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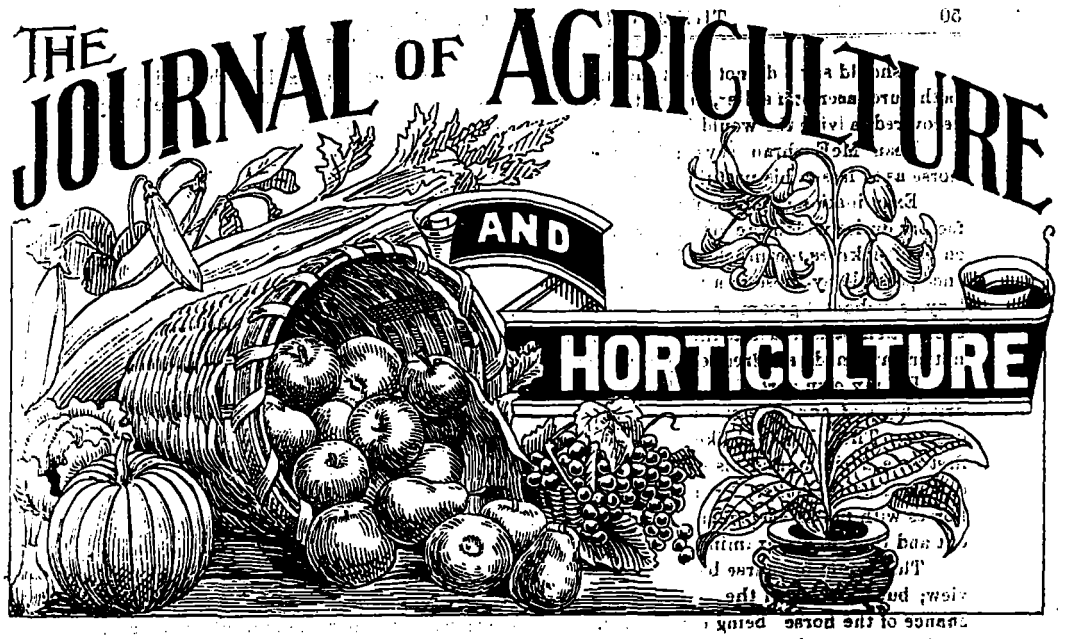


VOL. I. No. 4. This Journal replaces the former "Journal of Agriculture," and is delivered free to all members of Farmers' Clubs. FEBRUARY 15, 1898.

The Horse.

SOUNDNESS OR UNSOUNDNESS OF HORSES

By W. Wardle, Jr.; V.S.

There is probably no subject connected with horses on which so much has been written and upon which there has been so much discussion and so much difference of opinion as that of soundness *vs.* unsoundness of horses.

Even among Veterinary Surgeons, I am sorry to say, there is no uniformity of opinion as to what does or does not constitute unsoundness. To this our Law Courts bear witness, whenever a disputed sale of unsoundness comes before them. It is anything but pleasant to hear three or four Veterinary Surgeons swear they consider a horse sound, while as many more are equally sure he is unsound.

Of course there is much more excuse for this state of things than appears at first sight on account of the difficulty of defining the meaning of the term *soundness* as opposed to *unsoundness*.

Among the definitions of soundness which I can at present recall to mind, are: first, Lord Ellenborough's, who says: any infirmity which renders a horse less fit for any present use or convenience constitutes unsoundness.

Oliphant says: When a horse is free from hereditary disease, is in his natural and constitutional health, and possesses as much bodily perfection as is possible with his natural conformation, he may be passed as sound.

Chief Justice Eyre says: A horse suffering from a temporary disease, which can be quickly and easily cured, need not be considered unsound.

This does not seem at all reasonable to me; for instance, how often we see what appears a very slight cold develop into a case of laryngitis, pneumonia or pleurisy; or what appears a simple tread result in a quittor?

I should say ; do not reject the horse, but by all means clearly explain the position to both purchaser and seller, and if the latter is unwilling to keep the horse until perfectly recovered, advise the would be purchaser to have nothing to do with him.

Dean McEachran says : What ever alteration in structure or function so affects a horse as to lessen his usefulness or value constitutes unsoundness.

Examination of horses for soundness is one of the most difficult and often most unsatisfactory duties which the veterinary surgeon has to perform. It differs from attendance in cases of sickness, inasmuch as, in the latter case, the V.S. is given all the information and assistance possible by those in attendance, except in a few old cases, where he has to deal with a lazy or dishonest groom or stableman; whereas, in examination for soundness, frequently every attempt is made to throw dust in his eyes. Then the conditions under which examinations are made are frequently very unfavorable.

For my own part, I should like to look a horse over thoroughly for all defects; then, drive him; of course not omitting to thoroughly test the soundness of his respiratory organs. Then, I should like him brought to my own stable for the night, and be myself the first to lead him out of his stall in the morning. I should then like to have him ridden, or jogged by the halter, for a short distance. One thing more I should like, in cases of horses with flat or suspicious looking feet; i. e., to have the shoes removed and the feet pared out and thoroughly examined.

This would of course be an ideal examination from the veterinary-surgeon's point of view; but I am afraid the seller would complain of trouble, loss of time, and the greater chance of the horse being condemned, as unsound; while the purchaser would complain, of the cost of such an examination, as well as of loss of time, and probably also think that any man with any pretensions to veterinary knowledge ought to be able to discover everything worth knowing about a horse in much less time.

In most examinations for soundness a horse which you have never seen in your life is brought to your stable, as often as not thoroughly warmed up by a sharp drive, to be examined and passed as sound or be condemned, within a few minutes.

If unsuccessful under such unfavorable circumstances in discovering some unsoundness which later on develops itself, you are blamed by the purchaser and probably lose him as a client and are laughed at and extensively advertised by the seller. One cannot be too careful in looking for unexpected unsoundness; for instance, a V. S. very seldom allows a splint, ringbone, sidebone, spavin, or curb, to escape his notice.

