often tried, and never known to fail. Anoint the wart three times with clean, fresh hog's lard, about two days between times. I have had warts on my horses—bleeding warts, of large size, rattling warts and seed warts, to the number of more than one hundred on one horse's head. I have never been able to find the warts for the third application of the lard. All disappear after the second application. I have sent this prescription to several agricultural papers, hoping it would be of some use to farmers. But they all seem slow to believe, perhaps, because the remedy is at hand and costs nothing. I own I was slow to believe myself; but, having a fine young mare with large bleeding warts, that covered parts of the bridle and girths with blood whenever used, I thought there would be no harm in trying lard on them. When the mare was got up for the third application, there were no warts, and the scars are there now, after more than fifteen years, with very little change. I may say that for cuts, bruises, galls, etc., the application of fresh lard—either for man or beast—is worth more than any patent liniment in use. It will remove pain instantly, and does not irritate raw flesh, as all liniments do.

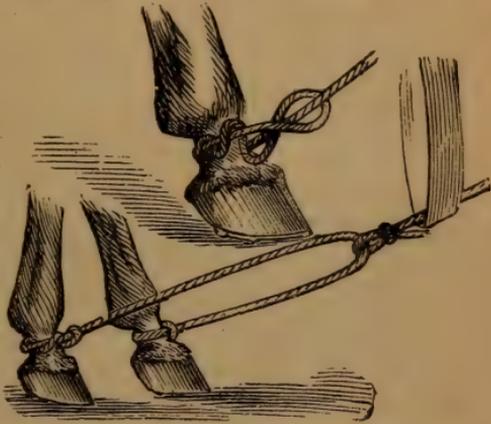
Stumbling Horses.—The Pittsburg *Stockman* says: "Some good horses are addicted to stumbling while walking or moving in a slow trot. A well-versed veterinarian states that there are two causes that would tend to produce this faulty action; one a general weakness in the muscular system, such as would be noticed in a tired horse; the other a weakness of the exterior muscles of the leg, brought about by carrying too much weight on the toe. To effect a cure, he adds, lighten the weight of each front shoe about four ounces; have the toe of the shoe made of steel instead of iron, it will wear longer, have it rounded off about the same as it would be when one-third worn out, in order to prevent tripping, allow one week's rest; have the legs showered for a few minutes at a time with cold water through a hose, in order to create a spray; then rub dry briskly, from the chest down to the foot. Give walking exercise daily this week, for about an hour, twice a day. When you commence driving again omit the slow jog—either walk or send him along at a sharp trot for a mile or two, then walk away, but do not speed for at least several weeks. By this means the habit of stumbling from either of the above causes will be pretty well overcome.

Cure for Balky Horse.—Hermann Koon, my German neighbor, writes a correspondent of the *Prairie Farmer*, is as patient a man as belongs to that patient race. Coming along the road a month or so ago, I saw Hermann lying in a fence corner, under the shade of an elm, quietly smoking his pipe. A quarter of a mile or so beyond I saw Hermann's horse and buggy by the roadside, the horse evidently tied to a post. This was a queer condition of affairs, for my neighbor is one of the most industrious men I know. My curiosity was aroused, and I stopped for an explanation. In broken English he told me his horse, a recent purchase, had proved balky, had stopped near where he now stood and no amount of coaxing could induce him to go on. Hermann did not curse the animal, he did not lash it with his whip, beat it with a club, build a fire under its belly, nor resort to any other of the brutal means some men use in such cases. He quietly got out of the buggy, tied the horse to the post, and walked off. Hermann had been taking it easy under the tree for three long hours. He thought the horse would be glad to go now if requested to do so. It had once before stopped

with him, and after a patient waiting alone, for an hour, it went on all right. He expected about four hours, this time, would effect a permanent cure of the bad habit. I went on about my business, leaving the stolid German to his pipe and his thoughts. To-day I met him again. He said the horse was eager to start when he went back to the buggy, and though he has used it every day since, no disposition to balk has been manifested. He believes there will be no repetition of the offense. Most men think they cannot afford to waste time in this way, perhaps, but if the horse is cured he is a valuable one, whereas, if it had become a chronic balker, through cruel management, it would be worthless. Hermann thought he could not make money faster than by saving the reputation of his horse. It is a new system, but Hermann says it will work well every time, if the horse is not naturally vicious. It looks reasonable to me, and if my nag ever tries the stop game with me, and I can command patience sufficient, I will try his plan.

Kicking Horses.—We present herewith a method that will be found available in all cases of kicking by horses. The beast should have a good

pair of bits in his mouth, to which should be attached a strap or rope sufficiently long to reach back between and behind the fore legs about eight inches, and should pass through the girth or surcingle. A loop should be made in this, the back end of the rope or strap, about two inches or more in length. Now take a rope about seven or eight feet long. (The length of the rope will depend upon the size of the horse; the rope should be long enough to allow of a free use of the horse's hind legs in traveling.) Pass one



HOW TO PREVENT HORSES FROM KICKING.

end of the rope round the leg, upon the inside, so the fastening shall come upon the outside, to prevent interfering, and bring it round upon the outside of the leg, and pass the end over and around the middle of the rope and wind it round the rope upon the outside of the leg, as illustrated. Draw the noose up round the pastern—i. e., between the fetlock and hoof—and pass the unfastened end of the rope through the loop in the rope or strap which passes through the surcingle, and fasten the end round the other leg, as was done the first time in fastening. This mode of fastening is simple, is easily done and undone, and will not work off, provided the noose is drawn up tightly around the pastern. If you have a horse that is addicted to the unpleasant habit of kicking, try this experiment, and you will find that it works admirably.

Training Vicious Horses.—A new and very simple method of training vicious horses was exhibited in West Philadelphia, and the manner in which some of the wildest horses were subdued was astonishing. The first trial was that of a kicking or "bucking" mare, which her owner said had allowed no rider on her back for a period of at least five years. She became tame in about as many minutes, and allowed herself to be ridden about without a

sign of her former wildness. The means by which the result was accomplished was a piece of light rope which was passed around the front jaw of the mare just above the upper teeth, crossed in her mouth, and thence secured back of her neck. It was claimed that no horse will kick or jump when thus secured, and that a horse, after receiving the treatment a few minutes, will abandon his vicious ways forever. A very simple method was also shown by which a kicking horse could be shod. It consisted in connecting the animal's head and tail by means of a rope fastened to the tail and then to the bit, and then drawn tightly enough to incline the animal's head to one side. This, it is claimed, makes it absolutely impossible for the horse to kick on the side of the rope. At the same exhibition a horse which for many years had to be bound on the ground to be shod suffered the blacksmith to operate on him without attempting to kick while secured in the manner described.

Galls and Sores on Horses.—If the owner of the horses, the farmer



ONE CAUSE OF HIDE-BOUND.

himself, could always be among his work animals, they would receive more attention and better treatment; but as he has so much to think about and look after, he cannot give this department his careful supervision, and many errors creep into the management which could not otherwise be found there. There are some horses which chafe more readily than others, while some do not have the collars and harness fit them, which will invariably cause galls or sores; and even when the harness does fit properly, the warm weather, or giving the horse a hard, warm day's work, may cause shoulder or saddle galls to appear, which will soon become larger and bad sores, if not promptly attended to. Bathing the shoulders, with spring or well water hardens them, and decreases the tendency toward galling. When galls appear, wash the affected parts with good white castile soap (only use the best castile and none other), and warm water to cleanse them. After the parts

have been dried with a soft cloth or rag or sponge, anoint the parts with a mixture of pure glycerine in which a little carbolic acid has been mixed. Do this at night after work. In the morn cleanse well again, as above, and put on some pulverized alum if you work the horse regularly. Continue this course until the sores are perfectly healed up.

Working Mares in Foal.—It is quite common to see or hear inquiries as to how near the time of foaling, a mare may be worked without injury to her or the colt, on the supposition that it is necessary for her to go idle for a month or two before.

This is not the case; and in the hands of a careful man she may be kept at such work as plowing, harrowing, or cultivating without the least danger, until she is ready to foal. Of course, fast driving or working to a heavy wagon tongue, on rough or muddy roads, or where heavy backing is to be done, should not be allowed. The writer has always worked mares moderately on the farm, when necessary, until it was evident they were likely to foal within a few hours, and has known of their foaling in harness, en route from the plow to the barn, but never with any bad results. While we think it more humane to let a mare have a few days' liberty before this trying event, there seems to be little necessity for losing the work of a strong mare for any great length of time before foaling, and we would prefer to allow the extra holidays afterward. Ordinarily, she will do first-rate work with a ten days' vacation, provided that she is not put immediately to work that is too severe, and fed partly with something else than corn.

Kicking in the Stall.—The habit of kicking in the stable arises from idleness. Regular day work is the best remedy, but when that is not sufficient, a branch or two of some prickly shrub, nailed to the posts, will often stop the habit, care being taken to arrange it so as not to prevent the animal from lying down and obtaining needed rest. Mares are supposed to be much more subject to this vice than geldings or stallions; but so far as our personal experience goes, there is little difference. A broad leather strap, to which is tied a small wooden log, are commonly applied to one or both legs, but they are not always sufficient. A heavier weight than two pounds should not be used, for if a horse is frightened by it, he may kick worse and do himself injury. When, however, he is well used to a wooden log, and has got over his first alarm, a heavier one may be put on if required. The strap, which should be broad, is buckled around the leg above the fetlock, and the weight suspended from it, which should not reach farther down than an inch and a half above the coronet, as the coronet would inflame to a mischievous extent if bruised. Sometimes a weight is required for each leg, if the animal kicks at both stall posts. Occasionally, when all other remedies fail, the practice will cease when the animal be turned loose in a roomy box stall.

Reining Horses.—The habit of reining in horses very tightly finds less favor with many persons than it did. It is not easy to see in what way the habit originated. If a man has a load of anything to pull, he wishes to get his head as far forward as possible to pull with ease. But the horse is denied this. His head is reined back tightly, thereby making it much harder for him to pull the load. To our view, a horse looks better, and we know he feels better, when pursuing a natural, leisurely, swinging gait. It is as necessary for his head to oscillate in response to the motions of his body, as it is for a man's hands to do the same thing. A horse allowed his

head will work easier and last longer than one on which a check is used. Blinds are another popular absurdity in the use of horses. They collect dust, pound the eye, and are in every way a nuisance. A horse that cannot be driven with safety without them should be sold to a railroad grader. No colt should be broken to them. Animals fear noises they cannot see the cause of much more than those they can. We would dispense with tight reining and with blinds.

Colic in Horses.—This disease is caused by indigestion, over-feeding, or by giving cold water in large quantities, or by eating sour grain. If colic occurs from eating sour grain, one of the best remedies is a few lumps of charcoal. Pulverize it fine and pour on it about a quart of boiling water. When cool, strain off and give. If the above does not give relief, stimulants should be given, with a view to arouse the stomach and get relief from the fermented food which it contains. Purges are of no sort of use for the purpose of relieving an overloaded stomach, and therefore if inflammation is present, their use is positively injurious. The use of saleratus and turpentine, which is so popular an agent with horsemen, are not always the proper remedies. To make use of the former, being an anti-acid it is supposed to combine with the free acid in the digestive organs, and thus neutralize it, but if its use is persisted in, it will injure the mucous membrane of the stomach. Turpentine is a powerful irritant, and it should never be made use of except by those who understand its action, and neutralize it by mixing it with linseed oil. The following has been used with good results, and can be recommended as safe and efficacious: Sulphuric ether, 1 1-2 ounces; oil of peppermint, 2 ounces; water, 16 ounces. Mix and shake well before giving. If not relieved, give again in half an hour, and an injection composed of soap suds to be thrown into the rectum.

Dr. N. Rowe, of Chicago, gives the following as the best simple remedy for colic in a horse: If it is ordinary colic, or gripes without flatulence, give him a dose of whisky, say from two to four ounces, that being generally handy; or a strong dose of peppermint or spearmint tea, hot; but if a drug store is near, give from one to two ounces each of laudanum and spirits of nitre; repeat the dose in half an hour if necessary. If it is flatulent colic, the horse bloated with gas, give a teaspoonful of saleratus in half a pint of warm water, repeat it in ten minutes; if this does no good, give an ounce of turpentine in half a pint of linseed oil; or you may give half an ounce of chloral hydrate in half a pint of cold water. In addition to the above directions, in all cases give warm water injections, and let the horse remain quiet, allowing him to roll if he wants, to give friction to the belly, and give soft feed and rest afterward for a day or two.

The *Massachusetts Ploughman* recommends salt, and as this is known among housekeepers as useful in colic, we give what the writer says: "Spread a teacupful of salt upon the back of the animal over the kidneys and loins, and keep it saturated from twenty to thirty minutes, or longer if necessary. If the attack is severe, drench with salt water. I have a valuable bull, weighing nineteen or twenty hundred pounds, which had a severe attack of colic a year ago last summer. I applied salt to his back as above, and it being difficult to drench, we put a wooden bit into his mouth, keeping it open about two inches, and spread salt upon his tongue, which, together with the salt upon his back, relieved him at once, and within a very short time equilibrium appeared fully restored. I have for several years past successfully applied this treatment to other animals in my herd."

An officer who commanded artillery during the late war used the following simple remedy for colic in horses, which he has tried with perfect success in hundreds of cases: Rub the horse well between the fore legs and around the girth with spirits of turpentine. Immediately relief follows.

Another remedy is the following: Take some good home-made soap, and make about half a gallon of warm soap suds; then take a quart bottle, fill it, and drench the horse. Sometimes as much as a half-gallon may be needed.

Bots.—The bot larvæ are liable to be found domiciled in the horse at any and at all times. It only does noticeable damage when the number accumulates in the passages, or when there is some disturbance in the digestion of the horse, when, it is said, it cuts through the membrane of the stomach, causing death to ensue. The bot-fly lays its eggs in the hair of the horse, about the flanks and front legs, where they get to the tongue, and from thence are swallowed and hatch in the stomach. They live a certain period of time and are discharged, to become flies again. Several doses are recommended to be given to dislodge the grub, but when it is doing no perceptible harm many horsemen prefer to let it alone rather than medicate the horse. But some remove them by giving powdered aloes, asafetida, each one-fourth ounce; mix in hot water, and when cold add oil of turpentine, sulphuric ether, each one ounce. Give in linseed tea as a drench.

Another authority says: Bots in horses may be known by the animals occasionally nipping at their sides, and also by red pimples rising on the inner surface of the upper lip, which may be plainly seen by turning the lip up. The cure is effected by taking two quarts new milk, one quart of molasses, and giving the horse the whole amount. In fifteen minutes afterward give two quarts warm sage tea; thirty minutes after give one pint of currier's oil, or enough to operate as physic. The cure will be complete, as the milk and molasses cause the bots to let go, the tea puckers them up, and the oil carries them entirely away.

Another remedy is as follows: Give the animal one quart of sage tea, in which a large teaspoonful of soda or saleratus is dissolved. If not relieved in one hour, repeat the dose, and repeat hourly until relief is obtained.

Founder.—Founder consists of inflammation of the laminae, or leaves of the hoof—the most sensitive portions of the foot, which serve to connect the interior part to the outer protecting covering of horn. It may be very severe and acute, or a simple stiffness of the limbs and muscles. In this case two drams of lobelia may be given, and the limbs bathed with hot water and rubbed with liniment or kerosene oil. This may be continued for three or four days. Warm blanketing, with hot fomentations, will be useful. When the horse suffers very much, and the feet are hot and painful, a pound of salts should be given, followed by twenty-drop doses of tincture of aconite; the feet enveloped in large poultices of bran, or even sawdust, steeped in hot water, and the legs bathed in hot water and wrapped up. A deep, soft bed should be given, and the horse induced to lie down. After the worst symptoms are over the hoof and sole should be rasped down and the feet kept in a puddle of clay and water. The shoes should be removed.

The following remedy, says an experienced farmer, of Texas, is a sure cure for founder, viz: "A large tablespoonful of pulverized alum and a tablespoonful of pulverized saltpetre mixed. Moisten the dose and administer it by pulling out the tongue and placing the spoon as far back in the mouth as possible."

Heaves.—If you want to have no trouble with heaves in your horses be sure that they are fed no dusty and dirty hay, which is the prolific source of this annoyance. Ordinary clean hay can always be fed with safety if properly cut up, moistened, and mixed with ground grain; but to feed the musty or dirty sorts is very injurious. Clover, owing to its liability to crumble, often gets dirty, even after storage, and should never be fed without being previously moistened.

Very bad cases of heaves have been cured by simply feeding the animal upon cut and moistened feed, of very good quality and in small quantities, three times a day. For instance, four pounds of timothy hay and three quarts of feed made of equal quantities of oats, corn, and wheat bran ground together. With this was mixed a small quantity of salt, and twice a week one dram of sulphate of iron and half an ounce of ground gentian root were given in the feed. A liberal bran mash every evening will also be very useful. A horse that cannot be cured by this treatment is of no value, and may be considered past cure.

The following is recommended by an agricultural authority: One dram of tincture of aromatic sulphuric acid in a pint of water night and morning, allowing the animal to drink from a bucket. The horse should also receive in his food, night and morning, equal parts of powdered ginger, gentian, sulphur, cream of tartar, charcoal, licorice, elecampane, caraway seed and balm of Gilead buds (chopped fine), the dose to be an ounce. Be careful and not overfeed the animal.

Still another remedy is the following: Asafetida, pulverized, one ounce; camphor gum, pulverized, one-half ounce; mix and divide into four powders; feed one every other night for a week.

Epizootic in Horses.—The disease known as “the epizootic” is a common one, but is rarely so general as to be justly entitled to that distinction. It is simply a catarrhal affection of the bronchial tubes, the lining of the air-passages of the lungs, and the nasal sinuses, in fact, what may be called a very bad cold, with some fever. It is treated by a saline purgative, as 8 to 12 oz. of Epsom salts, and afterwards half an ounce of saltpetre daily, with warm drinks, general good nursing, and frequent rubbing of the limbs and body to excite the circulation.

Shying Horses.—A horseman whose horse is given to shying, ought never to permit himself to evince symptoms of nervousness nor punish the animal for exhibitions of timidity. Whenever a horse directs the points of his ears in a certain direction, as though distrustful or afraid, the reins should be pulled in another direction, thus diverting the attention of the animal from the object causing the perturbation. If, on the other hand, force or harsh means are used to compel an acquaintance with the object feared the horse will be doubly excited, if not unmanageable. We have found, in cases of shying or halting at real or fancied objects of disquiet, that stopping the horse and using soothing language, answers a very good purpose. If the object is stationary, the horse, after a short time, will most usually advance in the direction of it, approaching cautiously till satisfied no danger is to be apprehended, when he will resume his way in a quiet mood. But if chastised for shying, he will have two objects of fear instead of one, and become more confirmed in the habit of distrustfulness.

Best Material for Stable Floors.—A Western writer says: “I have used plank, macadam, cinders and coal-tar mixed, and clay pounded hard

for stable floor, but the best material for the purpose, and which gives me the most satisfaction, especially on the score of cleanliness, is good, hard brick, laid edgeways, with an inclination of about one-quarter of an inch to the foot; the more level the floor is, the easier it is for the horse. Many a horse has been ruined by standing on a stable floor with too much inclination. Persons making stable floors should study the comfort of their animals. Another great advantage of brick is, that it is always moist, which is an object to be taken into account, as the hoof never becomes dry, consequently there is no danger of contraction, providing the shoer leaves the frog alone, which should not be cut, not even the ragged edges of it. I have used the brick floor for the last three or four years, and am well satisfied that there is nothing better.

Scratches on Horses.—A veterinary authority says he has never known a failure of carrot poultice for scratches on horses, and he gives the following directions, probably valuable, as carrot has an excellent effect on many unhealthy sores: Wash the sores thoroughly with warm, soft water and castile soap, then rinse them off with clear water, after which rub dry with a cloth. Now grate some carrots (about a pint after grated) and bind them on the sores. The best way to bind it on is to take a cloth and wrap it around the sores, letting the lower edge come close down to the hoof; then tie a cord around this lower end, after which put the grated carrot into the opening at the top of the cloth, press it down around the sores, then tie another cord around the top of the cloth, a little above the fetlock. This should be repeated every day for four or five days, when the scratches will be cured.

Ringbones on Colts.—For ringbones on colts, first pay attention to shoeing. If he walks on the toe, have a high heel to the shoes; but if he strikes the heel first, let it be thin and the toe high. If there is inflammation, reduce it by rest and water bandages. Then blister with the following: Powdered cantharides, Venice turpentine, and rosin, each two ounces; lard, two pounds. Melt the last three together, and when not too hot stir in the cantharides. When the pustules appear, omit for a few days. Then apply again and alternate for three or four times. Remember that in all diseases or troubles of this kind there will be more or less fever, and attention should be given to the general health of the animal, even when no particular symptoms of illness are seen.

Cure for Spavin and Ringbone.—Venice turpentine and Spanish flies, of each, two ounces; euphorbium and aqua ammonia, of each, one ounce; red precipitate, one half ounce; lard, one and a half pounds. Pulverize all, and put into the lard; simmer slowly over coals, not scorching or burning, and pour off, free of sediment. For ringbones, cut off the hair, and rub the ointment well into the lumps once in forty-eight hours. For spavins, once in twenty-four hours for three mornings. Wash well previous to each application with suds, rubbing over the place with a smooth stick, to squeeze out a thick, yellow matter. This has removed very large ringbones.

Treatment of Sick Horses.—The practice of forcing a horse to stand on his legs, or walk about, while laboring under an attack of colic, is most inhuman. The same remark is also applicable to the plan of exercising a horse during the time he is under the purgative action of a dose of physic. He should be moved gently about before the medicine commences to operate, but never after. Do those barbarians who knock the animal about while

enduring the pains of colic or when suffering the purgative action of medicine, ever think of what they are doing? If they were treated themselves on the same plan under similar circumstances, they would soon come to their senses regarding the management of the unfortunate animal which is placed under their charge.

A Muzzle for Biting Horses.—This dangerous habit is taught the horses by thoughtless owners or drivers by playing with them when colts, or teasing them when full grown. A sharp cut with a whip across the horse's nose when he bites may serve to break him from the habit; but when the case is worse and incurable, a muzzle for this purpose may be made of strips of light hoop iron or of leather. A band may be made to encircle the muzzle to which strips of leather or iron are fastened. At the bottom of the muzzle a round piece of leather should be fastened by rivets to keep the strips in their place.

How to Save Oats in Feeding.—A saving may be effected in the consumption of oats for horses by simply soaking them in tepid water. Practical experiments which have been made show that by this method the ration for each animal may be reduced by a third. Horses whose teeth have seen their best days masticate the grain in its ordinary condition insufficiently, and younger animals often eat so greedily that the greater proportion of it is swallowed whole. This waste may be obviated by the simple method recommended, which so far softens the grain that it is more completely masticated and digested, and consequently yields more nutriment. Three hours is a sufficient length of time to soak the grain, provided the water is not too cold.

How Blindness is Produced.—It is said that dark stables tend to produce blindness in animals. A veterinary surgeon says: "Darkness produces blindness, because nature is outraged in the fact that the sight of the eyes is destroyed by want of light to present objects properly to the vision, and thus, by continued inactivity, producing blindness. Even so is blindness, or imperfect vision, produced by an over-action of light upon the retina of the eye, as is always the case when light is admitted by a window directly in front of the horse. Nothing is worse than this light, so admitted. Nature is outraged, and as a penalty we have nervous, fretful horses, shyers, cribbers, balkers, runaways, and anything but a reliable and pleasant horse."

Care of Horses' Legs.—Few men who handle horses give proper attention to the feet and legs. Especially is this the case with the farmer. Much time is often spent in rubbing, brushing and smoothing the hair on the sides and hips, but the feet are not properly cared for. The feet of a horse require ten times as much, for in one respect they are almost the entire horse. All the grooming that can be done won't avail anything if the horse is forced to stand where his feet are filthy, for his feet will become disordered and then the legs will get badly out of fix, and with bad legs and feet there is not much hope for anything. In short, to those owning horses we would say attend to the feet and legs.

How to Tell a Horse's Age.—The editor of the *Southern Planter* says: The other day we met a gentleman from Alabama, who have us a piece of information as to ascertaining the age of a horse after it has passed the ninth year, which was quite new to us, and will be, we are sure, to most of our readers. It is this: After the horse is nine years old, a wrinkle comes in

the eyelid, at the upper corner of the lower lid, and every year thereafter he has one well-defined wrinkle for each year of his age over nine. If, for instance, a horse has three wrinkles, he is twelve; if four, thirteen. Add the number of wrinkles to nine, and you will always get at it. So says the gentleman; and he is confident it will never fail.

Sawdust for Stables.—Nothing makes so soft and easy a bed for our “dumb animals” as sawdust, more particularly the horse, as it is natural, before lying down, either by pawing or stepping back and forward, to brush all their bedding, if straw is used, under their hind feet, but would be less liable to move the sawdust. As regards injury to horses’ feet or lungs on account of inhaling the dry dust, we know of a stable where horses are let, and I was informed by the owner that he had used sawdust for twelve years and never had been able to discover any bad effects from the use of it, and pointed out several horses that had been thus bedded for ten or twelve years; and had sold the manure at the usual rates, and never had heard of any objections on account of the sawdust.

The Watering of Horses.—M. P. Cartledge, member of the Royal College of Veterinary Surgeons, urges the great necessity of allowing an unlimited supply of water to horses; and he alludes to the very mistaken notion among grooms and others having the control of horses that water *ad libitum* is injurious. While grooms and others drink without stint themselves, they profess to know when a horse has drank sufficient, and so take away the pail before his natural wants are half satisfied. Horses will not drink to excess if watered frequently, and in their case drinking does no harm.

Cribbing.—Cribbing is a vice which springs from habit more than any other cause. It begins frequently from a desire to ease the teeth from inconvenience or perhaps pain, at that period when the dentition is perfecting, and then becomes fixed upon the horse as a vice. It is not injurious except when accompanied with “wind sucking,” which is a series of deep inspirations by which flatulence and belly-ache are caused. When the habit is fixed on a horse it is difficult to break it, and the only effective method is to use a muzzle which prevents him from thus using his teeth.

Linseed Oil for Horses.—Linseed oil is not only a valuable restorative for sick horses, but is exceedingly useful in cases of inflammation of the membranes, peculiar to the organs of respiration and digestion; it shields and lubricates the same, tranquilizes the irritable state of the parts, and favors healthy action. Put a couple of handfuls of seed into a bucket and pour a gallon and a half of boiling water upon it; cover it up a short time, then add a couple of quarts of cold water, when it will be fit for use. In case of an irritating cough add some honey.

Windgalls or Puffs.—Windgalls are puffy swellings occurring along the tendons of the legs of horses, below the knee. They are the results of sprains or strains of the tendons, and are generally filled with synovial fluid, or lymph, or serum. A padded bandage, with astringent lotions applied two hours a day at first, adding two hours every day after, until it is kept on continually, is the usual remedy. Rest from work is helpful to a cure.

Brittle Feet.—Some horses have such brittle feet that it is difficult to keep their shoes on. This is often caused by a sudden change from excess-

sive and long-continued wetness to extreme dryness. The best treatment is to rub the soles and shells of the feet with a mixture composed of the following: Tar, two parts; beef suet, two parts; whale oil, four parts; beeswax and honey, one part each; melt over a slow fire, and mix well.

Ignorance in Shoeing.—Some blacksmiths who shoe horses do not know that the frog of the foot should be allowed to come to the ground; that it should not be pared down, as is frequently done, nor should it be touched when healthy. It is meant to pound upon the ground, and it is the pounding that it gets that is the life of the foot, and those horse-shoers who have not yet learned this very important fact ought to learn it or quit business. Most of the diseases and defects of horses' feet come from cutting away the frog or by raising it by high shoes clear away from the ground.

Avoiding Indigestion in Horses.—It is best to give a horse water before giving oats. The water stays in the stomach a very short time, but is quickly absorbed or passed into the bowels, where it is absorbed and goes into the blood. The horse secretes a very large quantity—more than four quarts—of saliva while eating a meal, which is sufficient to reduce the food to a pulp suitable for its digestion. So that to give water soon after eating, except in very small quantity, would be apt to cause indigestion and waste of the food by excessive dilution.

Flies and Horses.—A physician writing to the London *Daily News* recommends, to prevent the torment inflicted by the flies on horses, application to the latter, before harnessing, of a mixture of one part crude carbolic acid with six or more parts of olive oil. This should be rubbed lightly all over the animal with a rag, and applied more thickly to the interior of the ears and other parts most likely to be attacked.

To Cool Horses When Hot.—There is danger of congestion when cold water is thrown on the body of a horse when very hot and tired; and yet, how many do it? The better way is to throw water freely on the fore legs of the animal. This corresponds to the well-known custom of persons, when overheated, bathing the wrists for some time before drinking much.

To Recruit a Hide-Bound Horse.—To recruit a hide bound horse, give nitrate potassa (or saltpetre), four ounces; crude antimony, one ounce; sulphur, three ounces. Nitrate of potassa and antimony should be finely pulverized, then add the sulphur, and mix the whole well together. Dose, a tablespoonful of the mixture in a bran mash daily.

Sprains and Bruises in Horses.—Dissolve an ounce of camphor in eight ounces of spirits of wine; then add one ounce of spirits of turpentine, one ounce of spirits of sal ammonia, half an ounce of oil of origanum and a tablespoonful of laudanum. Rub in a quarter of an hour with the hand, four times a day.

Flies in Horse Stables.—It is said that kerosene oil slightly sprinkled on the floor of the horse stables will serve to abate the nuisance of flies. It may be shaken out of a bottle through a hole in the cork. A pint will last a week for the purpose.

Hemlock Cribs.—A horse will not bite a crib made of hemlock lumber, nor will rats, mice, or other vermin gnaw through it.

Worms in Horses.—Worms in horses are caused by hard work, poor food, and general neglect. For ordinary cases of worms, common salt, nutritious food, and pure water will prove satisfactory. Salt should always be kept in the stalls of horses.

Over-Reaching.—An over-reaching horse, one whose hind feet is frequently hitting the forward shoes, should wear heavy shoes forward and light ones behind. The theory is that the heavier hoof will be thrown a little farther ahead than the lighter one.

Worms in the Rectum.—When a horse is affected with worms in the rectum there should be injected in the rectum, once daily for a week, a mixture of one pint of linseed oil and two drams of oil of turpentine. Feed at the same time bran mashes and oil meal.

Sensitive Jaws.—Some horses are more sensitive than others in the upper jaw, and will not go up on the steel bar or snaffle upper-jaw bit. In such cases have a bit made of plain round leather, the usual size of the upper-jaw bit.

Best Method of Cleaning Horses.—The best thing to clean a horse with is a corn-cob scrubbing-brush. It never can scratch his legs, as the curry-comb of tin does, while it does more work in the same time than curry-comb and brush put together.

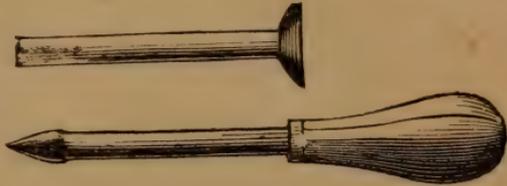
Hints to Breeders of Shorthorns.—To learn a trade, is to do things precisely upon the same principles, and up to the same general standard that experts in the same trade attain to. The principles are simple, though the parts are complicated. So of Shorthorn cattle. They are merely machines for converting crude grain or grass into bone, muscle, adipose matter, and hair; and the whole secret of excellence—the superiority of one beast over another—consists in their ability to convert the most crude food in a given time into the finest quality of the tissues named, so distributing these as to give us a roomy frame of bone in the parts where we want room for the vital organs and for the choicest cuts, and thick, fleshy, well-marbled roasts, and broad, well-marbled steaks, in the parts where best fiber is produced. Such a conformation should be secured as will answer these ends so effectively as the engine is expected to generate steam through the consumption of fuel in the furnace. The conformation of the trunk of the cow is a subject worthy of very careful study. The bony frame is of secondary importance, the vital organs within being of the first importance, and the size and vigor of these, if accompanied by a liberal distribution of cellular tissue throughout the system, ensures a rapid conversion of food into nutritive particles and the disposition of these in the various tissues. Large lungs, and large heart, stomach and liver give size and rotundity to the trunk and width to the bosom. A large stomach is of the utmost importance, because furnishing a large surface. From this the gastric juice issues, and when we consider the inner surface of the stomach, and the air cells of the lungs, we must prize an extended surface in those organs as highly as we do a large surface in a steam boiler if we expect great results. Two of the worse faults in the construction of a Shorthorn are the following, viz.: the ribs starting from the spine in a downward direction, giving a wedge shape to the upper third of the chest; the other is a long rib deficient at the lower end, causing a curve upward in the lower line immediately back of the fore leg. We doubt

if any other two defects are so hard to breed out as these. A drooping rump or low carriage forward may be brought up in one or two crosses, so that with after care they may not reappear; but the defects in the chest pointed out above depend upon deficient vital organs within. The re-organization and enlargement of the heart, lungs, stomach, and liver require many discreet crosses to accomplish. Passing from the chest backwards, we would call attention to the importance of the short ribs being long, and standing out horizontally from the spine, forming a level plane forward of the hips. This broad, level loin generally keeps company with a round, deep chest and is a point of excellence that should always be sought. The hind quarter that holds its width well back, carries a large amount of meat not represented in the quarter that narrows in rapidly from the hip back. A perfect symmetrically-organized frame, with the fleshy part so well distributed and packed as to make it difficult to tell where one portion of the carcass ceases and the next begins. This is the goal to be aimed at. The third and last subject, "quality," we will treat very briefly. No intelligent breeder while striving to increase the depth and breadth of the carcass, loses sight of the equally important point, the texture of those parts of the animal that are to be consumed as human food. This idea of texture is never lost sight of by the fruit grower, and the excellencies which fix the value of the apple, viz., fair size, smooth surface, and tender, juicy meat, are the three things upon which we base our estimate of a Shorthorn. Now, the common notion is that all animals that handle mellow have high flavored, tender flesh. This is an erroneous idea, proved every day upon the butcher's block. We couple two animals together, expecting to secure well-fattened, ready feeders in the progeny they will generally transmit it. But if both the parents have dark, unsavory flesh, they and all their get, and all the progeny after for all time, will have the same, unless modified and improved by new crosses having light-colored, savory flesh.

Selecting Breeding Males.—The first object which any breeder of cattle or sheep must keep in view is that his stock must be healthy. In the selection of a male animal, therefore, the first things to be considered are the indications by which it may be possible to form a judgment as to his constitution. There can be no doubt that this is one of the important points of form or shape to which it is material for a breeder to look into in the selection of either a bull or ram. It is not enough to observe that they have wide breasts or bosoms, but the width which is noticed in looking at them from the front, should be continued along the brisket, which should show great fullness in the part under the elbows; it is also important that they should be thick through the region of the heart.

Another point to be carefully considered is the muscular system. Great muscular power is not only indicative of a good constitution and good health, but it has a merit in itself. Large muscles are the usual accompaniment of strength of constitution, and it also shows that when ready for the shambles there will be a good proportionate mixture of muscle and fat in the meat. In both bulls and rams a thick neck is proof of large muscles, and there can hardly be a greater fault in either animal than to have this wanting. Other indications of muscle will be more difficult to observe in sheep than in cattle. In a good bull there should be a full muscle on each side of the backbone, just behind the top of the shoulder blades. He should also have the muscles at the outside of the thigh full and extending nearly to the hough. A bull having these indications will seldom be found deficient in muscle.

Ringing a Bull—We give an illustration of a plan for putting a ring through the nose of a bull worthy of the attention of stock-breeders. A ring is undoubtedly the safest mode of controlling the bull. Clamp rings having two knobs, which press into the nostrils, may be useful for occasional use, but a good stout copper ring should be put through the cartilage of the nose of every thoroughbred bull before he is four years old. This will last him for his lifetime, and whether tied up in the stable or out for exercise, it will effectually control him. The old-fashioned plan of inserting the rings was by burning a hole through the cartilage with a hot iron, but this was a cruel and difficult process. The plan suggested is to use a weapon styled a trochar, similar to the surgical instrument employed for "tapping" in case of dropsy, and for "hoove" in cows. It is a sharp-pointed, round dagger (the point three-sided), carrying a silver-plated shield reaching from the upper part of the point to the handle. The above illustration will further explain.



The sheath being on the dagger when the operation is performed, the whole is easily pushed through the nose, the sharp point of the dagger piercing the nostril with so little pain that one man can easily hold the head still. The dagger is then withdrawn, leaving the sheath in the hole. The ring is then inserted into the end of the sheath, which is slowly withdrawn, leaving the ring in place. This is then closed and fastened with a screw.

These rings should be so well made that both the hinge and the screw should be perfectly smooth, and so fitting as to take a practiced eye to notice the joining.

The manner in which the operation is performed will be seen at a glance at the accompanying engraving.

The ring should turn freely round in the incision, which, having been made with a three-cornered cut, will be more sensitive



against a pull than the smooth-burned hole. Indeed, it is sometimes necessary with the latter cruel operation to take the ring out after a time and resort again to burning, in order to make the cartilage sufficiently sensitive for the ring to be effective in managing the animal.

An Inexpensive Relish for Stock.—Stock men of large experience appreciate the need of salt for stock, and usually make such provision that animals under their care are daily provided with this relish. There are, however, many farmers who look upon salt as a luxury enjoyed by their stock when placed within reach, but not necessary to their thrift or comfort. Ob-

ervation and experience have proven to those who have given most attention to the subject that cattle require for best results the salt they crave.

The French Government at one time commissioned a number of practical and scientific men to investigate the subject of salt as a relish for stock, and ascertain the quantity required for different animals. While only approximate figures could be arrived at in the numerous experiments made to settle this matter, a scale was fixed upon by this commission as the minimum daily allowances for the different animals in ordinary condition. In this a working ox or a milch cow is allowed two ounces of salt per diem. Repeated trials appeared to prove that the amount specified produced in milch cows the greatest flow of milk. Oxen fed the same amount presented sleek coats, while others receiving no salt were rough, mangy, and ill conditioned. The scale in question allowed for fattening stall-fed oxen, two and a half to four ounces of salt per day, and for fattening pigs, from one to two ounces. For sheep, from one-half ounce to two-thirds of an ounce was allowed. One ounce was set down as the daily portion for horses and mules.

The figures given above possess a practical value to feeders of stock, in that they represent the respective amounts best calculated to produce desirable results in the different animals named, and give an idea of the amount required by each kind. On small farms with few animals salt can be dealt out in small quantities each day, but where herds and flocks are numerous, salt boxes and troughs become a necessity, and are in any case a convenient and economical arrangement. These troughs or boxes ought, of course, to be in sheltered places and at points where animals can have daily access to them. Some should be placed at elevations to suit horses and cows, and others set within reach of sheep.

A plan in favor in the far West, and which recommends itself on the ground of economy, is mixing salt and hardwood ashes in equal proportions, combined with a sufficient amount of water to make a solid lump or mass. These lumps are distributed in the trough, where, with diligent licking, each animal gets a small quantity, the belief being that they will take in this form no more than they really require. In addition to the fact that salt is necessary to the thrift of animals, a strong argument in its favor in localities where cattle and sheep are allowed extended runs during the day, is that it proves a strong attraction, bringing them home at night without other incentive.

Cattle in Cornstalks.—A Kansas farmer writes: If cattle are allowed to run in stalk fields for an indefinite time they are apt to die from eating too much food of an indigestible character. Cornstalks when left standing in the field become woody and indigestible. Cattle when allowed to run, fill themselves so full that the stomach becomes clogged, the food heats, does not pass off, and the animal dies. For three winters I have fed my cows on shocked cornstalks, feeding no hay or straw, and in all cases they have done better than when fed on hay. In the winter of 1880 and 1881, I wintered 3,500 head of working oxen. I bought all the stalk fields that were accessible, allowed the cattle to run in them three hours each day, when I had them driven out. My reasons for so doing was not on account of smut, but because the stalks had become hard, woody and indigestible. I lost no cattle from this management, and returned them in the spring with a loss of only two to the hundred. Feeders have fed beef cattle for years on shock corn; they consider it the best and safest kind of feed.

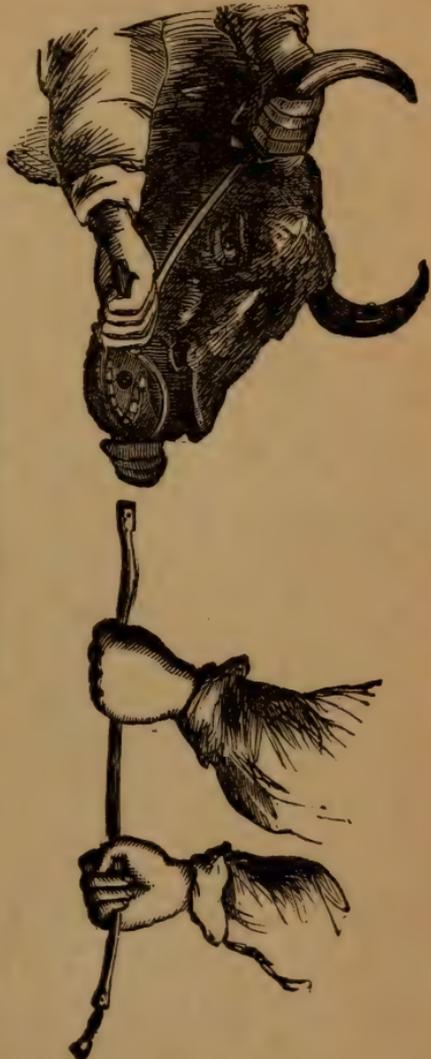
Relieving Choked Cattle.—The accompanying engraving represents the instruments employed for relieving choked cattle, as recommended by Prof. Simonds, of the Royal Veterinary College of England.

“In cases of choking,” says Prof. S., “the amount of danger may mostly be calculated by the abdominal distension, for death results from the lungs being unable to expand in consequence of the pressure of the rumen against the diaphragm.”

He says: “In many cases prior to unchoking the patient, the gaseous compounds which are disengaged from the ingesta and distend the rumen, must be given an exit to, by puncturing the rumen, to prevent suffocation.”