The two narrowests escapes from serious mistakes I can at present think of as having happened to myself were, first in the case of a horse with doubtful looking forefeet which I had the seller lead to the nearest forge in order to have the shoes removed. On entering the forge I thought I noticed the horse blunder. and on taking the halter myself I was able to lead him right against a wall. This horse was perfectly blind from *gutta serena* (paralysis of the optic nerve .

In these cases the eye appears normal or, according to some authors, even unusually bright and clear. In this case I had to thank the horse's bad feet for my escape from a serious blunder.

(*To be Continued*)

WM. WARDLE, JR. V. S.

THE AMERICAN TROTTER.—CANADIAN BLOOD.

The Southern states were settled largely by that class from England which indulged in horse-racing and fox-hunting, consequently the sport of running horses developed there. In the North it was too cold to ride comfortably in the winter, so driving became the general means of travel. While the Puritans, on account of religious scruples, were generally opposed to racing, they could not resist the temptation of "speeding" their horses on the road. This soon led to public trotting races where horses were matched against each

other, and this in time led to trotting against time. The first public trot against time was by Boston Blue, which took place in 1818. A bet of $1,000 was staked and lost that he could not, as reputed, trot a mile in three minutes. This was considered a great feat at the time, and some authorities date the beginning of trotting as a sport from this event. It became established in 1830 when the record was reduced to 2–32. Other authorities claim that trotting interests date back to the importation to Philadelphia in 1788 of the gray thoroughbred stallion Messenger, to which more fast trotters trace back than to any other one horse.

Ever since trotting began the record has been constantly reduced. In 1818, a mile in three minutes was considered a wonderful pace. Flora Temple trotted a mile in 2.19¾, Dexter in 2.17¾. Goldsmith Maid then brought the record down to 2.14, Rarus reduced it to 2.13¼ in 1878, St Julien to 2.11¼ in 1879, Maud S. to 2.8¾ in 1885, Sunol to 2.8 in 1892, and Nancy Hanks to 2.4 in 1893.

Quoting from the editor of the "National Norman Horse Stud Book" — "The American trotter originated in a union of the English racer with the stout Normans of Canada—a physical combination of fleetness and bone, and a mental combination of spirit and self-control. The Canadian is the basis of the general horse in Canada, crossed with English blood. From this mixture many of the most celebrated trotters have sprung. Originally of Canadian descent they have found their way into New England and there won their laurels as American trotters. There is no doubt that Canadian blood, by frequent crossing entered largely into the primary composition of the American trotters, in many of which it is quite visible, especially in the leg bones and feet and in the element of "bull-headedness."

Each of the different families of trotters has originated from some noted horse and is known by his name. The female lines usually run back to fast road mares of unknown breeding, many of which were Canadian.

The Hambletonians derive their name from Rysdyk's Hambletonian, a bay horse foaled in 1849, and tracing back through both sire and dam to Imported Messenger.

The Bashaws trace back to a horse by this name. Bashaw's dam was Bell, by Webber's Tom Thumb a Canadian horse of unknown blood but a trotter of great speed and endurance.

The Mambrinos are descendants of Mambrino Chief, a horse foaled in 1844, also of Messenger blood.

The Stars trace to Stockholm's American Star, by Duroc, son of imported Diomed.

The Gold Dusts and Black Hawks are branches of the Morgan family.

St Lawrence, the founder of the family by that name, was a small bay Canadian, 15½ hands, foaled in 1841, brought to New-York in 1848, died in Michigan in 1858. His breeding is not known but he was a trotter and a sire of trotters. His peculiar gait is seen in his descendants, the hind quarters swing gently from side to side as the hind feet successively advance, giving an idea of irresistible power and momentum. (1)

Pacing Pilot, the sire of Pilot Jr. who was the grandsire of Maud S. and Jay Eye See was a Canadian. His breeding is not definitely known, but his ancestors came from France to Acadia and thence to Canada. He was foaled in 1826 in Canada, but first became famous in New-Orleans where he was bought from a peddlar in 1832 for $1,000. He died in 1855, He was a black horse, 15 hands high, with a thick short neck, very heavy mane and tail, close built body and sloping rump, long quarters and hocks low down. As his name indicates, this horse, as well as many other fast Canadians, was a pacer. In his "Notes on North America" written in 1850, Professor Johnson states that the pacing action was largely practised in Canada, French Canadians training their horses to it in order that they might be more pleasant to ride. Copper Bottom and Blue Bull were also Canadian pacers whose blood entered largely into some of the trotting families.

The Morgan family traces its origin to a horse known as Justin Morgan foaled in New-

(1) *Hock*-action is very rare in Canada. The use of hackney sires will amend this. ED

Eng'and in 1793. The breeding of this horse is not definitely known; some authorities say that he was a Canadian, others say that his sire was a Canadian, while others claim that he had no Canadian blood whatever. The Encyclopedia Americana states that Morgan was probably a cross of English thoroughbred and Canadian. The race are fast trotters, spirited, docile, hardy, easy rapid trotters and good roadsters," Mr Cottrel of Montpelier says there is not the slightest doubt that the original Morgan was got by a Canadian horse. He says.—"A man by the name of Smith of Plainfield, New Hampshire, had a fine imported mare. He rode this mare to Canada, and while there she got in foal. Smith regretted the accident, and laying no value on the colt sold it to Morgan, a singing master, who rode him on his singing circuits. He was a fleet runner at short distances and this induced people to try him". One John Stearn, in contradiction to this story, gives his affidavit to the effect that his uncle, John Randolph, bought the horse of Justin Morgan who bought him at Montreal. George Barnard of Sherbrooke being aware, as he says, of the surprising results of crossing the Canadian with the other breeds, was first of the opinion that the original Morgan had Canadian blood, but he afterwards changed this opinion. He says.—"The clear bay which prevails in the Morgan is rare among Canadians. The action of the Morgan is different from that of the Canadian, the Morgan glides, the Canadian shows the exertion of his powerful muscles. The Canadian, if he has the power of rapid locomotion, inclines to put forth his energies for a short time, and then to take a leisurely gait, but there are horses who will travel 80 or 90 miles a day with a good load. The muzzle of the Morgan shows more thoroughbred than does the Canadian. The Morgan is round and broad backed, the Canadian is apt to be flat sided." Justin Morgan's son denies the affidavit of Stearn and says his father brought the horse to Randolph, Vermont, in 1795, when two years old, at the time he moved from Massachusetts to Vt. Mr Morgan asserts that the horse was got by True Briton or Beautiful Bay, a horse stolen from an English officer during the Revolutionary war. Whether Justin Morgan was a Canadian or not, there is no doubt that many of the mares with which he was crossed and which helped to found the breed were Canadians, for Vermont and all New-England were full of the blood at this time.

To show how common Canadian blood is in all the trotting families we will take a few examples from the trotting register.

Johnny Gordon.—2nd. dam a French mare from Lower Canada.

Lady Fulton—dam, a mare of unknown blood from Canada.

Mignon.—2nd, a fast Canadian pacing mare.

Moscou.—got by Defiance, a Canadian.

Jos. H. Burke—bred in Canada, pedigree not known.

Jonesville—2nd dam brought from Canada.

Boggy—got by Billy Cease, a white Canadian pony (pacer).

Brother Jonathan—dam, by a horse brought from Canada.

Beargross—2nd dam, by a Canadian horse.

Bell Morgan—dam, a Canadian mare of unknown blood.

Henry Clay (head of Clay family)—dam, the famous trotting mare Surrey, a mare of unknown blood brought from Canada.

And so on through the list. Benson Horse, Canada Black Hawk, Pioneer, Robinson Horse, Rana, Foster's St. Lawrence, Snowstorm, Molly Morris, Gauntlet, Daniel Lee, Ed. White and scores of others all show Canadian blood in their pedigrees. So the statement made in the first part of this article that the "American trotter originated in a union of the English racer with the stout Normans of Canada" is literally true.

Garden and Orchard

(*Conducted by Mr. Geo. Moore*)

THE SAN JOSE SCALE.

In view of the peril which threatens us from the ravages of this peculiarly destructive insect, Professor Fletcher did well to call attention to it at the last meeting of the Fruit-Growers Association.

There are numerous scale insects which attack vegetation, so called because they are protected by a hard scale or shell, and this renders them exceedingly difficult enemies to overcome.

A good deal of alarm is being felt by growers of fruit as to the destruction being wrought by one in particular, a most pernicious fellow as its name implies (*Aspidotus perniciosus*). It made its first appearance on this continent in California, and is

Scale Insects

familiarly known as the San Jose Scale; it is supposed to have been imported from Japan. It has spread with alarming rapidity over the Western and some other of the United States, making its progress from the Westward, as did the Colorado beetle, and is as destructive to all fruit trees, and, indeed, to all trees and shrubs, as that loathsome insect is to the potato—It really is a much greater evil; first, because its presence is more difficult to detect, and next, because it does not succumb to any but severe treatment on account of the coat of mail with which it is covered, and the peril appears still greater in cold climates because the scale is thicker.

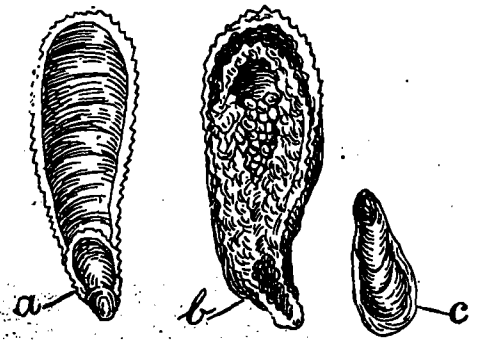
Another difficulty as to its annihilation exists in the fact that it fixes itself upon all parts of the tree or plant. Young and tender limbs, leaves, and fruit do not escape its ravages, and not only are the individual insects set so closely to each other as to prevent respiration, but they also prey upon the vital nourishment of the tree, its sap, or cambium. It will therefore be evident that plants cannot long survive under these circumstances, and even if they do, they will be made unhealthy by the scurfy deposit remaining on them, and the injury done to the bark.

Another dangerous characteristic of the "San Jose Scale" is its minuteness while in the embryo state; the almost microscopic young scales might elude the observation of the most careful scrutiny were it not for a peculiarity which they possess which makes their presence distinguishable on the stem, leaves, twigs and fruit of their victims: round each individual is a bright red ring, which thus encircling it, makes the real enemy a conspicuous object to the close observer.

So great is the damage to be feared from the incursion of this pest into our nurseries, orchards, gardens, and forests, that scientific men, who are aware of it, are

urging the necessity of legislation to enforce active measures to prevent its spread in several States of the neighbouring republic; and it will be well for our Canadian horticulturists to be on the alert, so as to be able to adopt measures to avert such a dire calamity. However, we must not place all our trust in legislative enactments, but support the executive, by studying for ourselves, and promptly following such directions as the experts who are employed may recommend.

The insecticides for the destruction of scale now found to be most effective are usually called "resinous washes;" they are also called "contact insecticides" and, in the case of scale, kill by forming a coat, beneath which the pest is smothered. These washes vary a little according to the insect treated, and the locality; for those with soft scales, and in warm climates, they need not be so strong as in colder latitudes where the scales are thicker and harder.



a. Female outer scale,—b. Female neutral view, with eggs. c. Male.

The following is a strong formula which has been approved for the destruction of the San Jose Scale.

Resin—30 lbs.
Caustic Soda (70 per cent) 9 lbs.
Fish Oil—4½ pints.
Add water to make 100 gallons.