The instrument for unchoking, as shown in the sketch, consists of a probang and a gag; the latter is to be placed in the mouth as shown. Two assistants are required. One of these should be placed on either side of the animal, holding the handle of the gag, which protrudes from the side of the mouth, with one hand, and the opposite horn with the other. They must also keep the head elevated so as to bring it as near as possible in a straight line with the neck. We give Prof. Simonds’s instructions in operating as follows:

“The probang being held as represented, is to be passed through the opening in the gag and carried carefully over the dorsum of the tongue into the pharynx, and from thence pushed inwards until it reaches the obstruction. Sufficient and well-regulated pressure is now to be made until the obstruction yields, when it is to be driven by the instrument into the rumen. Care should always be taken to *propel*



RELIEVING CHOKED CATTLE.

the root into the first stomach, and we should never rely on the power of the esophagus to do this after we have succeeded in removing it from its original situation. Want of attention to this simple rule has often protracted suffering to the animal, and not unfrequently death. The probangs in ordinary use are seldom of sufficient length, nor are the bulbs with which they are tipped of a proper shape. The instrument should not be less than six and a half feet long, and the bulbs should be large and slightly cup-shaped.”

Bone Disease in Milch Cows.—For more than half a century there have been occasional outbreaks of a peculiar disease in New England, mostly affecting milch cows, and commonly known as bone-ail or stifle joint lameness. Heretofore the trouble has been chiefly confined to hilly sections, but seems now to be approaching the valleys.

This disease, technically called *Cachexia ossifraga*, is not confined to the stifle joint, frequently affecting the hip and other joints also. In one case, where the hip joint was affected, examination showed that the articular surface of the head of the tibia or shank bone had been worn through by its friction with the femur, or thigh bone, by the absorption of the floating cartilage between the ends of the bones. Similar conditions were noticed in other instances. As it is believed this cartilage cannot be regenerated, it was at first a question whether the disease was curable. Before investigation, its cause was attributed to the phosphatic materials in the feed, and this idea has been fully established. Where such materials were supplied in the form of bran, the disease was thought to be occasioned by the excessive use of such feed, as it was known that such excess changes the bone into a sort of phosphate, while the healthy bone is an insoluble phosphate.

In former outbreaks, bone meal was found to be an effective remedy, and in recent instances it has been used with good results. A Suffield, Conn., man, of considerable experience, says that two ounces of the meal in a pint of bran, three times a week during the early summer and fall feeding, will generally cure, if accompanied with plenty of salt. In aggravated cases, however, the free use of this material is recommended. Still, care must be exercised lest it should be supplied too freely, as an excess is sometimes liable to injure the butter, because the putrid, oily matter of the bone is excreted by the udder as a sort of oleomargarine. But if the meal has been thoroughly clarified, this trouble is less apt to occur, and it may be avoided altogether by the use of cotton-seed meal, which is rich in phosphates without containing the obnoxious matter liable to be in bone meal. Bran is also largely made up of phosphates, but it is well to add corn meal.

The necessary mineral element can probably be furnished in hay that has been manured with superphosphates, which furnish lime and phosphoric acid that are greedily taken in by the plant. Indeed, the recent outbreak is accounted for by the fact that where it occurs, little, if any, mineral fertilizers are used. They are now being applied more extensively, and the gradual disappearance of the disease will doubtless follow.

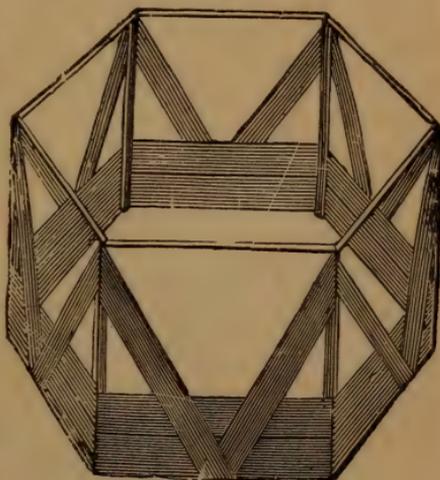
Marks of a Good Cow.—Those who keep but one or two cows naturally want them for general purposes, do not want a mere butter cow nor yet a mere milk animal, but one which combines both in as great a degree as can be found. Such cows are not plentiful, we admit, or at least are not often for sale at a moderate price, so that when they are offered, it behooves would-be purchasers to be able to tell them.

We do not believe in very small cows, nor yet in large, heavy animals, as neither, as a rule, are capable of filling the bill, the former too often falling short in the quantity, while the large ones are apt to run too much to flesh to make them profitable dairy animals. The medium-sized ones invariably produce the best results, and a heavy milker and a large butter maker is seldom fat, as the majority of the food she consumes is converted into milk and butter. The head should be fine but bony, with small horns, large, mealy nose and shapely ears. The base of the horns and the inside of the ears should be of a bright golden color. We have never yet seen an animal

with horns and ears well colored (golden yellow) which failed to make a fine quality of butter and highly colored. It is an unmistakable sign. The body should be of good size, and the width and depth rapidly increase as it runs to the rear or hind quarters. The milk veins should be large and prominent, and the udder need not necessarily be large, so it is not meaty, but is small when milked out. The teats should be of good size, and only have a single hole in each; we have seen quite a number with teats having two holes. The hair should be fine and soft, while the skin should be pliable, and almost as soft to touch as velvet or kid. In color it should be tinged deeply with yellow, especially on the shoulders and flank and along the back. Color of the hair is rather a secondary matter, though the best cows are generally yellow, tawn, gray or white, with dark marks edged with yellow. Black cows but seldom prove to be good general-purpose ones, though of course there are exceptions frequently met with.

Cattle Rack.—We give the following illustrated design for a rack to feed cattle from in the yard. We think it far superior in point of economy and convenience to anything of the kind we have seen. It can easily be made by anyone possessing ordinary skill in using tools:

The shape, as will be seen, is six sided, or in the form of a hexagon. It consists of six upright posts five feet long (3 by 4 scantling will answer, or round poles 3 or 4 inches through will do very well), and twelve boards, each one foot in width and five feet long. These latter nailed to the posts horizontally will form the box. To strengthen the whole and keep the cattle from stepping over the sides, nail strips of thick boards or plank flatwise across the upper end of



CATTLE RACK.

the posts. Then nail two boards diagonally upon each side, extending from the top of the posts to the bottom of the box, leaving a space of about a foot and a half in the center on a line with the upper edge of the box. These slanting boards serve as braces, and give strength and firmness to the whole structure, and make six feeding places for the cattle. If scantling is used for posts, it would be well to hew off the corner from each, so as to make the boards fit well.

Mode of Construction.—Nail the boards to two sets of posts to form two opposite sides. Cut two strips of boards about ten feet four inches long; stand the side upright and nail these strips across the top and bottom—across the diameter—then bring the other ends within five feet, and nail on the boards across the end; you will then have three sides formed. Nail on the other two opposite sides and end. Put on the braces and it is done. It can be moved to different parts of the yard, and with care will last for years.

Economy in Feeding Cattle.—There is more waste in feeding than in anything else on the farm. Wheat straw, corn-stalks, and even chaff may be

fed, if properly prepared. With a fodder cutter that not only cuts but crushes, corn fodder can be made as palatable as clover hay, and wheat straw, when cut into short lengths and mixed with hay, answers excellently when grain is fed with it. Cows will always eat chaff if it is mixed with cut food. If all such feeding material as corn fodder and wheat straw is cut up fine, and well moistened, salted, and mixed with bran, shorts and meal, with a pound of linseed or cotton-seed meal additional, a mess will thus be prepared that is not only nourishing and healthy, but superior to hay alone. It is not intended here to recommend straw in the place of better food, but we claim that if a saving can be effected by feeding straw in connection with concentrated food, there will be a saving, not only of the hay in the loft by reason of the substitution, but also of much that annually goes to waste.

How wasteful it is to throw fodder and straw over the fence into the farm-yard to be picked over and trampled in the dirt without being consumed. Every pound of fodder and straw is valuable and can be put to useful service, which is very important when the winter's supply of hay seems unlikely to last, and when the cold season is unusually long. Nor is it proper to allow fodder to remain all the year stacked in the fields, for it is almost every time that the winds blow it down, where it remains until fed, but it is not then in as proper condition as if well cured and placed under cover. As to using straw for bedding, this, also, is wastefully done, as if it possessed no value; and if chaff is not preferred for feeding, let it be used as an absorbent in the stables, for which purpose nothing is superior to it. A crop of turnips, or what may be better, beets, parsnips, and carrots, should be grown for stock, not only for their value for feeding purposes, in proportion to their cost, but also because they afford a succulent diet in winter when every other kind of food is dry, and at times not relished.

How Good Cows are Ruined.—Milking is an art, and the farm hand who knows how to milk properly is more valuable to the careful dairyman than any other help. Of course, anybody can milk, and some can milk a dozen cows before breakfast. The careful manager, however, is not so anxious for fast help as he is to employ those who are careful. The operation should never be hurried, but the milk should be drawn steadily, and, as it flows, naturally. Some cows have very tender teats, and the rapid milkman forgets this fact in his endeavor to make speed. The cow that is naturally impatient and fretful does not like to submit to rough handling, and her disposition is soon ruined by such treatment. With the constant irritation she will fail in quantity, and be less productive, just as any human being would fail to perform faithful service when laboring under mental affliction or trouble. As the udder becomes distended and filled with milk, the desire on the part of the cow is to be relieved of its contents, and she willingly submits to it for the relief it occasions. The constant practice of being milked at stated intervals impresses itself strongly upon her, and she will seldom offer resistance without cause. When a cow, therefore, that has been a patient deliverer of milk becomes fractious, the fault can always be traced to the milkman. The careless dairyman is the one who complains of the failure of his cows to keep up the flow, and bloody milk, garget and other evils are the results of his own bad management. There is another point in the treatment of cows that demands attention, and that is allowing them to stand a long time waiting to be milked. With cows that give large yield it is very painful, and when the udders have been filled to their utmost, and the milkman is not on hand to relieve them, they become exceedingly nervous and restless. This

will do more to cause a cow to go dry before her period than anything else, and many a good cow has been sent to the shambles through diminution of quantity, simply because nature has revolted at her sufferings, and allowed her to dry up because her storehouse was not emptied of its contents at the proper times. She should also be milked to the last drop, if possible, and as the last portion of milk is claimed to be the richest, the udder should be left with nothing in it. With regularity in feeding and milking, and kind treatment at all times, the cow will not only become gentle, and remain so, but will milk on several weeks longer than otherwise. An experienced dairyman needs help that are skillful, and he knows how to judge the milkman's work by the behavior of his cows. When a stable of cows begin to give trouble in milking, it is only necessary to observe the manner in which they are milked in order to cure the evil. The udder of a cow is a very delicate structure, and she quickly rebels at rough usage or improper periods of milking.

To Prevent Cattle from Hooking Fences.—

The mode herewith illustrated will be found a sure cure for cattle that hook or put their heads through fences. Take a one-eighth inch annealed wire ten inches long; make a ring in one end (one inch and a half); grind the other end sharp, to punch through the gristle in the nose. The animal's head has to be fastened securely in the stanchions, in order to bore the holes through the horns, which should be



TO PREVENT CATTLE FROM HOOKING FENCES.

done with a three-eighth inch bit; then punch the wire through, and make the same sized ring in the sharp end; now take a cord that will run easily through the holes in the horns, and tie one end to the ring on one side and pass the cord through the holes in the horns to the other ring; the wire should be bent up above the nostrils to prevent the breath from rotting the cord; the cord should not be very tight when put on, for the rains will tighten it enough.

To keep a bull from jumping and hooking fence, put on the above and a poke with the sword or arm running through a wire ring in the nose, long enough to keep the arm from bearing on the wire, and the animal is at home all the time.

Currying Milch Cows.—To the farmer the idea of currying a cow, milch or otherwise, is an absurdity; but to dairymen who have highly-bred cows, who take a pride in their business and get the top price of the market for their produce, it is a matter of moment, in that it is known to increase the milk flow and the butter produce by ten to twenty per cent.

There are many points in the conduct of a dairy, unknown, indeed, unthought of by farmers, that will presently have a prominent place in their management, very much to the benefit of themselves and those who receive and make use of their produce.

Among those are: Succulent food, protection from inclement weather, kind handling, thorough and careful milking, full and regular feeding, clean stabling (when stabled), and an absence of foul odors, good ventilation, plenty of light and that thorough cleansing of the skin without which no milch cow can perform her duty thoroughly and well. With all these we must, to have a "tip top" article of butter, have the washing of the udder and teats before milking, and with this an entire absence of the filth accumulated in feeding and lounging between milkings.

Of all these, one of the most important is that of periodical currying, in that it cleanses the hide of superfluous hair, keeps it active and healthful and void of that peculiar odor so commonly found in milk and sometimes in butter. It promotes the secretion and disposition of the putrid particles of the animal system which would otherwise be absorbed by the secretory glands and be carried off in the milk, and leaves the latter not only purer but of a much better quality, and gives promise to the butter maker of a higher color and a purer flavor to the butter from the churn, hence a higher price in the market.



TO PREVENT COWS KICKING.

Herein may seem lots of trouble over details, but when reduced to a system they occupy little of time, labor or expense.

To Prevent Cows Kicking.—We give an illustration of a patented device for preventing a cow from kicking,

which is said by those who have used it to be effectual. It consists of a light iron semi-circle intended to go over the back of the animal, with a joint and ratchet at the side, and a wooden block at each end, which fits to the flank of the cow, and prevents her from moving her foot forward. The inventor claims that it can be affixed in three or four seconds and that its operation is neither cruel nor harsh. On the contrary the habit has been entirely cured after it is used for a short time. It will doubtless suggest a modification that will be useful to farmers without infringing upon the patent.

Black Tongue in Cattle.—The symptoms are inflammation of the mouth, swelling of the head and face, discharge of bloody saliva, and high fever marks the first stages. Ulcers soon appear under and on the sides of the tongue. Then the throat and neck swell, and if the disease is not checked gangrene ensues and the animal dies. The disease is said to yield readily to early and proper treatment. The following has proved very successful: The animal should be bled from the neck vein. Give him castor oil, one pint, to be repeated in ten hours if it should not operate. Then use the following: Powdered burnt alum, four ounces; chloride of lime, two ounces; corn meal, two quarts. Mix, and with this powder swab the mouth frequently.

Lice on Cattle.—A correspondent of the *Country Gentleman* says on this subject: The more common remedies recommended for relieving cattle and stock from lice are more or less dangerous to life or health, and must be used with extreme care. An unfailing remedy which may be used by any one without danger to life or limb would be a boon to many farmers. Such a remedy we have in the bee-larkspur of our flower-gardens. A strong tea made from the seeds or foliage of the plant can be used as a wash with perfect safety. Any part of the plant may be used in making the wash, either green or dried. The plant should be gathered before it is frosted, and cured and preserved as other herbs are. In the use of kerosene, mercurial ointment, tobacco, etc., great care must be used or injury results from absorption; it enters the limbs or other parts of the animal and is often a permanent injury. No such danger need be apprehended in the use of larkspur. All the parts where the vermin lodge should be well scrubbed with the wash, and if thoroughly well done in a pleasant, mild day, one application is sufficient. In former days, when school children were troubled, I have heard old people tell their experience in using this remedy to their complete satisfaction. Another equally harmless remedy is aloes in fine powder, which may be used dry by filling a common pepper box with the powder and sprinkling it freely into the hair on the neck, back, sides and rump of the infested animal. Rub it thoroughly through the hair and on the skin with the ends of the fingers. Leave the animal undisturbed for a week, then card thoroughly and apply as before. Continue this at intervals of a week, till not a living parasite is left. Usually two applications, if thoroughly made, will suffice.

Another writer says that to destroy lice on live stock he has found nothing better than strong carbolic soapsuds. The soap usually sold under that name is not strong enough for the purpose. It may be easily prepared and at any degree of strength that may be required. Get a pound of carbolic acid crystals, which may be had at any wholesale druggist's. I get them in Boston at a cost of sixty cents per pound. Take ten pounds of common bar soap, put in a pan with a little water and heat until dissolved. Take out the cork from the bottle containing the acid, and set it in hot water, which will cause the acid to become fluid; add this to the soap and stir well. Set away to cool and you will have a soap at a small cost that will be strong enough to kill any vermin which infest domestic animals, and which will cure barn itch or any cutaneous diseases to which they are liable. It is good to cleanse and heal sores, and a wash of it will be found good where animals are hide-bound and the skin out of condition; it will be found good to wash the inside of poultry houses to render them sweet and kill and prevent vermin. It is a cheap, safe and sure remedy, and should find a place in all well regulated premises.

A stock-grower, writing to the New York club, gives his mode of destroying lice on cattle. He says: "I destroy them with brine—any kind of salt water will do it. I find two kinds of lice; the blue lice, and I think the other is hen lice. I tried red precipitate one year; it killed the lice, two yearlings, and a two-year old. But washing the cattle with brine is easier, and they get into the habit of licking one another, and are more gentle toward each other."

Another writer recommends grease. He says: "Insects breathe by means of small pores on their sides. Grease or oil that comes in contact with the insects closes the pores and stops the breathing. Mercurial ointment kills as much by the lard in it as by the mercury—that is, so far as the

vermin are concerned, but not as to the animals that lick it off from their bodies, so that almost any oily or greasy application will be destructive to insect vermin that infest animals if it is applied where it will do the most good."

Still another authority says: "A good remedy for lice on cattle is water in which potatoes were boiled. For every one of your cattle take two quarts of water and eight middle-sized potatoes cut in half. If you have ten cattle, you must take eighty potatoes and twenty quarts of water. When the potatoes are soft take them out. Get a large sponge and wash the cattle freely, choosing a warm day. Comb them with a currycomb, and you will be astonished to see the effects of the potato water."

Cheap Shelter for Stock.—Shelter for stock is one of the great needs of farmers. It is costly to build a barn and shed, but for simple purposes of shelter farmers might make greater use of their abundance of straw. In some localities it is customary to burn this as the readiest means to get it out of the way. A much better use might be made of it in constructing shelter for all kinds of stock, both against rain and cold. A very good plan is to make a frame of poles (as the engraving represents), and stack straw over them.



CHEAP SHELTER FOR STOCK.

This work should be done at threshing time, but if it has been neglected it may be done at any later time. It pays richly in health, thrift, and in the saving of food, to provide shelter.

The Soiling System with Cows.—It is a question of economy as to whether it is wise in us to allow the herd the full occupancy of a pasture, in order to reap the products in the shape of butter and milk. A large herd re-

quires a large pasture, and before any estimate can be made in the way of profit and loss, the value of the pasture itself, and the probability of what it may yield if cultivated, should be considered.

The soiling system, which demands that the cattle shall be fed at the barn instead of pasturing in the field, has many advocates, and the reasons in its favor are that fewer fences are required, more manure is saved, larger yields of milk and butter are procured, and less space is required. Those who oppose the method say that it requires extra labor, and that the health of the stock is improved by their having the liberty of the pasture.

Every consideration should be made, however, regarding the conditions. If the stock is kept on farms that are too large for cultivation, and where space is no object, with an unlimited supply of grass that cannot be utilized except by being pastured, then the soiling system is not economical, for no necessity arises for its practice; but on small dairy farms, where land is valuable and the products within easy reach of the best markets, the system of stall feeding of cattle is one that should be carried to an extreme, for the result will be very profitable, any other method being suicidal in the extreme. The extra labor required is equalized by the saving in fences, and

the care and management is balanced by the savings of the liquid and solid manure. Both systems, therefore, are profitable under certain circumstances, the whole matter being regulated by soil, climate, capacity for production, and distance from market.

Raising Calves.—A stock grower writes: As a general rule, I let the calf suck the cow for three days, then I take it away; and after it has been twelve hours without food, I give it some new milk—about ten pounds, if I can get him to eat it. If, while the calf is running with the cow, you can handle it a little, so as to make it tame, it will learn to eat much easier. I am a large, stout man, and can easily hold a calf. If the calf is tame, so that it will come up to you and suck your hand, you can get it to eat the first time without much trouble; but if it is not tame, I get a-straddle of the calf, back him up in a corner, hold the pail between my knees, put one finger in the calf's mouth, and with the other hand hold the calf's head in the pail, and keep doing so until the calf commences to suck. Sometimes he will begin right off, and others will refuse for maybe ten minutes; but I never had one but what would suck after a while. By the third time I feed him I commence to take my finger out of his mouth, and do so more and more until he drinks without having a finger to suck. I feed entirely on new milk for ten days, then give about half new and half twelve-hours-old skimmed milk (using the cream I take off the milk on the table); then, after another ten days, I drop the new milk, having done so by degrees, and feed half twelve-hours-old skimmed milk and half skimmed milk. I work it so for a little while; but soon give him all skimmed milk, giving about eleven or twelve pounds at a feeding, and feed twice a day, without any meal or bran. I give in winter all the hay they want, keeping some before them all the time. After a calf is three months old you can give it some meal or shorts, if you wish; but I do not think it is best if it can have plenty of milk. I feed calves until about five months old, and then commence to wean them by degrees. If calves scour while they are being fed milk, I give them about two teaspoonfuls of salt. In the summer I feed them their milk cold, and it is generally thick, sour milk. In the winter I warm it a little, about milk-warm or blood-heat. It is well to handle your calves some while they are eating, so as to make them tame, and that is one advantage of raising them by hand, for they are generally tame.

Charcoal for Sick Animals.—In nine cases out of ten, when an animal is sick the digestion is wrong. Charcoal is the most efficient and rapid corrective. The hired man came in with the intelligence that one of the finest cows was very sick, and a kind neighbor proposed the usual drugs and poisons. The owner being ill and unable to examine the cow, concluded that the trouble came from over-eating, and ordered a teaspoonful of pulverized charcoal to be given in water. It was mixed, placed in a junk bottle, the head turned downward. In five minutes improvement was visible, and in a few hours the animal was in the pasture quietly grazing. Another instance of equal success occurred with a young heifer which had become badly bloated by eating green apples after a hard wind. The bloat was so severe that the sides were as hard as a barrel. The old remedy, saleratus, was tried for correcting the acidity. But the attempts at putting it down always raised coughing, and it did little good. Half a teaspoonful of fresh powdered charcoal was given. In six hours all the appearance of the bloat had gone, and the heifer was well.

How to Break a Heifer or a Vicious Cow to Milk.—A vicious cow becomes so only by education, or, as it is sometimes said, by being spoiled. The case is much worse than that of a heifer, and when the cow is apparently cured of a bad habit, it is liable upon slight provocation to return. The principle involved in the treatment of all brutes is to employ kindness together with the means of proper restraint. In the case of the young or the vicious cow, place her in stanchions or fasten her securely. Pass a girth—either a strap or a rope—around the body, just in front of the bag, letting it pass in the rear of the right hip and in front of the left. Draw the girth somewhat tightly—more or less so, to correspond with the severity of the case. Take pail and stool, and sit down to the milking. The case must be a very obstinate one which will give any lasting trouble. The philosophy of the treatment is that the strap so restrains the actions of the muscles of the hind legs that the animal cannot kick to harm, or get its foot into the pail, while the restraint is steady and sure and the punishment not severe. A woman or boy can manage an ordinary case. Heifers broken in this way, we

think, become more thoroughly gentle and submissive. Of course an even temper and kind treatment must be strictly observed.



FEED RACK FOR STOCK.

Feed Rack for Stock.—The rack represented in this engraving is designed to be placed against a building or wall, under cover. It may be adapted to any kind of stock by placing it at the proper height. The cut plainly explains

its construction. The trough below the slats may be used for feeding grain or roots. This style of rack is very popular in Europe.

Science Applied to Stock-Feeding.—It is often necessary to mix different kinds of food to secure the best combination of flesh and fat-producing elements. Experiments have been made in Germany to ascertain what is the proper combination of these principles. Ordinary food contains two leading elements, one of which supplies the flesh and muscle of the animal frame, and the other the fat and heat. These two elements should bear a certain relation to each other. In the combination producing the best results, the ratio is one of the muscle-producing to three or four of the fat-producing. Our common crop contains these elements in very different ratios. In corn-fodder it is 1 to 10, which is too small proportion of the muscle-producing element in proportion to the fat-producing. In wheat straw, they are 1 to 15; in oat straw, they are 1 to 16; in German millet, they are 1 to 3, so that this, when cut in the dough state, possesses the proper combination. In corn (grain) they are 1 to 7 or 8, too much of the fat for the muscle-producing elements. This corresponds to our experience. Corn is too heating for work stock in our climate in summer. It is, however, excellent for fattening animals. In oats (grain) these elements are 1 to 5, nearer correct

than in corn. In wheat bran, 2 to 8 1-2; in rye, 1 to 6. European field bean has 1 to 1.8 (one and eight-tenths), showing too much muscle-producing for the fat-producing elements. The proper medium may be attained by mixing two kinds of food. Thus corn and peas mixed make the ratio about correct. Clover hay is 1 to 3; lucerne, 1 to 2; vetch, 1 to a little more than 2.

How Practical Farmers Manage their Cattle.—A well-known firm of practical farmers give the following information of the method pursued by them: "Unless the weather is stormy, we turn our breeding bulls out for exercise half of every day, often with the cows in the pasture, when none of them are in heat. After breeding our cows we keep them in a stable, where they cannot be with the other cows for from ten to fifteen hours. We have a few stalls that are specially designed for cows that are due to calve during cold weather, and, of course, these are made as warm as we can get them. We turn the cows out with their calves three times each day, until the calves are six to eight weeks old, then only twice a day. We rarely allow calves to run with dam in pasture, though we put the calves out to grass as soon as they have learned to eat it. Feed young calves well on shelled corn, oats and meal. Have separate pastures for bulls and heifer calves and do not allow them to pasture together after the bulls are three or four months old. Our dry cows we winter principally on hay, feeding very little grain, except to young stock and those that have calves at their sides, or those designed for the show-ring. We breed our heifers when about twenty months old."

Calf Weaner.—This invention relates to the class of calf weaners adapted to be attached to the central cartilage of the calf's nose, like a bull ring, the parts of the weaner being provided with sharp points that come against the cow's bag when the calf attempts to suck. The parts or sections of the device are attached together by a pivot forming a part of one of the points. They are held closed by means of a small screw. This device is very effective, simple and cheap.



CALF WEANER.

Training Horns.—If it is desirable to straighten a horn, you may frequently scrape with a piece of glass, or a knife, the hollow side, which will cause it to grow faster on that side; but in that case it must not be scraped deeply, for then it becomes weaker on that side, and will be turned toward the weaker side. Some scrape the side toward which they wish to turn the horn quite thin, and then scrape the opposite side just enough to make it grow faster, and that will turn it toward the thinly scraped side. If you wish to turn a horn up, scrape on the under side just enough to make it grow faster on that side. A very barbarous way to turn a horn is sometimes practiced, by searing with a hot iron on that side toward which the horn is to be turned. This prevents the growth of horn on that side, and the growth upon the other side turns the horn. The horns may be polished by rubbing them with fine sand paper, and then with pumice-stone, and then oiling them. But this artificial manipulation of horns is seldom necessary. The horns of well-fed cattle will generally grow in comely shape if let alone.

The hair is sometimes oiled to give it a glossy appearance, but the best gloss is put upon the hair by rich and appropriate feeding. Nature, under proper conditions, does this work best.

Hollow Horn.—The first symptoms of the disease are readily seen. The animal affected refuses to eat, and shows an indisposition to move about. If not properly treated at once, the disease soon becomes so severe as to prevent the animal from feeding at all, and death is generally the result. The old plan of boring the horns and pouring in turpentine should never be resorted to, as it does no good, and gives the animal unnecessary pain. The horns are not effected, and consequently need no doctoring. The tongue is the member wherein lies the trouble. By securing the animal's head, so as to prevent injury to yourself from its horns, and then pulling out the tongue and pressing it downward, over the under lip, hundreds of little black heads of so-called flesh-worms will rise above the surface. Take a dull table knife and scrape off these black heads carefully and gently; then throw on the tongue a little salt or pepper, or both mixed together, which will bring up the saliva and set the animal's tongue to working. In a few hours at most the animal will begin to eat, and the trouble will be ended. We have never known this remedy to fail, no matter how severe the case.

Taste of Turnips in Milk.—There are several remedies, says the *American Agriculturist*, to prevent the taste of turnips in milk, but we believe no one of them can be strictly relied upon as effectual; we will, however, give them in order:

1. The objectionable taste comes from the crown of the turnip. If this is cut off and thrown away entire, the remainder will not affect the milk.
2. Dissolve a teaspoonful of carbonate of soda in a teacupful of warm water, and add this to six gallons of milk when first set in the pans. For a single gallon, of course one-sixth of the above would be sufficient, and for two or three gallons in due proportion. The turnips ought to be given to the cow immediately after milking.
3. Pulp or crush the turnips so fine as to make them quickly and easily digested after eating, and when fed mix with cut hay or straw.
4. Scald the milk as soon as drawn from the cows. The best way to do this is to insert the milk can into a large pan or kettle about three-quarters full of boiling water, and stir the milk until it reaches 80 to 90 degrees of heat, and then set it away to gradually cool off. The cream then rises thick, comes off in a lump, and is churned quickly. All the above remedies are so simple as to be easily tried, and if they do no good, cannot effect harm.

Leaves for Bedding.—An economical farmer writes: "In the scarcity of rye straw, and the absence of saw-dust and other material for bedding cattle, we have been forced to use forest leaves to keep the horse and cow in cleanly condition, and on the whole are much pleased with them. The gathering was from the roadside, and along the walls, where brush and leaves had accumulated for years. A few basketfuls were put under the animals every morning, and kept there until they were well saturated with the urine, and then thrown out into the manure heap. With a plenty of this material, kept dry under a shed, and used abundantly, there is very little loss of liquid manure. As an absorbent, it is much more effective than we expected to find it. Leaves have a high reputation as a material for the hot-bed and the compost heap, and are worth the labor of gathering, in most cases for their fertilizing properties. Cords of them are going to decay in the sight of almost every rural home, and it is the rare exception that they are utilized. Meanwhile the fields and garden are famished for want of manure, or supplied with concentrated fertilizers at forty dollars a ton.

The First Milk.—The custom of weaning the calf from the cow when it is only three days old is a barbarous one. We are familiar with the fact that cows are sometimes injured by such a course, also, especially if she is naturally of a nervous, anxious disposition, she soon learning the habit of holding up her milk, and when a cow holds up her milk she has become addicted to the most incurable vice known. There is another thing connected with the weaning of the calf at so early an age, which is the plain statement that we make in claiming that the milk is unfit for use, although the calf is usually taken away in order that the milk may be sold. Those who have had experience in the dairy know that milk from cows that have recently come in is ropy, and possesses a distinct characteristic in appearance from that of cows that have been in service for a longer time. Thus, it is not only unnatural to deprive the cow of her calf so early, but to use the milk. It also pays to keep the calf on the milk until it is old enough to be sold at a fair price.

Obstructed Teats.—The more the udder is stimulated to extra secretion of milk, so much the more is it liable to congestion and inflammation. The pressure, too, of a great quantity of milk in the udder upon the circular muscle (sphincter), which closes the end of the teat, tends to set up more or less irritation there, and this will sometimes result in excessive thickening of the walls and hard milking, or even complete closure of the orifice. The simplest and best treatment is to slightly dilate the opening of the teat, once or twice a day, with a perfectly smooth probe. A silver milking tube, about a twelfth of an inch in diameter, will answer; or, when this is not available, a probe of the same size made of gutta percha. A small size will be necessary at first, and, after a day or two, when that passes easily, a larger one, until finally the orifice is easily dilatable and the milking sufficiently free. In every case the probe should be well oiled, and introduced with caution, so as to avoid injury to the internal parts. A silver tube should be warmed before it is introduced.

To Test the Health of a Horse or Cow.—In horses the pulse at rest beats forty times, in an ox from fifty to fifty-five, and in sheep and pigs about seventy to eighty beats per minute. It may be felt wherever a big artery crosses a bone. For instance, it is generally examined in the horse on the cord which crosses over the bone of the lower jaw in front of its curved position, or in the bony ridge above the eye, and in cattle over the middle of the first rib, and in sheep by placing the hand on the left side, where the beating of the heart may be felt. Any material variations of the pulse from the figures given above may be considered as a sign of disease. If rapid, hard and full, it is an indication of high fever or inflammation; if rapid, small and weak, low fever, loss of blood or weakness. If slow, the possibilities point to brain disease, and if irregular, to heart troubles. This is one of the principal and sure tests of the health of an animal.

Black Leg.—Black leg in young cattle generally attacks calves in the fall when they get the rank growth of feed and are subject to sudden changes of weather from rains and frosts. It sometimes attacks thrifty calves in the winter when they are in the house and eating dry feed. We believe the herdsman can trace the disease back to the cause, and we believe the cause is the same in winter as in fall and spring; that is, rapid growth from generous feed and liability to sudden chills from being kept in too warm houses and exposures to cold while out during the day. Stables

should not be too warm, nor should calves be deprived of exercise. Saltpetre in salt is used by experienced herdsmen as a preventive; bleeding will prevent the disease spreading among calves; for, although it is not contagious, the cause that produces it in one is apt to produce it in others.

Treatment of Horn Brittleness.—In treating cows for horn brittleness, a stock raiser in Austria found no good resulting from feeding bone meal when the water used from a spring was perfectly soft—that is, without mineral matter. But upon changing them to the water of another spring containing carbonate, sulphate and phosphate of lime, and chlorate of magnesia in small quantities, the effects were as follows: 1. The animals drank half as much again as before. 2. The cows gave more and better milk than before. 3. The worst diseased cows at once began to get better, and this was the first case in which any of them recovered without removal. 4. The oxen showed far better condition than could be previously attained on the best of food and with the most careful attention. No fresh cases occurred as soon as the change of water was introduced.

Sores on Cattle.—There are many sores on cattle, which if kept constantly washed clean with cold water and kept free from dirt, would heal of themselves. A very careful herdsman says his practice of curing hoof-rot is to thoroughly cleanse the affected parts with warm water and soap; and then apply warm tar between the hoofs. In very bad cases there will be a large core to come out; remove it carefully with the thumb and finger, cleanse the cavity as above with soap and water, and then fill it with warm tar. Keep the parts thoroughly covered with tar, even if it is necessary to use a bandage. Keep the animal in a clean, dry pasture. It is no more liable to affect the whole system than any other ulcer. When once cured there is no danger of its appearing again unless from the same cause.

How to Milk a Cow.—The most economical way to milk a cow, all things considered, is to milk the two fore teats clean, leaving off with a pretty full stream, and then milk the hind ones down to a short stream, and, returning to the fore ones, milk them to the same condition, not touching the hind ones again. This will leave the teats empty, and the bag, too. It is a false notion that tugging away at the teats stimulates a cow to give more milk; but, on the contrary, emptying the bag as soon as possible yields more; then the cow can have the extra time to eat, which is a better stimulus than either. A slow milker is never tolerated in the dairy districts, and a “stripper” is an injury anywhere. The sooner a cow is milked, and all the organs connected with feeding, digestion, and secretion are left in their natural condition, the better it is for the cow.

Caked Udder.—When a cow's milk suddenly dries up and becomes clotted in the udder, it is probably due to garget or inflammation of the udder from some one of many causes. The udder is then hard or lumpy, and hot. A remedy is to give the cow at once eight or twelve ounces of Epsom salts, with half an ounce of saltpetre, repeating the latter in six hours. If the milk is difficult to draw, a solution of one ounce of carbonate of soda in a pint of water should be injected in the teats with a syringe, and then milked out. This will bring away the curded milk which, if left in, will make matters very much worse. If the cow is feverish, the saltpetre may be repeated for a day or two. To bathe the udder in cold water, rubbing and squeezing it gently for a considerable time, is useful.

Another remedy is to wash and rub thoroughly with water as hot as you can bear your hand. Then rub with a dry cloth. Then apply hog's lard, or what is better, grate good yellow carrot fine and simmer it in the lard to an ointment and apply and rub as above.

Cows Winter Themselves.—Many farmers are accustomed to dry off their cows early, milking them only about eight months. We think it improves the milking qualities of the cows to milk them ten months, but they should be well fed. We have a neighbor, who, ten years ago, found himself short of hay in the fall, and lamented that he should have to pay out nearly all of the product of his cows through the summer to purchase hay at high prices to winter them. He had a moderate amount of straw, and we suggested that the product of his cows from the first day of December, if well fed, would pay for all the corn and meal, middlings, etc., necessary to winter his cows in fine condition. He tried this, keeping account of purchases of feed and sales of butter, and found that the butter came out ten dollars ahead in the spring.

Cornstalks for Cattle.—A Maine farmer says: Farmers justly set a high value on well cured corn stalks, but some find a difficulty in getting their stock to eat them as cleanly as they wish. I have overcome this difficulty this winter by sprinkling them with hot brine. I withheld dry salt from the stock a while, also husks, and made a brine by putting salt into a watering pot and pouring on hot water; gave the husks a bountiful sprinkling and fed them the last thing at night, instead of feeding them in the morning, as formerly. I think if I had tried this plan years ago I should have saved a great amount of fodder that was thrown out and trodden under foot.

Foul Foot in a Cow.—Cows and horses are subject to a disease of the feet similar to scratches in horses. Diseased granulations, similar in appearance to the heart of a cauliflower, break out and excrete a thin acrid matter. The treatment should be, to dress the diseased part with caustics, such as powdered sulphate of copper (blue vitriol) or sulphate of zinc (white vitriol), rubbed up smoothly, with clean, sweet lard, and give the animal repeated doses of one ounce hyposulphite of soda, as an alterative. The soda should be given every other day for a week or ten days.

Kicking Cows.—A writer says he once had a very valuable heifer which was an exceedingly vicious kicker. To cure her of the habit, he put a common garden hoe end in front of her off hind leg, and behind and above the gambrel joint of the nigh hind leg. Then sitting down on the right to milk, he put the handle of the hoe well up under his arm and began milking. The heifer could not stir either hind leg, and after one week she could be milked safely without fettering, and proved to be a valuable and gentle animal.

Warm Water for Cows.—Warm water is an excellent thing for cows giving milk; it is as good as two or three quarts of meal a day; but if you mix meal and shorts with it cows must be allowed, as they will drink too much—enough to diminish the flow of milk. The quantity will vary with the character of feed and the cow. A little good judgment is a nice thing here, as everywhere else.

Roots for Stock.—The value of roots for stock is not appreciated to the extent that it should be. In the rotation of crops in England turnips rank

high, and it is not uncommon for a farmer to devote from twenty to fifty acres to this crop. Cattle are kept there in fine condition in winter on raw turnips, and the latter also make excellent food for sheep. On rich land the crop produces very largely, and a comparatively small space is sufficient for ordinary wants.

Jumping Cattle.—To stop a cow or steer from jumping over fences nail a horseshoe on one forward foot. This prevents the hoof from spreading, and consequently renders the animal unable to spring. This is calculated to be very effectual.

Mixing Hay for Stock.—A mixture of one-third clover hay with timothy and redtop is recommended for any kind of stock. This mixture, it is said, will produce more milk, more growth, and more fat in stock than clear timothy and redtop.

Proportions of Food.—A milch cow, on the average, requires daily three per cent. of her weight in hay to keep her in health, an ox two per cent., or two and a half per cent. if working moderately. An ox fattening, five per cent. at first, and four and a half per cent. when half fat; sheep three and a half per cent. to keep in store order. If other food is substituted for hay, or a part of it, its comparative value as a nutriment must be ascertained. Thus, eight pounds of potatoes are equal to four pounds of good hay, while eight pounds of turnips are only equal to one and three-fifths pounds of hay.

Carrots for Stock.—It is asserted, by those who have tested the matter, that for stock-feeding an acre of carrots is worth about two hundred per cent. more than the same ground will do in grass. This will pay for increased expense of cultivation, and leave a fair margin of extra profit. Cattle take readily to carrots as a portion of their daily food, and the large yield per acre should make them a greater favorite with farmers than they generally are. The thinning and weeding appear to be a great drawback to their more general cultivation. But with this expense the crop pays well.

Celery Tops for Cows.—A writer in an Australian paper states that in many instances the leaves of celery are highly esteemed as food for milch cows, and are often preferred to red clover. The cows are said to eat them greedily, and to yield on this food a far richer milk than on any other. Sometimes leaves are cut up small, scalded with hot water, and given as a mash mixed with bran, and sometimes they are fed whole in their natural state along with the other ordinary food.

The Best Feed for Cattle.—We have seen pumpkins fed quite freely with excellent result in quantity and quality of milk; but it is not fit or economical to feed too largely of any one food. Potatoes fed in moderation are excellent for milk; but given in too great a quantity they will reduce the yield. Turnips or beets must not be given too liberally; corn fodder, given as a sole ration, is unprofitable; but fed with half pasture will keep up the yield of milk and add largely to the profit of the season.

Phosphates for Cattle.—A natural instinct leads cattle to eat bones when their pastures are deficient in lime or phosphates of lime. If these bones are brought home and reduced to a fine powder, mixed with salt, and placed in a box or boxes fixed in the barn-yard, the cows will lick them and

derive very great benefit from them. This will save their teeth, and prevent them from choking themselves, as they might readily do with a piece of bone. Those who have no old bones should purchase a few, and treat them in the way indicated.

Straw and Bran.—Professor Henry, of the *Wisconsin Experimental Farm*, holds that it is wise economy on the part of the farmer who has a great straw stack, and small herd of cattle, and some hay, and who will not enlarge his herd, to sell the hay at \$7 or \$8 per ton, and spend the money in buying bran at \$11 and \$12, and feed it with the straw, together with some oil-meal. Good bright straw is made equal to hay by the addition of the protein in the bran and meal, and the whole is thus made into a far better quality of manure than usually comes from the usual way of feeding the hay, and half washing the straw.

Feeding Bran with Meal.—For winter feeding, where cattle are kept in stalls and heavily fed, there is no better divisor for corn meal than wheat bran. It is also cheap, and furnishes what the corn meal lacks. When cattle are fed on corn meal as the principal food for fattening, it is apt to clog if fed in too large quantities; hence, our best feeders are in the habit of using bran as the cheapest and best means for rendering the meal fed more digestible.

Rings on Cows' Horns.—The first ring appears when the bovine is two years of age, and sometimes before. The ring gradually increases during the third year, and is fully formed at three years; the second ring appears during the fourth year, and is complete at the end of the fifth year; after that one additional ring is formed each year. A cow with three rings is six years old; with four, seven years old. After nine or ten years the rings are no indication of the age.