Put the ingredients into a kettle; cover them with water to the depth of four or five inches and boil for about two hours, or until the compound can be thoroughly dissolved with water; then, fill the kettle gradually with cold water, so that the wash may not be too suddenly chilled; stir briskly while adding the water, so that an emulsion be formed which will mix with more water; dilute the mixture until you have 40 gals.; the additional water up to 100 gals to be added as used.

This preparation must only be used in the dormant season of winter. A good way to apply it is with a whitewash brush; and the question is, whether it would not be the part of wisdom to do so without waiting for the actual appearance of scale, on the principle that "an ounce of prevention is better than a pound of cure."

G. Moore.

NOTES ON STRAWBERRY CULTURE.

There are very few branches of Horticulture which afford so much pleasure, and, when properly managed, yield such a handsome profit, as the cultivation of strawberries.

A great many people who propose to grow this delicious fruit seem to have the idea that if they succeed in sticking their strawberry plants in the ground and give them an occasional hoeing through the summer, it is all that should be required of them, and that nature should do the rest, but when the fruiting season arrives they wonder why their berries are so small and of such poor quality, and when at last they cannot remember any lack of care or attention on their own part, they attribute it to the excessive heat, or heavy rains, or some other fault on the part of Dame Nature. To such people a few practical notes on the management that warrants a successful crop may not come amiss.

The first and most important item to consider when about to engage in strawberry culture is the selection of varieties best suited to the climate and soil, and although the most satisfactory results are obtained from practical experience and careful experiment with the leading varieties, still, a few hints on some of those best suited to the Province of Quebec may prove acceptable, especially to those who have had no practical experience on the subject. Among the hardiest and most prolific of the standard varieties may be mentioned, Wilson, Crescent, Glendale, Cumberland, Sharpless, Grenville, Manchester, Miner's Prolific, Kirkwood, etc., of these the Wilson is probably the most satisfactory general purpose berry, while the Sharpless makes up in size and quality what it lacks in productiveness; the Crescent is undoubtedly the hardiest and will live through the severest of winters, but it is greatly lacking in quality and size.

A great many theories have been advanced in regard to the proper time to plant strawberries, and it is largely a matter of personal opinion, but fall planting is not to be recommended for northern climates, where the frost has a tendency to heave the young plants out of the ground, and although it may prove successful some seasons, when the winter is not so severe as usual, still, the general results are not so good as those obtained from spring planting.

The quality of the soil and its condition when planted require the most careful attention on the part of the would be successful strawberry-grower. A patch of ground should be selected—sandy loam if possible—well underdrained and having a good southern exposure so that the berries may become thoroughly ripened before gathering, this should be sown down the previous year with clover, which should be plowed in while still green, thus giving to the soil a large quantity of nitrogen, a very essential thing in the production of strawberries. (1) The following spring the land must be thoroughly worked in order to make it as mellow as possible and to effectually destroy all young weeds, for weeds in a strawberry bed form a very bad combination and in removing them one is apt to destroy many young plants. When the land has been thoroughly cleaned and pulverized, mark it off in shallow drills about four feet apart and run a light drill harrow over these to partly fill them in, and then set out the plants, which should be taken up with as much earth adhering to them as possible so as to ensure a good take; it is also a wise plan to prepare no more drills than can be readily planted out the same or the following day, that the earth may not have a chance to become dry.

During the summer the young plants should be frequently hoed, and when they have got a good hold on the land a liberal quantity of bone fertilizer and potash may be applied as a top-dressing. While the plants are sending out the young runners, care must be taken to see that they are properly turned in along the rows or they will run in all directions and a great number of them be destroyed in cultivation.

M. JACK.

(To be continued).

Household Matters.

Clearing Away and Washing Up.

One hears of a number of people who are really fond of cooking, but who ever heard of anybody who cared for clearing up and putting away after a meal.

Yet this must be done, and the wisest course is to find out the quickest and best means of doing it.

A task well begun is half done; and taking it up with a cheerful feeling that it will soon be over will rid it of half its trouble.

(1) Eat your clover, and use the dung from the cattle. ED.

In clearing the table, care must be taken to put each article away where it can be easily found.

To keep the tablecloth nice, after brushing off the crumbs fold it up in its original creases and put it away carefully for future use.

A careful housewife will see that every bit of anything that is available for future use is put by for that purpose.

All odd bones and scraps should be put into the stockpot, and well boiled down down for soup or gravy as required: the greater the variety of meats the better the soupe.

And now follows the question of washing up. Wash all dishes, plates etc, in hot water, with the addition of a little soap or soda; turn a strong cup upside down in the middle of a pan, lean the plates after washing against it to drain for a short time; wipe a few at a time while hot, as they cool very quickly, put each sort separate and keep the table clear for others. A little system will save a vast amount of labour. Spoons, forks, and knives should be soaking in hot water during this time. The blades of the knives only must soak in a jug; a little shake up and a good wiping while hot will cause the silver to look nice and bright. If convenient, it is easier and better to clean the knives at the same time in the usual way.

Glasses and china must be washed in clean water and dried with a soft cloth to ensure good results.

All pots and pans, with their covers, should be washed inside and out with very hot soda and water.

Let nobody think the above details beneath their notice. Speaking from a personal experience, I know what a comfort it is to have every thing in readiness and order for any emergency.

The ignorant may sneer, but the cultivated mind will see the point and wish that they could get things done in order like this in their own houses.

LAUNDRY HELPS

To wash flannels without shrinking, make a solution of two gallons hot water, a tablespoon of powdered borax, and enough soap to form a strong lather. Wash the flannels in it as hot as the hands can bear, using no more soap nor rubbing any more on. Rinse in hot water, squeeze and dry. Never wring flannels. (1)

(1) And never wring a sponge.—ED.

Wash flat irons occasionally with warm water, to every two quarts of which has been added half a tablespoonful of melted lard. Wipe thoroughly, and set in a warm place till perfectly free from moisture.

A polish for shirt bosoms is made by melting together one ounce of white wax and two ounces of spermaceti. Heat gently and turn into a clean shallow pan. When cold break into pieces about the size of a chestnut and put in a box until required. When making, boiled starch add a piece of the wax. When ironing first smooth the bosom very carefully then place a clean cloth over it and iron lightly; remove the cloth, and with a clean, smooth, hot iron rub it rapidly; when about dry take a cloth wrung dry in cold water and pass lightly over the bosom, following with the hot iron immediately.

EIDER DOWN

Do the wearers of eider down dressing sacks and wrappers know that this peculiar and beautiful fabric will not blaze when held to the fire? It will only smoulder, being made of

an animal fibre. Mothers will do well to remember this when they are buying warm garments for their little ones.

Here is the way in which to wash garments of eider down: Make a suds of lukewarm water and the best laundry soap. Put in the garment and wash it thoroughly, being careful not to rub soap on it, that causes it to shrink in spots and is undesirable in every way. The best eider down will not fade and will bear hard and frequent washings.—New-York Tribune.

THE CHILDREN

By Henry Reeve, Highland Creek. The Eye of Isis.

This is played by taking newspapers and placing them over a clothes horse, and cutting holes large enough and high enough for a person to look through. Several go behind the screen, and the company then guess, if they can, who the owners of the eyes are; they seldom are able, and the mistakes made are ludicrous.

THE COOK WHO DOESN'T LIKE PEAS

The fun of this game depends on a fair proportion of the players not being acquainted with it, in which case they will be sure to lose small fortunes in forfeits before finding out the "catch."

The leader begins, addressing the player: "I have a cook who doesn't like peas (p's). What will you give her for her dinner?" The person addressed, if acquainted with the secret, avoids the letter "p" in his answer, and, for example, says, "I will give her some bananas." The question is then asked of the second person, who, if unacquainted with the trick, is likely enough to offer something which contains the letter "p"—e g., potatoes, asparagus, pork, apple pie, pickles, spinach, etc. When this occurs, the offender is called upon to pay a forfeit, but the precise nature of his offense is not explained to him. He is simply told in answer to his expostulation that "the cook doesn't like p's. When a sufficient number of forfeits has been extracted, the secret is revealed, and those who have not already guessed it are aggravated by being reminded that they were told over and over again that the cook did not like "p's" and that if they would persist in giving them to her they must, of course, take the consequences.—Exchange.

HOUSEKEEPER

The Farm.

PRACTICAL FARMING

by James Dickson

Does it pay to raise turnips?

*(The Editor is *not* answerable for the opinions of his correspondents.)

Many Farmers object to raise turnips because they cost so much for manual labour! and the calculation of the cost differs so much, that during the last season I kept account with my turnip field with the direct object of ascertaining what it costs to raise an acre of turnips. If my memory serve me right one estimate for hoeing was $12.00, while another was $2.50.

I must observe that the cultivating and hoeing, was done by a prairie wheat and corn farmer, who had never previously hoed a turnip. I must however give him the credit of having learned with little trouble. Also, that they were cultivated and hoed twice. I kept

no account of the manure or the drawing, as these items would be the same cost on any other crop. Also, I compare a field of oats with the field of turnips: as oats are a standard crop in all parts of the Province. And as a basis of calculation: I reckon that the manure put upon one acre of turnips is sufficient for three acres of oats. And ignoring the fact, that writers generally claim that the yield of an acre of turnips is from 700 to 1000 bushels. base my calculation on a modest 500 bushels. (1) Also, in the same principle I place the oat crop at 50 bushels of 34 lbs. per acre: observing, that a return of 50 bushels of oats is less likely, than a return of 500 bushels of turnips.

I may also observe, that the several items will be varied, according to the circumstances of the individual farmer: some boys handle turnips just as well as higher priced men if under proper supervision. I paid my man 75 cts for ten hours work: the pulling and drawing was done by boys. The sowing, I did myself charging $1.50. I mention these points as the cost was probably about what it can generally be done for, and I am the more particular in mentioning them, as calculations are often misleading unless the circumstances are fully understood.

Cost of one acre of turnips

Rent of Land	$4.00
Ploughing	2.00
Harrowing	.50
Drilling	2.00
Seed	.50
Sowing	1.50
Cultivation	2.00
Hoeing	4.35
Cutting	2.25
Drawing	2.75
TOTAL	$21.58
500 bushels turnips — 15 tons at $1.44 — or 4 cents per 60 lbs.	21.60

Cost of three acres of oats

Rent of Land	$12.00
P'oughing	6.00
Harrowing	1.50
Sowing	1.00
Seed	3.60
Harvesting	7.50
Straw to pay for threshing	
Grinding at 3 cents	4.50
TOTAL	$36.10
150 bushels oats 5100 lbs equal to 2½ tons a t$15.00 — 24 cents per 34 lbs.—	$36.10

By this calculation the turnips cost $1.44 per ton, while the ground oats cost $15.00, per ton, about 10 lbs of turnip against each pound of oatmeal. Now, are my figures nearly correct? And according to the circumstances of the general farmer? If so the proof is conclusively against the oats, and no one with a practised eye and hand, requires scales to prove to him, whether ten lbs of turnips, or one lb. of meal, lays on most fat. At the present time I have two large toothless cows, each gets half a bushel measure of cut turnips twice a day, (40 lbs) and daily improvement can be seen: this according to my estimate would equal a feed of four lbs of meal. That is about a proper ration for cattle to be finished on grass, but cattle weighing ten to twelve hundred pounds, cannot be fattened on that quantity of ground oats. And I must here again, as I have previously done, protest against feeding turnips and meal at the same time. This is invariably done, and when fed in quantity, decidedly at a loss. In the report of the Manitoba Experimental Farm in regard to an experiment on feeding steers, the superintendent says, "It would seem that at the prevailing prices of grain, "turnips are fed at a lose." In this case several of the steers were fed forty lbs of turnips a day, extra above the reguiar ration of meal fed to the whole lot. Now, my experience in feeding turnips compels me to say it was the meal that was fed at a loss, and not the turnips; forty lbs of turnips are a good fattening ration for a steer with what green oats he will eat, without meal. The old country Scotch farmers