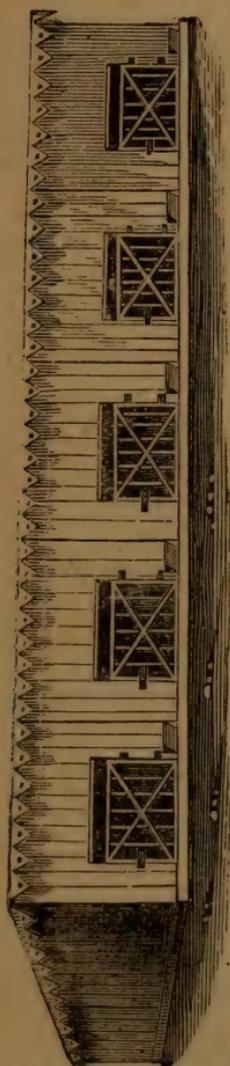
Care of Oxen.—Oxen that work on frozen roads, although there is no ice, should be shod. The rough, hard surface wears down the hoofs very fast, and causes inflammation of the interior; the trouble may not become apparent until later, when the mischief is difficult to repair. If the feet are tender and hot, and a slight lameness is perceived, examine the hoofs between the claws, cleanse the feet, and apply the needful remedies without delay, and so save trouble in the future.

To Exterminate Rats and Mice.—An English agricultural paper says: "Several correspondents write to announce the complete extirpation of rats and mice from their cow-stalls and piggeries since the adoption of this simple plan: A mixture of two parts of well-bruised common squills and three parts of finely chopped bacon is made into a stiff mass, with as much meal as may be required, and then baked into small cakes, which are put down for the rats to eat."

Garget in Cows.—It is said that eight drops of tincture of aconite dropped on a piece of bread and mixed with the food at night, and next morning four drops more given in the same manner, will generally complete the cure of garget in cows.

Scours in Calves.—For scours in calves, a raw egg broken into their milk is the most effectual remedy. A piece of rennet soaked in milk is also good, but we prefer the raw egg.

A Winter Piggery.—The object sought in the erection of this piggery is to secure a neat, clean, cheap and comfortable shelter for young pigs. The structure is thirty feet long, six feet wide, five and a half feet high in front, and four feet high at the rear. The roof slopes only one way, and projects fifteen inches, to throw water away from the pens.



A WINTER PIGGERY.

First make the spot on which it is to be built a foot higher than the natural surface, with stiff, good clay soil. Gravel must be put on this several inches deep. Set round white oak posts a few inches in the ground at every corner of each pen or division. Nail on, with double-ten nails, scantling, two by four inches. Board up with vertical boarding, one by twelve inches. Cover the roof of building with the same material, and make slatted divisions for the pens inside. Our illustration shows the trough into which slops and water are poured from the outside. These have a one-inch hole at one end, with peg to let off surplus water in cleaning. A piggery of this size will hold from ten to thirty, according to size and age. It should be built facing the south, so as to allow as much sunshine as possible to enter the doors. Whitewash the inner apartments for health; also the outside, which gives the structure a pleasant appearance. The ornamental verge board is sawed out of one-inch plank a foot wide, and a one-inch auger hole put through the center of the figure, as shown in the cut. The rafters project a foot over the front, which proves a solid basis upon which to nail the verge board. A little venetian red in some lime is good to color the verge board, the corners and doors. The doors are made of open slat-work, and are furnished with small chains for fastening, and strap hinges. This piggery can be built for about \$35.

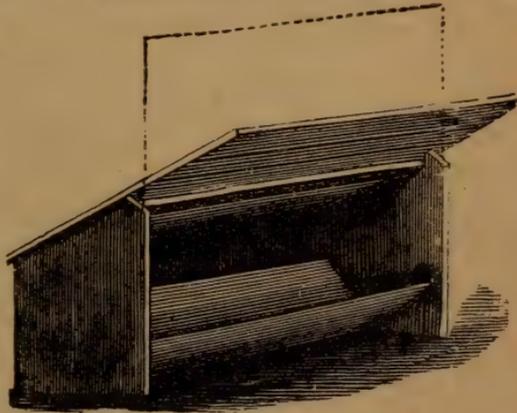
Will it Pay to Steam Fodder!—Taking the word fodder in its broadest sense, says the *American Agriculturist*, as any kind of food for granivorous animals, we may say that it will always pay to steam or cook feed for swine, and often for cows, in stables containing twenty-five head or more, while for sheep and horses it will be of doubtful expediency, and usually not advisable under any circumstances. The cooking of feed for fattening swine is so important as a matter of economy, that it will pay, even though done with

little regard to the saving of labor and fuel. On the other hand, to cook the feed for neat cattle with profit, not only should there be animals enough to make it pay, but the rations should be so carefully planned, that by mingling of palatable, with less relished and coarse fodder, a saving may be effected in that way. Besides the object for which the cattle are kept, is an important factor to be considered in the feeding.

The flow of milk is increased by steaming the fodder—the color of the butter is, however, injured. The same ration will prove more fattening, while, at the same time, there will be little or no waste, if the steam is well managed. It is best to have the steamed ration composed of a variety of feed, such as corn-fodder roots, hay or oat straw, with bran and corn meal, or cotton-seed, or linseed-cake, or meal. The substitution of one kind of fodder or meal for another, gives variety and relish. The coarse fodder is cooked soft, and the flavor of the roots and of the meal pervades the mass. It is not likely that any of the small agricultural steamers can be made to economically cook the food for as many as twenty-five or thirty head of cattle. When a boiler of several horse-power is employed to do other work, as pumping, thrashing, sawing wood, grinding, cutting hay and corn fodder, etc., steam may be economically used for cooking fodder. Of this there can be little doubt. The steam box in which the fodder is placed for cooking, if it is big enough, need not be filled oftener than twice a week, and if, as already intimated, every pains is taken in the operation to save in the items of labor and fuel, steaming fodder for cattle will be found profitable.

Convenient Trough.—

This trough is designed more especially for an outdoor or field trough for summer and fall use. It is very desirable with many to feed their swine outside of pens in those seasons, and every farmer is aware that it is almost a necessity to have the trough arranged to keep the swine away, both from the person who feeds them and from the receptacle into



CONVENIENT TROUGH.

which their food is placed while the latter is being prepared. The trough which we illustrate is adapted very perfectly to this purpose. It may form part of the fence, so that the swine cannot come to the rear, from which side the food is placed in it, and the additional advantage is the shelter of both trough and animals from storms.

The cut requires little explanation. The cover is hung on pins and fastened by a hook and staple on the rear side to keep it down. When food is to be placed in the trough the hook is unfastened and the cover lifted up in the position shown by the dotted lines. By this movement the swine are completely shut away, and it is very convenient to place and mix their food. A slight effort brings the cover back to its place, and they can then "go in." Perhaps sheep feeders might take a useful hint from this plan.

Pig Raising.—We will suppose that the farmer has a litter of good, healthy pigs of good stock, one day old. He congratulates himself that, having escaped the dangers which are so thick at the critical period of farrowing, he will have no further trouble. The pigs are lively, and well developed; the mother shows no disposition to eat them, and is careful not to overlie them. There are still two dangers right before the pig raiser

into which he may ignorantly run—but which may be easily avoided—which have caused the death of pigs by the million. The first is overfeeding the sow with rich, heat-producing feed. I think there is no one cause that has occasioned so much loss as this. Make it an invariable rule to feed sparingly of corn for the first week. A failure to pay close attention to the matter of diet at this time will often result in fever, which dries up the milk, the insufficiency of which actually starves the pigs to death. When the result is not so bad as this, the sow loses appetite, runs down rapidly in flesh, and although the pigs live they do not thrive, and before weaning the mother is a skeleton. For the first week feed house slops and bran, with but one ear of corn at a feed, and then increase gradually, and by the end of the second week you can feed as heavily as you please. The second danger to young pigs is that they become diseased for want of exercise. If the sow is kept in a close pen and proves to be a good suckler, it is often the case that in two or three weeks the pigs get so fat as to die. Many a farmer, with a valuable litter of pigs shut up in a close pen, has seen them die one after the other until the litter disappeared, and yet he had no idea what was the matter. Lay it down, then, as a second rule in pig raising, that young pigs must have exercise.

Still another important thing is a clean bed. If allowed to sleep in dust they are likely to die of thumps, and if in a wet place or a manure pile, they become mangy, or contract colds and die. But we will suppose that the farmer is wise enough to guard against the dangers I have spoken of, and has brought the litter safely to the age of four weeks, with the mother in good condition, and having a good appetite. It is now time to begin to prepare the pigs for weaning. Make a pen near where you feed the sow, and arrange it so that the pigs can go in and out at pleasure, but let it not be accessible to the sow, and begin feeding with milk and soaked corn. The quantity must be very small at first, and only what they will eat clean. Increase gradually, and by the time they are eight weeks old they will be eating enough so that they can be weaned without checking their growth. If, as is often the case, there are in the litter two or three pigs that are not quite up to the average, it will be good, both for them and the sows, to let them run with the mother a week or two longer than the remainder of the litter. For four months after weaning feed liberally. No matter whether your pigs are to be kept for breeders, fattened the first fall, or wintered over to be pastured the next summer and fed the second autumn, the treatment should be the same. Do not aim to make them fat, but get all the development of bone and muscle you can. The food should not be corn exclusively, for we want more of the flesh-formers, and they should have the run of pasture, and be fed on bran slop with the corn. Exercise, a varied diet, with part bulky food and not too much corn, will give a profitable hog.

Overfeeding Stock.—Overfeeding an animal is worse in its effects than a spare diet. A great many more young animals are checked in their growth, and otherwise injured, by overfeeding than by a deficiency of food. In illustration of this statement, a correspondent tells the following story of his own experience:

A rather opinionated and willful hired man, who requires the closest watching in feeding the stock, in defiance of strict orders, gave some Berkshire pigs some cotton seed meal in their feed, in the expectation that it would help them to grow. Their feed had been skimmed milk, with a quart of wheat middlings to the pailful. Considerable more cotton seed meal was

added to the feed during my absence from home for a day and night, and on my return the next day two of the young pigs were taken with convulsions and severe spasms. They died the next day, when two more were taken, and soon after two more. The whole six died in the same way. First they slowly turned around and around, then stood with the head in a corner and pressed against the wall or yard fence; the jaws were chopped together, and they foamed at the mouth. After a few hours they lay upon their sides and struggled violently with the legs until they died. A dose of lard oil allayed the symptoms for a time, and had it been given at first, would probably have saved them. On opening them the lungs were found congested and very red in patches, and the brain, also, was much congested, the blood vessels being dark blue. The stomach and intestines were filled with cotton seed meal, the milk having been digested. So short a case of indigestion, or stomach staggers, as it is popularly called, is rare; but the pigs were but two months old, and had probably been misfed previously.

A Convenient Feeding Trough.—We give an illustration of a convenient trough for feeding hogs or sheep. It is especially well designed for feeding hogs, and may be placed in the pen, the swing door above the trough forming one side.

If desirable to use it out of doors, it may form part of a fence. The construction is simple. Two upright board standards, about four feet high, are nailed to the ends of the trough to support a swing door or partition, which is adjusted so that the lower edge plays back and forth just over the top of the trough. The view given is of the rear side of the



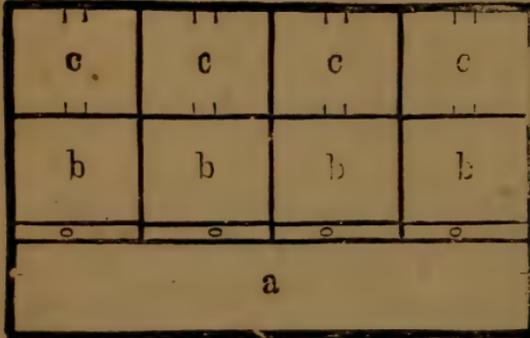
A CONVENIENT FEEDING TROUGH.

of the trough, and the partition is swung forward to shut the animals away while their food is being prepared. When ready, the slide is withdrawn, the partition swings over the rear side, and the hogs can "go in." Slats of wood should be placed across the trough to keep the animals from standing in it. By swinging the partition high enough, the hogs may pass under.

Sanitary Management of Swine.—One great fault in the management is to keep too many hogs together in one shed or inclosure. From want of proper protection in the way of housing, hogs are very apt to crowd together in bunches during cold weather; and, coming into the sheds wet and dirty, and being obliged to lie either on old and filthy straw bedding or on a wet and damp floor, their sweating and steaming soon produces a foul atmosphere, and the bedding, not being removed at proper intervals, gets rotten, and adds to contamination of the air. Being thus packed together in the building, the hogs, in a warm and perspiring condition, are next exposed to the influence of cold winds and wet, by being turned out in the morning hours to run in the field among grass wet with cold dew or from rain or hoar-frost, or to be fed from troughs in the yard. Among the common consequences are congestion, cold or catarrh, and, if the so-called hog cholera

happens to be prevailing, they are almost certain to be affected with that disease, as their systems, under such management, are rendered predisposed or susceptible thereto. In many places the hogs are kept in miserable sheds, no provision being made for proper drainage, the ground sloping toward the sheds, which frequently being unpaved, or without proper flooring, are constantly damp and wet, while pools of urine and filth abound, and with wind and sleet approaching from all quarters. In proportion as the standard of breeding has become higher, so has the vital force, energy, and hardiness become lessened; and the effects of improper quantity and quality of food, filthy or stagnant water, faulty construction of houses, and undue exposure to atmospheric influences, have become proportionately more baneful.

A Good Pig Sty.—We furnish herewith a plan for a good pig sty, with a detailed description showing the best manner of constructing the same. Our illustration represents the ground floor, 25 feet wide by 32 feet long. A is an entry five feet wide, running the whole length of the building, with a door at each end; it is used for feeding, as the troughs in boxes b, b, b, b, run along one side of it. The roof extends only over the entry (a) and the boxes



A GOOD PIG STY.

b, b, b, b. The boxes c, c, c, c, are not under the roof. The whole building is floored with plank, with a slight depression in grade toward the front of about half an inch to the foot, for the purpose of drainage. The inside partitions need not be more than about four feet high. The small door between b and c is hung by hinges from the top, so as to open either way, made to work easy,

not reaching quite to the floor. The pig soon learns to push it open and pass through, and the door closes after it. When pigs are put into the boxes, one corner of the box floor (c) should be made wet, and the pigs will be careful not to wet anywhere else. O, o, o, o, are feeding troughs. The height of the building should be seven or eight feet. No bedding is required. Keep the floor clean.

Hog Cholera.—The *Lewistown Gazette*, published in Fulton County, Ill., says: "Every paper in the United States ought occasionally to keep the fact before its readers that burnt corn is a certain and speedy cure for hog cholera. The best way is to make a pile of corn on the cobs, effectually scorch it, and then give the affected hogs free access to it. This remedy was discovered by E. E. Lock at the time his distillery in this county was burned, together with a large lot of store corn, which was so much injured as to be unfit for use, and was hauled out and greedily eaten by the hogs, several of which were dying daily. After the second day not a single hog was lost, and the disease was entirely conquered. The remedy has been tried in a number of cases since, and never failed."

The *Washington (Iowa) Gazette* says Mr. Donahey, of that place, furnishes the following recipe for the cure of hog cholera: To prevent hogs from hav-

ing cholera, quinsy, or pneumonia, use one gallon of soft soap, four ounces of saitpetre, and half a pound of copperas. Mix well in swill, and feed to about forty hogs in one day. In four or five days give the following: Carbolic acid, eight drams, black antimony, two ounces, half pound of sulphur. Mix well in swill, and feed to about forty hogs in two days. Repeat the above once a month, and it will prevent any of the above diseases. I have used it for ten years without a single case of any disease among my hogs.

A simple cure for hog cholera, says the *Kentucky Live Stock Record*, is an infusion of peach-tree leaves and small twigs in boiling water, given in their slop. Peach leaves are laxative, and they probably exert, to a moderate extent, a sedative influence over the nervous system. They have been used as a worm destroyer with reported success. They have also been recommended as an infusion for irritability of the bladder, in sick stomach and whooping cough. The cases of fatal poisoning from their use in children are on record, as peach leaves contain prussic or hydrocyanic acid, but as it is almost impossible to poison a hog, their use would not be objectionable. The specific is worth a trial.

The report of the Georgia Agricultural Department has a statement to the effect that forty cases of hog cholera were averted, if not cured, by turning the animals on to a quarter of an acre of clover, to graze for one week. It has long been held that this disease springs mainly from malnutrition, and too much feeding on corn or other carbonaceous food. The fact that clover—a nitrogenous fodder—in this case averted the threatened disease is of great interest. The culture and use of clover in the South may through this knowledge be greatly extended.

Nancy Agree, of Missouri, some years since claimed the \$10,000 premium offered by the legislature of that State for a cure for hog cholera. Her specific is as follows: "Take inside bark of the wild cherry tree and boil it down with water so as to make a strong solution, and give it to the hogs to drink, excluding them from water. It has proven a perfect cure, even in the last stages of the disease. I also recommend an admixture of the root of the bull nettle."

A correspondent of the *Journal of Agriculture* recommends a half teaspoonful of carbolic acid in a gill of milk. This remedy, he states, has been successful in every case and not only cures but stops the spread of the disease. It is administered from the mouth of a long-necked bottle.

The Pig as a Plowman.—Farmers everywhere, says the *American Agriculturist*, are influenced by the construction of railroads and other means of quick transportation, but none of them more so than those who grow meat as a branch of their farm operations. The pork-raisers in the older States come in competition with the swine products of the prairie States, where the pig is a condenser of the corn crop, and among the most economical methods of sending that cereal to market—yet even with cheap freights, it will not do for Eastern farmers to abandon the sty, and look to the West for their salt pork and hams. There are economies to be practiced in swine raising that will make the Eastern farmer successful in his competition with the West. He has the protection of freights over long distances which can never be very much reduced. The home market will always be remunerative, so long as pork products are in demand. His lands need manure, and that which is made in the sty and under cover, is among the best of the home made fertilizers. Herding swine upon pasture, or old meadow, that needs breaking up, is not very much practiced, but is one of the best methods of

raising pigs. They are as easily confined within a movable fence as sheep, utilize the grass and coarse feed quite as well, and perform a work in stirring the soil that sheep cannot do. The nose of the pig is made for rooting, and we follow Nature's hint in giving him a chance to stir the soil. A movable yard, large enough to keep two pigs, can be made of stout inch boards, about fourteen feet long, and six inches wide. For the corner posts use two by four inch joists. Nail the boards to the posts six inches apart, making four lengths or panels four feet high. Fasten the corners with stout hooks and staples, and you have a pen or yard fourteen feet square, which is easily moved by two men. If you place two fifty-pound pigs into this yard they will consume nearly all the grass and other vegetation in it in three or four days, and thoroughly disturb the soil several inches in depth. When they have done their work satisfactorily, the pen can be moved to the adjoining plat, and so onward through the season. The advantages of this method are, that it utilizes the grass and other vegetation, destroys weeds and insects, mixes and fertilizes the surface of the soil about as well as the ordinary implements of tillage. In the movable yard there is thorough work. Even ferns and small brush are effectually destroyed. Worms and bugs are available food for the pig. And it is not the least of the benefits that the small stones, if they are in the soil, are brought to the surface, where they can be seen and removed. The pig's snout is the primitive plow and crowbar, ordained of old. No longer jewel this instrument, but put it where it will do the most good, in breaking up old sod ground, and help make cheap pork.

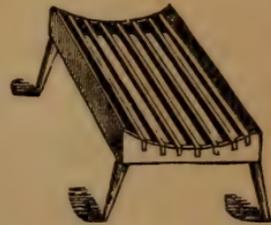
Charcoal for Hogs.—We have but little doubt that charcoal is one of the best known remedies for the disordered state into which hogs drill, usually having disordered bowels, all the time giving off the worst kind of evacuations. Probably the best form in which charcoal can be given is in the form of burnt corn—perhaps, because when given in other forms the hogs do not get enough. A distillery was burned in Illinois, about which a large number of hogs were kept. Cholera prevailed among these hogs somewhat extensively. In the burning of buildings a large amount of corn was consumed. To this burned and partially burned corn, the hogs had access at will, and the sick commenced recovering at once and a large portion of them got well. Many farmers have practiced feeding scorched corn, putting it into the stove or building a fire upon the ground, placing the ears of corn upon it, leaving them till pretty well charred. Hogs fed on still slops are liable to be attacked by irritation of the stomach and bowels, coming from too free generation of acid, from fermentation of food after eaten. Charcoal, whether it be produced by burning corn or wood, will neutralize the acid, in this way removing the irritating cause. The charcoal will be relished to the extent of getting rid of the acid, and beyond that it may not be. Hence it is well to let the wants of the hog be settled by the hog himself.

Iron Hog Troughs.—Upon the subject of the best material for hog troughs, a writer says: "I make them out of iron, not out of iron-wood, but cast iron. I grappled with this problem a half dozen years ago and mastered it. I became an inventor. I had an invention put into the form of a model and got the proprietor of an iron foundry to cast eight troughs after the model. They were put into the different pens and they are there now, bright, clean, smooth, sound, and all right, and I expect to leave them just in this shape to my heirs. The model cost \$18, and the troughs 6 cents a

pound, and they weighed an average of at least 100 pounds. The spout is cast with the trough in one solid piece, and there are also feet cast and attached, by which it is fastened to the floor. The corners are made rounding and so is the bottom, so that freezing does not crack them, as the ice does not press against the corners or sides, but around the whole. They are easily cleaned out, as the sloping sides allow the dirt to slide out before a broom, are always in place, and will never wear out. The wear and waste and annoyance of modern troughs became unbearable. Now I contemplate this part of farm experience with a feeling akin to perfect satisfaction. The trough is not patented."

Phosphates Essential to Pigs.—Experiments made by Lehman upon young animals showed that food containing an insufficient amount of phosphates not only affects the formation of the skeleton, but has an essential influence upon its separate parts. A young pig was fed one hundred and twenty-six days upon potatoes alone; a result of this insufficient food, *rachitis* (rickets, or softening of the bone). Other pigs, from the same litter, fed upon potatoes, leach-out-meat, and additional phosphates, for the same length of time, had a normal skeleton; yet even in these animals there was a difference according to the kind of phosphate added. Two that were fed on phosphate of potash had porous bones, specifically lighter than the others, which were fed upon phosphate and carbonate of lime.

Pig Scraping Table.—This table can easily be made by a handy man. It is formed by bars of wood fixed into a frame. By using a table of this description when scraping pigs, the water and hair fall to the ground, and the latter is effectually disposed of. It is a simple arrangement, and its construction and use will materially aid in neatness and despatch.



PIG SCRAPING TABLE.

Preparing Food for Swine.—A writer gives the following opinion: "The present practice with the greater number, I believe, is to prepare food for pigs either by steeping, steaming, or boiling, under the belief that cooking in any shape is better than giving in the raw state. I am not at present prepared to say definitely what other kinds of food may do, raw or cooked, with pigs or other domesticated animals, or how the other animals would thrive with peas or corn, raw or boiled; but I now assert on the strongest possible grounds—by evidence indisputable, again and again proved by actual trials in various temperatures, with a variety of the same animals, variously conducted—that for fast and cheap production of pork, raw peas are fifty per cent. better than cooked peas or Indian corn in any shape."

Hogs as Producers of Manure.—One hog, kept to the age of one year, if furnished with suitable material, will convert a cartload per month into a fertilizer which will produce a good crop of corn. Twelve loads per year multiplied by the number of hogs usually kept by our farmers would make sufficient fertilizing substance to grow the corn used by them; or, in other words, the hog would pay in manure its keeping. In this way we can afford to make pork at low prices, but in no other way can it be done without loss to the farmer.

Swine Raising.—The *American Agriculturist* contains the following sensible advice regarding the raising of swine: Pure air helps to make pure blood, which, in the course of nature, builds up healthful bodies. Out-of-door pigs would not show so well at the fairs, and would probably be passed over by judges and people who have been taught to admire only the fat and helpless things which get the prizes. Such pigs are well adapted to fill lard kegs, whereas the standard of perfection should be a pig which will make the most ham with the least waste of fat, the longest and deepest sides, with the most lean meat; it should have bone enough to allow it to stand up and help itself to food, and carry with it the evidence of healthy and natural development in all its parts. Pigs which run in a range or pasture have good appetites—the fresh air and exercise give them this—hence they will eat a great variety of food and much coarser than when confined in pens. Nothing need go to waste on the farm for lack of a market. They will consume all the refuse fruits, roots, pumpkins, and all kinds of vegetables, which will make them grow. By extending the root patch and planting the fodder corn thinner, so that nubbins will form on it, and by putting in a sweet variety, the number of pigs may be increased in proportion. A few bushels of corn at the end of the season will be ready the next year for any crop, and ten times the advantage accrue to the farm than if as the pigs are usually managed.

Bone Meal for Strengthening Hogs.—Most farmers have noticed that in fattening swine, especially when they are crowded rapidly, they always appear weak in their hind legs, and sometimes lose the use of them entirely. An intelligent farmer says that he and his neighbors have made a practice of feeding bone meal in such cases, and find that a small quantity mixed with the daily feed will prevent any weakness, and strengthen the animals so as to admit of the most rapid forcing. As bone meal is known to be a preventive of cripple ail and weakness in cows, it looks reasonable that it should also be a benefit to hogs, which are often confined to a diet containing but little bone-making material.

Keeping Hogs Clean.—The floor of a hog pen should be of plank. The pen and hogs can then be kept clean. If the animals are permitted to root up the floor of the pen and burrow in the earth, they will always be in an uncleanly and unwholesome condition, and much food will be wasted. It is quite unnecessary for either the comfort or health of the hogs to let them exercise their natural propensity to root in the ground. The exercise is really a waste of food and takes so much from their growth. Hogs will fatten most quickly when they eat and sleep and remain perfectly quiet, as they will do in a dry, warm pen, with a clean plank floor, and bedding of clean straw and plenty to eat.

How to Give a Pig Medicine.—At a recent meeting of an English Farmers' Club, Professor McBride spoke of the difficulty of administering medicine to a pig. He said: "To dose a pig, which you are sure to choke if you attempt to make him drink while squealing, halter him as you would for execution, and tie the rope end to a stake. He will pull back until the rope is tightly strained. When he has ceased his uproar, and begins to reflect, approach him, and between the back part of his jaws insert an old shoe, from which you have cut the toe leather. This he will at once begin to suck and chew. Through it pour your medicine and he will swallow any quantity you please."

Hay for Hogs.—Very few are aware of the fact that hay is very beneficial to hogs; but it is true, nevertheless. Hogs need rough food as well as horses, cattle or the human race. To prepare it you should have a cutting-box (or hay cutter), and the greener the hay the better. Cut the hay short and mix with bran, shorts or middlings, and feed as other food. Hogs soon learn to like it, and if soaked in swill or other slop food, it is highly relished by them. In winter use for hogs the same hay you feed to your horses, and you will find that, while it saves bran, shorts or other food, it puts on flesh as rapidly as anything that can be given them.

Paralysis in Pigs.—Pigs are frequently subject to a partial paralysis of the nerves of the lumbar region, by which motion of the hind quarters is rendered difficult or impossible. It sometimes results from inflammation of the covering membrane of the spinal cord, caused by exposure to cold. The remedy is to rub turpentine or mustard paste upon the loins, and to give a teaspoonful of saltpetre in the food once a day. Dry pens and protection from rains in the hot season are the best preventives.

Poisonous Swill.—A correspondent of the *Prairie Farmer*, having complained of a disease among his hogs, is told by another correspondent that the symptoms are similar to those of hogs of his own, which he is satisfied died from eating swill that had become poisoned by standing too long. He says: "Chemists say that when swill stands a certain length of time after it has soured, it becomes poisonous. I don't *know* that this is so, but I *do* know that I shall not feed any more old swill."

Roots for Hogs.—Parsnips, carrots, Swedish turnips, and especially mangel-wurtzels, will all fatten pigs. The roots ought not to be given in a raw state, but always cooked and mixed with beans, peas, Indian corn, oats, or barley, all of which must be ground into meal. When pigs are fed on such cooked food as we have stated, the pork acquires a peculiarly rich flavor, and is much esteemed, especially for family use.

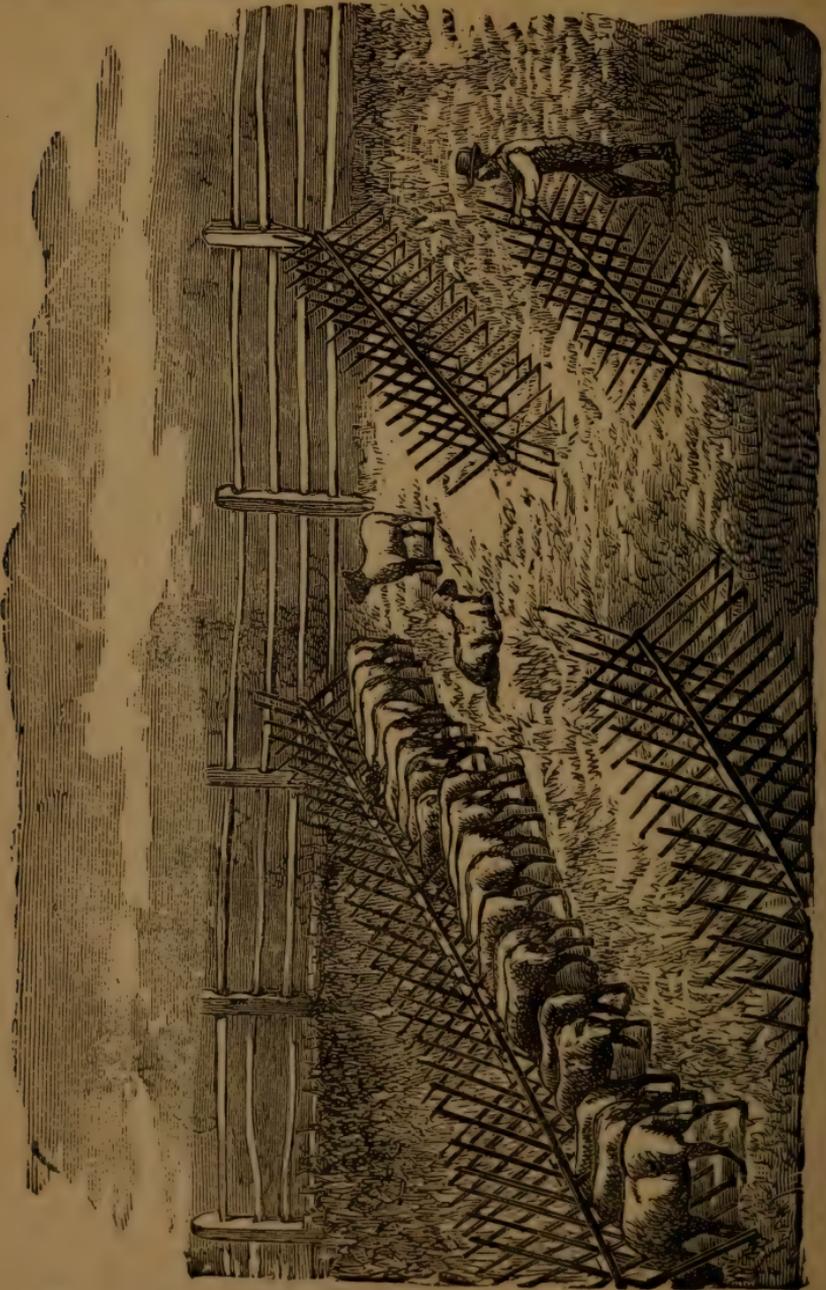
Economy in Hog Raising.—One man who let his hogs run on grass and artichokes all summer, was sure that his hogs paid him from fifty to sixty cents per bushel for the corn they consumed (not counting anything for the grass). Another man, who kept his hogs in a pen all summer without anything but corn and water, did not realize more than ten or fifteen cents per bushel for the corn consumed.

Water for Hogs.—Hogs require free access to water in the summer time. If they can have a place to bathe or wallow in, it is beneficial to them, as it cools and cleanses the skin. Mud is not filth—it is a good disinfectant and healthful. Sometimes mud baths have been found useful as medicinal treatment for sick people.

Scurvy Pigs.—It is said by a farmer who has tried the experiment so often as to be sure of his ground, that buttermilk poured over the back of a scurvy pig will entirely and speedily remove the scurf. The remedy is simple.

Squash for Fattening Hogs.—A New York farmer declares that an acre of Hubbard squash will fatten ten more hogs than the corn that can be raised on the same ground. He has gathered from six to eight tons from an acre.

Hurdling Sheep.—The accompanying illustration shows how an Englishman fed his sheep on an irrigated pasture, by the use of hurdles of



AN ENGLISH METHOD OF HURDLING SHEEP.

a peculiar description. The hurdles are twelve feet long and are made with a stout pole bored with two series of holes twelve inches apart; stakes six feet long are put into these holes so that they project from them three feet

on each side of the pole. One series of holes is bored in a direction at right angles to that of the other, and when the stakes are all properly placed they form a hurdle, the end of which looks like the letter X. The engraving shows how these hurdles are made and the method of using them. A row of these hurdles is placed across the field. The field in which they are used consists of six acres. A strip of ten feet wide is thus set off, upon which four hundred sheep feed. They eat up all the grass upon this strip and that which they can reach by putting their heads through the hurdles. The hurdles are then turned over, exposing another strip of rather more than four feet wide at each turn. When this is fed off, the hurdles are again turned over. The sharp points presented by the hurdles prevents any trespassing upon the other side of them, and by using two rows of hurdles the sheep are kept in the narrow strip between them. Their droppings are very evenly spread over the field, and it is richly fertilized by them. At night the sheep are taken off and the grass is watered. The growth is one inch per day under this treatment, and when the field has been fed over, the sheep are brought back again to the starting point and commence once more eating their way along.

Raising Feed for Sheep.—The corn raised especially for sheep should be planted in drills, three and one-half feet apart, and about six inches in the drill. It will ear sufficiently, and should be shocked when the ear is just passing out of the milk, in large, well-built shocks. And the most profitable use that can be made of this for winter feeding is, to run it through a cutter, directly from the shock, reducing to fine chaff, stalks, ears, and all. If cut one-fourth of an inch long, the sheep will eat it all clean; this we know from practical experience. With a large cutter, a ton can be cut in twenty to thirty minutes. This cut corn, fed in properly constructed troughs, will furnish both grain and coarse fodder. The only improvement you can make on this ration, without cooking, is to feed with it some more nitrogenous food, such as bran, linseed meal, or cotton seed meal. Wool is a nitrogenous product, and corn is too fattening a ration when fed alone.

To Tell the Age of Sheep.—The books on sheep have seriously misled flock-masters on this subject. Almost any sheep owner will tell you that after a year the sheep gets a pair of broad teeth yearly; and if you show that his own three-year-olds have four pairs of broad teeth, he can only claim that they are exceptions, and protest that they do not exceed three years of age. Now these cases are no exception, for all well-bred sheep have a full mouth of front teeth at three years old. Some old, unimproved flocks may still be found in which the mouth is not full until nearly four years old, but fortunately these are now the exceptions, and should not be made the standard, as they so constantly are. In Cotswolds, Leicesters, Lincolns, South-Downs, Oxford-Downs, Hampshire-Downs, and even in the advanced Merinos, and in the grades of all of these dentition is completed from half a year to a year earlier. The milk or lamb teeth are easily distinguished from the permanent or broad teeth by their smaller size and by the thickness of the jaw bone around their fangs where the permanent teeth are still inclosed. As the lamb approaches a year old, the broad exposed part of the tooth becomes worn away, and narrow fangs projecting above the gums stand apart from each other, leaving wide intervals. This is even more marked after the first pair of permanent teeth have come up, overlap-

ping each other at their edges, and from this time onward the number of small milk teeth and of broad permanent teeth can usually be made out with ease. Another distinguishing feature is the yellow or dark coloration of the fangs of the milk teeth, while the exposed portions of the permanent teeth are white, clear, and pearly. The successive pairs of permanent teeth make their appearance through the gums in advanced breeds at about the following dates: The first pair at one year; the second pair at one year and a half; the third pair at two years and three months; the fourth and last pair at three years. It will be observed that between the appearance of the first two pairs there is an interval of six months, while after this each pair come up nine months after its predecessors. For backward grades, and the unimproved breeds, the eruption is about six months later for each pair of teeth, but even with them the mouth is full at three years and six months.

Sheep Tick.—How to Get Rid of Them.—Sheep ticks are much more numerous and more annoying than many suppose. Men of experience with large flocks generally know and apply the necessary remedies, but there are

hundreds of farmers whose time and attention are principally directed to grain growing, etc., and who keep but a few sheep, whose flocks are sorely troubled by this parasite, and they never discover the cause of the evil. The accompanying engraving of the insect in its different stages, is from the Cyclo-pædia of Agriculture.

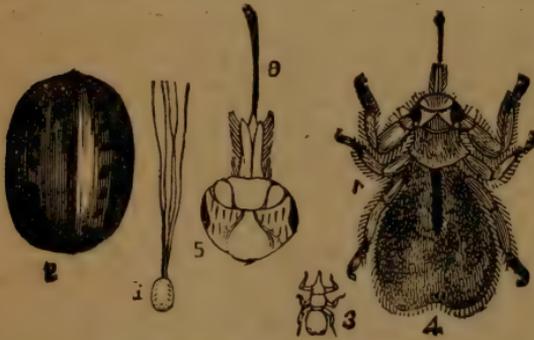


FIG. 1.—SHEEP TICKS, MAGNIFIED.

The sheep tick or louse lives amongst the wool, and is exceedingly annoying to lambs. Their oval, shining bodies, like the pips of small apples, and similar in color, may be found attached by the pointed end to the wool. (See engraving Fig. 1; Fig. 2, the same magnified.) These are not the eggs, but the pupæ, which are laid by the female, and are at first soft and white. From these issue the ticks (Fig. 3; Fig. 4, the same magnified), which are horny, bristly, and dull ochre; the head is orbicular, with two dark eyes (Fig. 5), and a rostrum in front, enclosing three fine curved tubes (Fig. 6), for piercing the skin and sucking the blood. The body is large, leathery, purse-shaped and whitish when alive, and notched at the apex. The six legs are stout, very bristly, and the feet are furnished with strong double claws. The English remedies are a wash of arsenic, soft soap and potash, decoction of tobacco, train oil with spirits of turpentine, and mercurial ointment.

Ticks, when very numerous, greatly annoy and enfeeble sheep, and should be kept out of the flock if possible. After shearing, the heat and cold, the rubbing and biting of the sheep, soon drive off the tick and it takes refuge in the long wool of the lamb. Wait a fortnight after shearing to allow all to make this transfer of residence; then boil refuse tobacco leaves until the decoction is strong enough to kill ticks beyond a peradventure. This may be readily tested by experiment. Five or six pounds of cheap plug to-

bacco may be made to answer for one hundred lambs. The decoction is poured into a deep, narrow dipping tank kept for this purpose, and which has an inclined shelf on one side covered with a wooden grate, as shown in our illustration below (Fig. 2). One man holds the lamb by the hind legs, another clasps the fore legs in one hand, and shuts the other about the nostrils to prevent the liquid entering them, and then the lamb is entirely immersed. It is immediately lifted out, laid on one side on the grate, and the water squeezed out of its wool. It is then turned over and squeezed on the other side. The grate conducts the fluid back into the box. If the lambs are annually dipped, ticks will never trouble a flock.

Early Lambs.—In many localities an early lamb will sell for more money than will the ewe and her fleece; therefore, where there is a market for early lambs the breeding of these is a very profitable business, if the person who attempts it is provided with ample shelter and understands the management of both ewes and lambs.

Lambs for early market are bred so as to be dropped in February and March. February is a hard month to bring them through, and without judicious treatment and warm shelter many lambs will be lost. The chief aim is to get the lambs ready for market as soon as possible, as it is the earliest arrivals that gain the highest prices. It is necessary to keep the dams in good condition with sufficient food to make plenty of nourishing milk. Experi-

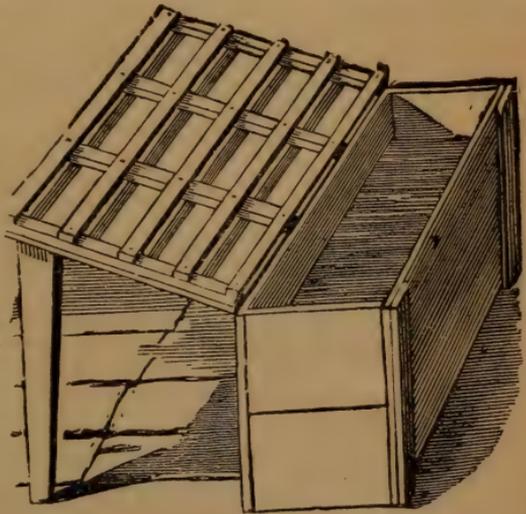


FIG. 2.—TANK FOR DIPPING SHEEP.

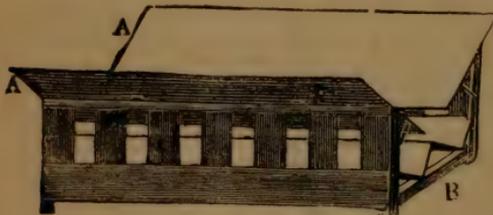
ence and judgment are required in feeding the lambs; they must have food enough to promote rapid, healthy growth, and yet of a character that will not produce scouring. While the lambs are still with the ewes, it is well to supply them additional food. They can soon be taught to drink milk which is fresh and warm from the cow. Later on, oats, rye and wheat bran finely ground together make an excellent feed. As a gentle laxative a few ounces of linseed oil-cake will be found beneficial and at the same time nourishing.

As the lambs approach the period for weaning extra food should be increased; indeed, the weaning must be very gradually accomplished. The sudden removal of the lambs from their dams is injurious to both. A plan generally followed to avoid the evil effects of a sudden change, is that of removing the lambs to a good pasture of short, tender grass, and at night returning them to the fold with the ewes. The ewes must not be neglected. Their feed should be gradually diminished so as to diminish the yield of milk.