(1) A bushel of turnips weighs about 48 lbs. ED.

know better how to raise "neeps" than we generally do, and they also know better how to feed them; It is a well known fact that they make good beef with turnips and straw; (1) and the philosophy lies in the fact, that each is a corrective of the other; the turnips tending to looseness, act upon, and aid in the digestion and expulsion of the straw through the system, while the straw retards the process: thus giving a sufficiency of time to allow of full digestion. But that is not the case in feeding meal at the same time as the turnips. Straw cannot be fed to the extent of scouring; meal can, without turnips, and the usual ration of meal which, alone, would remain longer in the system, and be digested, is, by feeding turnips at the same time, hastened through the system, each aiding the other in the hastening process; the result being a partial loss of both, but more particularly of the meal, as the turnip are more easily digested. With this reasoning I insist on feeding no meal while turnips are being fed. As I have previously stated I secure excellent results; can get more money from feeding turnips and green oats than any other kind of food.

Some raise the objection, that turnips abstract more strength from the soil than any other crop. Let me ask? Does any one object to a cow being a good feeder if she gives it back in the milk pail? or is it to be expected that she will give a large flow of milk without being generously fed? No! Then let me say the same principle applies. The turnip is a good feeder, and particularly from the atmosphere. There is no better food for animals, and what they do not appropriate is left in the excrements. And it must not be forgotten that the turnip land is left in a very superior state for future crops. And again it must be observed, that an animal eating the bulk and weight of forty lbs of turnips, cannot eat so much forage as the animal eating four lbs of meal; while at the same time the turnip fed animals have a better appetite, and will eat coarse forage until full as drums, on which they would seem dainty, if being fed on meal.

Again, in regard to raising turnips writers lay so much stress on so many ploughings, and so much extra cultivation, and the use of implements specially for the management of turnips, that it is enough to frighten those not acquainted with the subject.

We will suppose the land the previous season produced oats on a newly broken up grass sod, and that it was harrowed after the crop was removed for the purpose of germinating weed seeds. Then plough in the spring when the land is dry, and only long enough previous to sowing the turnips to allow it to be dry enough to sow; this for the purpose of giving the turnips an equal claim with the weeds. Cut it up with a disc, or spring tooth, or a common harrow weighted down will answer quite well. The land is then ready for the manure to be spread on the surface. It is very much better to spread that by throwing from one side to the cart or waggon, so as not to cut up and harden the land after it has been ploughed. This can be done by ploughing sufficient for five or six drills at each side of the field and down the other, with a "ha turn"; manure that, drill and sow it, and again proceed in the same way: by this method only the last three drills in the centre of the field will be tramped, and these very little; or, by ploughing with a gee-turn, commencing in the centre of the field, and finishing at each side, without trampling any turnip land.

I recognise that the usual method is to plough the previous fall, and again in the spring. Lately, however, I consider that to be worse than wasted labour and the philosophy lies in the fact, that the sod upon which the preceding oat crop was grown has rotted, that the soil is more mellow, and there is more humus six inches deep, than there is on the surface. It is evident, that if it is ploughed the fall previous, this mellow humus will be turned on the surface, and in the spring it will be turned down again; but if ploughed only in the spring, the mellow humus of the old sod will be on the surface, and, in conjunction with the manure also on the surface, will be gathered into the drill to the immediate benefit of the turnips In a former article I fully described the method of drilling.

(3) Three bushels a day, to each beast, in Aberdeenshire, fifty years ago. Now, no Scotch farmer dreams of such a style of feeding. ED.

The Grazier and Breeder.

TREATMENT OF CHOKING IN ANIMALS.

Experience proves that all animals are liable to suffer from the stoppage of food in some part of the œsophagus, which extends from the back of the mouth to the stomach, and it must be evident that in the circumstances prompt measures for the removal of the obstruction are necessary in most cases.

A careful examination should be made within the mouth of the horse, taking the tongue in one hand and turning up the point after the manner of giving a ball, searching both with hand and eye for the cause of the trouble. The outside, from the base of the tongue should be felt for deformity, continuing the scrutiny down the neck to where the œsophagus ascends over the trachœa.

If found within the mouth the obstruction may be removed with the hand, or with forceps if within view but out of reach, or so fixed that the fingers cannot grasp it during the restless and excited movements of the animal, which make digital interference both difficult and dangerous. If found in the neck portion of the gullet it will be of importance to know of what the actual obstruction consists. For instance, an egg which may have been given to produce a glossy coat, and which tradition holds should be given in its shell, may be firmly seized and quickly broken with the hand, and with a minimum of danger to the tube, the breakage being followed by immediate relief through the passage downwards of the offending body.

Veterinarians, with the manipulative skill that is the outcome of long practice, can often succeed in persuading other and more solid bodies than eggs to pass on in the way described, for it should be remembered that the circular order of muscular fibres, acting in the rear of a morsel to be swallowed, follow one another in their rhythmic contractions, and the moment the body is removed from the constricted portion of the gullet, the remainder of the tube is ready to carry on the movement. It may require but very little more force to move it than the wearied muscles previously possessed, and only a small amount of force from the outside will give the necessary impetus. A hard apple or piece of frozen turnip, will not often yield to such pressure, and to know what substance he is dealing with is a great advantage to the operator. It may usually be assumed the impaction is of some hard material, but a hastily swallowed portion of hay may in some instances be the cause.