How to Make Sheep Pay.—Any farmer in the Eastern or Middle States having a farm of one hundred acres in good fence can keep a flock of

fifty sheep and receive larger profits than from any other investment of the same amount, providing they will care for them in the following manner, viz.: Have your sheep in good condition when you take them from pasture to winter. Have a sheltered pen, with plenty of room, to protect them from the cold and storms; have an out-yard where they can be allowed to go in on nice sunshiny days, in which throw cornstalks, oat or wheat straw, if you have plenty of it, for what the sheep do not eat will make manure, so there will be nothing lost. Also keep the sheltered pen dry, by throwing in straw, as fast as it is cut up in manure. Feed them on clover hay. If you do not grow any buy it, for one ton of clover hay is equal to two tons of any other for sheep, in my experience. Try and have your lambs dropped in January or February. Build a small pen alongside of your sheep pen, cut a small hole, so the lambs can get in, but not large enough to admit the sheep. Put troughs in the lambs' pen, and feed them on ground feed. They will soon find the hole and learn to eat, and if you have never tried it before, you will be surprised how much faster they will grow, and you will also find that the butcher will buy your lambs earlier, and pay a larger price for them than he will for your neighbor's, who does not observe the above advice.

Feed Rack for Sheep.—Feed racks for stocks are indispensable



FEED RACK FOR SHEEP.

articles of furniture in the sheds and yards of the farm. We give an engraving of one of these, designed especially for sheep. Its dimensions are thirty inches high, twenty-eight wide, bottom formed by nailing together four boards, eight or nine inches wide, in the shape of two troughs, or the letter W, resting on the

cross piece B. The novel feature, perhaps, is the cant boards A A, which are hinged and then fastened by movable braces. These boards serve as particular shelter to sheep, both from storm and chaff from fodder; and by moving the braces they assume a vertical position, and thus keep out the sheep while one is filling in the grain.

Why Sheep are Profitable.—Sheep are profitable for several reasons, among them being the small expense of maintaining a flock. By that we do not mean the plan pursued by many of turning them into the woods and fields to be called up occasionally to be "salted," but they cost but little when cared for, because they are not choice in the matter of feeding. They greedily devour much that would be unserviceable, and for that reason are a necessary adjunct on a farm as a measure of economy. Where they become serviceable mostly is on those pastures that are deficient in long grass, and which are not used for making hay. It is on this short grass, even if scattering, that the sheep pick up good feeding and thrive well. In fact, long grass is not acceptable to sheep, as they graze close to the ground. A flock of sheep would almost starve in a field of tall clover, and will quickly leave such for the privilege of feeding on the short herbage that grows in the fence corners, in the abandoned meadows, and among the wheat stubble. The crab grass, which becomes a weed on light soils, is highly relished by sheep when just beginning to spread out, and even the purslane is kept down by

them. Fields from which the corn has been harvested afford them much valuable pasturage, and they are always able to derive something for food on places that would support no other animal. In saying this it is not inferred that they require no care at the barn. They surely do, but require less than may be supposed.

They are also great renovators of the soil, scattering manure evenly and pressing it in, thus improving the ground on which they feed. They multiply rapidly, a small flock soon becoming a large one, and they produce profit in three directions—wool, mutton and lambs.

Tar the Noses of Sheep.—The months of July and August are the ones when sheep in many localities are subject to a most aggravating annoyance from a fly (*oestrus bovis*), which seems bound to deposit its larvæ in the nostrils. It infects wooded districts and shady places where the sheep resort for shelter, and by its ceaseless attempts to enter the nose makes the poor creature almost frantic. If but one fly is in a flock they all become agitated and alarmed. They will assemble in groups, holding their heads close together and their noses to the ground. As they hear the buzzing of the little pest going from one to another, they will crowd their muzzles into the loose dirt, made by their stamping, to protect themselves, and as the pest succeeds in entering the nose of a victim, it will start on a run, followed by the whole flock, to find a retreat from its enemy, throwing its head from side to side, as if in the greatest agony, while the *oestrus*, having gained his lodging place, assiduously deposits its larvæ in the inner margin of the nose. Here, aided by warmth and moisture, the eggs quickly hatch into a small maggot, which carrying out its instincts, begins to crawl up into the nose through a crooked opening in the bone. The annoyance is fearful and maddening, as it works its way up into the head and cavities.

The best known remedy is tar, in which is mixed a small amount of crude carbolic acid. If the scent of the acid does not keep the fly away he gets entangled in the tar, which is kept soft by the heat of the animal. Any kind of tar or turpentine is useful for this purpose, and greatly promotes the comfort of the sheep, and prevents the ravages of the bot in the head.

Increasing the Growth of Wool.—The use of chloride of potassium is recommended in Germany as a means of increasing the growth of wool on sheep. Some German chemists have made experiments with the article, proving that the growth of wool is promoted by its use. It is administered in the proportion of one part of chloride to nine parts of salt. It not only increases the production of wool, but improves the quality, and promotes the general health of the animal, we are told; but the proper quantities to administer are not stated.

To Cure Poisoned Sheep.—Take rue leaves, as many as you can grasp between thumb and forefinger. Bruise them; squeeze the juice into a half teacup of water, and drench the sheep with it. If the sheep are poisoned very bad, drench the second time, which will never fail to cure.

Crossing Merino on Common Sheep.—A Merino ram crossed on a flock of common sheep will double the yield of wool through the first cross alone, thus paying for himself the first season.

Neck Yokes—How to Make Them.—We present herewith several new and good designs for neck yokes, with complete descriptions of each, which will enable any one to make them without difficulty. Any farmer can get out the woodwork from the patterns here shown, and the iron work can be made at any blacksmith shop, at a trifling expense. If your old neck yokes are worn out, now is a good time



NECK YOKES—FIG. 1.

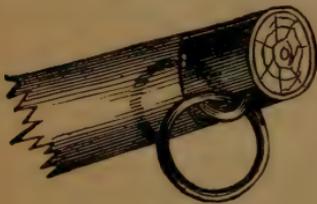
to supply yourself with new ones, before the spring work begins, and from the several styles we have here illustrated, you should have no difficulty in making a selection of one to suit you.

In our illustration, Fig. 1, is shown a neck yoke complete; the position of the various rings being as they appear when in actual use. Through the center of this yoke pass two eyed staples, riveted at the upper part as shown; in each of said eyes is a welded ring, and also through these is passed and welded a larger one, or what is denominated the tongue ring, from three to five and-a-half inches in diameter. The end, or breast-strap rings, wear against the lower side of the ferrules encompassing the outer end of the yoke, as a prevention against



NECK YOKES—FIGS. 2 AND 3.

splitting or checking, by use or the elements. The ferrules are retained in place by staples, holding the rings substantially, as shown. This is a very good and neat style; it is strong and durable.



NECK YOKES—FIG. 4.

Fig. 2 represents a threaded iron staple with ring attached; the portion with thread cut on is eight inches in length. It is screwed into the ferruled end of the yoke shown in Fig. 3. The advantages gained are, when one side of the staple becomes worn, by the action of the ring while in use, it may be revolved one-

half, and the opposite side worn.

Fig. 4 illustrates another method of attaching the breast-ring. A strip of iron is welded upon one side of the ferrule as shown. Should it by use become worn, it can, by readjusting the ferrule, be used as in Fig. 1.

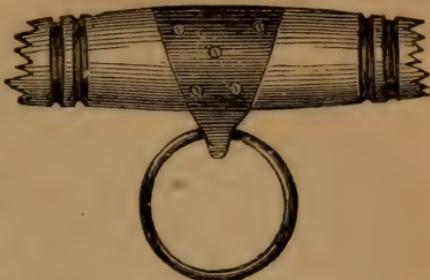


NECK YOKES—FIG. 5.

Fig. 5. exhibits another plan of attaching the tongue ring. But one staple passes through the yoke, with proper wear plates for the same, attached by nailing or with screws as is shown. It is self-

evident that this staple should be larger than that in Fig. 1; also should be loose enough to revolve, as the position it will often occupy will necessitate.

In Fig. 6 is shown the simplest possible plan or form of attaching the center or tongue ring. It is simply an iron clasp, of a size corresponding with the dimensions of the center of the yoke over which it passes, and is secured by screws. With this arrangement, the wood part of the neck yoke may be small and not open to the liability of breaking, as are those with a staple or staples passing through the most vital part—the center. The manner of attaching the breast-strap ring, designed especially to accompany the part shown in Fig. 6, is shown in Fig. 7. It is so clearly shown in our illustration as to render a description unnecessary.



NECK YOKES—FIG. 6.

In Fig. 8 is shown a neck yoke designed especially for use upon light or pleasure vehicles. Around the center is made a groove two inches wide and one-eighth of an inch in depth, around which is placed a strip of leather, the ends connected together by sewing or riveting, and provided with a hole for the reception of the end of the tongue, or iron on the end of the same. Staples are inserted at the side, near each end, between which and the yoke passes a strap, which, when buckled, is of a length sufficient to allow of the passage of the breast-strap; or the strap first mentioned is buckled around the lower part of the horse-collar, dispensing entirely with the breast strap. The list shown and described contains all the various forms and styles deemed worthy of notice, especially for farmers.



NECK YOKES—FIG. 7.

Working Vicious Horses.—The management of balky and kicking horses, writes a correspondent of the *Indiana Farmer*, is very poorly understood by many of our horse owners. I will give a few plans for managing this noble animal without so much brute force. The way to manage a kicking horse is to take a short piece of rope long enough to go around the upper jaw, which must be tied so as not to slip. The knot must be placed in the center of the mouth; then take a rope twenty feet long, half-inch in diameter, double it, and pass one end through the loop around the upper jaw; pass both ends up between the ears through a ring that is tied to the top of the bridle; then pass each end through the terrets of the back band on the harness; then through a ring that must be tied to the crupper strap, divide the rope and tie each end to the shafts. By this arrangement a horse cannot kick unless he jerks his head up at every attempt he makes to kick, which will punish himself so severely he will soon give up the bad habit.



NECK YOKES—FIG. 8.

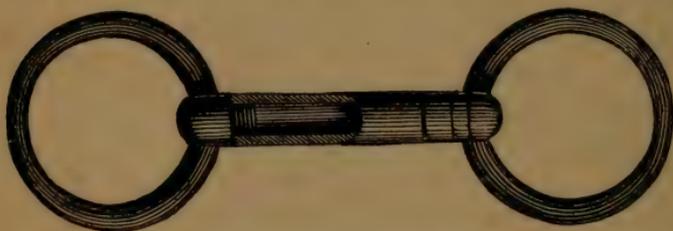
This rig will work on a horse that kicks to a road wagon. By bolting a

stout piece on the double tree, so it will extend out as far as the end of the singletree, and bolt one end of a two-inch square piece to it, and tie the other end to the hame; then tie one end of the rope to the two-inch piece and the other end to the tongue, and let them kick if they can.

Balky drivers are apt to make balky horses. It is apt to be the case when a horse shows signs of balking, the driver commences to whip and gets the horse excited so he won't stretch a trace.

Now, the best plan when the driver sees that a horse is going to balk is just to pull on the lines and stop them, and let them stand a few minutes. And if the other horse is a true puller, speak to him and let him start the load, and by loading light and working gently with the balky horse you can soon have a good puller of him. Of course there are some horses that have been spoiled by overloading and bad drivers, and nothing but force will make them pull.

For halter pulling put a bridle on the horse, and buckle a surcingle around his body; then take a half-inch rope twenty feet long, double it, and pass the end under the surcingle on either side of the horse and through the rings of the bridle, and fasten to a post; the center must be put under the tail, the same as a crupper. So when he pulls the hurt will come behind, and, as a natural consequence, the horse will not make any attempts to pull back.



MEDICATED BRIDLE BIT.

**Medicated
Bridle Bit.—**

In our engraving is shown a bridle bit which is said to have been the means of aiding in the

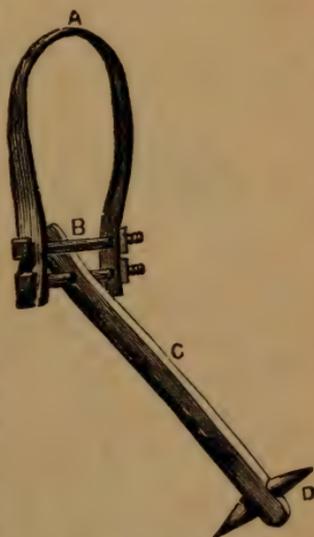
cure of various diseases to which the throats and mouths of horses are liable. The bit is made hollow, with minute perforations along the side. Into the hollow bit is poured, while melted, a medicament prepared with some bland substance, like lard, oil of theobroma, or other substance which melts at a low temperature, simply as a vehicle, or which may be itself of service as an emolient. The warmth of the horse's mouth when the bit is applied melts the medicament, which flows to and over the diseased parts, which are thus reached for treatment, even when the animal is at work.

Good Grooming.—The advantages derived from thorough grooming are not very generally understood. A good many people who exact plenty of hard work from their horses will, nevertheless, begrudge them careful grooming, apparently regarding that as a luxury merely, which can be spared just as well as extra fine clothes. This is a great mistake. Grooming does not necessarily mean plaiting the mane and shining up the hoo's; it means keeping the animal's hair and coat cleaned and well brushed. Good grooming will not only add to the animal's comfort, but to its healthfulness. It is as essential in this respect as cleanliness and care are to children. Moreover, it tends to render the horse docile and to inspire in him affection for his master. Gentle handling is a great factor in securing a horse's good will, and nothing will enable a man to get the best work

from his horse more than the animal's good will. Who that has had anything to do with horses needs to be reminded of how much greater efforts will be put forth by a good horse in response to his beloved master's friendly voice, than in response to an angry tone or to the crack of the whip?

Perhaps we have here one of the causes of the frequent complaint that it is hard to find a man who can take care of horses. The ability to care for horses as they should be cared for is much more rare than the ability to be a good bricklayer or carpenter, or to do any other purely mechanical work. To succeed with horses a man must be ever watchful of them; he must get to know them and love them. Their health and comfort must be his constant care, and grooming must be a labor of love, and not a tiresome duty. Especially do horses need care after a spell of hard work, and every humane master will at such a time wipe them dry of perspiration, taking off the harness, if possible to do so, even if he has to put it on again immediately. Let the legs, from the knees and hocks down, be well hand-rubbed, and, if fevered from over-driving, they should be bandaged in wet cloths, to take away the heat. Attention to these little matters will not only stimulate the horse's affection and gratitude, but will preserve him in good health and prolong his years of usefulness.

A Horse Yoke.—Our illustration represents a yoke for unruly horses, which will be found very useful to those that have such stock. This is a harmless and simply constructed yoke, and will prevent any horse from scaling fences. *A* is a bow about three feet and a half long. This should be of tough hickory or oak, so that it will bend readily to its neck. *B* is two pins about a foot long, to go through two holes in each end of the bow. They should be inch pins. *C* is a poke four feet long, with the top end square. A hole must be bored four inches from the top, so that the under pin may pass through it, and the four inch part may rest on the upper pin. The poke should be at an angle of thirty degrees. *D* is a hook, mortised through the lower end, which will be found beneficial. The yoke should fit the neck neatly, and the ends of the bow should be drawn closely up to the square sides of the poke. This simple device will be found very useful to those who have horses that are addicted to the bad habit of jumping fences.



A HORSE YOKE.

The Shape of a Saddle Horse.—Most people stand too near a horse to form the best judgment as to his general shape. If a man examines a horse in the stable only he may satisfy himself that the horse has a good neck and shoulders, and also good hind-quarters, and yet the fore-quarters may be out of all proportion to the hind-quarters, so that the horse will look as if he was made of two halves of two different sized animals joined together. Better look at a horse first from a distance of forty or fifty yards, and then make a closer inspection for local details.

It is a mistake to think that a horse will alter in shape as he alters in

condition. His general construction will remain the same. If a lean horse has a ewe neck do not think you can fatten his neck into good shape any more than you could by feeding convert a man with a turnup nose into one with a hooked nose.

A side view will show the proportion between the horse's height and length, the shape of head and neck, and the size of his barrel. His hocks can be marked to see if he has curbs, and you can tell whether his fore-legs are straight or crooked.

As to the barrel, a good depth in the girth is a good thing, but if a horse is wide in the chest, he is not so deep in his girth, and a wide-chested horse is stronger than a narrow one, although he may not look so deep. His back ribs should, by all means, be large. That is, his body should look as big near the hind legs as near the fore legs. A horse that looks light in the stomach when he is fat, will not be as strong or last as well as one that looks thick in the middle at all times.

Looking at the horse when in front of him you can note the width of chest and shoulders. A moderately narrow chest is generally preferred to a wide one. But two great annoyances are (1) a sore back from the saddle pinching the withers, and (2) fetlocks cut by the opposite foot. A wide-chested horse, with fore legs well apart, is exempt from both these evils.



PULLING AT THE HALTER.

From the same point of view it can be determined whether a horse's feet are straight or not. Toes turned in or out are faults, but widely different ones. A horse that turns his toes out may be good tempered and have good shoulders, and may be ridden with pleasure. A horse with his toes turned in is often morose and always clumsy.

Looking from behind a horse, his hocks should appear straight. It is better, however, that they should be too near together than too far apart. A fourth view is that which one has when looking down upon the wheelers of a coach from the box, and it is important. The horse's body, seen from this point, should be the same shape as a hen's egg, with the broad end towards the tail. That is, the back ribs will be the broadest part of him.

To Break Horses from Pulling at the Halter.—Provide a stout, new rope—one that is not easily broken; knot it around the animal's neck with a knot that will not slip; then give the rope a "hitch" around the under jaw just behind the lower tusks as shown in the illustration. Give about eight feet play of rope from his mouth to the tree. Give the rope two turns around the tree; take a keen whip and whip him in the face until he pulls on the rope, you letting it slip a little in your hand. When he gets quiet, draw him up a second time, and a little closer. Whip him again in the face. Repeat this until he is satisfied that he cannot get off. After four or five trials he will have learned the lesson, and the habit of pulling at the halter will be broken.

Remedy for Cribbing Horses.—The habit of cribbing is considered by the best modern authorities a symptom of indigestion or a diseased condi-

tion of the stomach. Horses addicted to this vice are generally thin in flesh, but this condition is probably the result of the disordered state of the digestive organs rather than to the act of grasping and pressing upon the manger or some other object with the teeth. A horse in which this habit has long existed can readily be recognized by the worn and rounded appearance of the edges of his front teeth, also by the enlarged appearance of the muscles which depress the jaw. The habit can be prevented in several ways, but is liable to return again when the preventing conditions are removed. By taking away the manger and feeding from the ground the animal will have nothing to rest his teeth upon, hence, as a rule, can not gratify his propensity in this direction, except in some very obstinate cases, when they will seize one of their knees and use that for cribbing purposes. By nailing a strip of sheepskin about eight inches in width the entire length of the crib, selecting a skin covered with long wool, and sprinkling it freely with cayenne pepper, renewing it occasionally, the worst cribber can be persuaded to desist from his habit.

Too Much Curry-Comb.—An excellent colored coachman, whose horses always looked clean and smooth, once assured us that he wanted nothing but a wisp of straw for cleaning horses. A writer in the *Journal of Agriculture* takes about the same view in the following:

It is within the memory of most stockmen, that the curry-comb was considered an indispensable article of horse furniture, and even yet in most stables it is used to a greater or less extent. But it is time to consider whether there are not other means of cleaning stock less barbarous and more effective.

Suppose you try a curry-comb every morning on your own head a few minutes (provided you are not bald-headed already), and see how you like it. The hair can be kept short, perhaps, and smooth, but it is at the expense of a healthy skin on the animal. There are brushes made purposely for the business that are infinitely preferable to the curry-comb. The brush will remove all the dirt if properly applied, and there is no danger of applying it too vigorously. The best thing to clean a horse with is a handful of "excelsior," or the moss that is used for mattresses, or if you have not that a good brush, or a wisp of hay or straw. A corncob applied to the limbs of the horse and a polish off with a piece of cloth, will do all the cleansing necessary, especially if the limbs are sponged off frequently and carefully in good weather, and rubbed dry.

None of these articles cost as much as a curry-comb (except the brush, which all good horsemen will keep on hand), and either of them are better than the comb. The owner of a good horse ought to see to it that the curry-comb is abolished from his stable, or used sparingly, and a little more work put in, with a less barbarous instrument. When a horse cringes and jumps at the application of the curry-comb, it is not because he don't like to be cleaned, but he objects most decidedly to the method.

Try the noble animal once with a little less heroic treatment, and our word for it, you will banish the curry-comb from your stable.

Shoeing the Horse.—The horse, the shoe and the smith. The latter, says the *Turf, Field and Farm*, is responsible for nearly all the trouble our horses have. They cut and slash away on the feet until all the life is gone. They nail the shoe on with seven or eight nails when four or five would answer every purpose and be so much better for the foot. They shoe the

poor horse now as they did one hundred years ago. They employ boys, in many cases, to nail and trim the foot, who have no more idea of what they are doing than a monkey has of weather predictions. The owners of horses stand around and say nothing, but allow them full sway. Oh, owners of horses, why will you allow the poor horse to be butchered? Why don't you stop and reason. Ask yourself, does the foot require so much cutting? I tell you right here *no*; they will not stand it. Shoe the foot in the most simple way. The shoe, the rasp, and four or five nails for a gentleman's road horse is all that is required. What is still better is a short shoe, called a tip. If you cannot make up your mind to use the tip, use a plain, flat shoe, and have it put on the way I have stated. Don't go to the shop with your horse and tell the smith to shoe him, but tell him how you want him shod, the most simple way is the better. Say, "Mike, Pat or Jerry, I want my horse shod; just rasp his foot off, so he will have a level bearing. Do not touch a knife to it, at all. Nail on a short, flat shoe, with four or five nails and let it alone. I want the outside of the foot to look as dirty as possible; no sandpaper or rasp goes on the outside of the same." In a little time you will have a foot on your horse that is sound and strong, free from corns, or any other trouble. Now, if every owner of a horse will do this much, we will not see the poor crippled horses that we do now, in one year's time. Every man who owns a horse, will own one that can walk, trot, or run, and do it with ease and pleasure. After you do this much, you will shorten the shoe a little; you will find that improves your horse; after a while you will shorten it still more; before you know it, you will be driving your horse with tips; then both you and the horse will be pleased.

Horse Maxims.—Never allow any one to tickle your horse in the stable. The animal only feels the torment, and does not understand the joke. Vicious habits are easily brought on.

Let the horse's litter be dry and clean underneath as well as on top. Standing on hot, fermented manure makes the hoofs soft and brings on lameness.

Change the litter partially in some parts and entirely in others every morning; brush out and clean the stall thoroughly.

To produce a good coat on your horse, use plenty of rubbing and brushing. Plenty of "elbow grease" opens the pores, softens the skin, and promotes the general health.

Use the curry-comb lightly. When used roughly it is a source of great pain.

Let the heels be well brushed out every night. Dirt, if allowed to cake in, causes grease and sore heels.

Whenever a horse is washed, never leave him till he is rubbed quite dry. He will probably get a chill if neglected.

When a horse comes off a journey, the first thing is to walk him about till he is cool, if he is brought in hot. This prevents him from taking cold.

Let his legs be well rubbed by the hand. Nothing so soon removes strain. It also detects thorns or splinters, soothes the animal, and enables him to feel comfortable.

Let the horse have some exercise every day, otherwise he is liable to fever or bad feet.

Let your horse stand loose, if possible, without being tied up to the manger. Pain and weariness from a continued position induce bad habits, and caused swollen feet.

Look at the animal's legs and feet. Disease or wounds in these parts, if at all neglected, soon become dangerous.

To Make the Mane and Tail Grow.—Mr. Findley, veterinary editor of the New York *Sportsman*, gives the following treatment to make a horse's mane and tail grow, and to prevent their falling out:

“Rubbing the mane and tail usually results from an unhealthy condition of the skin, which, in most cases, is produced by neglect of grooming, or by bad food, or by any sudden change of diet from bad to good. Occasionally, however, it appears in stables where grooming and food are unquestionably good. Damaged oats or hay are very ready causes for this annoying affection. In every case, therefore, the food should be carefully examined. Young horses, on coming into stables, sometimes suffer from irritation of the skin, probably from change of diet. Horses recovering from fever frequently lose a large portion of the hair from the mane and tail. In the latter case it seems to arise from an impoverished state of the blood. In regard to treatment, if any positive cause, such as damaged food, or neglected grooming can be ascertained to have existed, measures, of course, must be taken to rectify it. Without such amendment local treatment will not be of much avail. The local treatment consists in dressing the skin with equal parts of mercurial ointment and soft soap, made into a lather with hot water, and applied by means of a stiff hard brush. The new hair will grow rapidly after this application. Besides the above local remedies, it will be necessary to act on the system generally by a change of diet; green food, which by means of its laxative qualities lessens the irritability of the skin, should be given. A bran mash with five grains of arsenic daily, in addition to the usual food, will exert a beneficial influence on the skin.”

Watering Horses.—The present system of watering is surely capable of improvement. The prevailing idea seems to be that a horse is like a bean, only fit to be used when every particle of moisture has been extracted from it. Comparatively few grooms give horses as much water as they will drink, simply, as it would appear, because they dread its effects, and not because they are opposed to *ad libitum* treatment itself, for, though niggardly with the water, they often keep hay in the rack all day. If there be no danger of a horse overeating, why should overdrinking be apprehended? Some years ago there was a movement in favor of the plan of letting horses have water before them at all times, except, of course, when they come in hot. Some persons who gave the experiment a fair trial affirmed that horses so treated drank less in course of the day than those watered from a bucket at stated intervals, and our own experiment coincides with theirs. Nor is there anything irrational in this, while the advantages of the system seem self-evident. Our horses are fed on dry and consequently thirsty food. If this thirst is not quenched there is a tendency to fever, which is also furthered by the strong work performed by a hunter, whereupon the groom comes to the rescue with his “bit of physic.” If nature were allowed to find her own balance, this feverishness would probably never appear, as a horse never drinks for drinking sake, as some of his masters and attendants do at times. Moreover, a horse with water before him never drinks much at one time, and is never unfit for work any moment; whereas the horse watered only at feeding times can never be used until some time after the bucket has gone round.

Cure for Pawing Horses.—A correspondent of the *New York Tribune* writes that paper that the habit of pawing can be overcome in most cases by lifting the foot, and holding it up for a while every time the animal begins to paw. To give the horse the first lesson, he says: Put on an old harness, buckle a strap around each of the forward fetlocks, attach a small rope five or six feet long to each strap, pass the ropes through rings or loops on the top of the saddle, take the horse to a soft, smooth spot, so that he will not be liable to get hurt, girt the saddle tight so that it will not turn, take up one forward foot and hold it up for some ten or fifteen minutes by making the rope fast at the ring on the saddle. The object of this lesson is to teach the horse that standing on three legs is tiresome and disagreeable work, and also to teach him that his foot is held by a superior power, and that he cannot put it down without the consent of that power. For him to get these ideas, he needs to stand long enough to get very tired of it, and needs to do his best to get his foot free before he can realize that is impossible for him to free it. Having given this lesson, put the horse in the place where he is in the habit of doing the most pawing, and when he lifts either foot, hold it up by pulling on the rope attached to it, and hold it for a short time only. The object of this lesson is to teach the horse that it is when and only when he lifts his foot to paw that the control of it is taken from him. When he learns this he will probably stop the practice; but for him to get this idea, the foot must be taken and held long enough for him to realize that it is held every time he attempts to paw. In this, as in all teaching and all disciplinary work, the teacher and governor needs a good supply of patience and perseverance.

Box Stalls in the Stable.—Box stalls are a necessary appendage to large stables. Two or three stalls for the use of sick and lame horses are indispensable to all large establishments. The more box stalls the better for training race horses. They are far better than open stalls for conditioning the racer, and are better for wintering than close when out of training. They should be built from twelve to sixteen feet square, which would give abundant room for the largest class of inmates to lie down and get up without being cramped for room. These stalls can be converted into single stalls by a movable partition when necessity requires it. Each stall ought to have an escape pipe running to the roof to carry off the foul air, and apertures at the bottom to let in the fresh air. The constant ingress of fresh air and the egress of foul air will cleanse and purify the stable. Condition for winning races is nothing more than good health put in execution by constant exercise and grooming. Preserve the health of horses by pure air and clean stables, and the skill of the trainer will more easily put them in the condition to contest for the palm of victory. Great consequence is attached to health and condition in the breeding stable. It is acknowledged to be the turning point of success in breeding establishments.

Hints About Horses.—Bad driving will often fatally injure a horse in a few miles, while skillful driving would make the journey in less time and leave the horse as fresh as when he started. Drive slow when the animal is full of food and water; but after the muscles are limbered and the system emptied, increase the speed. Then check up and let the horse cool off before stopping, and there would be less danger of taking cold and of stiff muscles, and less necessity for rubbing down. Drive slow up hill and down, and make good time on level ground and on moderate descents.

Never keep the same gait and speed for a long time, for a change of gait is equivalent to a rest. Never ride a horse without first making his acquaintance and securing his good will. Go to his head, speak kindly, pat him, look in his eyes. Whether you are a friend or foe, he will judge by your voice, your breath. Horses judge a man as quickly as a man does a horse. Feed and water abundantly at night after work and the animal has had time to rest and cool off. Feed moderately in the morning or before work. Parthians and Arabs prepare their horses for hard drives by fasting rather than feasting. More horses are injured by hard driving on a full stomach than by any other process. Never let a horse eat or drink much when he is hot from work. Study your horse, treat him according to his nature, make him your friend, and he will do better and safer service.

Off with the Check Reins.—It is painful to see so many horses tortured with tight check reins. There are four ways in which these faithful though dumb servants show neckache alone, to say nothing of other tortures from too tight a check rein: First, by tossing up of the head; second, by running out the tongue; third, by frothing at the mouth (the horse cannot swallow); fourth, by swinging the head from side to side. Unhook the check of almost any horse that has been harnessed an hour or two, notice how slowly and pleasantly the poor animal lowers his head—a convincing proof that keen suffering has been endured. Again, with the free use of the head in warm weather the horse keeps off many torturing flies, which he cannot do if reined with a tight check. Give him a light check, or, better, none at all. Let the owner or driver try the effect of a single fly upon his bared arm and he will learn to be merciful to the noblest and yet most abused of domestic animals.

The Horse's Back.—The back of a horse is strong and well supported. It is the arch of a bridge, which, from his structure, can bear weight placed upon it, whereas an inverted arch would fall to pieces, or would withstand a far less pressure. It has been observed that low-backed, or, rather, hollow-backed horses, working in harness, kept their condition, while those with high backs lost flesh. Persons of not very inquiring or observant dispositions would probably attribute this to the fact that the former were of more hardy constitution than the latter, but this would be a false conclusion. It is owing entirely to the curvature of the back, for a horse which can draw a weight was least able to bear a weight upon its back, while the horse unable to bear the strain of draft could beat the other any day in carrying a weight. The line of the vertebræ indicates the sort of work for which the horse is fitted. If it is high the weight must be on the top to press it together; if low, the pressure must be from below for the same reason. A downward curvative is, therefore, the best form of spine for a draft horse.

Accumulation of Manure in Stables.—A large mass of dung, unless frozen or kept near the freezing point, will undergo decomposition, and gives off, besides steam, ammonia and other gases. These tend to soften and injure the hoofs of animals, and especially horses, that may be forced to stand continuously upon the accumulation of dung. These gases cause inflammation of the eyes, and injure the general health, interfere with digestion, and reduce the vigor of the animal. There should be no mass of manure in any stable where horses are kept. A clean floor and pure air are requisites for the best health of the animals.

A Horse Stocking.—The horse stocking shown in our illustration is intended to contribute to the comfort of the horse, and, in one sense, to its support. It consists of snug-fitting elastic ankle of india-rubber molded to fit the horse's leg, and ribbed and reinforced to prevent sagging and slipping down at the top. It is also perforated to allow free exit for perspiration, and is laced in front, as shown in the sketch. The object of the invention is to provide a support not always of the length shown, but longer or shorter, as may be necessary for sustaining and protecting the tendons, ankles, knee-joints, etc., of trotting and racing horses, and horses in general, so as to prevent injuries from over-bending or straining in stepping upon stones or rut-holes.



A HORSE STOCKING.

Horse Management in Summer.—The requisites of a good stable are but few. It should be dry and well drained. Its floor should slope a little in the rear, and it should be covered with narrow strips having half inch spaces between them, through which the liquids could escape. The ceiling be high, nine feet at the least, and should be of matched boards to exclude dust from above. The light should come from near the top, at least above the level of the horse's head, and should be abundant; if the window is on the sunny side, it should be shaded by a blind or shutter. There should be ample means of ventilation by openings at the bottom and the top, covered with wire gauze to exclude flies. The doors should be double, so that the upper half may be left open at night, or they may be made of strips with half inch spaces between them, protected with gauze or netting. The interior should be kept white-washed and perfectly clean and free from vermin. All these requisites need only attention, and cost no more than the ordinary ill-adapted arrangements. The bedding should be fine; cut straw will be found economical, even counting the cost of the labor to procure it. Saw-dust is the best of all bedding, and pine saw-dust is better than hard wood on account of its resinous odor and its repellent effect against vermin.

Physical cleanliness, however, is the great matter to be observed. There is no reason why a horse stable should be so powerfully odoriferous. Nothing is easier than to keep it clean and sweet. A gutter should be provided to carry off drainage and a tank or pit filled with absorbents should be made to receive it. Once a day a few pails of water should be dashed on the floor to wash it off. Then a shovelful of plaster should be scattered about before fresh litter is spread. This will add at least one hundred dollars to the value of the manure from a pair of horses in a year, for the urine is worth more than the solid excrement, and would thus be saved, even that portion which escapes into the air or is carried into the house and elsewhere by those who attend the stables. The result of this care will be to keep it free from those odors which attract flies in vast numbers, and

which have a very injurious irritative effect upon the eyes and lungs of the occupants. The flies which infest stables are not the common flies, as is generally supposed, but a savage biting fly, called from its annoying attacks, "Calcitraos," or the "causer of kicking." This is its specific name, being stomoxys (in full, Stomoxys calcitraos), while the house fly is Nusca domestic. Those who have experienced the sharp bite of this savage fly can appreciate to a feeble extent the sufferings of a tired horse exposed the whole night to its incessant, blood-thirsty attacks. It is this which causes the constant stamping which "murders sleep" in the homestead upon those nights when the air is close and heavy, and the farmer writhes upon his bed, ignorantly anathematizing the noise made by his team. This may be prevented by a few minutes' work in the evening. The horse may be brought into the yard and a pail full of water, a sponge, and a piece of carbolic or whale-oil soap provided. First with a corn broom the legs of the horse should be washed down, and then the whole body rubbed off with a handful of straw dipped in water; the sponge is then well soaped and passed over the whole body, leaving some soapsuds to dry upon the skin. This cools the horse, removes the filth from the hide, and drives off the flies, all of which are conducive to its comfort and rest. The change will be both conspicuous and agreeable, and the team, refreshed with a good night's rest, will do better work the next day with far less exhaustion.

Diseases of Animals.—It is rather doubtful, says a writer in the *American Rural Home*, whether wild animals suffer much from disease, unless it may be in the case of injuries inflicted by other animals in the struggle for subsistence, in which the weaker, if it escapes with life, is sometimes wounded. The numerous diseases, constantly increasing in number, to which domestic animals are subject, are mainly caused by changed condition incident to domestication. Some of the changes, the result of domestication, are calculated to prolong existence. The fact that most of our domestic animals are provided with a steady supply of food, instead of the somewhat irregular and precarious supply of the wild animals, is favorable to health and longevity, as also is the fact that they are protected from the rigors of the seasons by warm shelter. However hardy we may regard those animals that run wild upon the prairies or in the woods, at all seasons of the year, there is little doubt that many of them succumb to the inclemency of the weather, attended, as it frequently is, by an insufficiency of proper food. Yet, with all due allowance for this there is little doubt that our practice of pampering our domestic animals subjects them to many species of diseases, unknown to the animal in his wild state.

Many diseases are brought upon our laboring animals by ignorance, inconsiderateness and positive cruelty in the excessive labors we exact from them, placing burdens upon them too heavy to be borne. Some men, in loading their teams, are only restricted by the ability of the teams to move loads, not considering that a team can only be pressed to the utmost extent of its ability at great risk of strain and injury. The cruelties inflicted by man upon his faithful servants, the horse, the mule and the ox, are a foul stigma on his manhood, from the just penalties of which he cannot escape. These penalties are not simply the loss of service and property by diseases and disabilities resulting to the animals, but, also, the hardening and imbruting of his own character. We do not take into consideration, fully, the fact that our relations to the brute creation, and especially to the domesticated portion, may be a source of blessing in their influence upon our own

characters, or may be a curse. We are under obligations to treat dumb animals with justice, mercy and kindness, as we are to so treat our fellow men, and any failure to discharge those obligations will react upon our own character.

The first effort of every stock-owner should be to *prevent* disease in our animals. To enable us to do this we should first study our animals, learn all in our power about their anatomy and physiology, about the wonderful processes of animal life. In this we shall learn what bones, muscles, organs, nerves are most tender, most exposed to injury, and then guard, as much as it is in our power, those weak and exposed parts. How few horses, for example, do we see that are perfectly sound in limb and lung; some bruise or strain has brought on spavins, splints, ring-bone, thorough-pin, etc., and great exertion, followed by sudden cooling, has caused inflammation of the lungs or other parts of the breathing apparatus. Now, while these diseases and difficulties might have been easily prevented by proper treatment and care, when once fastened upon the animal it is very difficult getting rid of them.

Then, how many diseases are brought upon domestic animals by improper and irregular feeding? Fed when exhausted, when heated; fed and driven, violently, immediately, or put immediately to hard work, diverting the vital energies from the important business of digesting the food. Is it a wonder that the digestive organs of horses, as well as men, are so often deranged and diseased, when we consider that they are managed by the same ignorance and recklessness that man's hygienic and dietetic practices are managed?

When our own management has caused disease in our domestic animals, and more especially, in the horse, what do we then do? The first thing we used to do in most cases, especially if there was any inflammation, was to bleed. When the poor animal most needed all the vitality he could command to enable him to throw off disease, we forthwith proceeded to deprive him of a portion of the fluid that contains the vital force and distributes it all over the system. The next process generally, was to *purge*, that is, to carry out of the system the partially digested food, containing the very force the system needs. Quacks, totally ignorant of the nature and effects of chemicals, were quick to prescribe the most deadly drugs, which were to be forced down the throat of the reluctant animal and, if nature, asserting her recuperative powers, was able to triumph over both disease and drugs, the latter received all the credit and became an established remedy.

We are glad to believe that a better day has dawned when the treatment of disease in the brute creation as well as in the human, is conforming to common sense, to reason. We are beginning to learn that when disease afflicts the animal or human system that nature effects the cure, and that our principal function is to put the patient in good sanitary condition and, as far as possible, remove the obstructions to nature's operations. Where there is inflammation or fever, some cooling applications (and there are few better than water) are beneficial, and where germs or insects cause the disease, drugs may be indicated. We have little doubt that in a majority of the diseases to which our domestic animals are heir, rest and sensible hygienic treatment will prove most efficacious.

About Stables and Stabling.—Does it ever strike the majority of our farmer readers, asks D. Z. Evans, Jr., in *Home and Farm*, that there are many mistakes made in regard to the arrangement of the stable they keep

their horse stock in, and that a little attention to this very important matter, and at a moderate outlay of cash and labor, would remedy many defects? The most important stock a farmer has on his farm is the working stock of horses, for without them he would have to either quit farming altogether or else relapse into the primitive style used by the ancients, with the profits worse than *nil*. Yet the working stock often is sadly neglected, not particularly in the matter of feed, for the major part of our farmers feed their horses liberally, but in regard to the stables.

Those large, double-decker barns, erected at great expense, look all that they should be. The mow room is commodious enough for the crops, the arrangements are such as to admit of the use of that great labor saver, the horse hay fork, while there is plenty of room to drive in and out. The building itself gives the place an air of thrift and substantiality, which nothing else can. We like up-stairs arrangements very much. Now let us take a trip below and see if there we find things in good keeping with what we have seen above. We see the root cellars, and they are just where they should be, and well arranged; but when we see the cow and horse stable we admit that we are not at all satisfied.

In the first place the stables are very dark, which is a great objection, and is a fruitful cause of blindness. The horses, when not at work, are kept here, and when wanted for use are brought out into the sudden glare of the bright sunlight. Great pain is the present, and blindness the prospective, result.

Basement stables are usually damp, for the simple reason that they are surrounded on three sides by the earth, which lies against the substantial masonry. A more fruitful cause of disease cannot be imagined than dampness; and when to this be added the want of ventilation, which is too often apparent in such barn, we can readily see why the horses sometimes suffer, though it is often a matter of surprise that more sickness and disease is not produced by such fruitful causes.

We do not wish to discountenance building such barns as above spoken of, for we like to see them and have farmers put them upon their farms, provided dampness can be avoided and thorough ventilation secured. Under most circumstances, we prefer to stable our horses under shed stables, provided they are properly built. These can be made to commence at the barn, where a door admits of ingress and egress, and the hay conveyed along an entry to them.

This makes rather more work, we admit, but *we* think it pays. In future we shall only erect new stables in this way, and thus be sure of freedom from dampness, darkness and want of ventilation. A farmer who has mechanical skill, who knows how to handle ordinary tools, can devise and erect such sheds himself, but when it comes to building a barn but few will attempt it.

Where it can be done, have a hard clay or earth floor for your horses to stand on in preference to stone, brick, mortar or wooden floors, the latter being perhaps the most injurious. The cool, moist earth is the most natural, while it is the pleasantest kind of floor for a horse's feet, keeping it in sound, healthy condition if ordinary care is taken of the animal otherwise.

Rations for Work Horses.—We have an inquiry, says the *National Live Stock Journal*, as to how it is profitable to feed the heavily-worked horse, and as to the cheapest effective ration to use, hay being worth \$16; oats,

\$22; middlings, \$16; new process linseed meal, \$25 per ton; straw and corn fodder, \$6 per ton.

Here is a pretty good list to get rations from. Let us suppose that two of corn is ground with one of oats, per weight. Oats being the most expensive by weight, we will use less of this grain. In making up a ration, particular attention must be given to a proper balance of constituents. The horse is useful only for his muscle, and the liberal nourishment of the muscles must be provided for. Corn meal is deficient in albuminoids or nitrogenous matter for the muscles. It is particularly rich in heat and fat-producing elements, consequently it can be fed in larger proportion in winter than in summer. Middlings are less heating than corn meal, and more muscle forming. This food may very properly be used as a considerable part of the ration for work horses. Straw may be used to good effect in the work-ration, but there must be more nitrogenous food to balance it. If straw only is used as the coarse fodder, then there must be sufficient extra nitrogenous food to make it equal to hay. Let us see if we can balance the straw to the standard of hay, and still cheapen the ration—12 lbs. of hay cost 9.6 cents, 12 lbs. of straw, 3.6 cents. This makes the difference in cost 6 cents. The hay has .66 of a pound of digestible albuminoids, and the straw has only .16 of a pound; now, the difference is a half a pound. Two pounds of linseed meal will more than make up this deficiency, and will cost only 21-2 cents, leaving a balance of 31-2 cents as a saving on the use of the straw and linseed meal.

We will now give a few detailed rations, giving only the digestible nutrients, as these represent the value of the food:

Foods.	DIGESTIBLE NUTRIENTS.				
	Albumi- noids.	Carbo-hyd- rates	Fat.	Cost.	
	Lbs.	Lbs	Lbs.	Cts.	
12 lbs. meadow hay.....	.66	4.92	.06	9.6	
6 lbs. corn and oat meal.....	.54	4.29	.28	5.4	
6 lbs. middlings.....	.60	2.91	.19	4.8	
3 lbs. linseed meal.....	.90	.92	.09	3.8	
	2.70	13.04	.62	23.6	
6 lbs. meadow hay.....	.33	2.46	.03	4.8	
6 lbs. oat straw.....	.08	2.47	.04	1.8	
6 lbs. corn meal.....	.45	4.04	.19	4.8	
7 lbs. middlings.....	.70	3.83	.19	5.6	
3 lbs. linseed meal.....	.90	.92	.09	3.8	
	2.46	13.72	.54	20.8	
12 lbs. oat straw.....	.08	4.94	.08	3.6	
6 lbs. corn meal.....	.45	4.04	.19	4.8	
7 lbs. middlings.....	.70	3.83	.19	5.6	
7 lbs. linseed meal.....	1.20	1.23	.12	5.0	
	2.43	14.04	.58	19.0	
12 lbs. corn fodder.....	.40	5.20	.12	3.6	
6 lbs. corn meal.....	.45	4.04	.19	4.8	
7 lbs. middlings.....	.70	3.83	.19	5.6	
3 lbs. linseed meal.....	.90	.92	.09	3.8	
	2.45	13.99	.59	17.8	

It will be seen that the fourth ration is the cheapest, yet as good as any of the rest. This results because the corn fodder is better than the straw, but having the same market value. These rations may be relied upon as good, practical rations for work horses. The fodder is supposed to be run through the cutter, and the ground feed all mixed with it, after moistening the cut fodder, and to lie in mass, and warm up somewhat before feeding. The linseed meal will be found an excellent food for the horse. It will keep the stomach in a healthy condition, and the coat smooth and silky. When the horses are at constant work, these rations are none too strong, but if they cease work for a considerable time, then the ration may be reduced. But it will be a very hopeful sign of improvement in agricultural operations when farmers shall keep their teams for steady work. It is certainly very unprofitable to have horses standing in the stable half or more of their time, as is quite too frequently the case.

If farmers would raise a nice quality of clover hay (alsike is one of the best) for their horses, they might reduce the grain ration, as clover is far more nutritious to the muscles than meadow hay; and the question of dust does not arise when the clover is moistened and mixed with the grain, as here recommended.

Breeding Horses upon Farms.—The figures given in a late report upon live stock in regard to the values of horses, mules, and cattle are very well worth the study of all those farmers who are concerned in the profitable management of their farms, writes Mr. Henry Stewart in the *New York Times*. From this report we learn that whereas cattle at 3 years old average a value of \$21 and cows of the same age \$27, 3-year-old horses are worth \$71, and mules of the same age about \$80. All farmers know that this relative difference in value exists, but it is doubtful if they give much consideration to the fact. We have frequently called attention to the profit there is in rearing colts, and have had a lively regard for this kind of stock since the time when we discovered by pleasing experience that a good yearling colt sold for \$150, when a yearling heifer brought only \$40, and that the one cost no more than the other except for the service of the sire, which was \$25. For ordinary farm stock these figures may be halved and will then amount to the usual prices at which these animals are readily salable. But we do not wish to be understood as encouraging the sale of such young animals. On the contrary, we desire to show that there is a greater profit in keeping colts until they are mature and training them carefully and well, and then getting three times the above amount for them, which is not difficult to be done. From close figuring we have found that a fairly good ordinary colt can be reared the first year for \$25, the second year for the same, and the third year for \$30—in all \$80. At that age the animal may be completely trained to work, and if it is sold for no more than \$160, the profit is 100 per cent. on each year's cost. A 3-year-old cow or steer cannot be reared for much less and would sell for about \$40 to \$60 at present prices. If the cost of rearing were but half this there would be far less profit in the animal. It is needless to comment upon this statement, for we doubt not it will be accepted as the plain, unvarnished truth by our readers. But we may be pardoned for saying a few words as to the future prospect for a regular business of breeding horses upon farms. It is a special business, and it may be feared that the supply may overrun the demand if a large number of farmers should go into it. This, however, is altogether improbable and, so far as experience of the past goes, wholly

impossible. It takes three years to rear a horse for work. Under our present high-pressure system a large number of horses are worn out in three years. There are about 40,000 horses in the city of New York car stables alone, which require to be replaced every three years. We doubt very much if this number is not too small, and this is only to replace the present supply and has no reference to the enormous growth of business and other horses which are not worked so hard and have a longer life. This is a drop in the bucket as compared with the needs of the whole country. Every railroad built, and every additional train of freight cars put on existing roads call for more horses at each end. The demand is indeed insatiable. Thousands of farmers never do, and never will, rear their own horses, and all these are eager purchasers of fresh stock. A neighbor who recently bought a good horse for \$275 told me it was the third in eight years; this is an outlay of more than \$100 yearly for horseflesh, and it is merely a sample of what is doing constantly every day in the year all over the country. Moreover, a change in the habits of the American people is impending. Riding is being found a cheaper way of preserving health than paying doctors and buying drugs. The saddle is becoming popular and American ladies are adopting the more athletic and healthful habits of their English sisters, and a saddle horse is kept in the suburban home where it was never thought of before. This pleasing recreation will become popular and will stay so. Already there is a call for trained saddle horses far ahead of the supply, and it is only the beginning of it. There never was yet known in history a surplus of horses, and there never will be. Horses are the most profitable of farm stock to the breeder, and with the demand in sight and the plain scarcity of these animals, and the profit of them, there is no more certainly remunerative, easy, and pleasant business for the farmer, who has the will and the tact for it, than this.

Farm Teams.—At no season of the year, says a writer in the *American Rural Home*, are farm teams more crowded with work than in preparing for seeding with spring crops, and at no season are they, as a general thing, in poorer condition for work. Many farmers are in the practice of allowing all except the road team to run in the barnyard and under open sheds, in winter, feeding on stalks, straw and hay, with little or no grain. This may be a good practice on some accounts. It gives the hoofs opportunity to expand and removes all danger of suffering from being pampered. But it does not put the horses in good condition for hard work, and the growth of long hair, which nature promotes to enable them to resist the cold to which they are exposed, will cause them to sweat easily when they commence work in the warm spring days.

Besides, the flesh on them is not of the hardest, toughest kind and will not endure hard labor. The skin on their shoulder and back becomes tender from disuse, and they are very apt to gall badly when put to steady plowing. It is certainly very poor policy for farmers to allow their horses to get in poor condition for work when work is most urgent and when they ought to be in their very best condition, capable of doing their largest day's work. The soil may be so wet and cold as to make it advisable to postpone working it until it is late for sowing and planting; then, when the soil is in suitable condition the farmer wants to push ahead his plowing, harrowing, etc., as rapidly as possible. If he then puts horses to plowing with soft muscles, tender shoulders and long hair, they will sweat easily, their soft

flesh will disappear, the collars will gall their shoulders and, in two or three days they will be unfit for work.

Horses that have been out of service during winter should be gradually prepared and hardened for spring work. Good firm muscles should be created by feeding oats and wheat bran, with a small proportion of corn meal. They should be thoroughly groomed so as to reduce the thickness of their hairy covering, and they should be gradually inured to labor in such a way as to harden their breasts before they are put to steady, severe labor. If nothing else can be found for them to do, while waiting for the ground to dry, it may be well to draw home such fertilizers as may be needed through the summer; phosphates, plaster, lime, salt, etc.

To the man who likes labor there is real pleasure in hitching a span of strong horses, in good condition, full of vitality, before a good plow and, on a pleasant spring day, strike a straight furrow across a field and turn over the fertile glebe full of the potency of life and activity; there is joy in the normal exercise of every organ and every muscle of the body, under control of the will, actuated by intelligence. But to work a span of horses in poor condition, every effort of which causes pain to them, is as far removed from pleasure as one can well imagine. Then see to it that your brutes are placed in condition to do the work required of them.

Foul Sheath in Horses.—There is nothing, says a practical farmer, that pulls a horse down faster than foul sheath. Farmers and all having charge of horses should know that it is no hard matter to clean a horse's sheath, and keep it clean. The best way is to feed good wholesome food, that will prevent disease, but that cannot always be done, and then we have to resort to a cure, which I find generally a very easy matter. Pare the nails of the right hand smooth, and take as much clean lard, free from salt, as can be held by the points of the fingers and thumb; insert the hand to the bottom of the sheath, and as the hand is withdrawn, leave all the lard. Repeat the operation two or three times at intervals of about two days and my experience is that in nine cases out of ten the horse will be all right. If not, wash out carefully with lukewarm water, but it is a bad plan to use the water in very cold weather. I am now nearly three score years old, but never saw a foul sheath until about twenty-five years ago, and I find now, when my horses are fed on good pure hay, or well-cured corn fodder, free from all mold or dust, that they are not troubled, but while feeding hay, it is next to impossible to keep them clean. I have never seen a horse troubled with that disease while fed on good corn fodder.

Horse Education.—Any person who has handled horses to even a very limited extent, says the *Turf, Field and Farm*, has noticed that there is a great deal of what may be termed human nature about them; that is, susceptibility to improve by education. In fact all domestic animals possess this power to a certain degree, but the horse is more than commonly endowed in this respect. If left to himself, however, or but indifferently taught when young, the horse, like the neglected boy, will grow up with an uncouth carriage, and though a serviceable drudge, will fail to give pleasure to those who have the management of him. As soon as the colt is weaned, he should have good feed, and be handled every day if possible. He should be coaxed rather than made by force to do anything. Never use a switch or end of a halter strap. Be firm but not overbearing; it will be found better to overlook the fault than to attempt to correct it and fail.

Never lose your temper, for the moment you do so, you at the same time lose the advantage you should always have over him. In handling a colt remember that you are forming the future horse, and care now taken either in his appearance or character, is by no means lost. By the time he is a year old, he should allow you to place light articles on his back without any resistance, and should be taught not to be afraid of straps hanging loosely either about the body or heels. This education is best done in the winter, and should be repeated until perfectly broken, and when harnessed for the first time he will quietly permit himself to be driven alongside of a quiet horse. During the operation of halter-breaking, great care should be taken to always make him walk fast. Fast walking (the best gait of a horse) should be part of his education, and he will never forget it in his after life. We have had a wide experience with colts, and have yet to find one which could not make a good walker if properly trained when young; but this is a fast age and walking is too slow to keep up with it.

The Horse and His Driver.—We knew a wise driver, who, when he observed while "hitching up" that the horses' heads were carried high, and that they were feeling first-rate, would say to himself, "There is a good head of steam on to-day, and I shall be able to get a good day's work out of these fellows, if I save it all to be used to the best advantage." Therefore, he would speak in as quiet a tone as possible, would move gently about, and aim to get his team afield without any rumpus or excitement, and would bear with a few irregularities, such as getting out of the furrow, and pulling by fits and starts a few times. The consequence would be that when they were warmed up to their work they would move off smoothly, and at the same time quickly, and at the end of an hour there would be a row of nice even furrows to show as an equivalent for the "steam" which a more careless man would have used up in mere fret and worry and passion.

Teaching Horses to Stand.—An old horseman gives the following as his method of training horses to stand without being tied: After young horses have once become entirely bridle-wise, I first endeavor to teach them the meaning of every word I say to them. This is not a difficult matter, provided too many words are not used at once. The first step is to adopt some word at the sound of which they are to understand that they must stop. Words that are easy to speak, and which can be made emphatic should be chosen, such as "ho," "whoa," etc., and every time the word is used the horse to which it is spoken should be made to obey it fully. Carelessness in regard to this matter will do more to undo what has been taught than anything else. When a horse fully understands the meaning of the word which you use when you wish him to stop and stand still, the greater part of the work is accomplished. He then can be trusted with safety while you leave him a short time. To take no risk, and to make the work more effective, it is a good plan to get into the vehicle to which a horse is hitched, and, having stopped after a short drive, one should get out and leave him for a short distance. Should the horse then start, the one in the vehicle can draw the lines suddenly, and thus prevent his getting away. There will be no trouble in teaching any horse with an ordinary amount of good common sense to stand as long as you desire without being hitched, if a little judgment and patience are used in attempting it.

Cattle Racks and Feed Boxes.—The high price that hay has brought in market for the past few years teaches each and every feeder of stock to use strict economy in feeding this staff of animal life. You may be the possessor of the best quality of hay that ever grew, but unless you provide some means for its economical feeding, it will last no longer than that of a much inferior quality fed in the usual manner. Provide your cattle with wholesome food in a proper receptacle, and proper shelter, and they, by their sleek appearance, good condition and health, will repay you a thousand-fold. We present herewith sketches, with descriptions, of several practical, serviceable, and economical feed racks and boxes, from which we trust our readers may obtain some valuable hints and suggestions. The feed rack shown in our illustration

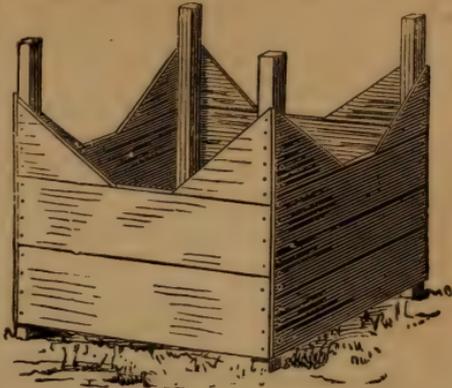


FIG. 1.—FEED RACK FOR CATTLE.

(Fig. 1), though old, cannot be too highly recommended. The peculiarity is that a few animals only can quietly eat from it at the same time; therefore, to have all quiet in the barn-yard, provide racks for the accommodation of all the stock at the same time. Place the racks under shelter, although the general health of the animals would be greatly improved if the arrangements were such as

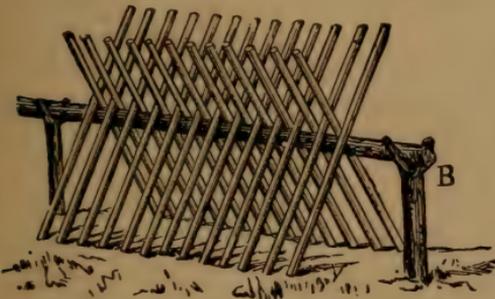


FIG. 2.—OUT-DOOR FEED RACK.

to feed them in open air on pleasant days, and under shelter during inclement weather. The heaviness of the racks prevents their being carried to and fro, and is only obviated by providing a double number of them, or making in the open air one similar to that shown in Fig. 2, which is constructed as follows: A pole (B) is supported near its ends upon crotched sticks driven firmly in the ground; across the top of pole B rest poles, whose lower ends are driven in the ground, crossing each other at the angle shown. Hay, straw, corn-stalks, and other coarse fodder is thrown in the rack. A

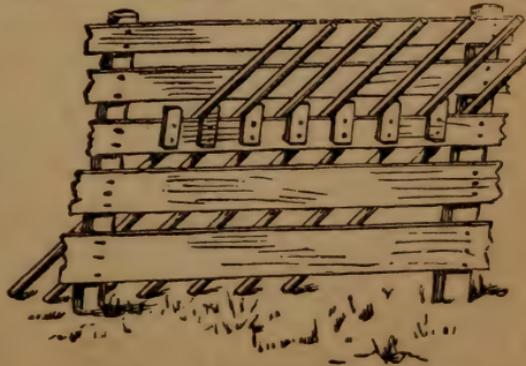


FIG. 3.—A VERY CHEAP FEED RACK.

still cheaper plan of rack is shown in Fig. 3. Through the space between the third and fourth rails of a common board fence is placed a number of small poles, secured in the ground at the opposite side. For keeping apart the poles any desired distance, bits of boards are nailed on. They should extend and be nailed to the fourth board. Hay is placed between the fence and upper portion of the rack.

Our illustration, Fig. 4, is a perspective view of a feed box of a length

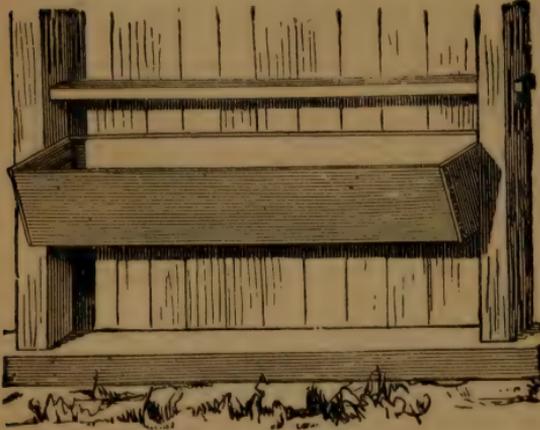


FIG. 4.—IN-DOOR FEED BOX.

equal to the distance apart of the posts, to which it is secured by nailing; the bottom board is one foot wide; sides, one foot high, sloping outward, as indicated by the end pieces; partitions will be necessary when more than two are fed at the same time. Often it is not convenient to feed under shelter for want of room; in this case it is well to arrange a box similar to that shown in Fig. 5. A stake is driven in the ground near the fence, to which a box is

nailed. This may be objected to on account of its requiring to be cleaned after a storm. During the fall and winter many farmers feed their cattle on cut straw, roots, grain, etc., for the purpose of fattening, and, in a pecuniary point of view, it is profitable. Cattle, during the winter and spring, are greatly benefitted by an occasional mess of cut hay or roots. The American farmer is not fully awake to the importance of growing roots. For feeding stock in England, and even in Canada, roots for feeding are as important as hay with us. This is an important subject, and will bear still further and greater enlargement thereon by the agricultural press.

Contagious Cattle Diseases.—

The President and Secretary of the International Range Association have issued a circular, from which we extract:

Paramount to everything else is the necessity of such concert of action on the part of all associations in the range country as will absolutely protect us from all possible danger from contagious animal diseases. It is a matter of history that the introduction of one infected animal upon the ranges of Australia caused a loss of over \$40,000,000, and practically wiped out the range cattle industry on that continent.

With such a lesson for us to profit by, and with the knowledge that contagious animal diseases exist in some parts of the United States, it becomes

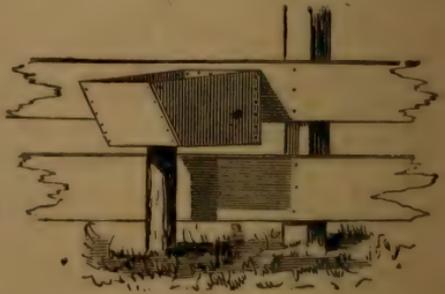


FIG. 5.—AN OUT-DOOR FEED BOX.

our imperative duty to secure uniform sanitary regulations in all the States and Territories in the range country, and by the exercise of the police powers given by the Constitution of the United States, quarantine on our borders all cattle from infected districts, such length of time as experience has demonstrated is necessary to establish the fact of their freedom from disease. The system of inspection that was in vogue last season is known to be faulty; and this fact should be a warning to us, and cause the most rigid enforcement by our own people of such radical measures as will secure to us absolute protection. The necessity for concert of action in relation to this matter of protection against disease, has perhaps had more to do than anything else in bringing about the organization of this range association. And the results for good that will follow from the steps for

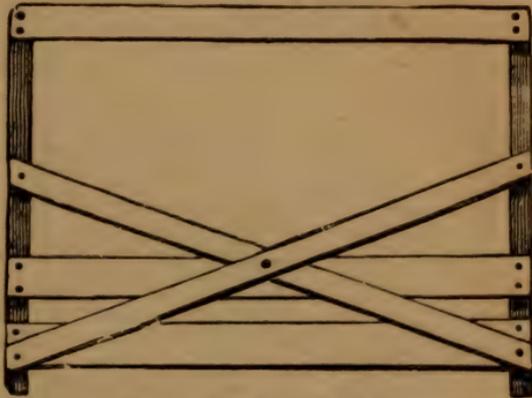


FIG. 1.—FEED RACK OR BOX.

protection that we propose taking, should commend our work to your favorable consideration, and merit your earnest and united support.

When we show to the world that we are going to protect ourselves, and by the exercise of that western manhood which has redeemed our plains from the savages, and utilized for the food supply of millions, grasses that would otherwise rot on the ground or be consumed by fire, we will see a degree of confidence established in the minds of conservative capitalists, in the permanency and profitable nature of range investments, that will enable us to command cheap money with which to build up our great industry.

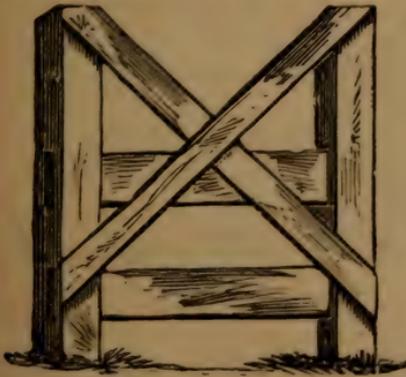


FIG. 2.—FEED BOX.

Feeding Racks and Boxes. —

Feeding racks or boxes are really a necessity in every well-regulated barnyard. Farmers who are not supplied with them suffer the unnecessary loss of much valuable fodder, which is sure to be scattered about and trampled under foot by the stock. This loss, although perhaps not noticeable by an unobserving person, will be found to amount

to a great deal in the course of a year, and the only remedy for it is to provide suitable receptacles in which to place the fodder for the stock. These not only keep the fodder from being wasted and scattered, but also keep it clean and palatable. We present herewith several designs for simple, practical, and inexpensive feed boxes, which can be constructed by anybody, and if any of our readers are not supplied with them, we trust the hints

and suggestions offered will be found valuable to them. The feed rack or box shown in our illustration (Fig. 1) is constructed as follows: Posts, three by four inch scantling, six feet long; side boards, one foot wide and six feet long; cross-pieces and top board, six inches wide; about one hundred and twenty-five feet of lumber in the whole. Use ten-penny nails, with good wrought nails or bolts where the braces cross each other. Such a frame will last many years if well made, and save many times its cost in fodder. One is needed for every four head of stock kept in the yards, and they should be set about fifteen feet apart, in a dry place.

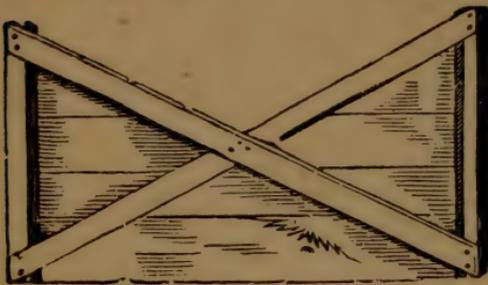


FIG. 3.—FEED RACK ON BOX.

greedy. By this means they work up and save considerable coarse fodder during the day.

The rack or box shown in Fig. 3 is nine feet square, with posts of three by four inch scantling, five feet high; the sides boarded, but without bottom, so as to be shifted easily when the refuse fodder fills it, or any other cause makes such a course desirable. The sides are only high enough to keep the cattle from getting into the box, and the corners so low that they may easily disengage themselves when hurriedly driven away. It should be strongly put together with wrought nails or rivets through the braces.

In Fig. 4 we give the end view of a rack and box combined, of a rustic character. Make first a crib of long, heavy poles, say from six to eight inches through, five feet wide, and two and a half feet high. For ten or twelve head of cattle it should be about thirty feet long. Then through the middle, lengthwise, place a strong pole (*a*) on the top of the second cross-piece, as shown in the cut. This done, take common fence stakes or small poles (*d, d*) seven feet long, and cross them on the middle pole (*a*) on each side alternately until the whole crib is filled. Then lay another pole (*c, c*) on each side of the crib, well notched into cross-pieces (*b, b*) to prevent their being pushed out of place, and the rack is completed. The space between the rack and the sides of the crib forms a manger, into which all the scattering fodder falls, so that there is no possibility of the cattle wasting or treading on any.

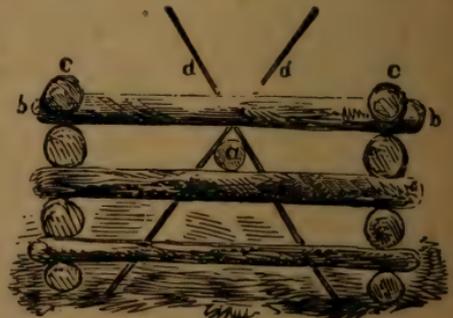


FIG. 4.—RUSTIC FEED RACK.

Fattening Stock.—It is not every farmer who can fatten an animal economically. It is an art that must be learned by study and practice.

There are many phases to this subject, and their numerous conditions must be thoroughly understood if the farmer would realize the most from his feed; quantity of food, quality of food, variety of food, warmth and quiet of stables, and many other important items, must be taken in consideration in fattening stock. As in many other departments of farm labor, there is a great lacking here of systematic work. Some are ignorant as to the best methods, while others are careless of their real interests, and have no regularity in their work. Every farmer seems to have his own way, and it is too often chosen with regard to the convenience of feeding rather than the economy. Ten chances to one he never knows whether he has gained or lost on the animal he has sold to the butcher. We cannot lay down any definite rules to be followed in fattening stock, and it would be still more difficult to follow them up to the letter, supposing they were given. But we can learn the general principles of economical feeding, and should never rest until they are put into practice. A man of good sense and judgment can apply them to his own particular circumstances. I might, for instance, say that the most economical method of feeding rough food is by the process of steaming, which would be very true, while at the same time I would not advise all farmers to go to the expense of purchasing an apparatus for this work. To those who have a large number of animals and proper facilities it would be good economy, but to small stock-raisers or fatteners it would be impracticable or too expensive to be economical. The same might be said of the silo and other theories or methods. Throwing aside the discussion of particular methods, I would beg leave to call the farmers' attention to some few things that can be applied alike to all, and in the programme of which the nicest system and regularity should be observed:

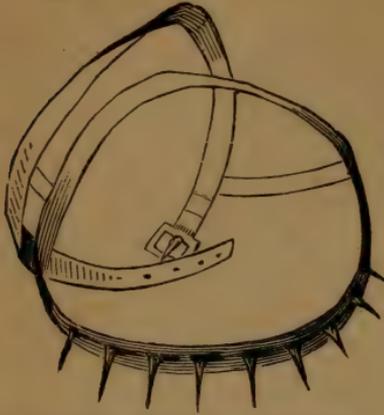
First—Fatten stock in the stall. Turn them out for exercise, but never feed in the yard. The animal that is obliged to fight for its food among the herd, and eat it after it has been fouled and trampled, cannot thrive up to its fullest capacity. There is also an enormous waste of food when given in this manner.

Second—Give the animals warm, well-ventilated, and quiet quarters. An animal will take on fat much more readily when it is made comfortable and not in constant fear of injury. The idea that an animal should be confined in a dark stall probably originated in this way. I do not consider darkness an important condition; for if the other conditions were attended to, there would be no reasonable grounds left for such a theory. Nothing should be neglected that will add to the comfort of the animal confined. It should be carded and bedded as well as fed.

Third—Give them their food in such a condition that they can get its full nutritive value, and that, too, with the least trouble and annoyance. If the fodder is coarse, it should be cut up and sprinkled with meal. A ton of cornstalks treated in this way will do more good than a ton and a half thrown into the manger whole. If given whole they will nose it over until they get all the leaves off, and then commence on the tender portions of the stalk, gradually working the mass over until it is thoroughly fouled by their breath, causing them to leave nearly half of it uneaten. They should have their feed of roots cut up so that they will not be obliged to gnaw them off or run the risk of choking.

Fourth—Feed them regularly and water them regularly. Regular feeding is an important element in fattening stock, and one that is too often disregarded by the farmer. His chores must be done when he can do nothing else—before daylight in the morning and after dark at night, with a little

intermediate attention when he happens to be around the house. The idea of taking cattle out of a warm stable and turning them into the yard before they have fairly eaten their breakfast, and leaving them out until dark again, is a very barbarous one, and will surely work a loss to the farmer who harbors it.



TO PREVENT COWS FROM SUCKING.—
FIG. 1.

fixed to answer the purpose. The nails, with large heads and sharp points, are driven through two or three thicknesses of old leather, and this is fastened to the band passing round the nose, as shown in our engraving, Fig. 2. This appliance will be found very successful, both where the milk is extracted from their own or another cow's udder.

Controlling the Bull's Temper.

—A correspondent of the *New Hampshire Mirror and Farmer* says of the management of bulls:

“The writer having kept bulls nearly all the time for more than thirty years, and never having had one that was vicious or dangerous to handle, while others to his knowledge have scarcely had one that was kept till two years old that did not become too ugly to be safely kept, feels that much depends on proper management. No calf that is to be kept for a bull should be played with or handled around the head in a way to get them to attempt to hook or butt, as they almost invariably will if treated in this way. Most young creatures



TO PREVENT COWS FROM SUCKING.—
FIG. 2.

that are thrifty are frolicsome, like young bulls will many times act, when loose in the yard, as if ready for a fight. In such cases the keeper should pay no attention to their antics, further than a light cuff if they refuse to go where they should; but never whip or club them to get their temper up. Before they are a year old they should have a ring in the nose, by which they should ever after be led, and if at any

time they should incline to be too familiar with their horns, a sharp twitch upon the ring will teach them good manners. They should early be taught that you are their friend and master; therefore, no one that is inclined to fear them or abuse them should have anything to do with them. It is an excellent plan to have them mated with an ox or stag, and worked enough for sufficient exercise. They can be worked regularly if well kept, and not overheated, and it is better than close confinement. If not convenient to work them, they can be exercised by putting a post strongly in the ground of suitable height, to the top of which a sweep or strong pole is attached, so that it will turn on a pivot, with holes in one end in which to put a bow, with a light leading pole in the first one at a suitable distance; then yoke in the bull, attaching a rope or leading chain to the ring in the nose and to the leading pole, and leave him to exercise himself.

“Many times a vicious disposition is inherited, and I should value a calf very much less for a stock animal if his sire was very vicious; but kindness, with firmness and a steady hand, will tend, in a great measure, to overcome hereditary traits.”

How to Select a Cow.—The best milk cow, as a rule, says a writer in the *Agricultural Gazette* (English), is of medium size and small-boned. The head is small and rather long, narrow between the horns and wide between the eyes. The lips are long and thick, giving the muzzle a flat appearance. The ears are thin, covered with long, but soft, silky hair, the inside of the ear being of a rich orange color. The eyes are large and bright, with a placid expression, the horns set on a high pate, bending outward at the base, and light, clear, and smooth; the neck long, clean, and thin, slender and well cut under the throat, thickening handsomely as it approaches the shoulder, but entirely free from anything like a “beefy” appearance. The shoulder-blades should meet narrow at the tip, widening gradually toward the points, which should be broad and well-rounded; the ribs rather straight and wide, indicating a good digestion and constitution, for everything depends on that in a good milch cow. The loins should be broad and the hips high and wide; the rump even with the hips; the pelvis wide, giving plenty of room for the udder; the thighs thin; the hind legs a little crooked, and small below the hock, with a long, large foot. The udder should be long and broad, with the teats all the same size and well set apart; the belly to sag a little in front of the udder, and rise slowly as it approaches the brisket, and somewhat large as compared with the size of the cow. The tail long and slim, tapering gently to the end. The hair must be soft, indicating a mellow skin, which, on taking in the hand, feels like soft kid gloves, and no coarse, rough hair will grow on such skin. The color of the skin should be of a rich butter-yellow. This is the first point in handling. Then, pass your hand on the belly in front of the udder and feel the “milk veins.” They are an infallible mark of a good milk cow. The larger they are the better the indications. In extra good cows they branch out into four veins, but they all unite before reaching the udder. The more irregular the course the more sure you may be the cow is a good milker. The udder should be covered with a short, downy coat of hair. This hair should begin to turn its backward course from the front teats, then on the back part of the udder, called the escutcheon, and on as far as the vulva, in the best cows. The wider the belt of this upturned hair the better; it should be soft and velvety, covering a soft, orange-colored skin.

Feeding Cattle.—It has been claimed that the methods of breeding and feeding cattle have been so much improved of late years that the period of maturity has been hastened more than one half. That is, a sheep or a pig which matured at three years, or a steer which was ready for slaughter at five years formerly, is now ready for the butcher at less than half these ages. Pigs are said to be ready for pork at nine months, wethers for mutton at twenty months, and a two-year old steer is ready for the block at that age. It is to be feared that these claims are greater than can be justly allowed. No doubt some animals, by excessive forcing, are made as fat, and reach as heavy a weight at these premature ages as others used to in twice the time; but it is a question if this forcing is profitable either to the feeder or the consumer. On the one hand, the animal is forced to consume as much food in two years as was formerly spread over four years, so that on the whole there is no gain but in time, while on the other hand the consumer has very immature or half-grown meat, which is devoid of flavor and nutritive quality, and the meat is overloaded with fat, which is waste.

Physiologically it is a matter of doubt if the muscular growth of an animal can really be hastened by any process of feeding. Fat can be produced, no doubt, but fat is a diseased condition of the system, and an excessively fat animal would soon die under continued feeding. But if we examine the meat of one of these young overgrown animals it is found to be in great disproportion to the fat. It is quite common, for instance, for the nine months old pig which weighs 300 pounds to be turned wholly into the lard kettle because the few pounds of flesh under the fat is not salable or useful as food. On the whole, it certainly does appear as if we had carried the forcing system of feeding to an unprofitable extreme. Every year the losses of swine by disorders clearly traceable to over feeding increase in number, and although we are told that the dreaded diseases have been overcome and have disappeared, yet the feeding season no sooner begins again when the hog cholera breaks out as plentifully as at any time before. It is a question if we can safely follow English precedents in this respect of forcing animals to prematurity. Certainly, if we are to suffer the pains and penalties, the diseases and losses among our live stock which English farmers are complaining of, it is very clear that we cannot afford to do it, and had better make haste more slowly.

Quality Depends upon the Feed.—The quality of the carcass depends upon the kinds of feed given the animals which are fattened for the market; which fact has been determined by repeated experiments for that purpose. Some substances used for feeding will fatten more readily than others, while certain foods will give a quality of fat and lean that cannot be derived through any other method. The custom of feeding pea-meal and oil cake is a growing one, and gives excellent results in enabling the animals to take on fat, but the carcasses of those fed in that manner have not compared favorably with steers and hogs fed upon corn and corn-meal as an additional ration. We lately inspected thirty carcasses of the best steers in the country, they hanging side by side, and it required no expert to easily select the corn-fed animals from the others, as the hard, solid fat was in striking contrast with the soft blubber of those of the animals which had been deprived of corn. If, however, stockmen are to rely solely upon corn, it deprives them of the valuable assistance of other foods, but we think such difficulty may be avoided by first feeding them up to the proper condition desired, using corn alone during the latter portion of the time of

fattening. This rule is well known to those who feed hogs, the corn being reserved for the final process.

Cutting Feed for Stock.—This is the most economical method of feeding up straw, stalks, second quality hay, etc. By cutting these coarser fodders and mixing them with meal or bran almost every particle will be eaten. But another point is gained. Such fodder uncut is hard to digest, and a large bulk must be eaten to get even enough to sustain animal life and warmth through the winter. Any assistance we can give to digestion by previous preparation of the fodder is so much help to the animal, and this, when milk or fat is looked for, is an important consideration. Straw becomes a nutritious article of food when a little meal or bran is mixed with it, and a few pounds of middlings will make it the equivalent in feeding value to hay. When grain is scarce, the part which oat-straw plays in the feeding ration is worth consideration. When much stock is kept a large cutter should be provided, and enough cut at a time to last several days. Two or three farmers can combine and purchase a large cutter, thus saving expense. But for a few head as stock a common hand straw-cutter will be sufficient.

Milking Cows.—A writer in the *Agricultural Gazette*, England, says: "On no account, if it can possibly be helped, ought one man constantly to milk the same cow. If he does, it often happens that the cow becomes attached to him, and if anything occurs that he is away there is frequently quite a scene in consequence. If a cow shows partiality for anyone he should milk her as little as possible." Many men of many minds. This is just the rule that we would reverse, and if we found the man who could get the cows attached to him, he is just the one we would attach to ourselves. We would be perfectly willing to take the chances of our losses from his occasional absence. In the first place there is no need for disturbing the cow's equanimity simply because you are not in the habit of milking her. If there is any difference of opinion between you, it is much easier for you to give way to the cow's peculiarities than to force your own idiosyncrasies upon her. Be gentle and patient and she will give you all her milk, and if you are not able to hold your temper until the regular milker comes back, then sell out and go to breaking rocks on the road. You can expend all the temper on those rocks and on your own fingers that your position calls for. The man who can get a cow attached to him can, in the course of a year, get a large percentage more from her than a constant change of milkers could accomplish, and it is, therefore, best to get this class of milkers, and in their temporary absence use extra precaution to see that the cows are not unduly excited or treated in any way out of the usual routine.

Cleanliness and the Cattle.—"Cleanliness is next to godliness." This thought may as well apply to our stables, barns, and out-houses as to the dwellings; to the care of the cattle—whose milk and flesh we eat—as to personal care. We may about as well take filth at first hands as to allow it to pass through our domestic animals, taking it in the form of milk, beef, or pork. Both the milk and the flesh must partake of the quality of the fodder given to a far greater extent than is ordinarily supposed. It is known that the milk will indicate the kind of vegetables fed to the cow. If so, is it strange that the flesh of the same cow—made from the food eaten—will be pure or impure, according to the articles given? It is folly to expect pure and wholesome milk while the cow is fed on inferior hay, decaying

vegetables, drinking from a well within the limits of the barn-yard, supplied from the surface water of that yard, saturated with the filth of such a place. The water given to the cows should be as pure as that used in the family. Such water is not found in such a well.

It is a folly to suppose that the flesh of the hog is fit for use while the liver is found *ulcerated*, by feeding abominable garbage. It is absurd to suppose that pork is fit for the table when the hog is fed on filth, is kept in a close pen, wallows in filth, in his own odure, and always breathes filthy air. While it is true that a large class of scavengers—of which the swine is prominent, made to consume the filth that the higher orders may survive—are able to live in filth, consume decaying matters, breathe foul air, it is not true that their flesh is at all improved by habits which would be unsafe for man.

If we would be healthy and pure, we must breathe pure air and eat pure food, which will equally apply to the domestic animals. All of these principles apply to man and beast alike.

Skim Milk as Cow Food.—On this subject Prof. Arnold says that all easily digested foods which contribute to the building up of flesh and the framework of the body are especially efficient in stimulating a flow of milk. Among the foods of this kind are cottonseed meal, linseed-meal, bran from the various cereals, and every kind of clover and every species of peas. These foods influence the quantity of milk by reason of the high per cent. of albuminous or flesh-forming matter they contain. The composition of skim milk would entitle it to be classed with that sort of food, and its use as a milk-producing food proves it worthy of the position. Just as flesh when used as food is perfectly adapted to forming flesh again, the use of milk by milk-giving animals is perfectly adapted to reconstruct milk. It is decidedly an albuminous product, and consequently contributes to swelling the flow.

To secure best result, skim milk should be fed in good condition. Its value is not all destroyed by souring, but it is thereby considerably reduced. Sweet skim milk is believed to be about fifty per cent. better than sour milk as cow feed. When skim milk will increase a cow's butter product \$10 a year when fed back to her in a sour and loppered state—and this is about its usual efficiency—the same milk fed sweet would add \$15 to her increase in the same time. Any acidity in the milk when fed is objectionable.

Injury to Cows by Allowing Calves to Suck.—There is no truer thing in my experience, and I believe in that of hundreds of others, than that allowing a calf to suck is an injury to the cow. This injury is more or less permanent according to how long it is continued, and doubtless depends largely upon the vigor and digestive powers of the calf, and the quantity of milk given by the dam. The udder of a young cow, thus treated in the full flush of her yield, loses capacity to hold a large "mess" of milk, if it ever had it, and older cows becoming accustomed to the steady half-hourly drafts of the calf, fall off in their yield rapidly after the calf is sent to the market. Calves, it is true, usually fatten better on the cow than as fed in general practice in this country, but our practice is certainly wrong, and I am by no means sure a calf may not be just as well fattened off as "on the cows." In fact, I have once or twice fattened a calf so well "on the pail" that the butcher complimented the veal, saying that any one could

see that that was no skim-milk calf, whereas, after the first three days of its life, it had had no milk which was not skimmed. The loss of cream was made up to the calf by as much scalded linseed-meal cake as was judged good for it, and it always had a wisp of sweet hay, or bite of grass in its season, to nibble upon. All calves are not alike in this respect, but where milk is the principal thing, veal is secondary, and so we are willing to sacrifice something of the excellence of the veal to the good of the dam.

When a deep-milking cow has two calves put upon her, their thrift will often indicate an enormous milk secretion. I presume no harm comes from this practice commenced after a cow is four or five years old, but thousands of good heifers are spoiled every year because, not being pleasant to milk, their calves are left to run with them. Their udders never becoming distended, they lack capacity to carry their milk from one milking to another, and when their calves are taken away, not only do the teats leak, but the discomfort caused by the unusual distension of the udder results in a decrease of yield. Whereas, had the distension occurred when the whole system was in the plastic condition in which it is just after calving, when the udder is naturally swollen and more or less painful, it would have become for life adapted to the circumstances and would be of increasing capacity.