Where the above method fails, or is impracticable, it becomes necessary to use a probang, and I would here strenuously protest against the dangerous practice of using cart whips, and broom handles. The veterinary surgeon should be summoned and informed of the nature of the case so that he can provide himself with such instruments he may require: meanwhile, as first aid, a wineglass or so of linseed oil may be poured into the throat; some of it will be retained about the obstruction, though the major part may return via the nostrils, and another similar dose may be administered in the interval of waiting for the veterinary. This simple treatment may succeed before his arrival, as the mass of hay will have been saturated and softened, and the tube mollified if the impediment be in the nature of an apple or root. For a horse the probang should be long and pliable, and not so large in circumference as that for bullocks. A cup shaped end of polished horn is the least likely to cause injury. To use the probang, rather than use a gag it is preferable to seize the tongue with the left hand and, with the instrument previously oiled, to push it gently, but continuously, over the tongue and down to the obstruction, while the patient is held by the ears on either side. If the object yields to the probang, it should be pushed right down to the stomach with one movement and the instrument immediately withdrawn. If it be moved but a little, some more oil may passed down the hollow probang and another effort made before the patient

becomes too restive. It may be necessary to withdraw the probang and repeat the oil, and success may reward the patient operator a little later. Wounding of the œsophagus is the frequent result of using improper instruments, and I have known a broken cart whip to be the first obstruction to be removed by the veterinarian on his arrival. If on the withdrawal of the probang, it is found to have blood and tissues adherent, it will be best in the case of a bullock with any flesh at all, to call in the butcher at once, before any gas gets into the tissues, and while the animal is fit for consumption.

After the successful removal of an obstruction of this kind, the animal should be kept without food for about fifteen hours, except perhaps a draught of milk in which an egg or two are beaten up, and an ounce of glycerine added as an emollient. Soft, moist food only should be allowed for two or three days to insure perfect recovery of the injured and exhausted tissues.

With the dog and cat we have quite different subjects to deal with. The former will often appeal to us for assistance and rarely offer any serious objection to an examination of his mouth. Dog probangs can easily be made with a small piece of sponge and a thin cane of the kind some school masters think so helpful to the youthful mind.

The sponge should be fixed in a cleft end, securely bound round with a waxed end or fine twine. One great advantage a dog enjoys over other animals is the possession of a large gullet, but the obstructions in his case are more often of a dangerous character, such as pins and needles, and can sometimes be diagnosed as such from the outside.

Incision into the œsophagus of a dog in the case of a splintered bone or nail having to be removed is a very hopeful operation, and herein he differs from other animals, always excepting the cat.

The veriest tyro in canine surgery must have observed not only the great recuperative power of the dog in case of injuries, but of his ability to fast without evil consequences, so that he makes the best of subjects for œsophagotomy. The wound may be treated with antiseptic bandages, and its position fortunately secures it from those lingual attentions (i. e. lickings) which too often remove sutures, when used in other parts of the body. The choked cat I have ever been unable to regard as quite so "harmless" or "necessary" as she is represented, but still she has to be taken into account in these days when she is honoured with a show of her own. Her symptoms are the same as the dog's, but she does not willingly accept help.

In order to examine her, a soft but bulky rug or blanket should be wrapped round her in such a manner as only to leave her head out. The courageous individual who holds her thus swaddled between his knees, may be induced to grasp with his hands the loose skin at the back of the neck, while the intending operator kneeling in front of her, inserts a bone penholder, or other harmless gag, between her teeth, with a view to the further introduction of two lengths of tape, the one to pull the head upwards and the other to pull down the lower jaw, and give a view of what is within. This plan may be found to answer, and the offending body may be removed with forceps—*not fingers*.

Of all domesticated animals there is no doubt but that the cat is the best subject for the administration of chloroform. It is safe, and effectual, and leaves no ill effects; therefore it is far wiser to use it than to run the risk of getting mauled.

W. R. GILBERT.

ANIMAL DIGESTION

RUMINANT'S STOMACH—Chewing the cud—Alimentary canal—Digestive juices—Saliva—Gastric juice—Bile—Pancreatic juice—Food Absorption by the blood.

Every farmer and in fact every person who has anything to do with the care and management of animals, ought to know something about animal digestion They will hen be able to feed their stock more intelligently and effectively.

Oxen and sheep differ from other ani ; als in that they possess a compound stomach, while human beings, horses, pigs etc., have only a simple stomach.

It is often said that oxen and sheep have four stomachs but it is more correct to say that, in these animals, the stomach is made up of four compartments, all communicating with one another.

The names of these compartments are :

(1) The rumen or paunch (butchers, tripe is chiefly this)

(2) The reticulum or honey comb.

(3) The omasum or manyplies.

(4) The obomasum or rennet stomach.

The capacity of the animal stomach is far greater than is generally supposed, it amounts to from forty to fifty gallons and fills the greater part of the abdominal cavity.

The first division—the paunch, occupies about nine tenths of the entire volume of the stomach, the other three divisions make up a chain on the front left side of the paunch. The fourth division or rennet stomach is the only part which secretes gastric juice and is therefore the only compartment capable of exercising digestive functions.

It is called the rennet stomach from the fact that it is the fourth division, of the calf's stomach, which is salted and preserved to make natural rennet for use in making cheese. Animals that "chew the cud" such as the ox and sheep, are called ruminants. This class of animals can stow away, in the first division of the stomach, a large quantity of vegetable food. This, at a suitable time, is brought back again into the mouth, where it is mixed with the juice from the salivary glands and slowly reduced to a fine condition between the teeth—this is called "chewing the cud". The compound stomach and the power to "chew the cud" are evidently devices of nature which enable the animal to make use of large quantites of coarse fodder and to get from it whatever nutriment it may contain.

After the animal has gone through the process of "chewing the cud" the food passes down the gullet and is directed along a gutter, through the third division of the stomach, and so into the fourth division. The glands lining this compartment pour out plenty of gastric juice upon the food, which is then subjected to the same action as in the simple stomach of other animals.

The "Alimentary Canal" is the name of a passage through the body which begins at the mouth and by means of which all food enters the body. It consists of the mouth, pharynx, gullet, stomach, small intestine and the large intestine. Of the food which an animal eats part is digested—that is, adapted to the use of the body—and the remainder passes through the canal, just described, and is finally ejected from the body.

Connected with the alimentary canal are certain glands which have the power of manufacturing—out of the blood which flows through them—certain juices which they pour out as secretions.

In the walls of the mouth we find the "salivary" glands. Food becomes mixed with saliva which softens and moistens it and so it is more easily swallowed. It also

dissolves it partially and acts upon it chemically by means of a ferment (ptyalin) which changes insoluble starch into soluble sugar. (1)

The inner lining of the stomach contains a great number of glands which give out a thin acid fluid called "gastric juice", when excited by the presence of food. These glands are called the "peptic" glands. The gastric juice contains two important substances—hydrochloric acid and pepsin. The function of this juice is to convert insoluble albuminoids into soluble peptones. These, when dissolved, are able to pass through a membrane, such as the lining wall inside the stomach. Gastric juice has no effect upon starches or fats but it helps to break up fatty tissue, because it dissolves the connective tissue which binds the fat particles together.

After food been acted upon in the stomach it becomes a fluid mass called *chyme*.

From the stomach the food is forced into the small intestine. Here its meets a secretion from the liver called the bile. The bile plays an important part in emulsifying the fats, that is, it reduces them to a very fine condition. In the small intestine there is another juice called the pancreatic juice which comes from the pancreas (or sweetbread).

This juice completes the work begin by other digestive juices and reduces to a digestible form any matter that may have escaped the other juices.

After the food has been acted upon by all these juices it goes by the name of *chyle*. (2) Chyle is the food in a complete state of digestion and it is then in such a form that it can be absorbed by the blood. A great part of this chyle is taken up by small blood vessels which are found in the intestine and then it enters the blood directly. But some of it is taken up by the lacteal vessels and is conveyed by them into a large blood vessel which leads to the heart.

A certain amount of food that is indigestible is not absorbe i by the blood and is therefore useles to the sustenance of animal life. This indigestible food is propelled from the small intestine into the large intestine and so on until it is excluded from the body.

WALTER S. G. BUNBURY

COMPTON MODEL FARM.

The Dairy.

Payment of Milk According to Butter Fat

To the Editor of the JOURNAL OF AGRICULTURE :

DEAR SIR,

There are many factories making butter since Nov. ; the close of the cheese season in this Province ; and more I believe in Ontario also. The time has come when all our makers should be qualified to run the Babcok milk tester, for it has been long enough before the public to prove its merits. With our dairy school at St Hyacinthe, and the 3 schools in Ontario, they are turning out young men who can be relied on to run it with accuracy. The best feature in this machine is its simplicity ; any one with ordinary intelligence, and one good lesson on its working, can run it immediately.

With this explanation about the machine itself I need go no further, only to say when properly handle l it always, under ordinary circonstances, gives true result of the butter-fat contained in milk.

Now, it is well know that butter fat, with a certain quantity of moisture, the salt used, with a very small ingredient called ash, and, in all well made butter, a small, (a very small) quantity of curd, is what constitutes the article properly called butter.

(1) Just as the diastase of malt converts the starch into sugar in the process of *mashing*.—ED.

(2) *Chyle*, from *cheein* (Greek) to pour ; *chyme*, from *chymas* (Greek) juice ; *pancreas* (Greek) all flesh.

Of course, every one knows that there are some days in which you will have a better result from your work than others, that is, those who pay any attention to their work.

A good maker needs to keep his eyes open, and ears too for that matter, at all times to see that his machine is working at its best. His ear should tell him by the hum of it whether it is running at full speed, he should also try it by the small article that goes with each kind of machine quite often, to see that in winter especially, the milk is of the proper temperature, a very difficult operation where farmers are careless and allow the milk to freeze : a thing that is always forbidden by every maker who knows his business. But to get good results, he must see that there is not much variation in the temperature when passing through the separator. I would here state that the higher the temperature the easier the separation.

Another matter is, that a maker, to have good results, must have his cream at the proper temperature to churn, and also at the proper acidity. If these two things are not attended to carefully, bad results are sure to follow.

It is also a well known fact that when the skimming has been well done, and the churning done at the proper time, you will make more butter than you have butter fat. Under exceptional circumstances you may expect an addition of about one sixth or 16 and 2/3 lbs per 100 lbs of fat; but, as you are liable some days not to get such good results as others an eighth may be a sure calculation to be added, that is, 12½ lbs extra per 100 lbs of fat. A careful maker should at least have this surplus, if he has not he must start an enquête to find out the cause of the trouble.

Where the system of paying by butter fat has been adopted, you know how much fat you have, and, if you know anything at all about arithmetic, should know how much butter you should have ; and it there is any deficiency, find out at once where the fault is, by testing your skim, or butter-milk by the same process.

By paying for milk according to its richness, you put a premium on honesty, also an encouragement to give your cows good food. Although I am not one of those who believe very much in the theory that you can feed certain rich food to increase your butter fat, you may do so, but does it pay ? I do not believe in doing a thing unless it pays. For instance ; you may take a Holstein cow that gives say 80 lbs of milk a day and I hardly think you could feed her anything that would make her give rich milk like the Jersey or our Canadian cow. You can increase her fat to a certain extent, but it will afterwards come back to its normal condition. Another thing in favor of paying for milk in this way is that you have no dishonesty among your patrons, it makes them honest : whether they are satisfied or not is another question.

I do not say perhaps at a cheese factory there is the same question at stake, as there is a difference of opinion with regard to paying by the Babcock test ; but at a creamery none whatever. I hope to see the day when all our creameries shall adopt this system. There are many now, who pay by this plan, and are well pleased. Of course you will always find grumblers who say and talk about dishonesty, but these are generally the ones who need looking after.

After an experience of 7 years with this Babcock machine, I am satisfied it is the only true way to pay for milk at a creamery, and I will also say that it is much better than the old way of paying for milk at a cheese factory.

Yours Respectfully,

PETER MACFARLANE

Chateauguay, 19 Jan., 1898.