A very sensible article is going the rounds of the papers, showing that it is just because wild cows have their calves running with them that they never give much milk. It seems folly for farmers who want milk to follow the course which they can see in nature produces just such results as they do not want. I was surprised to find that a good mare gave fourteen quarts of milk in a day, and yet most mares will sustain in good order a larger animal than a big calf, and one which grows much faster. This fourteen quarts of milk was given when the colt was weaned. What is it fair to assume was given by the mare during the period soon after foaling, the time when cows yield most? In cows, of course the decrease of milk is not observed until the system of milking twice a day is adopted. So long as the calf takes its rations as often as it can digest what it takes, the flow keeps up, but it renders the cow more or less incapable of carrying the milk produced, and of producing more than she can comfortably carry.

The desirableness, therefore, of promptly removing the calf from the cow is apparent. It is in fact demanded by every motive of economy. A calf is easily taught to drink, and will empty a pail of milk in a very short time. The usual practice is to leave the calf with the cow three days, and then remove it, because the milk may then be used. It is better never to leave the calf suck, unless the condition of the udder be such that the butting and, so to speak, manipulations, of a hungry calf, are needed to reduce swellings and cakey masses within the udder.

The system of allowing calves to drink from the pail is an evil one in every respect, except merely that it is better for the cow that they should drink rather than suck her. The practice of feeding calves, by means of what is termed a "calf feeder," is a growing one in England. This is a pail arranged with a close fitting top and a rubber teat upon the top of it, which is connected with a tube having a simple valve at the lower end which lies or is fastened in the bottom of the pail. I put this apparatus in use this year, getting up one for a neighbor who was unfamiliar with its construction, and the results have been most satisfactory.

The objection to a calf drinking from a pail is, that by this means no saliva of any account is mingled with the milk. The effect of this fluid in

aiding digestion is well known, and it is a fact, also well known by every farmer, that calves fatten much more rapidly, and better, as a rule, upon the cow than upon the pail, even if they get a pailful of new milk fresh and warm from their dams morning and night. A good many calves become "pot-bellied" from drinking rapidly, and I have no doubt are thus permanently dwarfed. I am by no means certain that skimmed milk taken slowly by the operation of sucking, will not prove of more real benefit to a calf than whole milk drank rapidly. In the home-made calf-feeder above alluded to, the contraction of the larger tube is affected by placing, for a short distance, a small one inside of it. This secures slowness of flow, and enforces sucking and mouthing necessary to the flow of saliva.—*American Agriculturist*.

Cooking Feed for Live Stock.—The question, writes Mr. E. W. Abbott, of Ann Arbor, Mich., that is agitating the farming community of to-day is, "Does it pay to cook grain for live stock?" We all know that cooked food is much better, but some think that it is too much "trouble." Now, if a man is paid for his steps, why not as well take them on his own farm as anywhere else? About two years ago we commenced cooking feed for our stock, and I am satisfied that we have saved one-third at least. This year we fattened twenty hogs and did not feed any sound corn. We had two hundred bushels of soft corn; this we cooked with little trouble and less expense. We also had about three thousand head of cabbage freeze; these, with some beets and turnips, were cooked and fed with the corn. I am not positive that there are much fattening properties in cabbage, but it was a change of feed, and the hogs seemed to relish it and did not lose any flesh, and some store hogs we had shut up and fed on cooked cabbage were in good flesh when the cabbage "played out." In feeding corn to horses we think that eight ears of cooked corn are better than twelve uncooked.

I will copy a few lines from the "United States Agricultural Report," which will show the superiority of cooked food over uncooked. Mr. S. S. H. Clay, of Kentucky, shows that one bushel of raw corn makes six pounds of pork, while one bushel cooked makes seventeen and a half pounds. This result is very remarkable, but Mr. James Buckingham gives an experiment where three and a half bushels of uncooked corn made nineteen pounds of pork, and one bushel cooked made twenty-two pounds, and Mr. T. J. Edge, detailing an experiment, says:

I found that five bushels of raw corn made forty-seven three-quarter pounds of pork, while the same amount of corn cooked made eighty-seven three-quarter pounds.

Mr. E. W. Stewart, of New York, sums up the result of cooking as follows:

- 1st. It renders mouldy hay, straw, and corn stalks, sweet and palatable.
- 2d. It diffuses this odor of the bran, corn, meal, carrots, or whatever is mixed with the food through the whole mass, and thus it may be cheaply flavored to suit the animal.
- 3d. It softens the tough fibres of the dry corn stalks, straw, and other hard materials, rendering them almost like green, succulent food, and easily masticated and digested.
- 4th. We have found it to cure incipient heaves in horses, and horses having a cough at pasture have been cured in two weeks on steamed food. It has a remarkable effect upon horses with a sudden cold and in constipation. Horses fed upon it seem much less liable to disease; in fact, in this re-

spect it seems to have all the good qualities of grass, the natural food of animals.

5th. It regulates the digestion, and makes the animal more contented and satisfied; it enables fattening stock to eat their food with less labor (and consequently requires less to keep up the animal heat), gives working animals time to eat all that is necessary for them in the intervals of labor, and this is of much importance, especially with horses.

6th. It enables the feeder to fatten animals in one-third less time, and saves at least one-third of the food. We have found two bushels of cut and cooked hay to satisfy cows as well as three bushels of uncooked, and the manure in the case of the uncooked contained much more fibrous matter unutilized by the animal. This is more particularly the case with horses.

Some think that because they do not feed more than five hundred bushels of corn in a winter that it will not pay them to cook it. Let us see. Corn when cooked swells to two and a half times its natural size; now, allowing that there is no more fattening property in cooked than uncooked corn, we gain one and a half bushels, which, at thirty cents per bushel, will give us \$225, which, for five months, is \$45 per month, fair wages for winter time. As this is the profit on corn alone, we have a clear gain on all the rough feed we cook. This enables the farmer to keep a third more stock, and will eventually enable us to supply the demand of the eastern markets.

Feeding for Fat.—There are several points of view from which the subject of feeding animals for fat may be considered, writes Mr. Henry Stewart in the *New York Times*. Some exceedingly varied opinions are held in regard to it by experts, and these differ so essentially as to produce distrust and doubt in the minds of persons who are unable to decide between them. We therefore wish to refer to and compare together some of these opinions. As was stated in the preceding article upon this subject, we consider excessive fatness to be a disease which is fatal in course of time; a shorter or longer period, in proportion to the physical weakness or robustness of the animal. But a moderate degree of fatness is quite consistent with health, and is, indeed, conducive to it, as it provides a store of heat-producing material which can be drawn upon at any time it may be required, and which is deposited in the tissues in readiness to be absorbed when it is wanted to make up any deficiency, or to meet any increased demand of the system, and this deposit of fat in the tissues, acts also as a non-conductor of heat and prevents the loss of it from the body under exposure to unusual cold. It is thus a most important regulator of health and comfort. We find both of these conditions met in the cases of the wild animals which hibernate and exist through the winter, comfortably sleeping through the cold season, and being supported by the store of fat in the tissues and under the skin. Another instance of this wise provision of nature is afforded by the whales and other warm-blooded mammals of the ocean which have a thick layer of fat under the skin as a defense from the icy coldness of the water. But it should be observed that when not exposed to this cold these animals lose their excessive fatness and become lean and so preserve their health, which would be endangered or destroyed by the excessive warmth of the blood and its consequent inflammatory condition. This coincidence of fat and cold and leanness and warmth is a balance of nature which cannot be disturbed without danger of serious results.

This same danger exists through high feeding for fat, and if this is continued past a certain point, which varies with circumstances, the animal be-

comes diseased, and a prey to various contagions which develop certain well-known fatal fevers in the system. This condition of an animal as the result of excessive feeding is well explained by Dr. Sturtevant, who says respecting highly fed cows:

"The high-pressure feeding produces inflammation of the blood, causing an abnormal development of fatty matter in the milk. Many writers delight in comparing the fat on the cow's body to the fat in her milk, both being developed by the same physiological process. Now it is well known to competent authorities that the fat on the body, under high-pressure feeding, is a mass of rottenness, and can be produced in large quantities in a short space of time. There is no reason why a similar process should not take place when feeding for "records." The consumers of such flesh and such butter may bring deserved retribution upon themselves, for any scourge sweeping over the land will drive them to their last hiding-place."

Other writers, misled, we fear, by want of sufficient knowledge, have maintained the contrary of this, and that excessive fat is a legitimate object in feeding and forcing extremely young cattle to a condition of extreme obesity at a very early age. We think sensible farmers, dairymen, and stockmen, will not take this latter view, but the more reasonable one that not only is the fat so produced a mass of diseased and unhealthful matter, but that the flesh under it and the blood from which both are directly derived are equally impure and diseased.

This view explains fully how it is that swine in process of fattening in the least possible time, and crowded with corn, are so subject to the fatal intestinal fever, and why the noted cows forced up to a high record drop off one by one, and meet an untimely fate by milk fever, lung fever, splenic fever, and other inflammatory diseases. It also explains why the process of feeding for fat should be slow and not hasty, and the animal should have matured its growth of flesh before the final fat is laid upon it, and, moreover, why the feeding should progress gradually, and no faster than the animal's power of digestion and assimilation will warrant in due regard to healthfulness. Unwholesome meat produces in persons who consume it the very same inflammatory diseases with which it is infected. This is shown most conclusively by the fact that the flesh of animals infected with anthrax fever will cause the very same disease—malignant pustule—in persons who eat the meat, and it may very easily be as true that butter made from cows which are in a diseased condition from excessive feeding may be charged with a deadly virus fatal to those persons who unknowingly partake of it.

Live Stock in Winter.—The shrinkage of stock the first few weeks of winter often amounts to as much as the summer gain. Animals are left to shift for themselves when cold weather comes on, and to get their living from the frost-bitten grass, which really has but little virtue in it. If not left to themselves to roam over the fields without any care, they are generally thrown a few cornstalks or other coarse fodder, which is so distasteful to them that they will not eat it, and so go hungry; meanwhile the winds are keen and chilling and the animals stand around humped up and shivering. With empty stomach they huddle together in some corner as much out of the wind as possible, trying to keep warm. This is the usual condition of stock, including the horses, until winter sets in and the snow gets so deep that pasturing is impossible. This management can only result in a rapid falling away which is often fully 25 per cent. of their entire weight.

Colds and diseases are sure to follow neglect and this careless treatment, which may last all winter.

As soon as the ground freezes animals should be put up at night and fed extra. It is a mistaken idea and the poorest kind of economy to give them any sort of feed at this time, as they should have the best of food. The transition from the succulent pasture to dry feed is so great that the appetite must be tempted with the best the barn affords. This is specially applicable to the young thing who will not eat coarse and rough feed except at the point of starvation. After animals become accustomed to dry fodder and to the winter air, the older ones may be kept on the poorer feed and they will eat it well; but the lambs, calves and young colts should always have the best. When a young animal gets stunted in the winter it takes all the following summer to get started again. Here is the loss of a year's growth, or rather the loss of a year's feeding, to make up for a want of sense on the part of the owner.

Animals should always be kept for a profit, and the profit comes from the growth. The manure they make is the compensation for the time and labor spent in taking care of them, and the increase in the size or weight is the farmer's gain. If they are allowed by neglect to run down in condition, or so manage that there is no increase in weight, we fail to see any profit in keeping animals. With hundreds of farmers there is no gain. A large portion of the summer is spent by them to lay up food for their stock in winter, and for the lack of forethought and prudence in caring for their stock the spring finds them no better off than they were in the autumn. They may say we have wintered so much stock, but the barns are emptied of the summer toil, and there is nothing but the number to balance the account.

Another common mistake is the trying to keep more stock than there is feed and comfortable accommodations for. Three half-starved cows are not as good as one well fed, and they will not yield any more milk or make any more butter. Two rollicking, well-fed and well-housed calves are worth more than four poor ones, and so it is with all kinds of animals. It is also true that the manure of thin animals is not worth so much as that of thrifty ones. The cold winds of November are as trying in proportion to animals as they are to people. This should always be borne in mind and ample shelter provided. A little meal will help wonderfully to keep out the cold, as it will give strength and thicken the blood. A few roots added to the meal will complete the diet, and make an appetite not easily cloyed, and also prevent the feverish tendencies which follow stimulating food. In the order of importance in the autumn care of stock there would be, first, shelter; second, plenty of good food. When both are supplied, humanity and profit are combined.

Keeping a Cow Upon a Small Plot of Land.—Many persons would keep a cow if they could be assured of a sufficient supply of feed. The average milk that can be purchased, and "store" butter, are very inferior to those made at home. It is a fact that a small cow can be well kept for ten cents a day, including winter feeding. With half an acre of ground devoted to producing fodder, a cow may be fed through the whole summer and part of the winter. For instance, half an acre is eighty square rods. One square rod a day of good grass, corn-fodder, or oats and peas, will feed a cow of 450 or 500 pounds (the average weight of a Jersey or Ayrshire heifer) for one day, and there will be some to spare. The ground may be made to produce two or three crops in the season. Twenty square rods

may be seeded down at any time in August with Red-Clover and Orchard-Grass, and then afterwards top-dressed liberally with manure. This will give a heavy cutting in May or June, which will feed a cow for twenty days, and may be cut again in July or August. Sow twenty rods to rye in August, which may be cut before the grass and clover is ready, and may then be sown to oats or Hungarian Grass, which will be ready to cut in July, and the ground sown to barley, fodder-corn, rutabagas or turnips. Twenty rods may be sown to oats in March or April, to cut in June or July, when the ground may be planted with sweet corn for fodder, with turnips sown between the rows. Twenty rods may be sown with peas early in April, which will be ready to cut in May or June, and the ground may be planted with cabbages at two feet apart, giving 1,300 or 1,400 heads in the fall for late feeding. There will in all be the equivalent of an acre and a quarter of crops, which, well manured with the droppings of the cow, can be made to produce a very large yield. The foddering will be about as follows: April, rye; May, grass and clover; May and June, peas; June and July, oats; July and August, grass and clover and fodder-corn; September, barley or fodder-corn, and thinnings of the turnips; October and November, cabbages, and some of the surplus fodder which has not been consumed, but has been dried for this purpose. After this will come the turnips, helped out by the remainder of the dry fodder, and hay will need to be purchased to get through the winter. There must be no time lost in replanting, but as the crop is cut in strips through the plot it should be sown at once, if only a strip six feet broad or as wide as a swathe of the scythe will leave. For the cultivation of such a plot the Rue hand-plow and cultivator would be sufficient, and it would be no more than agreeable recreation for the owner of the cow and his family to do the little farming that will be needed, with the occasional help of a boy to wheel the manure out of the yard to spread upon the ground as soon as it is sown or planted. The cow should be bedded with dry earth or hard-wood sawdust, and the yard should be littered in the same manner and frequently scraped clean. The comfort derived from having plenty of milk, cream, butter, butter-milk, pot-cheese, and the puddings and other things only possible with plenty of milk, that will come upon the family table during the year in consequence of an abundance of it, will well more than repay the light labor involved.—*American Agriculturist.*

The Feeding Virtues of Bran.—In an article under this heading in the *N. Y. Times*, Alexander Hyde shows, from the analysis and manufacture of bran, that it is of very high value for stock feeding, and that Graham flour (that is, flour retaining the bran) is a more wholesome and nutritive food than flour when bolted. In concluding an elaborate article on the subject, he says:

The conclusion is irresistible that bran has not been sufficiently appreciated as food for stock in past times, and that Dr. Graham was right when he recommended unbolted flour as the best for bread-making. Graham flour is specially adapted for children, as it furnishes the material for making bones and developing good teeth. Some objection is made to the use of bran by farmers, as it has a laxative tendency. This is due to mechanical not chemical influences—the coarse particles, when fed alone, often irritating the intestines, especially at the first feeding, if given in large quantity. This may be obviated by feeding bran gradually at first, and in connection with hay. A slightly laxative condition of the bowels is far

healthier than one of constipation; and if children are troubled with the latter, Graham flour is just the food they need.

One great recommendation of bran as food for stock is that it makes the manure-pile so rich. A large proportion of the inorganic matter (ash) in bran is composed of the various phosphates, just what most old soils need, these salts having been carried off in the milk and meat sold. We have seen wonderful changes produced on old farms by liberal feeding of cows with wheat bran. The pastures in a few years have renewed their age. Rye bran is not quite so rich in ash as wheat, but it makes an excellent food for producing milk, as it contains over twelve per cent. of proteine compounds, just the thing for cheese making, and over two per cent. of fats. Indeed, dairy farmers generally give the preference to rye-bran, and one reason is that it is finer, and does not induce such a laxative condition of the bowels.

Effect of Exercise and Excitement on Milk.—The dairyman's pocket is sensibly affected by a proper understanding of this question. But there are very few, comparatively, who have discovered the real effect of exercise upon the milk product. Many suppose that severe exercise in the cow simply affects the quantity, but not particularly the quality; and a still greater number have never given the matter any consideration, but evidently do not think it has any bad effect, as witness those who worry their cows with dogs. Many allow their cows to be driven on a run to and from pasture, no doubt regarding this as so much gain in time. But any violent exercise has a serious effect upon the most valuable element in the milk—the butter. Liebig observed that the milk of the cow had a much larger proportion of caseine when subjected to much exercise. Dr. Carpenter suggested that this comes from the breaking down of nitrogenized tissues. He also states that cows in Switzerland that pasture on the sides of steep mountains, and are obliged to use great muscular exertion, yield a very small quantity of butter but a large proportion of cheese; yet the same cows, when stall-fed, give a large quantity of butter and a very small proportion of cheese.

It seems to be well settled that active exercise or excitement lessens the proportion of butter in milk. How important the application of these facts are to profitable dairying, must be evident to any one. Those who have been in the habit of driving their cows long distances to pasture, and returning them in the evening to be milked, will see the necessity of discontinuing this, or if that cannot be done, they will see the propriety of driving them as steadily and leisurely as possible. Any large amount of exercise is at the expense of the yield and quality of the milk, but excitement from rough treatment is most unprofitable of all, and a dairyman who employs a rough, passionate milker among his cows does little better than he who worries them with a dog. Such a man may easily reduce the yield and quality of the milk in the herd more than all his labor is worth. He deserves to be treated as he treats the cows—kicked off the premises; but, as violence only excites violence, it is better to restrain such indignation, and inform him with all due courtesy, that his manners cannot longer be suffered to demoralize the herd.

Indeed, this is not a small matter; it would take millions to compensate for the losses sustained from the rough, brutal treatment of dairy stock.

We trust that dairymen will begin at the commencement of the season to study, not only the points given in this article, but everything relating to the improvement of their herds. Let every cow be examined, and her good

and bad qualities noted, all from the standpoint of profit; that is what they are kept for, and it is not unlikely that when brought to the standard of profit many in most herds of much size will be found unprofitable, and they should be weeded out.—*Nat. Live Stock Journal*.

Pumpkins as Food for Milk.—Prof. F. H. Storer, of the Bussy Institution, made a thorough analysis of pumpkins and squashes in 1877. The average of his analysis of the whole pumpkin is about ten to twelve per cent. of water, but not more than the turnip or fodder corn, and it is comparatively rich in albuminoids. This vegetable is an important auxiliary in producing milk; but some dairymen have got a prejudice against it, from the effect of the seeds when given in too large a quantity. The seeds have a diuretic effect, operating on the kidneys, and this has sometimes lessened the flow of milk, but if a small portion of the seeds is removed, the danger is wholly avoided. And probably the cases of injury have been occasioned from feeding more than the due proportion of seeds. Thirty pounds of pumpkins fed to each cow per day will increase the yield, and improve the quality of the milk; but more than this should not be given. They are a very cheap food, since it requires very little labor to produce them. From two to three tons may be grown, with a good yield of corn, per acre, requiring little more than placing the seeds, at distances of twenty feet apart, in alternate rows of corn, after the corn is up. The cultivation of the corn will be sufficient attention to the pumpkin crop; and this will often be worth as much as ten to fifteen bushels of corn per acre. This crop is appropriate to the whole country; and will repay the attention given to it. Pumpkins are a good fattening food for cattle, sheep and hogs. They are a good food for pigs, serving to contract the heating effect of corn. They are easily kept from freezing, and may be fed in cold weather. They are cheaply gathered and stored, costing much less than any root crop, according to value.

Tethering Cows.—The fence question has become very troublesome to solve in many parts of the country. There can be doubt that, with a herd of fifty to 100 head of cows, it costs more to fence pastures than it would to keep a herdsman to watch them. Where land is very valuable, the soiling system has been recommended in order to get a much larger production of cattle from an acre, and thus to get an adequate income from the land. But where land is cheap, and fencing expensive, the object is more to avoid the cost of the fence than to get the greatest possible income from the land. The grass is not expensive, for it grows on land perhaps worth \$5 per acre, while it would cost \$360 to put a fence around a forty-acre lot, or \$110 more than the land is worth. Now the interest on this fence, in most of the Western States, would be \$36 per year, and the cost of keeping it in repair at least \$15 more, making \$51 per year for this fifty-acre field. It would pasture, say sixteen cows.

Now, let us compare this with the Danish mode of pasturing their cows by tethering. A tether chain, 21 feet long, with a leather headstall, by which the chain is fastened to the cow, and an iron peg to drive into the ground, would cost about \$1.50 per cow, or \$24 for the sixteen cows; and if a five-eighth tarred rope, thirty feet long, were substituted for the chain, they would cost something less. Here is very little capital invested in restraining the sixteen cows from doing damage. The cows are all pegged in a line, and, of course, they eat on a circle, and they are moved forward a

few feet at a time, so as to give only a narrow strip of grass at the end of their chain, and they stand principally on the ground eaten over, and cannot waste the grass by treading or lying upon it; it is, therefore, all fresh, and all eaten. This gain in food produced and eaten would amount to twenty-five per cent. When the cows had eaten across the field, they could be brought back to the other side, and repeat the process. These tethering pegs are removed and replaced for each cow in one minute. Cows treated in this way soon become very gentle and are easily handled by boys. The Danish women tether the cows and milk them. How much simpler, cheaper and more economical of food this is than that of fencing and pasturing. Where there is a stream running through the pasture, they may be tethered on each side of it, so as to obtain drink at will; and where the water is obtained from a well, they can be watered as easily as if they were kept in stall.

Is not this Danish mode worthy of consideration in many parts of our country? It can be used to good advantage a portion of the time on most farms. There is often a large after growth on parts of fields not fenced, and these pieces could be well utilized by tethering a few cows or other cattle upon them. A little reflection will find a frequent application of the tethering plan on a large proportion of our farms, both West and East. It seems the most economical substitute for soiling.

Full Blood—Pure Blood—Thoroughbred.—Again and again we have been called upon to answer the question: "What is the difference, if any, between full-blood, pure-blood and thoroughbred, as applied to live stock?" and as often we have answered, there is really no difference. All these terms are used to denote purity of blood. When applied to horses, the term thoroughbred, by common consent, has come to be recognized as the name of a peculiar breed—the English race-horse—and when we speak of a thoroughbred horse, it is understood that we refer to a purely-bred animal of that particular breed. There are, perhaps, purely-bred, or well-bred, or full-blood Clydesdales, English draft horses, Percheron-Normans, Shetland ponies, etc., but we never speak of them as thoroughbreds. In speaking of the various breeds of cattle we may say, a full-blood short-horn, a purely-bred short-horn, or a thoroughbred short-horn, all meaning one and the same thing; and so of all the other breeds of cattle, sheep and swine. In some localities an arbitrary distinction has been recognized between thoroughbreds and full-bloods. Thus an animal showing a given number of crosses of a certain breed is classed as a full-blood, although it could not be recognized as a thoroughbred. But such distinctions are merely local, and are not generally recognized by breeders.—*National Live Stock Journal*.

Watery Foods, Not Pure Water, Affect the Quality of Milk.—The following extracts show the results of investigations by Dr. Augustus Voelcker, an English chemist, on this subject:

"The direct supply of water to milch cows, according to my experience, does not affect the quality of the milk, at least, not to a very appreciable extent. You cannot, in other words, water the milk by giving the cows much water to drink. The case is different if washy or very succulent food—which is always very watery, often immature, and at the best poor or in-nutritious—is given to cows. In my judgment it is the poverty of the food, rather than the excess of water, which causes cows fed upon such food to

give watery milk. Again: if such food as brewers' grains, or silage, which is naturally sour, or barley, or oatmeal is mixed with water, and kept until the wash gets sour, such acid foods or wash greatly promote the flow of milk, and unless supplemented with concentrated food, have the effect of producing much, but watery milk. All the constituents—fat, caseine, milk, sugar, and ash—vary in cows' milk according to the breed of the cows, age, time elapsed since calving, and especially the quality of the food on which they are fed. The greatest variation occurs in the percentage of butter-fat. I have had milk sent to me for analysis which yielded twice, and even three times, as much butter-fat as other samples of an unquestionably unskimmed, unadulterated milk. The proportions of solids not fat vary much less. Milk, and to the same extent also the relative proportions of caseine and milk sugar, vary in different samples of milk, but not in any great degree. As a rule, a milk which yields a high percentage of solids not fat also yields much fat. I have never found as little as 2.2 or 2.4 only of fat in milk containing 6.2 per cent. of solids not fat. If milk gives 8.7 of solids not fat, and only 2.4 per cent. of fat, in my opinion it is skimmed, but may be otherwise pure and not watered. As a matter of fact, the bulk of London milk has more or less of the cream taken off, especially in the strawberry season; and in my opinion the minimum standard of public analysis—namely, 21-2 per cent. of fat and 81-2 solids not fat—might with propriety and with benefit be altered to 3 per cent. of fat and 8 per cent. of solids not fat. According to my large experience, genuine milk of fair quality, and by no means extra rich quality, such as is produced from well-fed Alderneys, seldom contains less than 3 per cent., and much more generally 31-2 to 33-4 per cent. of fat throughout the greater part of the year. My opinion is, that a large proportion of milk sold in London and elsewhere, and passing the public analysts' ordeal, is more or less skimmed."

Milking Three Times a Day.—This is a pertinent question for dairy-men to put practically to the test, and then they may answer with authority. Some experiments have lately been made in France, and the report is, that the milk is more in quantity and richer in cream, and that the butter globules are more numerous. They state that cows will give from two to three quarts more per day, milking thrice than twice per day. Milking three times per day has been practiced in this country only when the cow yielded so largely that the udder could not properly contain the secretions of twelve hours.

It is well worthy of careful experiments to determine what effect it may have upon cows that yield only moderate quantities of milk. We have tested it in a comparative way upon cows that gave but a small quantity of milk in winter, once per day; and then in early spring, on milking twice per day, found an almost immediate increase, without any other apparent cause, the feed being the same. It requires accurate experiments before anything can be definitely asserted on the question.

How to Take off a Hide.—In taking off a hide or calfskin never cut the throat crosswise in the least. Slit the skin from the brisket to the tail, and from the brisket to jaw; then cut around each leg to the hoof. Slit the hind leg from the hoof up directly over the gambrel, and the forward legs in the front, directly over the knee, to the top of the brisket bone. This leaves the hide or skin, then, in the proper shape for finishing.

Skin the head and legs carefully to avoid cutting them; then, com-

mencing at the head, draw or fist off the skin without any further use of the knife, thereby avoiding the holes and cuts that almost spoil so many calfskins. Some farmers use a windlass to draw off the dairy skins, and others use a horse; but one or two men can do it a great deal more quickly and easily.

When taken off, lay the hide or skin flat on the floor in a cool place where the sun cannot shine upon it, and cover it with salt, rather fine salt being better than too coarse salt. Do not roll it up, but let it remain in the salt until you take off another; then place that one upon the other, salting freely as before, and so on until you get enough to make quite a pile; then commence another pile in the same manner. Do not be afraid to use salt freely; what the skins do not require will shake off and can be used again.

If you prefer to dry out your skins before selling them be sure that they are thoroughly cured with salt before drying them, and then that they are thoroughly dried before being baled up for shipment.

Never dry out a skin without having it salted as described, to preserve it from moths and other injuries on the hair side which are liable to occur if the skins are not properly salted before being dried out.

If your skins remain on hand very long after being dried out, before delivery to the tanner, even if salted, watch them carefully to detect any indications of moths or worms on the hair side, and if any are discovered have the skins vigorously whipped with a stick so often that they shall be wholly eradicated from the entire lot of skins, as they often work serious injury in a very short time.

Assistance at Birth.—A little knowledge of veterinary obstetrics is often of very great value to the farmer. Cases of wrong presentation occasionally occur on almost every farm, and sometimes cause serious loss, when a very little timely assistance would have removed the whole difficulty. The natural presentation is that of the forefeet, with the head lying upon them, the belly being downward. When this presentation occurs there is very seldom any need of assistance, the chief exceptions being in case of extreme debility of the dam, or of dropsical swellings about the head or abdomen of the fœtus. Sometimes, however, but one forefoot is presented, the other being doubled back under the belly. In this case the fetus must be gently pushed back; and the foot drawn carefully outward. A more difficult case occurs when the head is turned backward. In this case endeavor to slip a noose around the lower jaw, then push the body of the fœtus backward and draw the head forward.

Presentation of the hind feet occasionally occurs, and cannot be considered as abnormal, although assistance is more often needed here than when the forefeet come first. If both hind feet are presented, all that is needed is to pull gently when the pains occur.

In general it is the best to refrain from meddling, unless there is clear evidence of a wrong presentation, or several hours unsuccessful labor have shown that all is not right. Before attempting to render assistance, the hand and arm should be thoroughly greased, and gently introduced sufficiently to ascertain just where the difficulty lies. Then, in giving assistance, avoid all rough usage, pulling only when the pains occur.

The afterbirth need not be disturbed for twenty-four hours. If it is not naturally removed within that time, assistance should be given, by greasing the right hand and arm, and with it loosening the "buttons" which attach the membranes, while the left hand gently pulls, with a twisting motion.

Fall Calves.—If the farmer has warm and comfortable stabling for his stock, he will certainly find that fall calves can be raised more cheaply and with less risk than those dropped at any other time. We took occasion to urge this idea in these columns some two years ago. Since then we have been forced, by circumstances, to raise a good many calves at other seasons; and we have become more than ever convinced that the ideas then advanced were correct. We prefer calves dropped in September to any other month, for the very good reason that calves then escape the intense heat of summer, and during the winter season they can be “pushed” with grain, and in the spring are ready for the young grass as soon as it appears. The professional breeder likes fall calves, too, but for the additional reason that they “show” at the September fairs as “calves,” when, in reality, they are only a few days short of a year old, as “yearlings,” when they are really close to two years old. It would seem that there are tricks even in the farmer’s trade.—*Prof. Shelton, in the Industrialist.*

Lessons in Meal Feeding.—Experiments have shown that corn ground, cob and all, will cause cows to give more and better milk than clear corn meal. The reason for this is, no doubt, owing to the fact that when cows eat clear corn meal a considerable portion is voided without digestion; while in the case of the corn-and-cob meal it is all digested except the cob. Part of this, however, makes nutriment, as chemists tell us there is about five per cent. of nutriment in cob meal. The same bulk of clear corn meal would make more milk and butter if it was all digested, but it rarely ever is, unless fed with chaff or with cut food. The trouble should always be taken to feed meal in this way and it will pay a farmer to save his chaff to mix with the meal, rather than to feed it out by itself, as most farmers still do. What a world of waste there has been in feeding meal by itself, when with so little trouble it could all have been saved. Here is a lesson farmers can learn and practice to a great advantage. It will pay to erect a room or storage place in which to keep the chaff for a winter’s feeding.—*Our Country Home.*

More Humanity.—It is tough on a cow to compel her to have her calf with her head fast in the stanchions. The risk is run of her injuring herself, and then the worry she undergoes about her calf is most depleting in strength and profit, and the excitement of the other cows in the stable is also a great harm. These are the mercenary reasons why such a thing should never be allowed; but above them all is the humanitarian side, which ought to strike every man on his best side and make him carefully mindful of the physical comfort and feelings of his cows and the little, helpless calves.

The place for a cow to have her calf is in a box stall with plenty of bedding. Here she can give full scope to her motherly interests, and the surroundings are calculated to allay her feverish and excited condition. It must take some days for a cow to recover from the damage of giving birth to a calf in the cramped and straining position of the barbarous stanchions.—*Our Country Home.*

Cleanliness in Milking.—“The cow’s udder should always be washed or sponged off before milking, so that no impurities can enter the milk.” So says an exchange, but we do not endorse the above as practicable. If the washing was sure to be most thoroughly done, and as thoroughly dried afterwards, this style of treatment might do. But suppose a large number

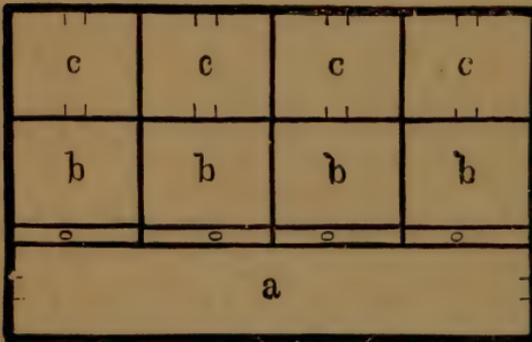
of cows are to be milked on a cold winter morning, long before sunrise, and the above advice is attempted to be carried out. We hold up our hands in horror and say *no*, not if the milking is to be accomplished within a reasonable time, and with any ordinary force of men. Our chief objection to any such procedure is the fact that unless the operation is done *most thoroughly*, impurities are more likely than ever to enter the milk; perhaps not in the form of solids, but, worse yet, in liquid form. Keep the stables well littered, and when the milker sits down to his task, have him *rub* the bag off well with dry straw or a stiff brush, then milk quickly and strain immediately before proceeding to another cow. If this practice is carefully followed, no impurities need ever enter the milk. But *never*, we repeat, attempt to wash with water the cow's udder, unless the animal is indeed in a filthy condition, and if done, do not attempt to milk her until the udder is thoroughly dried.

To Dry Off a Cow.—Safely and effectually to dry a cow you must regulate her food, restricting her mainly to dry food, and withholding roots, linseed, and such other articles. Have her milked at increasingly long intervals, first once a day and then once in two days. Drying may be hastened by giving a vigorous, healthy animal a dose of physic. Administration of alum and belladonna exerts considerable effect in arresting lacteal secretion. Vinegar or other applications to the udder are of little effect; and no medicine, whether used internally or externally, is as safe and effectual as regulated diet.

Why Salt Stock?—Every farmer is accustomed to salt his cattle, but not every one knows why he does it, unless it is because the stock like it. But a moment's thought will show where the advantage lies. As soon as food enters the stomach, the natural tendency is at once for fermentation to begin, and there arises a contest between this tendency and the digestive powers. And if these powers are vigorous and the process of fermentation is checked or intercepted, then no bad results will follow, the food will be digested, and salt will not be needed, though at any time this will assist in the process of digestion. Salt keeps food from decaying until it can be digested and assimilated, and prolongs the time to allow the digestive organs to complete their work, and if food is taken in excess, as often happens when stock is in pasture, salt given frequently will be of much advantage. And further, salt is a preventive of worms. When fermentation sets in, the conditions presented are favorable to the existence of worms in the intestinal canals, and may possibly be engendered by the process. Consequently it should be a rule with stockmen to keep salt before their cattle or within reach when they need it, and the cattle will obey the demands of nature and supply the want as needed.

Keep the Cows Clean.—If the cows have their flanks lined with manure, as too many of them often have, you should select a warm day and secure a few pailfuls of hot water to carry to the barn and wash off those flanks. Soak the manure well, using a sponge or rag, before you proceed to scrape it off or all the hair will come with it. Remember that the first point to be attained in securing a good yield of milk from a cow is to make her comfortable. This can never be done so long as she is compelled to carry a large weight of manure on her flanks, and then it looks so abominably. No one would ever buy milk coming from such an animal if they knew it.

A Good Pig Sty.—We furnish herewith a plan for a good pig sty, with a detailed description showing the best manner of constructing the same. Our illustration represents the ground floor, 25 feet wide by 32 feet long. A is an entry five feet wide, running the whole length of the building, with a door at each end; it is used for feeding, as the troughs in boxes b, b, b, b, run along one side of it. The roof extends only over the entry (a) and the boxes b, b, b, b. The boxes c, c, c, c, are not under the roof. The whole building is floored with plank, with a slight depression in grade toward the front of about half an inch to the foot, for the purpose of drainage. The inside partitions need not be more than four feet high. The small door between b and c is hung by hinges from the top, so as to open either way, made to work easy, not reaching quite to the floor. The pig soon learns to push it open and pass through, and the door closes after it. When pigs are put into the boxes, one corner of the box floor (C) should be made *wet*, and the pigs will be careful to not wet anywhere else. O, o, o, o, are feeding troughs. The height of the building should be seven or eight feet. No bedding is required. Keep the floor clean.



A GOOD PIG STY.

Butchering Time.—

Do not make the hogs too fat. Lard is not good meat.

Boiling water is a little too hot for scalding hogs—wait a moment.

Knock the hogs on the head before sticking. This for humanity's sake.

Take care that the dead hogs do not freeze before

cutting up. If they do the sausage will not be so good, and the pickle meat will not "take salt" well and will be found difficult to keep.

Have the sausage meat cut very fine. If you use a grinder run it through twice—a chopper is better. Use the finest dairy salt and pure pepper. You will be cheated in pepper if you don't look sharp.

One pound of salt, six ounces of black pepper, and a teaspoonful of red pepper to fifty-five pounds of meat is our recipe for seasoning, and we stand by it. We don't mention sage nor any other "yarbs" because not everyone likes them; and even for those who do, the sausage will become "strong" after awhile, if they are mixed through it.

Don't "stuff" sausage; it is not appetizing, and can be kept better without it. Here's the way: Pack what is wanted for winter use in common stone milk crocks, and run two inches of hot lard over it. That which you want to keep for next summer is best canned, just like tomatoes. Make into small cakes and cook about two-thirds enough for the table, or enough to cook all the water out, then pack the cakes in the cans, fill them full of hot lard, and seal at once. We have kept it two years in that way, and had it come out in perfect condition.

On most farms a beef is killed at the annual "butchering," and how best to keep it until it can be eaten is often a puzzling question. Try this plan and tell us how you like it: Cut in small pieces, leaving out the small

bones, and pack in a large stone jar with a weight on top. (A stone jar is the nicest vessel for this, and if one won't hold enough get two or three.) Make a pickle in the proportions of two gallons of water, two pounds of salt (three pounds may be used, though we prefer two), one ounce of saltpetre, one pound of sugar, and two large spoonfuls of baking powder. Boil, skim, and pour on hot. After two weeks, take out and wash the meat, heat and skim the brine, and this time let it get cold before pouring over.

Lay the hams to be cured on a slanting board and rub with fine salt. Let them lay forty-eight hours, then wipe off the salt with a dry towel, and to each ham take a teaspoonful of powdered saltpetre and a dessertspoonful of coarse brown sugar and red pepper rubbed well into the fleshy parts. Then pack in a tub, skins down, sprinkle between each layer with fine salt. In five days cover them with pickle made as follows:

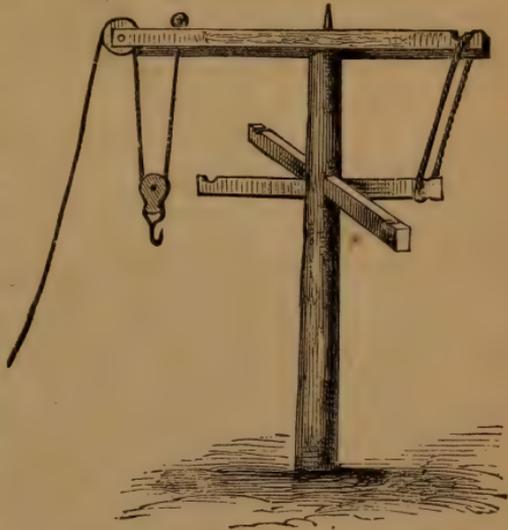
To one gallon of water take one and one-half pounds of coarse salt, one-quarter to one ounce of saltpetre, and one-quarter to one-half pound brown sugar. Let them lay five, six, or seven weeks according to size; beef, either ten days or two weeks. Hang them up several days before smoking. The pickle should be boiled and skimmed and poured over the meat while hot.

A Handy Contrivance for Hanging up Hogs.—

This ingenious contrivance, an illustration of which we give upon this page, is very simply constructed as follows:

Erect a strong post about 8 or 9 feet high, and attach to it four stationary arms, as shown in cut. The post should extend about 2 feet above the arms, and at its top an iron pin 1 1/2 inches in diameter should be driven in.

The tackle consists of a piece of 3x4 inch white oak scantling, with a pulley-wheel in one end, long enough so that when placed on top of the post, the end with the pulley-wheel will extend out 4 or 5 inches farther than the arms. The rope is first fastened in the scantling back from the pulley-wheel, then through the movable pulley, then through the pulley-wheel in the scantling, and drops to the ground to lift with. The back end of the scantling is fastened to the arm below by means of a rope, tied just the right length, and can be shifted from one arm to another as needed. The hook on the movable pulley is hooked on to the gambrel when the hog is elevated to the arm, and the pulley is then turned to the next arm, and so on.



CONTRIVANCE FOR HANGING UP HOGS.

When to Feed Corn for Fattening Hogs.—This question has been asked and answered many times, with varying results, according to the breed, and the care and attention, the shelter, time of year, etc. Store hogs in a

healthy condition and of good breed should lay on a pound of additional weight for every five and six-tenth pounds of merchantable corn fed to them, and will do it on the average, with reasonable care: When they do not do it we think there is a defect somewhere.

If the above statement, which in our experience we have verified, be true, one bushel of corn—a part meal and fed as slop, and a part all the animal will eat in the ear or shelled, changed frequently—should make ten

pounds addition to the weight. Ten bushels of corn will then represent 100 pounds of pork.

The following conclusion is then reached: It pays when corn is worth 30 cents per bushel to convert it into pork when it sells for \$3 per 100 pounds, as the manure will abundantly pay for the care when properly saved. So when the corn is 40 cents, pork should sell at \$4 per

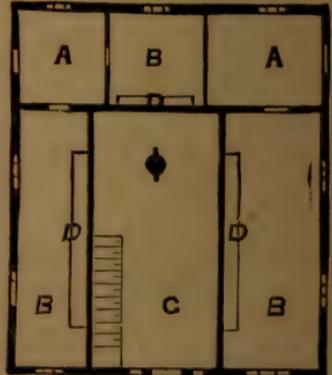
100 pounds; corn at 50 cents, pork \$5; 60 cents, pork \$6; corn 75 cents, pork should sell at \$7.50. When corn is worth \$1.50, pork must sell at \$15 per 100 pounds. If the pork sells for less than is thus represented by the corresponding price of corn, is it fed at a loss? if more, the advance is profit—in each case regarding the manure as pay for the trouble.

Fattening is accomplished more profitably as the cool weather of autumn advances, the animals having plenty of water or mud in which to roll when they choose with good shelter and warm quarters in which to lie. The feeding place should be kept clean, and corn in the ear or shelled, fed night and morning, as much as they will eat up clean, and slop or meal at noon, with pure clean water night and morning. The fatter they become the closer their quarters may be. In the early stages of fattening they used room for exercise, with wheat bran, charcoal and sulphur occasionally, to keep them in condition and increase the bone and muscle, for when quite heavy they need only rest.—*Prairie Farmer*.

Plan of a Hog-House.—We present herewith a perspective plan of a very good piggery, which may be easily modified at will or to suit circumstances. In the engraving of the ground plan, A, A are bedrooms, or divisions; B, B, B, feeding pens; C, cooking-room, with boiler, and stairs to the store-room for feed above. This store-room may be connected with the cooking-room by a spout and cut-off, by which the food can be conducted directly into the boiler below, or into baskets or bags at will. D, D are the troughs. It will be seen that the plan involves the lighting of the entire building thoroughly by means of sliding windows, for it is one of the gravest mistakes that hogs thrive better in the dark than



HOG HOUSE.—ELEVATION.



HOG HOUSE—GROUND PLAN.

in the light. A hog-pen should be kept as clean, be as thoroughly ventilated, and as well lighted as is practicable. The sub-divisions of the pen can, of course, be modified according to necessity. A good stone or brick foundation should support it, and the floor of the pen should be double and close. They should be so littered with absorbents as to deodorize them.

Driving Hogs.—Perhaps there is no other animal so contrary as a hog to drive or manage, yet it can be done with perfect ease and success. In my younger days I had the usual trouble with them which most farmers have experienced. On one occasion I had repeatedly tried to drive an old hog to a neighbor's, and it was necessary to cross two bridges, about fifteen rods apart, to reach my destination. She drove peaceably to the first bridge, when she turned, with a grunt, passed me and my helpers, and soon reached home. Repeated efforts resulted similarly, and the hog was mistress of the situation. I sat down to rest and wipe away the perspiration, telling the boys to go home and I would drive her alone after I got rested, or I would give up that a hog was more than a match for me. I rested and thought, and thought and rested for two or three hours, rejecting several plans for outwitting her, when at last *basket* came into my head. Said I to myself, "I have got you now, you old brute!" and I made another effort.

This time, when she turned at the bridge, she jammed her head into the basket. She commenced backing up. I followed as fast as she backed, until I had backed her to and across the second bridge, when I withdrew the basket, and she found herself a stranger in a strange place. She tried it but once more that day, with the same result.

Since then I have had no trouble driving hogs, or with cross hogs in butchering time, or in taking young pigs from their mothers. A good, strong bushel basket in dexterous hands will baffle the most savage hog, and I presume a wild boar would make but few attempts to master a man if he was caught head first in a basket, for at that instant he begins to retreat backward, and would not be apt to charge many times.

On one butchering day a rather lean porker strayed into a distant field, and the help sent for him returned with the report that they had been driven from the field, and that my life would be in danger if I went after him. I took my basket, and when nearing the infuriated animal he made a furious charge. I dodged the first one, and when he turned I caught his head in the basket; when I released him he made another attack, with like results. He made one more feeble effort before he was butchered, but from that day to this, now over twenty years, I have never been outwitted or beaten by a hog.

I have never seen this receipt in print, but think it too valuable to remain any longer hidden under a bushel.—*Cor. Farm and Fireside.*

How to Administer Medicine to Swine.—If the medicine cannot be given in his food, as when he has no appetite, or is in great pain, it must be administered direct. To do this is quite difficult, and most farmers give it up, or adopt the homeopathic treatment, because it is so much easier. When properly managed it is not very hard either for the pig or the attendant. The pig is caught by a slip noose in a strong rope, which goes through the mouth, and holds back of the tusks. He will pull back with all his might, and the rope must be made fast quite short to the top of a post or fence. Then his legs are secured so he cannot spring forward. Now, if an

an old shoe with a hole in the toe is given to him to chew upon, he will champ away upon it as angrily as possible, and the medicine can be poured into his mouth through it—a little at a time, or he will choke, and strangle, and cough. Another way is to hold the pig in the same way, or as for ringing, and to pour the medicine into one nostril through an oil can, such as is used for oiling machinery. Either of these methods render it possible to give medicine to a pig as effectually as to any animal, and it is not probable that his rage will have any evil effect, as in the case of a struggling child.—*American Agriculturist.*

How to Prevent Hogs Becoming Diseased.—The causes of diseases among swine, and the best remedies, are unsolved problems in the estimation even of multitudes who have reared hogs for a quarter of a century.

But a majority of our people will continue to try experiments. Nearly every man of large experience in fattening this class of stock, who has not a favorite medicine of his own, will try every remedy proposed by any man professing to be a veterinary surgeon. This is not surprising when we read in many of our papers that during 1878, twenty-five per cent. of the hog crop that year was lost by hog cholera.

So far as we can learn by careful inquiry there is at present but little of this disease prevailing. Will the readers, therefore, allow us to give all who either rear or fatten swine a little simple advice? It may not do them or their animals much good, but it will do them no harm, and it may be of great value to their young stock. At all events, the trial will not be expensive. As a postulate, we affirm the trite old aphorism: "An ounce of preventive is better than a pound of cure."

Keep your hogs in good clean fields; give them access to pure water—even though you should be compelled to dig a deep well for that purpose; a good pump and plenty of suitable troughs, cleansed every week, will cost but little and will always prove a valuable outlay. Provide, also, in the driest part of the field a good shelter, both from sun and rain. A few rails properly arranged two or three feet from the ground, covered with a stack of straw, or coarse prairie grass, will be an attractive place for the entire drove.

In troughs, near by their resting-places, two or three times each week, place a composition of salt, soda, red pepper, and ginger. To four parts of the first two articles add one part of the latter. Our common red peppers will do very well; they should, however, be well pulverized, and all the ingredients thoroughly mixed. Most healthy animals will readily devour salt. To obtain it they will also take the alkali and the stimulant. The compound will not injure bird, beast, fish or man. It is not offered as a patent remedy, but simply as a preventive of the injurious effects of the foul gases and pestiferous filth in which hogs have been allowed to wallow. Continue their usual summer feed, whether clover, bran, meal or corn.—*Drovers' Journal.*

Poland-China Swine.—The Poland China is a breed of pigs of exceeding composite pedigree—using that term in its application to the breed, and not to individuals, which of late have each their own complete pedigrees, running back through several generations of careful breeding. We do not need to inquire into the history of the origin of the breed to recognize it as one of great value. It is regarded by a great number of the best and largest swine raisers of America as the very best pork-making machine in the coun-

try, and by all who know much about pigs, as the best of the many distinctively American breeds. Any one can see, by its general form, color and markings, that the Berkshire breed has contributed largely to its formation, and the butchers know very well that in the quality of its flesh it closely approaches that of that admirable English breed. The qualities which especially recommend it to the American pig raisers, are its hardiness, rapidity of growth, large size, and the favor with which it is regarded by buyers, pork-packers, and others. It has excellent hams and shoulders, and very little offal. Its bones are small. It is a prolific breeder, kindly and docile in large or small herds, though particularly adapted to the former. It is fit for slaughter at any age, and at six months old ought to weigh two hundred pounds or over. At a year old, three hundred and fifty pound pigs are not rare, and at eighteen months to two years old, not a few turn the scale at five hundred to six hundred pounds. The color, which is black, or nearly so, with some white in flecks or spots upon the body, and assuredly with white face and feet, adapts it to our hot summers, and fits it for the great western and middle pork-raising belt of the country.

—*American Agriculturist.*

Berkshire Pigs.—Heber Humfrey, secretary of the British Berkshire Society, claims for the Berkshires the first company among pigs in England and abroad. While he makes no definite claim to an ancient British or a Norman descent, and doubts if the necessary data is in existence for anything like a reliable history of the breeding and progress of the Berkshires previous to the last century, yet he believes a race of Berkshires was produced many years ago, fitting ancestors of the pedigree herds of the present day. Previous to the advent of railways into the county of Berks, in England, there existed a system of raising a supply of pork and bacon for the London market, which from its extent and organization might well have been the growth of centuries. The elevated districts of the country were very thickly wooded, the character of the arable land was suited to the growth of barley as a main crop, so with the acorns, beech-masts and refuse grain it would bespeak a natural home for a hardy and thrifty race of swine. Here, from time immemorial, they seem to have been raised in considerable numbers. The autumn-bred pigs, after stubbing, were usually wintered in the straw yards and sent to market in the spring, followed by the spring and summer stock.

Mr. Humfrey believes that the Chinese and Neapolitan breeds had scarcely a feature in common with the pure Berkshires, and that they were never used in any of the herds of olden times which were carefully bred. He believes that the history of the Berkshires is not one of crossing and re-crossing, the one to qualify the other, but just one steady record of progress and improvement within their own lives.

The change in the taste of the British consumer during the last ten years has made thick, fat bacon more or less unsalable. Here the Berkshires are all that is required. Again they are hardy and healthy and have good, uniform appetites. In common with other animals, they resent sudden changes in their dietary, and at the weaning time especially they will repay extra care and attention.

It is not the question of expense so much as of time and trouble to give the pigs a little digestible food often from the first day they will eat any. It is surprising how much help such a feed is both to the mother and the pigs. Far too often it is thought that a good mother is doing the pigs well and

nothing more is necessary. The unfortunate effects of such a theory are never fully known until every pig receiving such treatment has reached maturity. The difficulty comes about in this way: The quantity of milk the little pigs get from their mothers at each meal is very trifling. It is exceedingly rich and taken often. If this goes on many weeks and no more bulky food is given, their whole system settles down to a state of things which cannot last, so that when they have some day almost suddenly to rely on food of perhaps ten times the bulk there is literally not room for them, with two or three meals a day, to stow away sufficiently to carry them on in good condition.

Such concentrated food prevents the natural and uniform distension of the intestines, and the consequences are serious. Quite a percentage of the little pigs cannot push through under such conditions. Others eat and drink and grow, and to all appearances are healthy and salable. But the lungs and liver, as well as the bowels, have undergone such a strain, through the sudden change in food that the chances are many of the pigs would have weak parts about them.

Always excepting weakly constitutions, brought about through unsatisfactory breeding, Mr. Humfrey thinks that unfair weaning brings more pigs into difficulties than any other cause. It is always going on to a small extent, and the after effects are often attributed to other causes. It happens oftener through an oversight than any other way, but it is well that attention should be directed to this important matter.

Care and Management of Hogs.—Mr. A. J. White, of Dallas County, Ia., in speaking of his methods, found the following, after many years' experience, the best: "I first select some of the best sows I have, those with good constitution, good length and good bone. I prefer old sows or such as have come to maturity. I then select a fully matured boar, and one as good as I can get; then I am sure of strong pigs that will make fully one-quarter larger hogs at the same age than those from younger sows and boars, where the strength that should go to the pigs while the sow is in pregnancy is used to supply the growth of the young swine. Those who breed from unmaturing stock and keep selecting breeding stock from such soon run their stock out. If I breed from young sows, I use an old boar. I never have them farrow until after a year old, by which time they are nearly developed. My mode of feeding is this: I never feed much corn to young hogs, but give them oats, bran, shorts and milk until cold weather sets in, when I feed corn at night and oats in the morning. I always feed my sows oats and bran for three or four weeks before farrowing. Corn is heating and binding, and I find that sows fed on corn alone do not deliver their pigs as easily as those fed on oats and slop. I always have my pigs drop the last of March or first of April. I feed them as I have stated until the first of the next April, then I put them up to fatten, and crowd them until June, when they are sold while fattening. I feed mostly corn-feed in some form and oats once or twice a week for a change and sometimes bran wet with boiling water. This keeps their bowels open and gives that change of diet needed by all stock. I have never lost any hogs with cholera, yet if the disease is around, I give each about one tablespoonful of kerosene oil three times a week in swill. I always throw my wood ashes in piles where the hogs can get at them, and I throw salt on the ashes twice a week."—*Our Country Home.*

Dirt Floors for Hogs.—If a good dry clay bed cannot be secured at all times, better retain the plank floor. But the clay bed is best, and if it can be of about the quality of dirt which will make good brick it is better than black soil, and if it is inclined to reddishness so much the better, as then there is an assurance that it contains the muriate of iron, which is healthy for hogs, applied outwardly or inwardly. Bennett says: It is one thing to read how a thing works and another thing to see it. We have noticed articles from such men as Clarkson and Brown saying that a dirt bottom is the best floor to the sleeping place for hogs if it is furnished with a roof and hogs allowed plenty of liberty. We suppose these men must know what they are talking about, but our faith was about 50 per cent. doubt as to its working satisfactorily except in favored soils. But this fall we tried it. We left some thirty hogs in the pasture and fixed things so they could run under a cow shed to sleep. The result was that the ground was always dry and dusty under the shed, rainy weather and all, and not a particle of filth to be seen. We never had hogs do so well before nor enjoy their surroundings better, and we have noticed the difference in other cases where farmers have bedded their hogs on floor, the floor and bedding being damp and foul in rainy weather and the hogs chilled and rough coated. Provided that a space of eight or ten rods is put between the feeding place and sleeping place of hogs they will prove themselves the cleanest domestic animals we have, and the dirt floor surprises us entirely in its suitability as a bed.

Green Food for Pigs.—Prof. S. R. Thompson, of the Nebraska Agricultural College, writes to the *American Agriculturist* that green food makes thriftier and larger hogs. Farmers who raise many pigs and feed them exclusively on Indian corn know that some of the shotes will cease to grow at an early age, begin to lay on fat, and never reach the size of good, merchantable hogs. This tendency to fatten prematurely, at the expense of bone growth, is not seen to any great extent in grass-fed hogs. A pig fed on bulky green food will develop a larger stomach than one fed on concentrated food, like corn; and when you come to fatten it this enlarged capacity will enable him to eat and digest more corn, and thus fatten faster than the other, and be a more profitable hog to grow for market. Grass fed hogs are healthier than those grain-fed. Every intelligent breeder knows the advantages of feeding green food to sows about to farrow. They have less difficulty with their pigs, are less liable to destroy them, will give more milk, and nurse them better. Grass-fed hogs are less liable to disease. The dreaded hog cholera is not much to be feared where hogs have the run of a good clover pasture. Undoubtedly, if exposed to contagion, they would take the disease, but they are not likely to develop it. For example, a farmer had his hogs in a small pen, destitute of grass, with no water except a muddy pool, which soon was made as vile as possible by the hogs. After a while the hogs began to die in considerable numbers, with symptoms resembling cholera. The owner was alarmed, took them out of his pen, turned them on a patch of green rye, and gave them water from a well. The disease was checked and the deaths ceased.

The silo will yet come to be regarded as essential to his business by the pork raiser, furnishing, as it will, the succulent food essential to the health of swine when green food is not otherwise obtainable.

A Sensible Method.—We noticed a farmer, a few days ago, loading two large brood sows in a wagon. He had no shute, and they had to be lifted

in by main force. The yard was full of other sows with young litters. And yet with some help he did it without a squeal or the least excitement in the yard. An ordinary man would have caught them and lifted them in, and every mother would have been excited, and perhaps a half dozen sucklings trampled to death in the melee. Instead he coaxed them into a box-stall, then placed a large crate in the door, to which they went readily, and then lifted the crate with some help, and emptied them into the wagon, where they lay down as quiet and contented as if under their favorite tree in the pasture.—*Iowa Homestead.*

Raising Sheep.—I would like to impress upon the minds of the people, through the columns of your much prized paper, the benefit there is in raising sheep. They should always in winter time have a well-covered shelter to stay under when the cold rains are falling and freezing, and they should have plenty to eat. They ought not to be allowed to expose themselves in bad weather, for that is very injurious to them. They ought to have almost as strict attention as people, when the lambs are young especially, then by close attention as they grow up, and gentle handling, you will most always have fine, large, healthy sheep. They ought not to be sheared but once in twelve months, unless you take particular care to see they are kept out of the cold rain and sleets. Just think of the clear money you can make on them. The wool brings forty and fifty cents most any time, and a good sheep will bear four pounds of the wool easy enough. So you can count on \$1.60 to \$2.90 a head for the wool every time, if you sell it, and it will sell most any time; and if you want to sell off your sheep at any time, you can get \$2.50 a head and upwards. They are easy raised, not much trouble to handle, and it don't take much feed for them. I would advise farmers to go at it lively and see the money they can coin at it. Just think how easy you can commence with a few head and soon increase to one hundred, which at even \$2.00 brings \$200; and think of the good, warm clothes you can have in the winter by getting a loom and making cloth.—*Ex.*

Shropshires and Hampshires.—The Shropshires and Hampshire-downs are two essentially modern breeds of English sheep. The desire to improve all kinds of live stock took possession of progressive English farmers during the latter part of the eighteenth century. The Wiltshire sheep were a hardy, horned, white-faced breed, which, when crossed with the improved hornless, dark-faced, well-bred Southdown, became a profitable market breed, especially for raising early lambs, and their wool was also greatly improved. The cross, with a dash of Cotswold or Leicester blood, is the foundation of the Hampshire-downs. They had been bred for black or dark faces and legs, which were Southdown characteristics, but when Southdown breeders found the Hampshires competing with them in the market, and successfully, from their large size, they changed, in a measure, the fashion of color in their legs and faces, now-a-days preferring the grizzly-brown, rather than very dark. The Hampshires are larger, coarser and not so well-formed as the Southdowns, and their wool is longer and coarser, doubtless from the long wool cross. They mature early, and are hardy and profitable. It takes a good judge to tell the difference in the quality of mutton, but the smaller Southdowns make the best.

The Shropshires were produced in a similar way, from the old Morf-common breed, but contain more long wool blood. In size, they are fully

equal if not superior to the Hampshires, and are their equals in easy fattening, early maturity of lambs, and profitable fleeces, the wool being fine, though of longer staple and more glossy than the true Downs. This breed seems now to be well established, and rapidly gaining in popularity. It has spotted or graying face and legs, with a carcass somewhat resembling the long wools.

How to Dress a Sheep.—Gen. Cassius M. Clay has written an interesting article on breeding and management of sheep, in course of which he gives directions how to slaughter and dress a sheep so as to wholly prevent the rank odor and flavor so often attached to mutton.

First, he withholds all food from the animal for full twenty-four hours or more before slaughtering, but gives in the meantime all the water it will consume. When ready to slaughter, he has all things in readiness, in order that the job may be accomplished in the shortest time possible, when the sheep is hung by the hind legs, and the throat quickly cut, severing all the main arteries at once, and the moment life is extinct the work of disembowelling is accomplished, and the skin taken off in the shortest time possible. The result is meat of the most delicious flavor, without a taint of the rank, offensive odor and equally offensive flavor, so often accompanying meats of this kind.

He never selects a lamb for delicate meat, but always chooses a full-grown sheep, from two to three years old.

Merino Sheep.—I will give you my reasons for preferring Merino sheep. I have been keeping from 75 to 150 for over nine years; in that time I have not lost one by disease, nor more than five or six by accident. This year one of my neighbors had a dog that bit off the ears from two, which I killed to put out of pain, and the owner killed the dog.

In winter I feed them on hay, straw and corn fodder. After the ewes drop their lambs I give the ewes turnips and sugar beets, cut up and sprinkled with wheat bran, corn chop, and occasionally oil-cake meal, with rock salt and water to go at pleasure, being careful to change feed as often as possible. When the lambs are two months old I have a hole in the pen large enough to admit them to another pen and not their mothers, when I feed them with a few oats, corn and bran. When four months old they weigh from 45 to 60 pounds. In the spring they go on the old pasture and wood lot; after harvest on the mowing lots, reserving a field for fall pasture. With that treatment the ewes give me a good lamb and 8 pounds of wool—for which, in fair times, I got 40 cents per pound; the rams give me from 15 to 20 pounds of wool; and altogether leave a nice lot of manure. Although they are not so handsome as some of the mutton breeds, they carry the golden fleece and pay 150 per cent. net on investment. My flock is reduced to 65, owing to sales made in Virginia to men who have fine flocks of Cotswolds, who want to try Merinos. We have mutton to export, and have to import wool.—*S. K. Crosby, in American Farmer.*

Washing Sheep.—Sheep breeders and flockmasters are invited to give their opinions on the utility and propriety of washing before shearing. Now, I don't claim that my opinion amounts to very much, or that I know much about the subject; nevertheless, I have an opinion, and if it is not worth much, it will not cost much. I have grown some wool for twenty years, and have washed and sheared a good many sheep, have noticed how sheep have been washed around the country, and had long ago come to the

conclusion that washing sheep was more or less a fraud, and just so long as sheep are washed, just so long the fraud continues. In the first place, there is no such difference between washed and unwashed wool as buyers make (one-third). In the next place, the average man will make all out of the washing he can, and not one wool buyer in ten knows whether a fleece of wool has been washed or not. This I know for a certainty. I have seen a tight three-pound fleece shrunk one-third because the buyer was told it was unwashed, when the lot contained a dozen fleeces that would weigh from eight to ten pounds that was half grease and gum, that raised no objection, that would waste more in cleansing than the tight fleece would weigh; and three-fourths of the wool that is sold is not bought on its merits, washed or not washed. So much per pound is the ruling price for certain kinds of wool, dirty or clean, nothing is held out to induce a wool grower to wash his wool clean and put it up nice, when he gets the same price as his neighbor who ducks his sheep once and passes them out of the water which scarcely reaches the skin. But it can be said of these sheep, they were taken down into the water and came up out of the water, and therefore their wool was well washed. A man to be a good judge of wool must have some experience in either growing it or handling it in some way, but most of the wool is bought by agents without experience either way. A fleece of firm, nicely-crimped Merino wool, where the sheep have been housed through the winter, never looks as well after being washed as before; it looks mashed and crumpled, and loses that shiny gloss that it had before washing, and an agent must have practice and judgment to understand these things, which many of them do not possess. It requires more nice discriminating judgment to handle wool than most any other product of the farm, and yet much of it is handled by men that are not judges.

My opinion is that wool should never be washed on a sheep's back. It induces wool growers to go through the mock ceremony of washing when they don't intend to get out a particle of dirt, and then tell the buyer it is thoroughly washed, and he don't know the difference. Hence, more wool is bought without the exercise of any judgment than any other way. A buyer who understands his business don't need to ask whether the wool is well washed or not. His judgment will tell him this. If he depends on the word of the producer for this information, he will not always get an answer that is strictly true. I don't mean to say that wool growers are more dishonest than other men, nor quite as much so, for half the buyers will cheat in weight if you give them a chance. There is just as much sense for a man that has fat cattle to sell to tell the buyer they are very fat when they are not, as for a man to say his wool is washed clean when it is very dirty. No buyer would take the man's word on the cattle, but would buy on his own judgment. Just so it should be on wool. Yet it requires more experience on wool than on cattle. The only correct way is to shear without washing, and then there is no deception on the part of the grower, and no chance for any; and if he asks more for his wool than it is worth, and the buyer pays his price, nobody is to blame.

And then there are other objections to washing. Some people have to keep up the old custom of getting a jug of whiskey, or some old, hard, sour cider, that would make a hog squeal to taste of, and get about half drunk, which is an objection in a moral point of view. And many times sheep are half drowned by indifferent or careless handling, and become so exhausted they have to be drawn home in a wagon, which is taken along for the purpose of picking up the ones that have fallen out by the wayside by bad

usage. Then many persons take cold from going into the water, not being used to it. In conclusion I would say, everything can be urged against washing and nothing in its favor, for, God knows, people are strongly enough inclined to be dishonest without any inducements held out to them to be so.—*Granger, in Ohio Farmer.*

Treatment of Sheep Rot.—Rot in sheep is perhaps a more serious form of parasite disorder than husk or “worm in the throat,” even if it is not so widely diffused. As we have explained, the malady is due to the ravages of the fluke (*distoria hepaticum*) in the liver, the worms being introduced in the inchoate state in the bodies of fresh water molluscs, which are swallowed by sheep when feeding in water meadows or wet lands, or when drinking from stagnant ponds.

The process of the liver rot is slow or rapid, according to the circumstances in which the animals are placed. If the flakes are few in number, and the food in the pasture is of tolerably good quality—and especially if the flock-master, aware of the character of the land, has taken the precaution to supplement the grass with manger food, as hay, meal or oil-cake—the sheep may remain some time before they show much evidence of derangement; but more commonly the grasses on rotting lands are unsubstantial, water food, and the sheep have to suffer from inanition, besides the disturbance to the digestive functions which results from the parasites in the liver ducts, and in such cases the disease proceeds rapidly to the stage of extreme emaciation, and the mortality is often considerable. At best the animals are worthless. We lately heard of a breeder who sold a lot of ewes affected with rot at the rate of 15 cents per head, and it was remarked at the time that they were dear at the price.

The existence of rot is generally ascertained without much difficulty by the appearance of the animal. In the early stage a peculiarly watery and pallid appearance of the eye is a symptom on which the shepherd places his chief reliance. The final test, however, is the detection of flukes in the gall ducts, and usually an opportunity will occur for a post-mortem examination, which will place the matter beyond doubt.

Liver rot being known to exist in the flock, the question of treatment naturally arises, and there are several points which require consideration. First, it is well to be quite certain whether or not the sheep became infected on the ground where the disease was discovered. A mistake in this direction may be serious, because it is most important that the animals should be removed from the place where the larvæ of the fluke are to be found. It will often be ascertained on inquiry that the sheep have been recently purchased, or that they have been feeding in other pastures; and it may be the case that the ground on which the sheep are at the time of the investigation is perfectly healthy. When it appears on inquiry that the affection has originated in the pastures where the animals are still feeding, it becomes a mere common sense proceeding to move them to higher and drier land. If from any cause this essential step cannot be taken, treatment is not likely to be of much use. Experience has proved over and over again that rotten sheep have a fair chance of recovery if they are taken, in the early stage of the disease, to a bare, dry pasture, where they will be required to hunt their living; whereas, if they continue on the wet ground, even if they do not take up more larval forms of flukes, which most likely they will do, there is little opportunity for the restoration of the tone of the digestive organs, and the majority of the sheep will die of debility—many

of them after the flukes have been expelled. Undoubtedly, the successful treatment of rot necessitates the placing of the infected animals in a favorable position, and supplying them with dry, nutritious food, with the addition of salt, both in the form of rock salt—which may be scattered about their feeding ground—and bay salt, which may be mixed with the manger food, so that, as near as may be, every sheep may get about an ounce per day.

How to Raise Sheep Successfully.—There is a general impression, says a practical shepherd in the *Cincinnati Times*, among those who do not know, that by means of sheep a great deal may be made out of nothing. We may frequently see absurd statements to the effect that “the sheep’s foot turns all to gold;” and that there is no readier or surer way to fertilize a barren field than to put a flock of sheep to pasture upon the briars and weeds in it; that, in effect, sheep will live upon the poorest food and make the richest manure, and are thus the very best stock a farmer can keep on his farm. But those “who have been there” know better. “Sheep are always an unhappy flock,” and many a man who has been deluded in keeping sheep in the vain hope of finding gold in their foot tracks has found out “the truth about it.”

Now, having been through the mill and turned defeat into victory by disabusing my mind of the common fallacies about sheep, I warn intending shepherds that there is no other domestic animal that needs better care or food for profitable thrift than sheep; that out of their finely grinding manure will come nothing that is not first put into the hopper; and yet with proper care and skill a well selected flock of the right kind of sheep in the place can be made to pay 100 per cent. on their cost every year. It is true that a flock will clear a field of weeds, briars and rubbish, and will enrich it; but it will not live upon these alone. To relish this rough herbage the sheep must be fed liberally upon supplementary food, such as bran meal, cut clover, grass or green fodder and always a pint a day per head of linseed oil-cake meal, bran or other grain food. Then, with this alloy, the sheep’s foot will take on a golden tinge, and will edge with gold the farmer’s pocket, by making his poor lands rich; giving him at the same time a lamb or two and a fleece every year. A field may be enriched, too, by sowing rape seed, at the rate of a peck per acre, and when the crop is of a thrifty growth the sheep may be turned in to cut it down through the late fall and early spring, thus fitting it for a crop of corn, oats or roots next year. But the sheep must have their pint per day of bran or oil meal even then.

The fact is, sheep are manure spreaders rather than manure makers. We feed them with the material; they take their pay out of it, and give us back the remainder transferred into a substance of equal value—because it is more available—with that which they revived, and they get fat meanwhile doing it. Just as we give the mint a bag of gold dust and we get back exactly the same weight of gold dollars, while the coiners have fed upon it; but without the dust we get no dollars. So with sheep; if we don’t feed them with the materials needed to make fat for themselves and rich manure for us, they will be as unprofitable as Pharaoh’s lean kine. And this is “the truth about it.”

Incidental Sheep Husbandry.—One of the strongest of the elements that have brought disaster to efforts at sheep husbandry has been the desire to do a big business. Men reared to other callings, seeing the profits

others were reaping from well-directed efforts at sheep husbandry, have hastened to become the owners of flocks; while still others, who have made money from a few hundred sheep, have become imbued with the idea, "the more sheep, the more money," and have soon placed themselves beyond the bounds of prudence, by incurring indebtedness on the one hand, and more care and labor than they are able to bestow on the other hand—both have been overtaken by the disaster their temerity invited. To a majority of farmers small flocks—that is, numbers remaining in the hundreds—will be the most profitable. The exceptions to this rule will occur to every careful student of sheep husbandry. Not only can the highest profit upon invested capital be thus rendered more certain, but the disappointments that occasionally follow the best of plans, and the most careful manipulation, are by no means so disastrous. Where sheep are handled as an incident to general farming operations—the plan now contemplated—care should be had that they do not trespass upon the other interests. When the farmer feels that his sheep are a burden—that is, that they are drawing upon the other departments for the time and feed not before assigned to them—he should fatten, and sell down to such number as will conveniently work along his crops and other live stock. Local butchers will always pay a fair price for a few good wethers, and some neighbor can usually be found ready to make room for a few more desirable store sheep. As the facilities for enhancing the numbers of the flock improve, the annual drafting may be confined to full-grown wethers, and such ewes as, by reason of age or other disqualifying peculiarities, are desirable. The flexibility of a small flock is one of its strongest recommendations—enabling it to be accommodated to the circumstances or ambitions of the owner more readily than any other life-stock property.—*National Live Stock Journal*.

The Sheep Industry.—There is no kind of stock which will pay the farmer better than a few sheep. We do not advise any one who has not had experience to start with a large flock, but rather with a few, and learn the business by actual demonstration. Sheep will be cheap after shearing, and they are cheap now. Let us see, good sheep can be purchased for \$3 to \$5 each, and they will afford an income from the wool of at least \$2, and a lamb worth from \$2 to \$4. The first flock of sheep we ever owned we bought of a neighbor at \$2.50 each in the late autumn. The wool the following year sold for enough to pay for the sheep, and left the sheep and lambs clear, not counting the keeping. Every farm can support a small flock of sheep, and the keeping will hardly be felt. In the spring they may be turned into the field designed for cows, and here they can remain until the ground is all plowed, and then if there is a field in which it is proposed to put buckwheat, they can be run there, and in this way no extra pasture is required. A little grain can be fed to sheep if the pasture is light, to make up deficiencies. There is no stock with which a little grain goes so far to make good condition. It promotes the growth of the fleece and also of the body. Sheep are so little trouble that a farmer can care for them however short-handed he may be. A child eight years of age can look after the sheep. They do not require to be fed in winter more than twice a day, as the racks well-filled in the morning will last all day. Early lambs will always sell at a high price, and lambs always sell for a price above other meat. Old ewes should be avoided, as they shear light fleeces and are hard to winter. Unless a ewe is specially valuable it is a good plan to turn her off when five years old. This is when the teeth are full

and while they are in perfect shape for the mastication and rumination of food.

Some farmers buy ewes in the summer and have the lambs come in winter and then sell them and fatten the old ewes, thus turning off the entire flock yearly. This is a good way to enrich the farm, and it always is profitable, as the ewes, by feeding them in the pasture, will be ready for mutton by winter, and thus the feeding of hay may be avoided. Good store sheep can always be purchased at the stock-yards. The farmer must be careful not to take home with him any of the infectious diseases sheep are subject to, namely, scab or foot rot. These can be detected by a careful examination of the flock. Wool has gone as low as it will, and from now on the tendency will be for a slight rise. A rising or a steady market is an encouraging feature for an investment.—*Our Country Home.*

Spring Feeding of Ewes.—The woolly coat of the sheep is well calculated to resist the dry, cold weather, but it sheds rain or snow poorly. Consequently the thaws of February and March, with their frequent rains, slush and mud, are the hardest portion of the winter for unsheltered sheep. When to the inclemency of the weather of the season is added the clogging of the appetite, after months of feeding upon dry food, a little extra care is absolutely essential to the keeping of our flocks in constant thrift.

For breeding ewes this care is especially necessary as the lambing-time approaches, as they cannot endure the strain of maternity and milk-giving without serious loss, unless previously fortified by judicious care and liberal feeding.

It is possible to feed too liberally, and thus induce a tendency to parturient fever; but this mistake is less often made than that of allowing the ewes to so run down in flesh that when the milk drain begins they soon become mere skeletons.

Milk cannot be made from nothing; if the material for its manufacture be not found in the food it will be taken from accumulated flesh of the body, and if no surplus flesh has been accumulated the secretion of milk will either cease or material will be drawn from the muscles and other tissue which is absolutely needed for the maintenance of health and strength. No more melancholy sight is ever seen in the sheep-fold than that of a poor half-starved ewe, with a scrawny lamb tugging at her for the nourishment which it vainly seeks.

One of the serious faults of our methods in stock growing is the neglect to provide succulent food for our animals at lambing, calving, and farrowing time. Such provision might be cheaply made by sowing rye in the fall, or by growing a crop of beets or turnips and saving for this purpose, but how few of us do either of these? In default of such feed the ewes should have an extra allowance of grain from now until the grass comes. This judiciously given, will give them strength and enable them to withstand the drain of milk-giving; while its cost will be more than repaid in the extra growth of lambs and wool. For this purpose bran, oats or shelled corn will be found the best food, with a spoonful of oil meal occasionally to each ewe. Corn meal is not a good food for sheep, being more liable to surfeit or scour on it than when fed on whole grain or bran.—*Our Country Home.*

Value of Fleeces.—Wool buyers have to know the value of fleeces as soon as they see them, for their own interests as well as those for whom they buy. We have seen buyers who did not, but they had to learn or quit.

Wool growers ought to know what their fleeces are worth as well as the buyers. Some do, some never will, and some do not want to. Well-fed, carefully handled sheep will produce even fibered, strong, elastic wool, worth several cents per pound more than from sheep of the same class which have been badly treated. Still the farmer that has poor wool thinks he ought to have the same price as his neighbors, because their sheep are of the same blood exactly. As a rule, buyers do not tell what they see of merit in fleeces; they see the poor qualities and are quick enough to mention them. They do not care to tell a painstaking sheepman that his wool is worth more than his slovenly neighbor, especially if they can buy it at less than it is worth.

Commission men send their circulars out free of charge to wool growers who are likely to consign their clips to them. By them, wool growers may become familiar with the different grades of wool and their market value. If they are at a loss to class their wool, a sample may sent by mail, with postage stamps for an answer, and the commission man will name the class it belongs to; or a visit to any manufacturer may be pleasant and profitable in these points.

Wool buyers do not propose to teach wool growers. It is not to their interests. If they can make the grower believe his wool is of a lower grade and buy it so, they are likely to do so. It is one of the tricks of the trade and held as fairly legitimate. We do not charge dishonesty to all wool buyers in this, but urge upon wool growers to have their own values upon their clips and stand up for their own rights. Wool growing has too much profit for others than the growers. They deserve more and the others less, and the cure is often in their own hands. If the traveling buyer won't pay what the clip is worth, ship to some reliable commission man.

The Way to Handle Sheep.—A great many men will catch the sheep by the wool on the back with both hands, and lift the animal clear from the ground by the wool only. We have slaughtered a great many sheep in years past, and when removing the pelts of such sheep as had been handled by the wool, we never failed to observe that beneath the skin wherever the animal had been caught by the wool, blood had settled. In many instances the skin had been separated from the body so that inflammation was apparent. We have known proprietors of sheep to be so strict in regard to handling them, that they would order a helper from the premises if he were to catch a sheep by the wool on any part of the body. When about to catch a sheep, move carefully towards the one to be taken, until you are sufficiently near to spring quickly and seize the beast by both hands, then pass one hand around the body, grasp the brisket, and lift the sheep clear from the ground. The wool must not be pulled. If the sheep is a heavy one, let one hand and wrist be put around the neck and the arm pressed against the leg. We have always handled sheep in the way alluded to. We never grasp the wool. Others seize the sheep by a hind leg, then throw one arm around the body and take hold of the brisket with one. But ewes with lambs should never be caught by the hind legs, unless they are handled with extreme care.

Treatment of Lambs.—For the first few weeks of a lamb's life its well-being almost entirely depends upon its mother. This being the case, ewes should be fed well, and a little oats and cake should not be grudged, especially for those which have twins to support. With regard to the sum-

mer management of lambs, the farmer should bear in mind the following rules, which are necessary to the development of fine sheep: Frequent change of pasture; the continuance of dry food in the form of bran, bruised oats, and oil-cake; access to rock-salt; constant care and attention; shelter in very hot weather. In addition to the above points to be observed, an examination of the lambs should be made now and then to see that their feet are in good condition, and also that their skins are not infested with ticks. It is a common saying that grass should be twenty-four hours old for sheep, and eight days old for an ox; hence the advisability of constant change of pasture. We do not believe in keeping sheep merely for the purpose of eradicating weeds and keeping down hazel-scrub, as is so often the sole reason for their presence on the western farm. There is profit in sheep raising, but none unless they have proper care and are made one of the important features of the farm management. If prime mutton is to be produced—and that is, perhaps, of more importance and profit than wool—the aim should be to keep the lamb-flesh on and steadily increasing until the sheep is ready to kill. To accomplish this is no simple matter; it requires skill, much care and well-selected food. Weaning-time is the most trying period in a lamb's life, and it is at this time that extra feeding is most necessary. Before weaning it is well to accustom the lambs to a small quantity of oil-meal daily—say two or three ounces—then as soon as they are weaned the oil-meal or cake may be slightly increased in quantity, and with good clover, sweet grass, and other green feeding, they should enter the winter season in good shape. By such feeding, sheep may be brought to good weights, fat, yet with plenty of flesh, at eleven, if not ten, months old, without forcing so as to produce disease, and without extravagant living.

Abortion in Sheep.—Ewes in lamb are liable to abortion, or slipping of the lamb, also called slinking, as well as the cow, but not so much, and the complaint is not considered epidemic in sheep. Various causes produce it, such as exposure to severe weather in winter, having to endure much fatigue in snow, leaping ditches, crowding through narrow gateways, being worried by dogs, over-driving, a too free use of salt. But that which is apt to cause it more than anything else is the unlimited use of turnips and succulent food, though this may not be attended with danger in every season. Abortion may occur at all periods of pregnancy, but is most frequent when the ewe is about half gone. It sometimes occurs very extensively, and becomes of serious consequence to the sheep-owner, disarranging all his plans, as well as occasioning a severe pecuniary loss. The symptoms first manifested are dullness and refusal to feed; the ewe will be seen moping at a corner of the fold, and will be heard to bleat more than usual. To these succeed restlessness, and often trembling, with slight labor pains, and in the course of twelve hours abortion will have taken place. By way of treatment, prevention is the most important part; and prevention consists in avoiding the causes which we have mentioned. As a peculiarity occurring after abortion, we would mention that the wool is apt to come off of the ewe in spring. The immediate cause of death in fatal cases of abortion is inflammation of the uterus or womb.—*Western Rural*.

A Cow Tail Holder.—This ingenious little device will be found very convenient and serviceable by dairymen and farmers during fly time. To make it, take two feet of No. 9 wire. Make the coil (A) in one end one and a half inch in diameter; turn up the end at B a little. Now make a small

eye at the end (D), and make the loop (C) to fit the leg, as shown in the sketch. To use the holder, put the switch, or a part of it, through the coil (A), putting it through from the side where the end (B) comes. Then put it over the end (B) and tighten. This makes a firm knot, and easily taken out. Now put the loop (C) over the leg, front of the gambrel joint, and your holder is on. It will cost about two cents.

Medicines for Farm Stock.—Professor Brown, Veterinary, in the Journal of the Royal Agricultural Society of England, tells the farmers how to make up a convenient “medicine chest” for the domestic treatment of animals. The following is his list of remedies, with the doses, arranged in alphabetical order:

Aconite, Tincture, (Fleming’s)—Action sedative, allays fever, and externally relieves irritation. Dose: horse or ox, ten to thirty drops, sheep, five drops. Add water in proportion of a teaspoonful to each drop of tincture. For a lotion use a tablespoonful of the tincture to a pint of water.

Alcohol in the form of whiskey or brandy or strong ale, is useful for cases in which the system requires to be temporarily raised from a state of depression. Doses: horse or ox, whiskey or brandy, four to eight tablespoonfuls; sheep, one to three tablespoonfuls. Strong ale, horse or ox, one pint; sheep, one-half pint. Repeated two or three times a day.

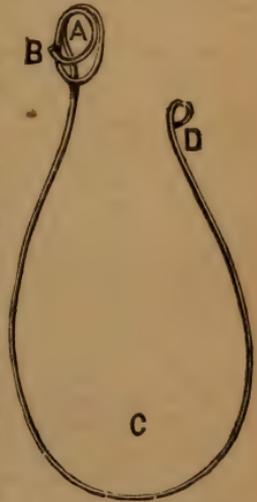
Aloes.—A purgative for horse or ox. The ordinary aloetic mass and the solution should be kept at hand. Both preparations must be obtained from a druggist. Doses: horses, four to six drachms of the aloetic mass as an ordinary purgative, or one-half pint of the solution. Usually given in combination with linseed oil in cases of continued constipation.

Ammonia Liniment.—Made by adding a strong solution of ammonia and oil of turpentine, one-eighth part, to soap liniment. A pint bottle of it, carefully stoppered, should be kept at hand. The liniment is useful as an application for sore throat, and for all cases in which an external stimulant is necessary. Must be applied with the hand and well rubbed into the skin.

Areca-Nut.—A useful worm medicine. The nuts should be kept in a stoppered bottle, in a dry place. When required for use the quantity should be grated by means of a nutmeg grater. Doses: horse or ox, one-half ounce to one ounce of the grated nut, mixed with the food (corn and bran); sheep, two drachms; dog, one-half to one drachm.

Calves’ Cordial—A form of chalk mixture for calves and sheep. To be prepared by a chemist as follows: Prepared chalk, two ounces; powdered catechu, one ounce; ginger, one-half ounce; opium, one drachm; peppermint-water, one pint. Dose: calves, two to four tablespoonfuls; sheep, one to two tablespoonfuls.

Carbolic Acid—A powerful caustic antiseptic, ordinarily used, in combination with fifty to 100 parts of water, as an antiseptic lotion to unhealthy wounds, and for disinfection purposes.



A COW TAIL HOLDER.

Carbolical Cotton and Gauze—To be obtained of the druggist. Valuable antiseptic application to wounds.

Castor Oil, also Linseed Oil—Purgative. Doses: horse or ox, one to two pints; sheep, four tablespoonfuls.

Colic Mixture—Equal parts of laudanum and sweet spirit of nitre, and one-eighth part of chloric ether. A half-pint bottle of it to be kept at hand. Dose: horse or ox, two to four tablespoonfuls in three parts of a pint of water.

Electuary—A soft mass compounded with honey or treacle. Must be prepared by a druggist as follows: Camphor, two ounces; powdered myrrh, licorice-root and nitre, of each eight ounces; extract of belladonna, two ounces, treacle, enough to make a soft paste. Dose: horse or ox, a portion of the size of half a walnut, to be put at the back of the mouth two or three times a day with a stick. Useful in colds, sore throat and influenza.

Ginger—Stimulant. Forms an essential part of all cordial powders for exciting appetite. May be given with strong ale in cases of prostration from overwork or disease. Dose: horse or ox, one to two teaspoonfuls of the powder in a pint of ale; sheep, one-fourth of the quantity.

Mercurial Ointment (blue)—To be purchased ready for use. Valuable to promote the growth of hair, and in some forms of skin-disease. Only small quantities may be applied.

Mercurial Ointment (red)—Binioidide of mercury. A good form for blisters in cases of splint, or after sprain of tendons.

Nitre (Nitrate of Potash)—Diuretic and fever medicine. Dose: horse or ox, two tablespoonfuls daily in drinking water, or half the quantity in the food; sheep, one teaspoonful in the food.

Salts (Epsom or Glauber)—Common purgatives for cattle and sheep. Dose: ox, twelve to sixteen ounces dissolved in a wine bottle of hot water (a tablespoonful of ginger may be added); sheep, four to six ounces.

Salicylic Acid—A valuable antiseptic, effective in the treatment of foot-and-mouth disease. Dose: four tablespoonfuls of the acid are to be put in an earthen vessel, and dissolved in a quart of boiling water; hot water is then to be added to make a gallon. This solution is to be used to syringe the feet, and lave the mouth and nostrils, and also to wash the udder, and finally to sprinkle over the litter. Half a pint of the solution may be added to the gallon of drinking water every day. The dry acid (powder) may be sprinkled on the feet after they have been syringed with the solution.

Santonine—Used to expel worms; one of the most effective agents for this purpose. Dose: horse, fifteen grains, with three drachms of aloes; to be given in the morning before feeding, and repeated after two days.

Sulphur (Flowers of Sulphur)—A very valuable alterative. Dose: horse or ox, a tablespoonful, with a teaspoonful of nitre, to be given in the food once a day; sheep, quarter of the quantity. Sulphur mixed with any common oils forms an excellent dressing for mange or surfeit in animals.

Turpentine, Oil of—Stimulant to the skin. Internally used to expel worms. Useful in "husk in calves." Dose: a tablespoonful daily in half a pint of a mixture of milk and eggs; lambs, one-quarter of the quantity.

Vaseline—Emolient to the skin. Effective in irritation of the surface, chapped heels, mud fever, especially if mixed with one-eighth part of tris-nitrate of bismuth or carbonate of lead (white lead) or oxide of zinc.

Zinc, Chloride of—Mixed with fifty to 100 parts of water, it may be used for the purposes for which carbolic acid is employed.

Tick Persecution.—There were more sheep ticks last year than ever before, writes Col. F. D. Curtis, in the *Rural New Yorker*. Where they all came from is a mystery. It is said by old farmers that when sheep run in the woods they will always get full of ticks. My sheep did run in the woods, and they were very ticky. This fact might prove the theory, but other people's sheep did not run in the woods, and they were also very ticky. I think condition has more to do with ticks, and with the effects from the weather also. Thin stock always seem to invite parasites of all kinds. This is the case with cattle and the lice which infest them, and also with hogs; and why not with sheep? I think sheep were universally poorer the past autumn and winter than I ever saw them. The reason for this condition was the excessively cold and wet season, which is opposed to sheep doing well. The spring a year ago was cold, wet, and backward, and sheep carried their fleeces very late. This helped to lay a foundation for ticks, as it helped to make the sheep poor. The food sheep eat helps the tick business. If sheep are so fed as to be puny, they will have more ticks; these seem to delight in a poor condition, and to want to be in at the death, to help finish up the poor creature they are preying upon.

The remedy for these depleting and destructive pests is care and sheep dip. The famous sheep breeders of Washington County, Pennsylvania, do not have any ticks on their sheep. They will not have any. So it seems resolution helps to keep clear of them. I have adopted the same idea, and have resolved to try to carry it out. To do this involves early shearing, which has been done, and as soon as the weather will admit, each sheep and lamb will be dipped with Lawford's Sheep Dip, and again in the autumn, and perhaps twice if necessary. The poor sheep should be put by themselves, and the best place for them is on some one else's farm, and if that cannot be done, in a pen by themselves. The amount of blood a good crop of sheep ticks will extract from a sheep or lamb is much more than a person imagines, and is always equal to the gain the infected and afflicted animal might make if the leeches were not at work. Unless the sheep are extra well fed they will run down rapidly, and they never gain anything however well fed. The farmer should never neglect his sheep and allow these parasites to prey on them. They make the poor sheep mad with pain. I sheared a lot of sheep almost in midwinter to get the best of the ticks, and if it had not been done the animals would have died, as they ran down in spite of food.

After sheep have been sheared the ticks go on the lambs, to return to the sheep when the wool gets out.

The dipping should take place in about two weeks after shearing, and care should be taken not to let the sheep get its nostrils under the liquid. Fools and boys should not dip sheep; it should be done by careful and humane men. The owner should be on hand to attend to the business, the same as when sheep are washed. It is barbarism to set a lot of crazy boys and reckless men to do such work. The liquid may be put in a tub, and the sheep dipped in and well saturated. It should then be lifted on a tight platform, slanting toward the tub, and allowed to drain off, the liquid running back into the tub. The waste of tobacco strips boiled does very well, if the decoction is just strong enough to kill the ticks and not to injure the sheep; but I prefer the sheep dip as safest, and much less troublesome.

Don't Tickle Him.—Many drivers fall into the bad habit when currying a horse, or when passing him, of tickling him in the flank. By this

practice a sensitive, playful animal becomes in time a biting or a kicking one, and has the vice confirmed. In the city many horses are spoiled by thoughtless men or boys, who tease them as they stand by the curbstone; hence the muzzle becomes necessary. Don't tease the horses. Owners should admonish their hired help about this and the mischievous results.

A Device for Preventing Hogs from Rooting.—We give an engraving of a jewel for hogs, which is of English make. It consists of a light iron roller a half inch in diameter and an inch and a quarter long, through which passes a light nail rod six inches long. That portion of it which passes through the ring and the shoulder is hammered round. The shoulders are about a half inch in length. The arms are flat, pointed sharp like a horse-shoe nail, and are about two and a quarter inches long, measuring from the shoulder. The snout of the animal is punctured just beneath the rooting ring of the snout, the sharp flat ends of the arm pushed through up to the shoulders, and, with a split iron rod made for the purpose, the ends are rolled, twisted, or nicked on the top of the snout, in a way which renders it impracticable for the hog to get rid of his jewels.

Large and Small Swine.—Large, white pigs have been very popular in England, where bacon and hams are largely consumed. We have imported into this country good pigs of some of these breeds, which have



TO PREVENT HOGS FROM ROOTING.

made a good reputation, and among them the best known is, perhaps, the large Yorkshire. This name, however, is not absolutely distinctive, for the large, white breed is not peculiar to any special county in England, where

the large Yorkshire, Lancashire, and Lincolnshire pigs are all classed as the large, white breed. These three counties adjoin each other, and there is really no essential difference between the pigs of the several localities, except as individual breeders take pains with their herds. This race of swine, which is popular in that part of England, has been much improved of late years, although the writer, when in that country as long as thirty years ago, met with many animals which weighed from seven hundred to nine hundred pounds, and these were considered as nothing unusual as to size. A good deal has been said and written of late of early maturing pigs, animals which will reach a profitable weight at nine months old. But it is altogether a matter of fancy whether an animal should weigh three hundred pounds in nine or ten months, or three times that weight at three times the age. Certainly there is something in the uses to be made of the pork which has an influence upon the manner of feeding the animals, and it would not do to have all the pigs of a very large size. For some uses large sides and hams are desirable, and it is beyond question that the meat of a fully matured pig has some qualities which make it preferable to that of a pig forced to great weight before its muscles have been matured. For some purposes fat is more valuable than lean, but generally "a streak of lean and a streak of fat" in pork makes it most desirable for foods. The large English breeds have this peculiarity, and on that account are preferred by many feeders.—*Dr. Thurber, in Agriculturist.*

Overcrowding of Stock.—The overcrowding of stock on farms is one of the worst features of many stockmen's management. From such overcrowding come the poor, scrubby animals which so much disgrace and beggar our markets; they are run-down farms which may be seen in almost every neighborhood. Too close pasturing will, in a very short time, ruin the best farm in the country. By cropping off the grass too closely the root is injured and the tender plant destroyed, and the ground becomes packed and hard, from the stock having to tramp over it so much to pick a scanty living. But if a judicious system of pasturing is followed, the land will become better year by year without extra care and fertilizing. By this we mean that the pasture should never be eaten so short as to expose the grass roots to the sun, to be dried and burned. Then if the grass is not too closely cropped by the stock, it will furnish a slight mulching and keep the ground moist and mellow, thus materially increasing the growth of the pasturage. Besides ruining the farm, stock raised in the way such management necessitates, cannot possibly yield a profit. The outcome will be very materially changed if a number of the poorest are disposed of, and the same feed and care given to the remainder which was formerly given to all. This is so evident to the intelligent farmer that it is scarcely necessary to enter into any detailed discussion of the fact; but still it is quite common for many farmers to stock their land more heavily than it will bear, with the idea that their profits will be increasing in proportion. But a greater mistake was never made. Go to a farmer who follows such a system, and see his bare run-down fields, and scrawny, under-sized stock, which will bring but little more than half price in the market. Note, too, that his fences, buildings and even himself, have the same run-down appearance. Then compare with another farmer who follows a judicious system of pasturing and see the sleek, contented looking cattle and horses, his green fields, and the other appurtenances of the farm in keeping. The difference can be accounted for in no other way than by the different farm management. The one overcrowding and half-starving his stock, the other feeding well, never overstocked, and his fat animals always meeting a ready and fair market. This alone will account for the same natural advantage.

Stable Floors.—Prof. I. P. Roberts has two strong objections to wood for stable floors. It is not durable, either rotting or wearing out in a short time, making it sometimes dangerous to the animals, and expensive to renew; second, its capacity for absorbing stable liquids renders it offensive and unwholesome. As a substitute he recommends cement. For ground floors begin below frost and lay a foundation with any large stones, ramming them down well. Level up by filling in smaller ones till an elevation is reached for a gutter and the platform the animals are to stand on. The small stones should be secured by a cement made of one part Portland cement and two parts sharp sand, and these same proportions should be observed in laying all the floor above the small stones. The only wood he would tolerate about the floor would be enough to cover the platform on which the stock must stand. He would have stock stand on wood rather than on cement, because it is more comfortable. The plank would be held in place by nailing to joists bedded in the cement. For an upper floor he used with entire satisfaction a course of cement covered with another of asphalt. With a free use of absorbents, an upper floor so constructed proved durable and perfectly tight. To prevent wood floors from rotting he recommends putting an inch or two of salt under them.

Saddle Horses for Farmers.—Why don't our farmers ride more on horseback? asks the *American Agriculturist*. It is strange that a people descended directly from the English, whose lives may almost be said to be passed in the saddle, should have so entirely abandoned this healthful and convenient means of locomotion. It is very rare to find, on an ordinary farm, a saddle and bridle suited for better work than the plowing of corn; and to find a thoroughly good saddle, one easy for the horse and easy for the rider, is almost impossible. We cherished the hope that one of the many beneficial effects resulting from the recent war would be to stimulate the use of saddle horses among those farmers who passed three or four years in cavalry; but, possibly, they may have been surfeited, as, indeed, the writer was, by an overdose of a rather disagreeable kind of horsemanship (poking along at a slow gait on rainy and wearisome marches), and did not, as a general thing, have an opportunity of riding good horses in a pleasant way.

We fancy that one reason why there is not a more active general demand for really good saddle horses in America is, because every effort to obtain such an animal is pretty sure to result in disappointment. The article does not, in reality, exist in this country, except in such rare cases as not to form an important exception to the general rule. The saddle horse should be lithe, short-backed, strong-loined, long-necked, free in his action, and perfect in his temper. Such an animal is susceptible of any amount of training that an amateur rider may choose to give him; but, in the furore for trotting horses that rages throughout the whole country, where almost every point that is desirable for the saddle is disregarded, and attention is wholly given to the making of time by mere propulsive power, which is almost the least desirable thing for saddle use, it seems quite hopeless to look for the breeding of the desired animal; and the result that we have long hoped for must be sought by slow and easy stages, and through a stimulus which can be secured in no other way so well as by the adoption of horseback riding by farmers, and their sons and daughters. In going about the farm, in going to the post-office, in paying visits, and in all journeying where heavy articles are not to be carried, the saddle horse ought to be used here, as he is in nearly all other countries of the world; and if there is any class of the community who should use him regularly, and should, as a matter of pride, know how to use him thoroughly well, how to ride strongly, gracefully, and securely, it should be the robust young farmers of the country.

In England, where it is estimated that, during the hunting season, a hundred thousand people ride daily to fox hounds, fully one-half the number being farmers, who go out to enjoy the sport or to practice their sale horses, there is, of course, a more active demand than can be expected in this country, at least for a very long time; but, even at this day, in the New York market, a perfect saddle horse, nearly thoroughbred, perfectly bitted and broken, and in all respects suited for the use of a lady or gentleman, may be readily sold for from \$2,000 to \$3,000. And when we consider the fact that the animal belongs to a race that arrives at early maturity, while his whole training may be incidental to the doing of errands and the necessary recreation of the younger members of the farmer's family, it seems to us that the opportunity for a combination of pleasure and profit should be enough to induce the giving of greater attention to the saddle horse question.

Good Cows for Poor Men.—Every poor man who can afford to do so naturally keeps a cow; but he generally makes the mistake of keeping a

cheap cow, that is, a cow of poor quality. Spending from \$40 to \$60 for her purchase, he secures an animal that, on not very abundant food, but still kept at some expense, supplies the family with enough milk for their use. He considers the operation a profitable one, and undoubtedly it is so. Many poor men would be inclined, we fancy, to think us wild in advising them to pay so much as even \$100 or \$125 for an extra good cow; the best that can be found in the neighborhood; yet we are confident that in a majority of cases, due care being given to the animal's health, cleanliness, and ample nutrition, the profit would be very much greater than with an inferior animal. Probably the average of cows kept for the family use of poor men will not give more than 1,500 quarts of milk per annum, or, at the most, 1,800 quarts. This amount of milk, in the family of the ordinary mechanic or laborer, is worth five cents a quart for home consumption—say \$75 or \$80 a year. Out of this sum is to be paid the interest of the animal's cost, her depreciation in value, and the price of purchased food, which is more or less according to the circumstances under which the family live. For \$125, even in other districts than those which are chiefly devoted to the keeping of cows, an excellent animal, frequently a grade Ayrshire or Short-horn, may be purchased, that will give with good care, on rich food, not less than 4,000 quarts of milk per annum. Instances are not rare of the yield reaching even 5,000 quarts. With such an animal we will suppose that, as in the previous case, 1,500 quarts are consumed by the family, and are estimated to be worth \$75. This leaves 2,500 quarts of milk for sale; and, in almost every village in the land, this milk may be readily sold at the door for six or eight, and not seldom for ten cents a quart. At the least price—six cents—the total amount of sales would be \$150, which would pay for the extra food required to keep this larger animal in the best condition, and for the increased interest and depreciation, and leave a handsome profit besides. Any cow must be sheltered, fed, milked, and generally attended to. The amount of labor required in the case of the better animal is in no respect greater than in the case of the poorer one. The profit of the operation is a real profit, and no small account should be made of the greater satisfaction and pleasure that result from full milk-pails than from those half-full, from fine cows than from "scrubs." It is a return to that old principle that whatever is worth doing at all is worth doing well; and if it will pay to keep any cow at all it will surely pay to keep the best cow that we can afford.—*American Agriculturist.*

A Stable Luxury.—A stable luxury to a cow is a light fly blanket, to be used while milking. In some of the European countries, especially where women do the milking, the cows are always blanketed while being milked, summer and winter. It is a practice we may well copy in this country. We blanket our horses to protect them from flies while standing in their stalls, and why not our cows while we are milking them? Every farmer has old sacking in which fertilizer or wheat bran has been bought, and which may be easily sewed together in a suitable size and shape for a blanket to cover a cow. There should be one for each milker. Three sacks sewed together without ripping them open will usually make a blanket large enough to cover a large cow, and which no flies or mosquitoes will reach their bills through. Most of the annoyance from cows' tails being switched about one's face and ears while milking, may be avoided by using such a blanket. Many cows learn the trick of throwing their hay around upon their backs and sides while eating, to keep off the flies, and not a little

is thus wasted under their feet. It is well during fly time to keep a stable pretty dark at milking time, and all the time if cows are kept up through the day. A cow that is constantly tormented by flies will give much less milk than she would if kept constantly comfortable. It pays to treat our animals kindly and to keep them happy and contented.

Cheap Shelter for Cattle.—A common excuse for the barbarous practice of wintering cattle at the stack-yard, says the *American Agriculturist*, is the want of capital to build a good barn. For the prosperous farmer a convenient barn, as near the center of his premises as possible, is doubtless the most economical arrangement. But almost every farm furnishes the material for "hovels," with very little expenditure of money, and a temporary hovel may be made quite as comfortable as a barn. Our Irish fellow-citizens have a genius for this kind of structure, and one often sees by their rude houses, shelters for the poor man's cow, that are models of comfort, if not of beauty. He has but one to provide for, and its walls and roof are thrown up in a day; but if it pays the poor man to provide shelter for his cow, it certainly will pay the large farmer to shelter his herd. Select dry ground for your hovel, and, if possible, the southern slope of a hill or the south side of a grove. Plant a row of posts ten or twelve feet apart, and eight feet high, for the rear of the hovel, and a second row, twelve feet high, about twelve feet in front. These rows of posts should be extended according to the number of cattle to be accommodated, allowing three feet for the smaller animals, and four for the larger. Boards or slabs may be used for the siding and for the roof, if these are available. Doors should open to the south, at convenient distances. A long feeding rack is constructed at the back side of the hovel, and the cattle are tied up, fed, and attended as if in a barn. The stacks of fodder are made immediately around the hovel, with reference to convenience in feeding. This is not so easy as to feed from the barn floor, but it involves very little more labor than foddering from the stack-yard, where the hay has not only to be thrown over the fence, but scattered widely, to give every animal a fair chance. Not nearly as much hay would be wasted by trampling, and about as much would be saved by shelter as in the best constructed barn. If lumber is scarce, the siding and roof may be made of straw, bog hay, sedges, seaweed, or even of the hay that is to serve for fodder. Thatch, well put on, will last nearly as long as shingles. Siding of straw, a foot thick, packed between poles, will last several years with slight repairs. But the stacks of hay may be so arranged as to form the most of the siding, and if the hay knife be used, the part next to the hovel may be left to the last, and be fed out in spring, after the extreme cold has passed. This style of hovel is much used upon the prairies, and in the new settlements, where timber is scarce, by the more careful farmers. It might often be used to advantage by all farmers in the North, who have not sufficient barn room for their cattle. It is as valuable for manure making as for shelter. If the floor of the hovel be covered a foot or more thick with muck, peat, or surface soil, well dried, it will absorb all the valuable parts of the urine, leaving only the water to leach away into the earth. The whole floor may be treated as in box stalls, adding loam and straw as they are needed to keep the cattle clean and comfortable. All the manure of the cattle would be saved in this way, and it would add greatly to the riches of the farm. One great advantage of these cheap shelters would be a great saving in the carting of manures. If the hovel were located as it should be, upon the field to be

broken up for corn, the manure would be already upon the ground for spring use. The only labor would be to compost the manure, and spread it for plowing in. This would give relief to the teams at a time when all their strength is wanted for the pressing labors of seedtime, and by adopting this plan the remote fields of the farm might be kept in good heart.

To Rear Fall Calves.—A dairyman should always raise his heifer calves, as he can do it much more cheaply than he can buy them and get far better ones. When butter is made there is no difficulty in rearing calves in the following manner: The calf is not permitted to suck the cow, but is taught to drink the first meal, and after the fourth day the milk is set for cream, and the calf gets only skimmed milk. The milk is warmed to the temperature of new milk constantly until the calf is three or four months old. The quantity of milk given, at first, is three quarts at a meal three times a day, and this is gradually increased as the calf grows. When two months old the calf is taught to eat a little bran and meal and this helps it very much. Calves reared in this way make excellent cows; large, thrifty, and docile, and give no trouble sucking each other or sucking cows. It is a mistake to suppose that calves need cream; if they need any fat in their food it is more cheaply and quite as well given in the form of oil meal.

The Water Used by Animals.—Poor drinking water has killed much live stock, and the following is pertinent: When we consider the quality of drink supplied to hogs we have yet greater cause to wonder that the amount of disease is not greater. Horses, cattle, and sheep are given comparatively clean water, because they will not drink filthy water unless forced to do so, and because the opinion justly obtains that foul water is to them destructive of health; but hogs are given, or rather circumstances are allowed to supply them with foul water, because inherited tendencies and education are such that they will drink foul water, and because the opinion unjustly obtains that they are not so injuriously affected by foulness of drink as are other animals. But we certainly ought to know, and certainly we are fast learning, that foul drink is just as productive of a diseased condition of the body when drunk by a hog as when drunk by a horse; and as we learn more of the nature and cause of swine plague, we understand that, so far as the health of the animal is concerned, we would better give foul water to the sheep, cow, or horse than to the hog, for foul water prolongs the life and favors the vigor of the *bacillus*, and when drunk introduces the germs of this most virulent of all swine diseases directly into the bodily organs. If we would safely preserve the health of our swine, we will not force them to drink water from pools, ditches, and creeks, but will supply them with water from a well, protected from impurities.

How to Make Good Veal.—To raise calves for veal a writer says to take your calf off the cow at three days old; have a muzzle made for it similar to the one they sometimes have for dogs. Keep it in a clean, dry, airy, but darkened room, and feed it nothing but pure and skimmed milk, warm as if fresh from the cow, two or three times a day; give it all it can take and it will get fat in six or eight weeks. The muzzle is for the purpose of preventing it from taking straw, hay and other foreign substances. The darkened room is a great factor in this fattening process, as it keeps the calf quiet and induces it to sleep a great deal, which greatly hastens the fattening process. The method is, of course, only for raising calves for veal. If the object is to make milkers of the calves, they need the exercise

and slow growth of slower methods. Good veal is too much a rare object in the market, and calves properly fattened should bring enough more than ordinary calves to pay well for the extra trouble, if it can be called trouble, to keep them quiet in a dark room.

Loss of Hair on a Horse's Tail.—The loss of hair on a horse's tail is generally due to some disease of the skin, chiefly caused by congestion. The irritation and itching thus produced impels the animal to rub the tail against any rough object, and so wear off the hair. This trouble is to be treated as follows: The skin should be washed with cold water and soap, and then dressed with carbolated cosmoline, or a mixture of four ounces tincture of Spanish fly, one ounce aqua ammonia, four ounces of glycerine, and one quart of water. This is to be continued daily until the hair regains its growth. As the origin of the trouble is in a disordered condition of the blood, this is to be counteracted by one ounce of hyposulphite of soda, given daily for three or four weeks.

Disease of the Eyes.—Breeding from animals whose eyes are diseased invariably produces progeny having the same defect, and the tendency to blindness is thus constitutional in them. This accounts for the prevalence of ophthalmia in horses, and that variety of it called moon blindness. Skillful treatment may evade the results of this hereditary defect. Every care should be exercised to avoid injury to the eyes. The air of the stable should be kept pure; abundant light should be admitted to the stable, from the front or on two sides and directly into the stall. Dust should be avoided, and no hay or fodder should be put above the horse where dust could fall from it into the eyes. The eyes should be bathed frequently with cold water, and if inflamed should be bathed with a weak solution of alum.

Sows Eating their Pigs.—The Deacon beat me badly on pigs, writes a correspondent of the *American Agriculturist*, and the way it happened was this: I bought a big fat sow a short while before her time was up for a big price, calculating on a dozen pigs at least. She was a little too fat according to my notions, but then would not light feed reduce her, and make her chance for a healthy litter as good as that of a lean, half-fed animal? Would she not give better milk, and would not the pigs grow all the faster? Besides, breeding sows were scarce, and it was this one or nothing. She had thirteen pigs on a cold, windy day, six of which died, in spite of Sam's most careful nursing. But there were seven left, and two-months-old pigs would be worth thirty cents a pound—rather a cheerful prospect. At a week old one was strangely missing. It could not have run away, and there was nothing to carry it off. Sam said the cannibal had eaten it alive. He administered a pound of raw pork in slices with the next feed, and the evil was checked there. The Deacon had a lean, wild-looking animal, with a fair proportion of snout, so accustomed to rooting that it took two rings to keep her in anything approaching wholesome check. She had the run of a small pasture, or what once was pasture, for in spite of the rings I noticed that grass was uncommonly scarce, and dead turf plenty. I do not think her rooting propensity was much abated by the rings. This lean, mean-looking animal had eleven nice pigs, and raised them all. The Deacon says he never loses pigs in the fall, when the sows can have plenty of fresh grass, roots, and grubs. Sometimes he has lost them in the spring, when the sows were kept shut up and confined principally to corn-meal

diet. His philosophy of pig-eating is this: Swine like some animal food, and especially roots, for which they are furnished with a natural digger. If they can have access to the ground, and get plenty of grubs and roots, their natural appetite is satisfied. If kept upon board floors or in small pens, and fed principally upon meal and slops, they have a great craving for flesh, and not infrequently devour their own offspring. He says the leaner you keep a sow, the more she will root and gather worms and grubs. I think the Deacon carries his philosophy rather too far, but it may be, like most stories, founded on fact. He recommends feeding sows that have this propensity to eat pigs, with some raw animal food, such as butcher's offal, and plenty of roots, in connection with the ordinary provender.

Blanketing Horses.—It is not unusual for over-kind and very careful people, in very cold weather, to put on a heavy blanket under the harness of their horses when about to drive to town or to church, says the *American Agriculturist*. This practice, although intended as a humane one, is not to be recommended. While the horse is performing his work there is no danger that he will suffer from the severest cold, or that his natural clothing will not be enough. Indeed, unless his work is very slow, perspiration will be excited, and the moisture thus arising would be retained by the blanket, instead of being immediately dissipated into the air. The consequence is, that, the moment we stop, our horse stands in the cold winds, with a wet blanket over his whole body, the effect of the evaporation of the water being to make him much colder than he would be if the blanket were then taken off. The true plan is, in cold weather, never to blanket a horse while he is taking his exercise; and never allow him to stand a moment without blanketing with a *dry* blanket, when his exercise has ceased. So true is this, that the most careful and experienced owners and drivers of fine horses find it advantageous to remove even the heavy coating of hair that nature supplies for the winter season, so that there may be no accumulation of moisture about the skin in consequence of heating work; and to supply its place, at all times, when the animal is at rest, by ample clothing.

“Breaking” Horses.—This is the word commonly used—“breaking” a horse. It is wrong. Nothing needs to be broken, but everything to be guided. Teaching is a much more appropriate word to use than “breaking.” The education of the horse is the important consideration, and, as in the man, it should begin at an early age, and be a gradual development, growing with the growth and strengthening with the strength of the horse. It is impossible to crowd everything into a horse's brain in a few hours or a few days. Cramming is no better in educating the brute than in educating the man.

In the first place the horse must be made to feel that you are its friend; that it need fear no harm or hurt in your presence so long as it in no way acts viciously. All improper action should be promptly and firmly restrained, but no unnecessary harshness that will cause extreme fright or fear should be resorted to. In this, as in the case of the child, it is more difficult to make it understand what is wrong than how to do many things that are right. But patience, perseverance, and gentle punishment for wrong-doing will in time have their desired effect. When once the horse knows what you want it to do, and has learned to look upon you as its friend and even its protector, it will freely obey your wishes, if you make them manifest in a way that the horse understands you.

There is a wide difference in the disposition of horses, as of men, and some horses, like some beasts, are practically untamable. They lack the necessary intelligence oftentimes, but have all the vicious propensities.

But more horses are spoiled by improper handling and usage than are naturally worthless because of lack of intelligence and possessing a vicious disposition; and an intelligent horse made vicious by ill-treatment is even worse than a stupid one. Patting or petting a horse that does wrong is a great mistake; and it is about as great a mistake to fail to do this and make the horse feel your approval when it does right. Overloading, or in any way discouraging, is one of the worst things that can possibly be done to a young horse. If it fails to start the load, and you punish it, who can say it does not feel that it is punished for making the effort? If you pet it, possibly it may think it is an approval of its failure. In either event, it is a bad case, and should always be avoided in handling a young horse, and especially a colt. Few old horses will pull with all their might many times without refusing to try again. Mistakes in handling make more balky and vicious horses than all other causes put together. In fact, they are almost the only cause of these evils.—*National Live-Stock Journal*.

Oats as Food.—There is probably no food so good for recuperating exhausted muscles as good, sound, heavy oats. They are easily digested, nutritious, muscle-building, and blood-making in a high degree. They are little heating, do not tend to make horses sweat, and on the whole are the best food a horse can have. Barley is very good, but not equal to oats. Indian corn is a poor substitute, not so easily digested, heating, and causing the animal to sweat. As to system, a horse should have hay first, then grain, and water when these are digested; or water should be given half an hour at least before feeding. Horses often have dyspepsia, induced by being fed when warm, or being worked after a full meal. The practice of feeding hard-worked horses at noon and working them immediately after is of doubtful utility. Horses will go eight and probably ten hours without food if properly fed at evening and morning. They should have water more frequently, but never when hot.

Protecting Horses from Flies.—Flies may be kept from annoying horses by making a wash of carbolic soap and water, with a small quantity of kerosene oil added to it. This is sponged over the horse's coat and let dry two or three times. Its effects remain for about three or four hours. By repeating it at intervals the flies may be prevented from annoying the poor animals at this season. Another remedy is to procure Persian insect powder; put a quantity of it in a common flour dredger or large pepper box, and dust it well into the hair. This is sure death to flies and harmless to animals. If it is blown up into the air of the stables at night and dusted well upon the posts and ceiling, as well as the animals, these will enjoy a good night's rest. It will also clear flies and mosquitoes from rooms. Yet, the best protection from flies is a full sized cover when in the open air and a rather dark stable when at rest.

A Wound from a Nail.—Punctured wounds are difficult to heal, because the deeper part of a wound must heal before the surface to get rid of the inflammation, and if the surface heals first and the wound closes the deeper parts cannot heal. Wounds by a nail in a horse's foot should be treated as follows: The opening in the horn should be enlarged with a sharp

knife, so that the bottom of the wound can be reached with the point of a syringe. The wound is then dressed by forcing to the bottom once a day a little tincture of myrrh and aloes, and then closing the opening with a plug of tow and covering the foot with a thick, soft pad of cloth dipped in cold water and a bandage to keep it in place. The wound will then heal gradually up to the surface. The wet bandage will keep down the inflammation and allay the pain.

Cowpox and its Treatment.—The hard lumps on a cow's udder and teats, and which are surrounded by red inflamed rings, are the pustules of cowpox. This is contagious, and spreads from one animal to another if care is not exercised. The disease is not at all serious, but goes through a course of three weeks and then disappears. The pustules dry up, leaving scabs which fall off. If, however, the scabs are broken the sores may become painful and difficult to heal, sometimes running together and forming ulcers. The treatment is to give one ounce doses of hyposulphite of soda daily, and to dress the pustules with a mixture of glycerine two ounces, carbolic acid, one drachm. This should be done twice a day. The affected cow should be kept away from the others, and milked after them. If they interfere with the milking silver milking tubes should be used.

Discharge from the Nose of a Colt.—A thin milky discharge from a horse's nose indicates catarrh. That the mucus or pus sinks in water is not any indication that the disease is glanders. All pus is heavier than water, having a specific gravity of 1.033 to 1.035, and that it floats at any time simply indicates that some air is entangled in it. The discharge mentioned is due to catarrh, its long continuance proving some permanent inflammatory condition of the bronchial and nasal membranes. The treatment should be as follows: Give an ounce daily of hyposulphite of soda; syringe the nostrils with warm water in which enough carbolic acid is dissolved to give a decided odor, and feed a warm bran mash daily in which the above medicine is given.

Impaction of the Rumen.—When a ruminating animal, as a heifer, is suffering from indigestion through eating hard, coarse, woody food, as brush and ripe leaves in woods or swamp grass, the undigested food is packed hard in the third stomach, or manipples, and dries by reason of the consequent inflammation into hard cakes between the folds. The result is great distress, fever, and stoppage of the excretions of the bowels. Death ensues in a few days. The disease is commonly called dry murrain. The remedy is to give copious injections of warm water and to give plenty of thin gruel with a pound or two of Epsom salts dissolved in it. The best remedy is to avoid the cause.

Spots on a Colt.—There are various causes for spots on the skin of a colt. They may be produced by a parasitic plant which grows in the follicles of the skin and causes small white, scurfy spots. These often appear on the nose or the rectum, and are accompanied by excessive itching. The remedy is to apply carbolic acid mixed with twice the quantity of glycerine or tincture of iodine, using a small brush, so as not to spread the fluid over the healthy skin. Also to give one ounce of hyposulphite of soda daily for two or three weeks. The feeding of a bran mash twice a week is always useful in such cases and beneficial under all circumstances.

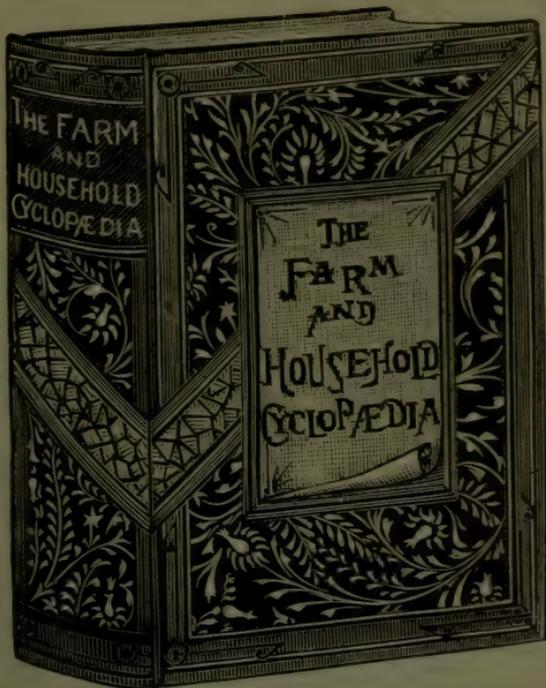
Big Jaw in Horses.—The disease of the bones of the head of a horse known as big jaw, or big head, or really *osteo sarcoma* or fibrous degeneration of the bone, is incurable unless treated properly at the first appearance of it. The bone becomes honeycombed and the solid substance sloughs away through an abscess, which discharges very fetid matter. When this stage of the disease occurs hope is past. Previously the horse may be given one ounce daily of hyposulphite of soda, and the abscess injected with carbolic acid diluted with twenty parts of water to one of acid.

Treatment of Sprain in the Hock.—A sprain in the hock joint will be apt to result in a spavin by the spread of the inflammation to the covering membrane of the bone and consequent deposit of bony matter around the joint. The only means of prevention is repeated blistering, by which the inflammation is drawn to the surface. One blister should follow another until all the inflammation disappears. Rest is required during treatment.

Diarrhœa in a Calf.—Diarrhœa is often caused by giving too much sour milk to calves, and too much new milk will cause it by producing indigestion. The best remedy the writer has found is to give a pint of hot new milk, and no more, four times a day, and after the disease is stopped to return to the ordinary feed slowly.

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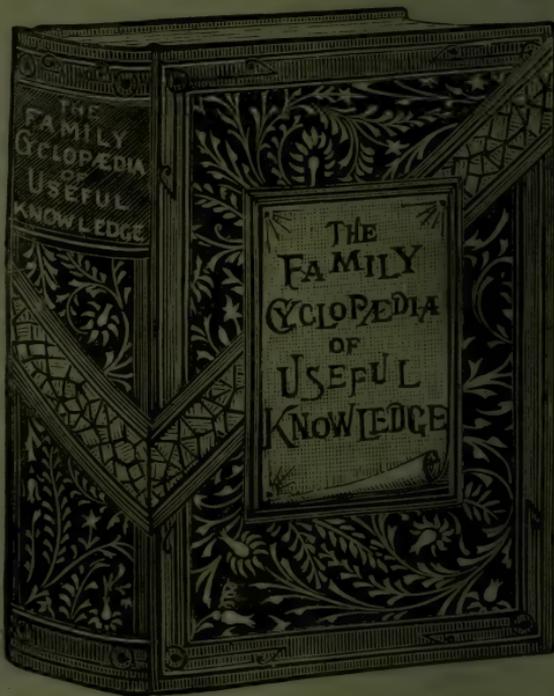
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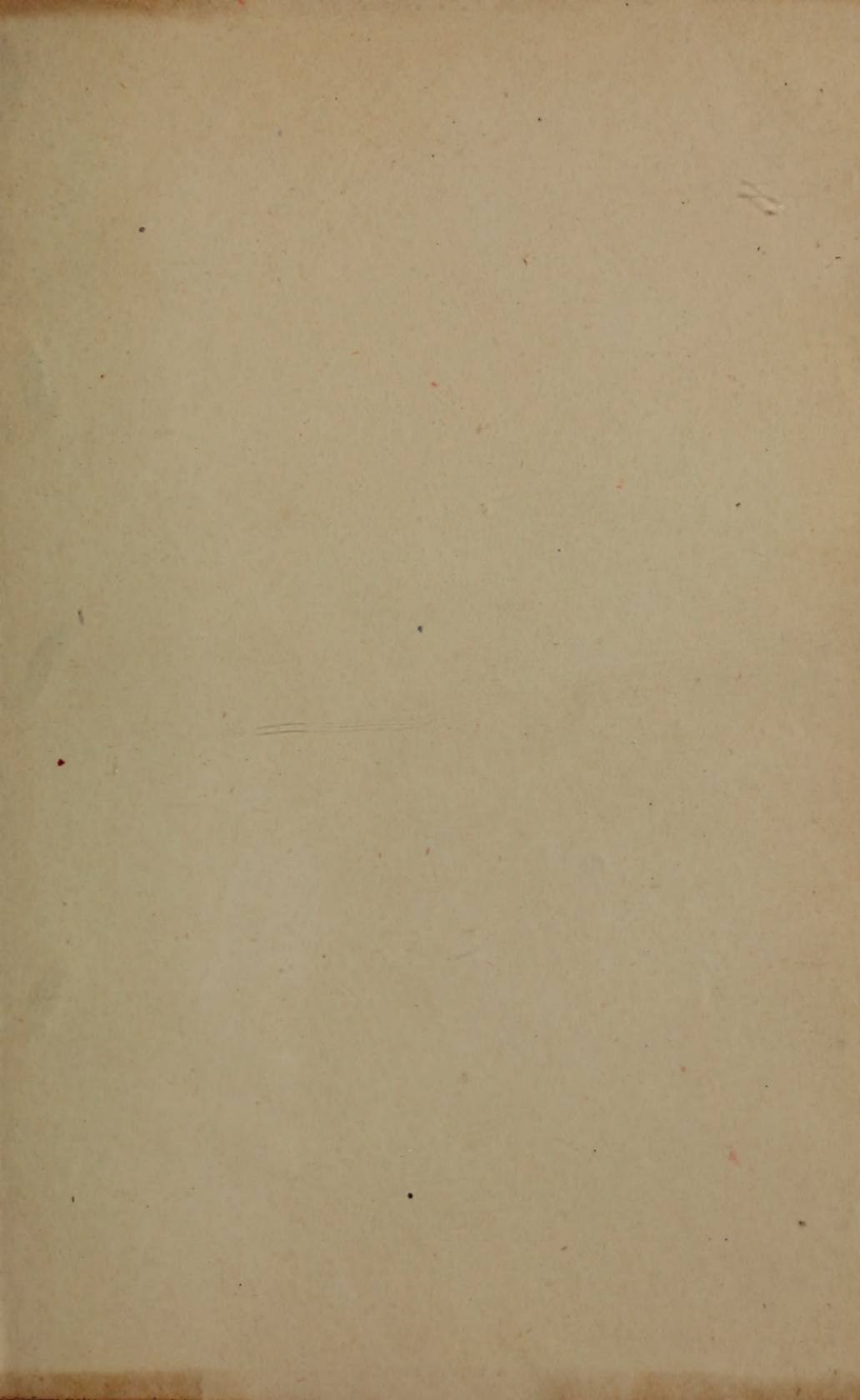
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